



Eco-Schools in Africa

A case-study evaluation using Social Return on Investment Analysis
For the Danish Outdoor Council

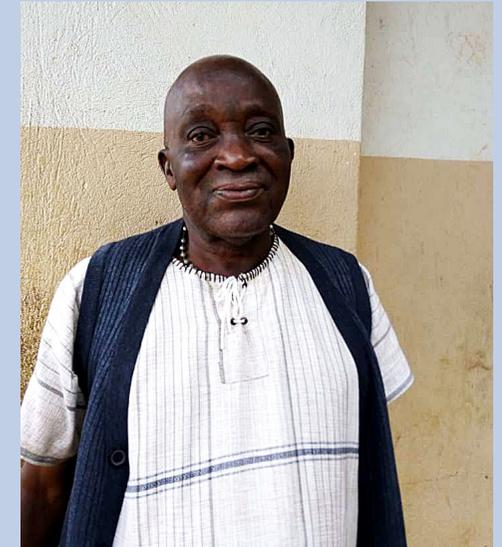
Olivia Copsey December 2019



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“Projects implemented at community level have become a spiral. Community members are learning from their neighbours, there has been positive change especially for low-income earners who are striving to learn new skills.”

**Semakula Mayanja, Parent,
Queen of Peace, Kampala**

Contents

Executive summary	4
Background	4
Purpose of this study	5
Theoretical Framework	6
Methodology	7
A note on Social Return on Investment (SROI) analysis	8
Eco-Schools Uganda	9
Queen of Peace Boarding Primary School, Kampala	10
St. Kagwa Boarding Primary School, Busheyeni	17
St. Aloysius Primary School, Mbarara	23
Eco-Schools Tanzania	29
Digalama Primary School, Mvomero	30
Hembeti Primary School, Mvomero	36
Lusanga Primary School, Mvomero	42
Eco-Schools Tracer Study	47
Conclusion	51
Recommendations	53
Recommended further research	54

Executive Summary

As long as the world is still struggling to achieve universal access for all children into quality primary and secondary education, programmes for Environmental Education, or even Education for Sustainable Development (ESD) will be sidelined. Initiatives such as 'Eco-Schools' offered to schools by NGOs in 76 countries globally, operate in the background of educational policy. They are often seen as 'nice-to-have', but a low priority compared to the real and urgent challenge of improving education provision for the millions of children who will fail to complete primary education with even the minimum standards of literacy and numeracy.

But what if these ESD initiatives held answers which could help reverse some of the complex and contextual issues which are preventing progress in education quality, or access for children into education?

This study builds on earlier evidence showing improved enrolment and decreased dropout in primary schools operating rights-based Education for Sustainable Development programme 'Eco-Schools' in East Africa. This study aims to qualify enrolment, dropout and academic performance statistics by providing a detailed but holistic account of the processes responsible for the change in six successful Eco-Schools in Uganda and Tanzania. The study looks deeply at the programme inputs and outcomes, charting the practical investments and immediate tangible impacts in schools, the broader changes in provision of quality education (SDG 4), to wider change felt within the community (e.g. SDGs 1, 3, 6, 11, 15, 16, & 17), and long-term positive outcomes for the individuals and communities involved.

A form of Cost-Benefit analysis (Social Return on Investment) has been adapted for this study to account for all tangible impacts, and support qualitative evidence of changes that are harder to measure. The SROI calculates all practical, financial and social returns attributable to the Eco-Schools programme in the school which can be assigned a monetary value. The results provide a ratio for each school which

expresses the number of dollars realised to every dollar spent on programme implementation. The process found SROI ratios in the three Tanzanian schools of 17:1, 19:1, and 26:1, and in the three Ugandan schools of 43:1, 49:1 and 51:1.

The SROI methodology has been overlaid with qualitative interviews of learners, teachers and parents. This uncovered several mechanisms within the rights-based ESD approach of CECOD and TFCG, which are fundamentally transforming the quality and access of education in the six schools studied. It also built a picture of the wider change happening in the community as a result of the Eco-Schools programme. A tracer study involving fourteen ex-pupils from four of the schools reveals how the effects of the programme are being sustained over time.

The findings of this study make a case to policy makers and funders for the effectiveness and efficiency of financing rights based ESD programmes, such as Eco-Schools, as a tool to help meet Education 2030 and the other SDGs. The findings also challenge ESD practitioners and partners to identify and promote the potential of their programmes, in meeting the grand challenges we face in the areas of universal education and community development. Finally, it aims to provide useful insights and examples for any local, national or international organisation, teacher, learner or parent wishing to tackle the education crisis from the bottom up.

Background

The United Nations Sustainable Development Agenda 2030 recognises that a quality education is the foundation to creating sustainable development. In addition to improving quality of life, access to inclusive education can help equip locals with the tools required to develop innovative solutions to the world's greatest problems¹. However, 258 million children, adolescents and youth are still out-of-school and the latest UIS data from September 2019 shows that three years after the

¹ <https://www.un.org/sustainabledevelopment/education/>

promise to provide universal primary and secondary education (SDG 4), there has been no progress in reducing this figure². The UN Secretary General's 2019 SDG Report states that Sub-Saharan Africa faces the biggest challenges among developing countries. Progress in terms of increasing proficiency in literacy and maths in sub-Saharan Africa is limited or stalled³ and many schools still lack basic infrastructure and facilities to provide effective learning environments. Less than half have access to electricity, the Internet, computers and basic drinking water. The proportion of primary school teachers who are trained is also lowest in sub-Saharan Africa at 64 percent⁴. Gender disparity still exists and currently 52 million girls are out of school in sub-Saharan Africa compared to 45.5 million boys⁵. In 2016 Primary completion rates for both sexes were 43.62% in Uganda and 79.54% in Tanzania⁶. Key research points to several factors influencing school absences and dropout. These occur at the individual, school and community levels, and include poverty, poor health or malnutrition, child labour, poor-quality teaching materials and methods, and school safety. Additional factors relate to perceptions of how education will influence lifestyle and career probabilities (Sebates, 2010). This learning crisis perpetuates poverty cycles, as the lack of quality education not only threatens an individual's ability to climb out of poverty, it also jeopardizes the economic future of entire nations as they struggle to compete in a global marketplace with less-than-skilled human resources⁷.

Since 2006 the Eco-Schools programme has been implemented in East African countries by the Danish Outdoor Council (DOC) in partnership with national NGOs Conservation Efforts for Community and Development (CECOD) Uganda (2006-present) and the Tanzanian Forest Conservation Group (TFCG) (2015-present), the Catholic Commission of Justice and Peace and the Wildlife and Environmental Society of Malawi (2008-2017), and the Albertine Rift Conservation Society (ARCOS) in Rwanda (starting 2019). While operating as part of the international Eco-

Schools programme of the Foundation for Environmental Education, over-time the Eco-Schools national operators in East Africa have evolved and refined their programme approaches through the partnership approach coordinated by DOC. The Eco-Schools seven-steps have been integrated within a rights-based Education for Sustainable Development (ESD) methodology focusing on developing action competences with schools as a hub for whole-community participation in action-based learning. Schools on the programme are trained and supported to transform their education provision and learning environments; Pupils Parliaments are set up to enable rights realisation through democratic processes; teachers are trained to deliver curriculum subjects through the action-based learning methodology 'Investigate, Vision, Action, Change (IVAC)'; and learners, parents and community members are involved in development and leadership of sustainable natural resource management (SNRM) and micro-projects which promote sustainable community development. The Eco-Schools Best Practices in Uganda, Tanzania and Malawi documented in 2017 by DOC found clear evidence of improved enrolment and decreased dropout in primary schools operating the Eco-Schools programme. Significant improvements were also seen in academic performance in schools after Eco-Schools implementation (Martin, 2017).⁸

Purpose of this study

This study builds on the earlier research carried out by DOC (Martin, 2017), which identified significant improvements in the quality of education indicated by increased attendance and academic performance, as well as general health and wellbeing of learners as a result of the Eco-Schools programme. It also responds to a call within the 2016 Global Education Monitoring Report 'Education for people and planet: Creating Sustainable Futures for All' for further research to address a knowledge gap within reciprocal ties between education

² <http://uis.unesco.org/sites/default/files/documents/new-methodology-shows-258-million-children-adolescents-and-youth-are-out-school.pdf>

³ <https://unstats.un.org/sdgs/report/2019/progress-chart.pdf>

⁴ UN Secretary General's SDG Report, 2019. <https://unstats.un.org/sdgs/files/report/2019/secretary-general-sdg-report-2019--EN.pdf> 11

⁵ <http://uis.unesco.org/sites/default/files/documents/new-methodology-shows-258-million-children-adolescents-and-youth-are-out-school.pdf>

⁶ <http://data.uis.unesco.org/#>

⁷ <https://unstats.un.org/sdgs/report/2019/goal-04/>

⁸ http://77.243.131.207/media/1737659/doc_best-practice-study_20-june_print-10.pdf

and development sectors⁹. Taking six successful Eco-Schools (three in Uganda and three in Tanzania) on a case-by-case basis, this study forensically unpicks the programme inputs and outcomes in order to expose and better understand the change processes at work behind the programme achievements in terms of Quality Education (Goal 4), including its influences on learning environment, attendance and dropout in each school. The study goes on to identify and build a picture of the wider impact this has had outside school in the local community. Finally, it zooms outward to look overall at how the changes mentioned in the schools have lasted over time, making it possible to project programme impacts forward as an indicator of efficiency of the Eco-Schools approach.

The mixed-methodology includes an adapted form of Cost-Benefit analysis in order to show what financial and resource investments were necessary to achieve the change being realised, and attempt to quantify the level of return on this investment. This provides further evidence of the value-for-money of the Eco-Schools programme for anyone considering adopting or funding similar approaches in other schools.

Theoretical Framework

Eco-Schools is a competence-oriented approach where pupils learn through engagement in real-world authentic learning opportunities. Skills of critical analysis, inquiry, reflection and collective action are key to the development of 'action competence', which is determined by the ability of an individual to be constructive within change process at a societal level (Jeffrey 2011 p. 9)¹⁰. Action competence requires collaboration on solving issues and as such becomes a process of social learning (Wals 2010¹¹). The cultural influences that shape the learning experience are also important to build action competence.

This study takes a systems view (Sterling, 2003)¹² to evaluate the Education for Sustainable Development outcomes of the Eco-Schools

⁹ <https://unesdoc.unesco.org/ark:/48223/pf0000245752>

¹⁰ https://wikieducator.org/images/archive/0/0e/20130909003222%21Jeffrey2010_Student_centred_learning_-_theory-based_options_for_application_in_OT.pdf

¹¹ <https://arjenwals.files.wordpress.com/2012/12/message-in-a-bottle-learning-our-way-out-of-unsustainability.pdf>

¹² <http://www.bath.ac.uk/cree/sterling/sterlingthesis.pdf>

programme including action competence. The holistic design is based on several complimentary education theories including Gregory Bateson's Logical Levels of Learning and Change (1973)¹³, Urie Bronfenbrenner's Ecological System's Theory (1979)¹⁴, and Pahl-Wostl's theory of Single, Double and Triple loop Learning (2009)¹⁵. All of the above theories express processes of learning and change which move learners from the immediate and physical influence of their environments, to reflection on inherent assumptions and values, towards structural institutional and societal change. In this study, the first level of change is seen as the practical and tangible impacts of the Eco-Schools programme felt in the school, for example micro-project products, new partnerships and extra resources donated, or immediate changes in attendance of learners and teachers. The second level of change is seen in the impacts in quality of the learning environment, teaching and learning processes, wellbeing and health of the learners etc. The third level of change happens outside the school and is recognised in a fundamental shift towards long-term societal change.

The UN Sustainable Development Goals have been used as a guiding framework for the evaluation to help in the orientation and classification of results. While Education for Sustainable Development is specifically targeted in Goal 4.7

“By 2030 ensure all learners acquire knowledge and skills needed to promote sustainable development, including among others through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture’s contribution to sustainable development.”

Processes happening through Education for Sustainable Development are seen as the essential basis for wider change within all targets for Goal 4 'Quality Education', and conduit for realisation of the other SDGs. In each case-study a second key SDG has been identified as dominant

¹³ Bateson, G. (1973) Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution and Epistemology, London: Paladin, Granada

¹⁴ <https://www.psychologynoteshq.com/bronfenbrenner-ecological-theory/>

¹⁵ https://www.researchgate.net/publication/222024258_A_Conceptual_Framework_for_Analysing_Adaptive_Capacity_and_Multi-Level_Learning_Processes_in_Resource_Governance_Regimes

within the change being seen in the community, and other relevant SDGs are noted.

According to realist philosophy which underpins this study, the information presented in the case studies are, as accurately as possible, a depiction of the change achieved in each school. This is seen as a result of the context, people and circumstances particular to the school itself, and not as an inevitable product of the programme. Nevertheless, the results stand as examples to show what is possible as a result of Eco-Schools implementation, and several common change processes have been identified which provide insight and guidance for those wishing to understand the role of ESD within Education 2030, or support replication of similar impacts in other schools.

Methodology

Using a combination of quantitative cost-benefit and statistical analysis, with qualitative informal and focus group interviews, the study tracks the change processes achieved by the Eco-Schools programme in six of the best performing Eco-Schools; Queen of Peace, St. Kagwa and St. Aloysius primary schools in Uganda, and Digalama, Hembeti and Lusanga primary schools in Tanzania. The data was collected by research teams consisting of programme staff from CECOD in Uganda and TFCG in Tanzania, during visits to each school lasting between a half and one day each. The visits were arranged in advance and parents and ex-students had been invited to the school to join the headteacher, other teachers, and current pupils being interviewed. The research methodology consisted of four elements, involving different individuals using separate questionnaires. Generally, these were split between members of the research team to reduce time and disruption to the school. The methodology was designed by the author in consultation with the Danish Outdoor Council African programme coordinator and research team members from CECOD and TFCG. The author was present and participated with data collection during the research visits to the schools in Uganda. In Tanzania the data was collected without

the presence of the author, the visits and methods were discussed via Skype and results communicated during follow up meetings between the research team leader from TFCG and the author.

The four research elements were:

1. Statistical analysis of enrolment, dropout and academic performance data collected from each school. While there may have been other factors affecting these figures not included in the analyses, graphs for each school are presented to support qualitative evidence which indicated changes in attendance and attainment as a result of the Eco-Schools programme.
2. Social Return on Investment (SROI) analysis clearly details the investment from CECOD/TFCG that was required to establish the Eco-Schools programme in each school and quantify all tangible returns. An SROI ratio has been calculated which provides a quantitative baseline for the study. The SROI was conducted during an interview between a member of the research team and the headteacher of each school, in several cases the Eco-Schools focal point teacher, treasurer and other teaching staff were also present.
3. Informal interviews were carried out with two learners, two teachers and two parents at each school to elaborate the results of the SROI. In each category of responders, the school chose one individual who had close involvement with the Eco-Schools programme (Eco-Schools focal point teacher, pupil parliamentarian or Eco-Parents Association member) and one who had not been closely involved. The questions were designed to expose the less quantifiable changes happening in terms of Quality Education (SDG 4) affecting the learners and teachers within the schools themselves, before moving on to examine the wider impacts in the community (other SDGs). The parents provided a proxy for other community members.
4. Thirteen past pupils from four of the case-study schools in Uganda and Tanzania were interviewed within focus group sessions. Other pupils from Uganda who were involved during the early days of the programme (from 2006) but have left the area to attend university

or work in cities etc were contacted via Facebook but only one responded. The individuals ranged in age from 13 to 23 years. The results have been analysed for patterns and written into a combined analysis to help us understand the long-term effects on learners and what impact this might have on their future livelihoods, contributing to societal change and achievement of the Global Goals.

The mixed methods above provide a layered methodology to achieve a holistic overview of the change being realised in the Eco-Schools. In particular, the different elements of the research will reveal how the programme inputs relate to incremental impacts seen in schools in terms of Quality Education (SDG 4), to wider impacts felt in the community (other SDGs), and existential benefits in terms of potential for future livelihood improvement and prosperity.

A note on Social Return on Investment (SROI) analysis

To evaluate value-for-money of the Eco-Schools programme we recognised the need to account for a much broader concept of value than traditional cost-benefit analyses would allow. Social Return on Investment (SROI) analysis was identified as appropriate because it provides a framework for measuring and accounting for social and environmental, as well as economic costs and benefits.

Rather than as an accounting exercise, SROI analysis uses money as a universally recognised way to express value. This makes SROI a participative process as all individuals involved were able to discuss and debate the values assigned to the Eco-Schools outcomes based on a commonly understood measurement. By recording social, environmental and economic outcomes it is possible to understand more clearly how much impact value we have created, in return for what we put into making that change happen. This enables a ratio of benefits to costs to be calculated. For example, a ratio of 3:1 indicates that an investment of \$1 delivers \$3 of social value.

The SROI was carried out in each school by a member of the research team during an interview with the headteacher, with support from the treasurer and Eco-Schools focal point teacher and other members of staff. This allowed discussion and deliberation on values assigned, meaning that the figures represent general consensus among key individuals in each school. The figures are not intended to be verifiable according to traditional accounting procedures but are used as an indication of value relative to the individuals involved. While some figures are specific (e.g. income from micro-projects), others are necessarily subjective, either calculated using equivalent costs (e.g. daily cost of educating a child not wasted) or according to perceived value (e.g. value of a skill in the community). In several cases the costs represented are estimates arrived at through critical appraisal, and debate between the individuals involved. In particular as an SROI calculation is a rigorous process, it was important that the changes being measured had happened as a result of the Eco-Schools interventions and would not have occurred otherwise. This point was discussed throughout the process between those present and we are confident that the figures represented are either as a direct result, or indirect result of the programme (e.g. additional partnerships attracted to the school because of the Eco-Schools projects in place).

The author acknowledges that there is an inherent conflict in the use of a cost-benefit style approach to evaluate outcomes of Education for Sustainable Development, which primarily hopes to transform education away from the dominant economic focus towards more humanistic values. In this study the use of monetisation to express the value of change is intentionally contrasted with qualitative interviewing and focus group methodologies to mirror the immediate, existential and paradigm changing journeys experienced in the schools. From initial funding and implementation of environmental education projects; to changes in learner attitudes, confidence and competences; to increases in school attendance and attainment; to brighter futures for the learners and their wider communities.



The Eco-Schools programme in Uganda started in 2006 as an Eco-Community School project developed by CECOD in partnership with the Danish Outdoor Council (DOC). The Eco-Schools seven-steps were integrated within CECOD's Eco-Community methodologies (renamed ELIMU For the Goals in 2019), focusing on schools as a hub for community engagement and development. Children are familiarised with their rights, and rights issues are incorporated at all levels of teaching and learning (rights-based learning). Both the way learners are taught and the learning environments themselves are transformed using ESD principles and action-based learning methodologies such as IVAC (Investigate, Vision, Action, Change).

CECOD now operates in around 450 schools in 4 districts around Mbarara, and 3 districts in the Eastern and Central regions. With the launch of the Global Action Programme (GAP) on ESD in 2014, CECOD signed a partnership MoU with UNATCOM in 2016 to jointly support the implementation of the National Action Plan of Eco-Schools on ESD in Uganda 2017-2019. An Eco-Schools and ESD network has been established to address education challenges and be an advocate for childrens' right to quality education on the local and national level. As a result, in 2018 the Minister of Education openly supported the institutionalisation of Eco-Schools methods across the education system in Uganda. The government, in partnership with key development partners, has supported the development and implementation of competence-based teaching and learning interventions in schools including validation of the National Education for Sustainable Development Policy draft in 2019.

The Eco-Schools programme in Uganda has developed approaches and methods that inspired the Eco-Schools work in Tanzania and Malawi (part of the programme between 2008 and 2017) and Rwanda (starting 2019), while established Eco-Schools in the three regions continue to serve as demo-schools for other primary schools, and education authorities (local and national).



Summary

CECOD's emphasis on the realisation of children's rights to quality education is recognisable within several programme returns. Safer more child-friendly and conducive learning environments, and democratic processes introduced at school via the Pupils Parliament, as well as improvement in the quality of the teaching and learning through action-based learning methodologies has transformed the attitudes of learners to attending school and made them more interested in secondary education. The schools all show significant improvement in enrolment and attainment as well as retention of children in education which bucks the trend for Uganda as pupil numbers from Form 1 to Form 6 are increasing rather than falling. There was a suggestion that local interest in the practical skills being taught in the school may have encouraged out-of-school learners to attend. Closer relationships between school and parents mean more support for children with problems, reducing the likelihood of dropout. It has also brought significant resources to the schools in terms of labour and materials contributing to the success of micro-projects.

Many learners and community members now practice the water-harvesting, agricultural and agroforestry skills in their homes to improve their health and standard of living. The projects have instilled entrepreneurship, and replication of income-generating projects and livelihood skills has made a significant difference to the incomes of parents and their neighbours, increasing local prosperity and making it easier for families to pay schooling costs for children. Through an increased confidence and understanding of their own ability to create change, learners have carried out advocacy in their communities and achieved significant improvements in areas such as waste management and sanitation.

Queen of Peace Boarding Primary School, Kampala

Located in the heart of Kampala City, Queen of Peace is a primary boarding school funded by government and the catholic church. Queen of Peace began working on Eco-Schools independently but was selected to implement the programme intensively during the scale up phase (2017- 2019). They received teacher training and parents training and received the supplementary Eco-Schools education materials. The school has established several thematic micro-projects including; waste management, compound improvement, tree planting, hand craft making, soap making, bakery, book making and charcoal briquette making, among others. The school won a Green Flag Award while still working independently on the programme (without intensive involvement of CECOD).

Key results

Quality Education (Goal 4)



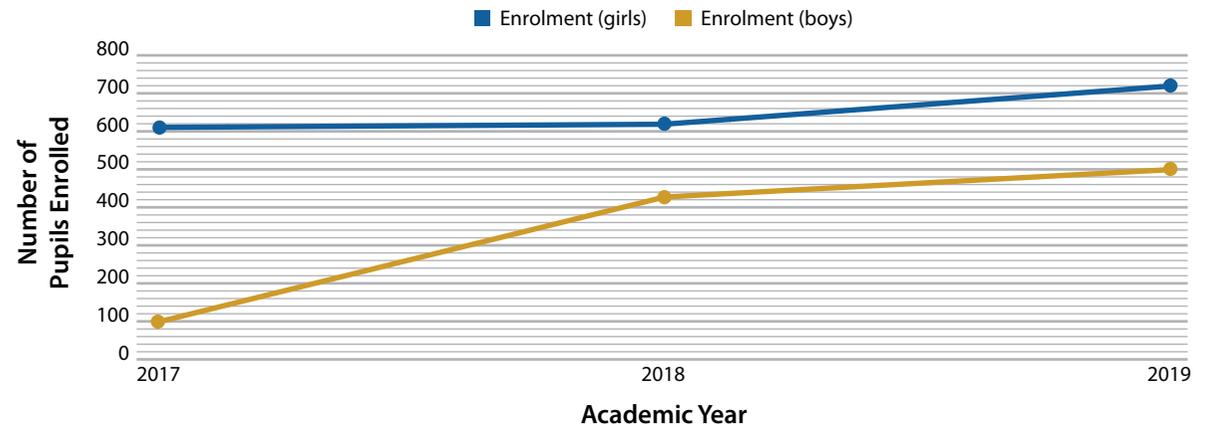
Improvement in the quality of the teaching and learning at Queen of Peace has transformed the attitudes of the learners to attending school and made them more interested in secondary education. The emphasis on skills based learning and micro-projects has led to Queen of Peace being seen almost as a technical institute in the community. Parents seeing other children in their communities bring home valuable skills have sent their own children there. This has led to a population explosion at the school. Micro-projects at Queen of Peace showed the highest income returns, and the school has reinvested the funds to improve the facilities and learning resources. For example, the income from their successful book making project has funded a computer lab and IT teacher at the school.

No Poverty (Goal 1)



The focus on developing skills specifically tailored to meet the needs in the communities surrounding Queen of Peace has made a significant difference to the livelihoods and incomes of parents and other community members, increasing local prosperity. One parent described this as a spiral effect whereby community members are learning from their neighbours. Extra funds generated through micro-projects are enabling families to support education costs of children. The projects have instilled entrepreneurship, and several learners mentioned their plans to become 'Job makers rather than job seekers', ensuring work for themselves and others by setting up their own businesses.

Enrolment Figures (2017-2019)



Queen of Peace Boarding Primary School, Kampala

Social Return on Investment Ratio 43:1

The original seed capital investment and training given by CECOD to establish the book making project acted as a great catalyst for many other income generating projects which makes Queen of Peace such a successful school whilst still only three years into the programme. The book making project earned a very large profit of UGX 29,755,700.00 (equivalent of USD 8,000), 50% of this was given to the school, 30% was given to teachers (as a salary bonus to improve motivation for Eco-Schools work), and 20% went to project facilitation. With their 50% the school was able to buy 5-7 computers which attracted another donation of 10 million UGX from local government to buy 10 more. As well as several projects which generate funds for the school, Queen of Peace has introduced many more which were specifically designed to be taken up by the pupils, parents and community members. These projects include charcoal briquettes made from banana peels, shoe polish, earrings and beads, and paper bags. The school reports a very high-level of uptake from these projects. The headteacher and Eco-Schools focal point valued these skills at UGX 50,000 per child (approx USD 13.00) and we calculated in this case that a potential social return of 30,000,000 (USD 8000) could be attributed assuming that the projects were replicated in 600 households. However, as the figure put on skills was high and it could not be ascertained whether all learners had replicated the projects at household level, the figure was excluded from the SROI analysis.

Reduced absences equivalent to 12 learners missing 14 days per term, due to improved attitudes towards school and reduced sickness, were accounted for in terms of the daily cost of educating a child (UGX 10,000). This was attributed as a value because of the school's mission to educate, and an extra grant they are able to receive from the government per child (not included in the SROI). It is assumed that costs of educating a child (fees plus capitation grant) is spent on days when children are absent, therefore would be wasted. Of course, there are several returns on the investments listed which we have not been able to quantify here. For example, the poultry project has been mainly used for providing essential animal management skills, and increased protein in the diets of the children. These outcomes and many more are captured in the qualitative section of this case-study.

The SROI ratio was calculated according to the total value of returns (minus any cost to the school for micro-project set-up) divided by the total investment by CECOD. The SROI ratio for Queen of Peace is 43:1, meaning for every \$1 spent by CECOD, the school realised \$43.

Queen of Peace Boarding Primary School, Kampala

Social Return on Investment Ratio 43:1

Investment

NON-RECURRING COSTS	UGX	USD
Communication and support to school	UGX 150,000	
Green flag assessment	UGX 58,936	
Teacher professional development and training	UGX 297,890	
Eco-Pupils parliament capacity development	UGX 162,000	
Monitoring and Evaluation	UGX 121,720	
Green Flag award ceremony	UGX 50,209.67	
Materials development	UGX 546,400	
Seed capital: Book making project	UGX 1,000,000	
Seed capital: Community development	UGX 2,433,360	
TOTAL INVESTMENT	UGX 4,820,515.67	1,305

Returns

MICRO-PROJECTS INITIATED FROM THE INITIAL INVESTMENT (OVER 3 YEARS)	EXTRA INVESTMENT MADE BY SCHOOL	TOTAL RETURN AFTER INVESTMENT	
Chalk making project	UGX 5,580,000	UGX 2,160,000	
Liquid soap making 20 jerricans @240,000 per term, cost saved 260,000	UGX 2,160,000	UGX 2,340,000	
Poultry keeping	UGX 3,000,000	UGX 760,000	
Book making project	UGX 1,000,000	UGX 29,755,700	
150 tins of jelly each @2000 produced per term for a span of 3 years	UGX 1,710,000	UGX 990,000	
Door mats each sold @70000, 3 produced per term	UGX 540,000	UGX 1,350,000	
Macron hangers each @10000, 20 produced per term from sisal	—	UGX1,800,000	
Sub Total	UGX 13,990,000	UGX 39,155,700	USD 10,561

Queen of Peace Boarding Primary School, Kampala

Social Return on Investment Ratio 43:1

Returns (continued)

EXTRA DONATIONS FROM COMMUNITY AND OTHER PARTNERS ATTRACTED BY ECO-SCHOOLS PROJECTS		
Additional computers donated by the government for IT lab paid for by bookmaking project	UGX 10,000,000	
Brass band project donated by parents as a result of increased parent-school cooperation	UGX 2,800,000	
Sub Total	UGX 12,800,000	USD 3,454
EXTRA TIME ACCRUED TO THE PROJECT IMPLEMENTATION		
Less absences per term (daily cost of educating a child not wasted) 12 learners missing 14 days per term	UGX 8,820,000	
Extra number of teachers (17) supported by parents each @300,000 per month	UGX 122,400,000	
Extra voluntary unpaid overtime at 4 hours per teacher per term - 130 hrs per term	UGX 23,400,000	
Sub Total	UGX 145,800,000	
TOTAL RETURN	UGX 206,575,700	USD 56,225



Queen of Peace Boarding Primary School, Kampala

What is the change inside the School?



“Of 54 children in my class 38 passed their exams with a first grade. This is directly better because of Eco-Schools”

Alex Kaamu, Primary 3 teacher and Eco-Schools focal point Queen of Peace

Teaching and learning

Teachers, learners and parents told us that since the introduction of the IVAC action-based teaching methods, the children have benefited from the much more practical and hands-on outdoor learning approach. The micro-projects have introduced many new learning aids, for example poultry keeping, gardening and growing vegetables and fruit. Primary 6 and 7 teacher Eeunice Agunyo believes the day-to-day management of these projects has provided a deeper and more memorable learning experience which helps them retain the knowledge. 12-year-old Valeria Mungyereza said that introduction of group work in class and between streams helps the children support one another in their learning.

In addition, the development of many different income generating micro-projects have enabled the school to upgrade teaching facilities and equipment. For example, seven computers were purchased using 50% of the income from the book making project in the first year. Setting up this project attracted new partnerships with a further 10 computers donated by the district. Now they have over 30 computers as well as a full-time IT teacher meaning that all learners now have access to computers.

The closer relationship formed between the school and the parents has also led to parents taking on the responsibility to fund 17 extra teachers, reducing the teacher to pupil ratio and improving learning and teaching. All individuals interviewed attributed the increase in academic performance to the Eco-Schools programme.

Self-esteem

CECOD’s child-centred approach to teaching and learning introduced through IVAC and rights-based education, as well as the pupils-parliaments, has increased the self-esteem and confidence of learners. From the beginning of the micro-project implementation the learners are encouraged to advise and teach their parents and siblings. Former pupil Varen Mukulu, 13, explained that the programme has given her a lasting ability to speak confidently to authority figures and community members. She has advised local leaders on waste management practices and there is now less scattered rubbish and disease where she lives. Queen of Peace Parent, Teddy Birungi, mentioned the improved self-esteem coming as a result of her children’s new business skills and their pride in contributing to family income.



Queen of Peace Boarding Primary School, Kampala

What is the change inside the School?



“It has changed their attitude to everything at school. Even their learning and ideas about secondary education”

Eeunice Agunyo, Primary 6&7 teacher, Queen of Peace

Better Health

Since the Eco-Schools programme was introduced increased pupil numbers have brought increased funding to the school via capitation grants per child. Alex Kaamu, Primary 3 teacher and Eco-Schools Focal Point, explained that this has enabled the building of new classrooms and a toilet block with flushing toilets and tiled walls. Improved sanitation has removed termly water-borne diseases previously experienced. The vegetable gardens and poultry project have enabled the school to supplement the diets of the children with a wide variety of vegetables including egg-plants, cabbages, spinach, green beans and sukumawich (leafy greens), as well as eggs and meat from chickens reared onsite. The teachers, parents and learners believe that improvements in the health of the children have had a direct impact on attendance.

Entrepreneurship

As well as generating funds for the school, some projects have been developed specifically for the learners to replicate at home in order to support family incomes. For example, paper bags, flower vases, clothes hangers, table mats, beads and pillows. All learners interviewed have set up their own small enterprises which support their families' income and provide pocket money and school funds. Other skills improve the standard of living for pupils at home such as charcoal briquettes made from banana peels. The very successful book making project has been copied in many homes providing schoolbooks for learners and their siblings, saving on education costs for parents.



Queen of Peace Boarding Primary School, Kampala

What is the change outside the School?



“The community has changed attitude and behaviour towards sanitation and waste management and have improved on cooperation with interests

in doing projects together as a community e.g. tree planting”

Teddy Birungi, Queen of Peace parent



“All the children now have skills to do their own things which has impacted on our livelihoods and improved our lives”

Arafa Abdalla, Queen of Peace pupil, 12 years

Local livelihoods

A community needs assessment undertaken by the teachers and learners as part of the Eco-Schools programme provided the basis for several projects which have been introduced at school and replicated in communities of the children. New skills for manufacturing products such as liquid soap, chalks, schoolbooks, Vaseline, shoe polish, candles, charcoal briquettes and fireless stoves have provided additional incomes for many families attached to the school. In addition, the spouses of several teachers are now making such items as liquid soap and paper bags at home to supplement the teachers' income, improving teacher retention and satisfaction. The impact can be far-reaching, P6 and 7 teacher Eeunice Agunyo, who comes from Kaberomaille which is ten-hours drive away from Kampala, taught her community to make liquid soap, providing extra income and preventing diseases.

Health

Vegetable gardens and poultry project have enabled the school to supplement the diets of the children: Replication of liquid soap production and hygiene practices have reduced waterborne illness and time and money spent at the clinic for families.

Local environment

The monthly community clean-up carried out 'Keep Queen of Peace Clean' whereby all learners go out into the surrounding area and clean trenches of waste and alluvial soil has had a gradual but visible impact on the community itself, modelling environmental management and raising local standards of sanitation. Queen of Peace parent Semakula Mayanja, also mentioned the new rules and regulations which the children have introduced to the areas where they live such as waste management, litter, and saving of firewood used for cooking.

St. Kagwa Boarding Primary School, Busheyeni

Located in Bushenyi-Ishaka Municipality, St. Kagwa Boarding Primary School is a rural school under the Catholic Church foundation but government aided (UPE) school. The school was among the 15 pilot schools who implemented Eco-Schools between 2006-2009. Due to its good performance, St. Kagwa was included in the schools chosen by CECOD to receive intensive support between 2010-2013. CECODs investment in this school has therefore been high, with many inputs including training of teachers in the Eco-Schools approach, training of parents in community development and replication, and formation of Eco-School structures (Eco-Schools Council, Eco-Parents association, and Eco-Pupils Parliament). Micro projects established during this phase included; rainwater harvesting tanks, energy saving stoves, tree woodlots, incinerator for waste management, compound improvement, solar energy installation and a medicinal herbal garden.

Key results

Quality Education (Goal 4)



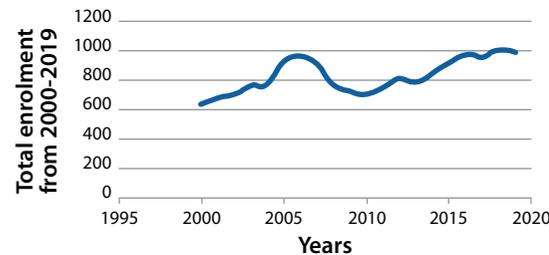
Incorporation of rights-based approaches into all teaching, learning and administrative processes at St. Kagwa has given learners a new knowledge of their rights, and the confidence to claim them. Democratic processes introduced at school via the Pupils Parliament have influenced other areas of school administration and the learners now use a ballot box to elect leaders and report instances of abuse at school. This led to disciplinary action on teachers. These factors along with a child-friendly and conducive learning environment have contributed to enrolment which bucks the trend for Uganda as pupil numbers are increasing rather than falling. From 2000 to 2019, there has been a 55% overall rise in enrolment at the school.

Peace, Justice and Strong Institutions (Goal 16)

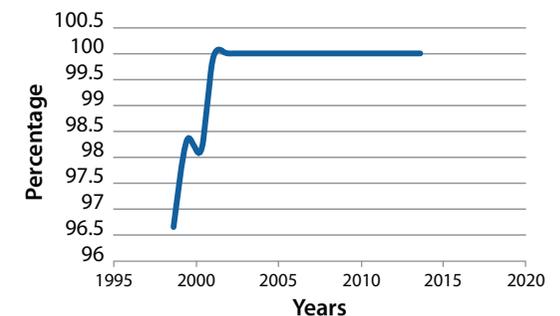


Teachers report that cases of abuse in the community have also reduced as children are actively sensitising community members about children’s rights. The Eco-Schools programme has fostered closer relationships between pupils, teachers and parents assigned Teacher Parents to oversee their pastoral needs. Teachers now feel able to intervene if there is a problem at home and believe this has been instrumental in preventing cases of dropout. The school also now offers work for struggling parents on Eco-Projects in return for reduced fees. Through the rights-based approaches, micro-project experience, and debating in the pupil’s parliament, St. Kagwa learners have a greater self-esteem and confidence in their approach towards adults. Parents report more involvement of children in decision-making at home and better quality of discussions about their learning. Parents also believe the programme has improved community cooperation with a new collective responsibility to conserve the environment.

Trend analysis of St. Kagwa Primary School enrolment



Trend analysis of percentage of passes at St. Kagwa Primary School



St. Kagwa Boarding Primary School, Busheyeni

Social Return on Investment ratio 51:1

Although the school has established many of the projects for over ten years, a five-year time span was taken for most because of the availability of records and accounts. However, as the rainwater-harvesting tanks were the first project to be implemented in the school and the headteacher could say with confidence what savings had been made on annual water deliveries to the school, a span of ten years has been taken for savings made on rainwater-harvesting.

While St. Kagwa has not made a great deal of income from the micro-projects put in place, they have made an enormous change to the school grounds and daily life of the learners and teachers at the school. Impacts relating to improved safety, health and quality of education at the school have been recorded for the purposes of this SROI in terms of improved attendance of both learners (daily cost of educating a child not wasted) and teachers (daily teacher's salary not wasted). These figures account for reduced absence due to sickness as well as attitudes towards school, and teacher retention. The figures were arrived at within discussion between the headteacher, Eco-Schools focal point and a member of the research team. They are subjective but conservative as all parties agreed that the figures could have been higher.

Establishment of Eco-Schools projects has allowed the school to attract several other partners who's funds also support the development of these projects and setting up of new ones. While the purpose of this SROI is not to claim responsibility for projects which are not attributable to Eco-Schools, careful questioning of the headteacher and Eco-Schools Focal Point assured us that it is unlikely that either the school would have had the capacity to contact these partners, or these partners would have chosen to work with the school had it not already been working on environmental projects through Eco-Schools.

The SROI ratio was calculated according to the total value of returns (minus any cost to the school for micro-project set-up) divided by the total investment by CECOD. The SROI ratio for St. Kagwa is 51:1, meaning for every \$1 spent by CECOD, the school realised \$51.

St. Kagwa Boarding Primary School, Busheyeni

Social Return on Investment ratio 51:1

Investment

NON-RECURRING COSTS	UGX	USD
Water harvesting tanks, woodlot, incinerator (seed capital investment)	UGX 9,800,000.00	
Community development	UGX 405,560	
Green flag assessment	UGX 58,936	
Teacher professional development and training	UGX 797,890	
Eco-Pupils parliament capacity development	UGX 162,000	
Monitoring and Evaluation	UGX 121,720	
Green Flag award ceremony	UGX 50,209.67	
Exposure visit for Primary Teacher Coordinators	UGX 588,000	
Capacity building of ccts and tutors	UGX 662,933.33	
Capacity building of key local government	UGX 117,000	
Capacity building of CSO	UGX 218,255	
Motor maintenance/transport	UGX 500,000	
Materials development	UGX 546,400	
TOTAL COST TO CECOD	UGX 13,832,473.33	USD 3,746

Returns

MICRO-PROJECTS INITIATED FROM THE INITIAL INVESTMENT	EXTRA INVESTMENT FROM THE SCHOOL	TOTAL RETURN AFTER INVESTMENT	USD
School contribution to 4 water harvesting tanks over 10 years (money saved on buying water over 10 years)	UGX 8,900,000	UGX 9,642,400	
School contribution to woodlot	UGX 1,200,000	UGX 7,000,000	
Energy saving stoves over 5 years	UGX 2,000,000	UGX 26,250,000	
Incinerator over a span of 5 years, 750k per year saved on pumping	UGX 450,000	UGX 3,750,000	
Charcoal briquettes 3 sacks per term@150k from banana peels	UGX 0.00	UGX 4,050,000	
Total profits from all micro-projects		UGX 50,692,400	

St. Kagwa Boarding Primary School, Busheyeni

Social Return on Investment ratio 51:1

Returns (continued)

EXTRA DONATION FROM COMMUNITY AND OTHER PARTNERS ATTRACTED AS A RESULT OF ECO-SCHOOLS PROJECTS		
Extra donation from other partners	UGX 40,905,515	
Donation from parents in terms of labour and materials (inc. building of staff housing block by parents)	UGX 24,030,000	
Total	UGX 64,935,515	
COST BENEFITS OR SAVINGS AS A RESULT OF THE PROJECTS OVER FIVE YEARS		
Extra voluntary investment by teachers in terms of unpaid overtime (4 hours per teachers, 130 hrs per term)	UGX 19,500,000	
Extra teachers supported by the parents due to increased community cooperation (17 teacher each@500k per month for 5 years)	UGX 510,000,000	
Fewer absences (cost saved in less absences) 15 less school days missed in a year taking a cost of education per day@10000	UGX 29,700,000	
Improved teacher attendance (daily salary not wasted)	UGX 33,840,000	
	UGX 593,040,000	
TOTAL RETURNS FOR THE SCHOOL	UGX 708,667,915	USD 192,750



St. Kagwa Boarding Primary School, Busheyeni

What is the change inside the School?



“There is efficiency in teaching because the learners know what they want. Once you don’t administer c/p and let them speak freely they will love you. When there is a good relationship there is a good service delivered.”

Didus Gumisiriza, Primary 7 teacher and Eco-Schools focal point



“Some teachers used to dodge lessons, but since children know their rights now, teachers no longer miss.”

Grace Yamata, 11

Awareness of rights

St. Kagwa has fully embraced Rights-Based Learning as a core value in their school. As a result, the children are aware of their rights and will defend them without fear. This has been a driving force within the improvement of the learning environment at St. Kagwa. For example, as explained by Eco-Schools Focal Point and Primary 7 Teacher Didus Gumisiriza, knowing their rights through rights-based learning means the learners are aware of their own needs for safeguarding. As a result, boys and girls now do not share latrines. Children will generally report any complaints about teachers, including instances of corporal punishment, straight away. This has led to cases of teachers being suspended. The school has also successfully engaged parents in learning about children’s rights which has improved conditions for learners at home.

Safer school grounds

Since the instillation of rainwater harvesting tanks, children no longer have to collect water from the river. This saves time and energy of the learners which benefits their schoolwork. It also reduces risk of drowning and outbreaks of waterborne diseases and skin conditions. Since the instillation of incinerators for burning of solid waste and sanitary items, latrines no longer get clogged and sanitation has improved. There is less dust due to planting, and less smoke in the compound due to energy saving stoves, reducing chest complaints. Improved health of learners due to safer and more sanitary school conditions is another key factor affecting school attendance.

Enhanced quality of education

Use of the IVAC methodology in teaching throughout the school has enhanced participation and engagement of learners. Teaching is action-based and all teachers must use the environment in teaching. For example tree planting is used to teach about measurement and plastic bottles in learning about construction. Learners participate in creating the learning materials wherever possible. Again, understanding of their rights has contributed to raising of the teaching standards. As 11-year-old Grace Yamata told us there are less instances of teacher absenteeism now that children are able to demand their right to quality education from their teachers. The teachers now set homework tasks which require investigations. Parents such as Caroline Arinaitwe have noticed a change in the children’s attitude to their school work, with children asking more questions at home and involving their parents in homework. There has been sustained improvement in academic performance at St. Kagwa as a result.



St. Kagwa Boarding Primary School, Busheyeni

What is the change outside the School?



“There is no child abused here. They teach their own community that it is bad to do such things to children.”

Lilian Namigenyi,
Primary 3 teacher



“Through their children, parents have acquired skills like sack farming and smart agriculture, land-use management, water harvesting, planting trees in lines and sorting waste. I have also learned the art of saving money through VSLA. There is improved sanitation around homes and there is great community cooperation”.

Caroline Arinaitwe, parent

Child protection

The introduction of ‘School Family’ scheme whereby all children are assigned Teacher Parents to over-see their pastoral needs, has fostered closer relationships between pupils, teachers and parents. If there is a problem in a family causing a barrier to a learner’s education or wellbeing, the teacher is now able to intervene. Teacher Lillian believes this has prevented cases of dropout. This closer relationship developed between the children and teachers and provision of kits has also meant girls are more able to speak up if they need sanitary products during menstruation. This has removed a major barrier for girls’ attendance and retention at school. Eco-Schools focal point teacher Didus Gumisiriza believes that parents now respect their children’s rights much more than before the programme.

Improved confidence and action competence

Within action-based outdoor learning the children are taught a variety of livelihood skills including mixed farming, agroforestry, milking, and handicrafts. Pupils have a positive attitude towards training their parents to replicate the projects at home and this grows as they are able to see changes occurring. Through the rights-based approaches, micro-project experience, and debating in the pupils’ parliament, St. Kagwa learners have developed a confidence in their approach towards adults. Parents report a greater self-esteem in their children and ‘better quality of discussions at home’. As a result, the children are more often involved in decision-making at home. Notions of respect for elders have previously made it difficult for children to engage in adult conversations, and certainly discouraged them from challenging adults’ behaviours or decisions. Their improved confidence and action competences, along with improved communication skills has helped remove this stigma, making them more equal members of society.

Improved quality of life and environment

Through their children, parents have acquired skills such as smart agriculture, land-use management, water harvesting and agroforestry. They have also received training in VSLA (Village Savings and Loans Association) savings. Many families have replicated these projects and parents report improved sanitation around their homes. Primary 3 Teacher Lilian Namigenyi gave examples of grand-parents starting rainwater-harvesting and out-of-school children learning new skills from St. Kagwa students. The projects have also introduced principles of environmental protection into the surrounding communities and better community cooperation with a new collective responsibility to conserve the environment.

St. Aloysius Primary School, Mbarara

St. Aloysius Primary School is a government aided (UPE) school under the Catholic Archdiocese of Mbarara foundation. It is located in Nyamitanga Division-Mbarara Municipality. The school started independently as a Green Flag school in the phase 2010-2013. This means they received very little support. They copied from what the intensive schools were doing at that time and managed to begin implementation on small scale. Through the programme, St. Aloysius were able to twin with an Eco-School from Europe and with continuous exchange online, received a donation of a water harvesting tank. This led to several other projects including; Institutional Energy saving stoves, Incinerator for waste management, tree woodlot establishment, climate smart agriculture projects, among others. Just like other schools, they have Eco-School structures in place including; Eco-School Committee, Eco Parents Association and Eco-Pupils Parliament.

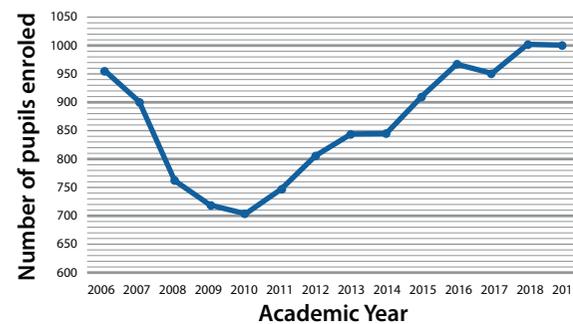
Key results

Quality Education (Goal 4)

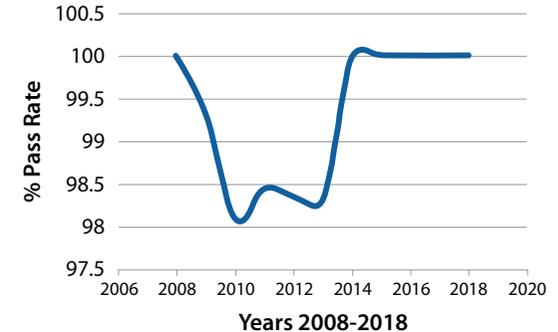


Teachers and parents at St. Aloysius believe that the improved quality of teaching, and safer and more child friendly learning environment is responsible for the improvement in enrolment and attainment at the school as well as retention of children in education up to secondary level. The programme has established closer links with parents. This has improved attitudes of parents towards the education of their children and meant that the school is better able to support children with problems, reducing the likelihood of dropout. It has also brought significant resources to the school in terms of labour and materials. There was also a suggestion that interest in the practical skills being taught in the school may have reduced numbers of local children out-of-school. Academic performance improved from 32% division one results before the programme started in 2005 to 93% in 2018.

Enrolment of pupils at St. Aloysius Primary School (2006-2019)



Trend showing the % pass rate of St. Aloysius Primary School



Good Health and Wellbeing (Goal 3)



Through an increased confidence and understanding of their own ability to create change, learners have carried out advocacy in their communities and achieved significant improvements in areas such as waste management and sanitation. The rainwater harvesting programme at St. Aloysius was the first of its kind in the area, and acted as a pilot for a district household programme. Access to a reliable supply of clean water has had a dramatic effect on the health of the children, reducing waterborne diseases and danger from drowning while collecting water from the river. Chest complaints caused by smoke and dust in the school compound have also reduced. Because of new agricultural crops at school, the learners and teachers have a more balanced diet. Many community members now practice rainwater-harvesting, agricultural and agroforestry skills in their homes to improve their health and standard of living. Some of the micro-projects have provided an income for the learners' families.

St. Aloysius Primary School, Mbarara

Social Return on Investment ratio 49:1

St. Aloysius have been able to develop and run many projects at their school due to the strong relationship formed between the school and parents as part of the Eco-School Community approach of CECOD. For example, the teacher's residence and boys boarding block was built entirely using materials and labour donated by parents. While the research team of CECOD were reluctant to include this as a benefit of the programme, the headteacher and PTA chair of 20 years who attended our interviews insisted that, as the PTA was previously non-functioning but had been revived as a result of the programme, the costs of 300,000,000 (around \$80,800) should be included.

The value of the practical skills passed on to each learner for replication at home was calculated at 50,000 per child, used three times a year and multiplied over five years to make 75,000,000 (around \$20,000.00). We have left this figure out as the total is high and difficult to verify.

The SROI ratio was calculated according to the total value of returns (minus any cost to the school for micro-project set-up) divided by the total investment by CECOD. The SROI ratio for St. Aloysius is 49:1, meaning for every \$1 spent by CECOD, the school realised \$49.

Investment

NON-RECURRING COSTS	UGX	USD
Water harvesting tank (seed capital)	UGX 12,000,000	
Community development	UGX 405,560	
Green flag assessment	UGX 58,936	
Teacher professional development and training	UGX 297,890	
Eco-Pupils parliament capacity development	UGX 162,000	
Green Flag award ceremony	UGX 50,209.67	
Exposure visit for Primary Teacher Coordinators	UGX 588,000	
Capacity building of ccts and tutors	UGX 662,933.33	
Monitoring and evaluation	UGX 271,720	
Capacity building of key local government	UGX 117,000	
Capacity building of CSO	UGX 218,255	
Motor maintenance/transport	UGX 500,000	
Materials development	UGX 546,400	
TOTAL	UGX 15,878,904	USD 6,911

St. Aloysius Primary School, Mbarara

Social Return on Investment ratio 49:1

Returns

MICRO-PROJECTS INITIATED FROM THE INITIAL INVESTMENT	EXTRA INVESTMENT FROM SCHOOL FUNDS	TOTAL RETURN AFTER INVESTMENT	USD
School contribution to 4 water harvesting tanks over 10 years	UGX 13,950,000	UGX 15,000,000	
Woodlot	UGX 4,000,000	UGX 7,000,000	
Energy saving stoves over 5 years	UGX 900,000	UGX 52,500,000	
Incinerator over a span of 5 years, 750k per year on pumping	UGX 450,000	UGX 3,750,000	
Briquettes making 3 sacks per term @150k from charcoal dust and banana peelings collected		UGX 4,050,000	
Other agricultural projects (beans, maize, cassava cuttings and plantings)		UGX 4,030,000	
Craft making		UGX 600,000	
Manure 600k earned per year over 4 years		UGX 2,400,000	
Medicinal garden		UGX 4,030,000	
Rabbit keeping	UGX 1,500,000	UGX 2,500,000	
Baking project now ran for 3 years, 450k earned per year	UGX 900,000	UGX 1,350,000	
Banana plantation	UGX 4,000,000	UGX 7,200,000	
Total profits from all the micro-projects		UGX 104,410,000	
DONATIONS FROM OTHER PARTIES ATTRACTED BY ECO-SCHOOLS PROJECTS			
Extra donation from other partners		UGX 16,950,000	
Money saved by parents for construction of staff quarters and boys dormitory		UGX 300,000,000	
Equivalent cost of materials donated by community members to set up micro-projects		UGX 36,500,000	
Total		UGX 353,450,000	

St. Aloysius Primary School, Mbarara

**Social Return on
Investment ratio
49:1**

Returns (continued)

COST BENEFITS OR SAVINGS AS A RESULT OF THE PROJECTS		
Time saved in cooking using energy saving stoves, 4 hours per day and 55 hours per term, in 5 years, 825 hours @1000 cost of cooking	UGX 825,000.00	
Number of hours parents/community members volunteered to the school - 1540 hrs rated @20,000 per week in a span of 7 years	UGX 30,800,000	
Healthcare services provided by nurses over a span of 3 years	UGX 450,000	
Monitoring and evaluation of the projects by parents rated @10,000, done 6 times in a year for 7 years	UGX 420,000	
Extra voluntary investment by teachers in terms of hours - 110 hrs per term, done by 40 teachers , each hour rated at 3125, for 7 years	UGX 288,750,000	
Total	UGX 321,245,000	
OVERALL BENEFIT	UGX 779,105,000	212,000



St. Aloysius Primary School, Mbarara

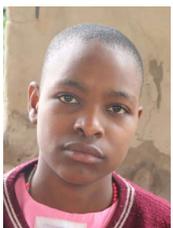
What is the change inside the School?



“Learning as a process is not about passing exams but it is about the change. The children now ask questions “teacher how?” that was formerly not there.

They are visioning because they have done interactive learning and cooperate in groups. They have new interest in learning and retention of the learning.”

Stephen Omoding Primary 7 teacher.



“When I reach home and start for example mulching our garden, most of our neighbours children normally ask where I got these skills from and as a result a number of them have joined me at this school.”

Aine Nganzi Patience, 12

Improved attendance and retention

Teachers believe that the safer and more child friendly learning environment and quality of education at St. Aloysius is responsible for a reduction in school dropout. Co-existence of the school and community has also meant that the school is better able to support children with problems, reducing the need for dropout. Local interest in the practical skills being taught in the school has increased school enrolment through transfer from other schools. In some cases it has also reduced numbers of local children out-of-school as children from the neighbourhood become interested in learning the skills to improve their income and potential and quality of life.

Enhanced quality of education

The successful establishment and ongoing management of the micro-projects at St. Aloysius has been achieved through IVAC action-based learning. This has transformed the quality of learning at the school. Teacher training in IVAC and rights-based learning has allowed teachers to develop more learner centred approaches. The children are given more attention than before and there is increased cooperation among the children themselves. Most learning is done outside the classroom and group work is now used for all age-groups. Teachers have developed a new understanding of the purpose and value of a skills-orientated curriculum which has led learners to be more critical and reflective. They report a new interest in learning and retention of the learning in their pupils.

Changing local attitudes towards education

Closer relationships between the school and the parents formed during the implementation of the micro-projects has also influenced a change in attitude of the parents towards school and support of children both at school and at home. Parents believe they have more confidence in the school and there is increased follow up of their children especially academically. Parents play a large role in the school supporting the projects both in terms of expertise, finances and labour. During the holidays the parents are the ones that take care of the micro-projects.

Improved gender equality

During discussions with learners and teachers, several described projects and policies which St. Aloysius has put in place to address issues of gender equality and gender-based violence. Signage bearing slogans such as ‘Act Now! The fight against gender based sexual violence starts with you’ have been placed prominently around the grounds. Learner chores are now the same for both boys and girls and the head prefect is now often a girl when previously it was only boys. In addition, changing rooms and improved sanitation has improved attendance of girls who previously had to miss school during menstruation.



St. Aloysius Primary School, Mbarara

What is the change outside the School?



“There is a nearby suburb where many of our children live. There was no sanitation there and the place was very unhealthy. We went there with gloves and bags to clean up. The children wrote a petition letter to the municipality to raise awareness of the conditions here. Through this initiative a communal latrine was installed. The lives of many people were made much better because of this”.

Gordon Nawamanya, Eco-Schools Focal Point and Primary 6 teacher



“We no longer have hygiene related diseases due to the water tanks. We used to have constant flu and cough because there was a lot of dust in the compound, but after planting trees we no longer suffer such diseases.”

Agebare Moela, 12

Youth empowerment

The learners report an improved confidence and an increased understanding of their own ability to create change gained through the process of passing their skills on to their families and neighbours. They have also carried out advocacy in their community in areas such as waste management and sanitation, in one case creating a petition to the district which resulted in community latrines being installed in a nearby area.

Improved health

Since the programme started in St. Aloysius in 2012, the school has installed six rainwater harvesting tanks and an SNV water purification tank. While previously the learners had to fetch water from the river across the road, with danger from traffic and drowning, or bring water collected from home which was often unsafe, the school now provides all water needed. The rainwater harvesting programme at St. Aloysius was the first of its kind in the area and acted as a pilot programme. Officers from the district came to study the project and as a result a scheme was developed for households. Access to a reliable supply of clean water has had a dramatic effect on the health of the children, reducing waterborne disease at St. Aloysius. Learners interviewed also mentioned that before the programme they would frequently get coughs from the smoke produced by the traditional wood fire three-stone cooking system and large amount of dust in the compound, but after installing an energy saving stove and planting the grass and trees this has stopped. In addition, the school has revolutionised its food production and cooking due to new agricultural crops and kitchens providing a balanced diet for all learners and teachers. The school has also established a medicinal garden with the help of knowledgeable local community members. The plants are frequently used to treat illnesses which may otherwise have required a visit to the clinic.

Local livelihoods and entrepreneurship

The parents and community members around Aloysius have been quick to adopt the micro-projects and skills being taught at school. Many now practice the water-harvesting, agricultural and agroforestry skills in their homes to improve their standard of living. Some of the micro-projects have provided an income for the families. For example, local people now have tree nurseries along the side of the road, and around five parents have bought rabbits from the school rabbit project and have started their own business. This is having an effect on local prosperity which, in turn, supports school attendance and retention as parents are better able to support the education costs of their children.



Tanzania Forest Conservation Group (TFCG) joined the Eco-Schools programme in July 2015 and currently implements Eco-Schools activities in 4 districts in Morogoro and Iringa regions. TFCG works with 44 schools (including 8 secondary schools) situated close to the Eastern Arc Mountain forests, where TFCG implements conservation interventions. This ensures the opportunity for synergy between TFCG's Eco-Schools activities and other interventions. TFCG has trained 235 teachers in the Eco-Schools approach as well as ward-education officers and district staff. Student teachers are also being trained in teacher training colleges to develop competency-based lesson plans with an environmental message addressed in each lesson. A primary teacher resource manual has been approved by the Tanzania Institute of Education and is available for all schools, while the approval of the secondary manual is underway. CSO coalitions advocate for adequate budgeting respectively on the national and local levels.



Summary

Due to the organisational objectives of TFCG, or the situation of the three case-study schools near to high biodiversity forest areas, the Eco-Schools programme in Tanzanian schools shows a focus which is more towards environmental conservation, than income generation. This is reflected in the sustainable natural resource management and sustainable agriculture micro-projects implemented in the schools (e.g. beekeeping, agroforestry and tree nurseries, banana farming, and fish farming), and the emphasis on transference of these skills to the local community. A notable common result in the three case-study schools is the positive impact which the Eco-Schools programme has had on local forestry conservation. For example, the beekeeping project has had the result of reducing forest fires, and new agricultural skills have reduced pressure on local forests, whilst improving local incomes.

While the incomes from the micro-projects are not always large, the use of micro-projects within action-based teaching methodologies, and increased parent involvement and follow-up on their children's education have had a positive influence on both attendance rates and academic performance, encouraging less-academic learners and preventing dropout. Improvements to learning environments, such as planting of grass and trees to reduce dust, and provision of school lunch due to food grown at school, have also improved motivation of learners which has contributed to these results.

All case-study schools have been very successful in engaging local community members in capacity building and replication of the micro-projects outside schools. The Eco-Schools programme in Tanzania provides an example of the potential role of local schools as hubs of lifelong-learning, demonstrating the power of social-learning in improvement of local livelihoods and prosperity.

Digalama Primary School, Mvomero

Digalama village is situated on the slopes of the Mkingu Forest Nature Reserve, in the Mvomero District of Morogoro Region, Eastern Tanzania. The majority of village members are working in agriculture, subsistence farming or livestock keeping. Forest encroachment for agricultural preparation and firewood is an ongoing issue. Digalama primary school, which has 455 students and 5 teachers, was selected for joining the Eco-Schools programme in 2015 because of its proximity to the high biodiversity forest where TFCG is working. Implementation of the Eco-Schools programme commenced in 2016 with training and capacity building for teachers in IVAC and ESD principles, and a pupils' parliament was established. Parents and community members were trained during community dialogue meetings organised with the help of the village council. The school is implementing beekeeping, fish farming and banana farming micro-projects. Teachers are using IVAC approach during the teaching and learning processes. The school is among the first 5 schools in Tanzania that have been awarded the Green Flag Award.

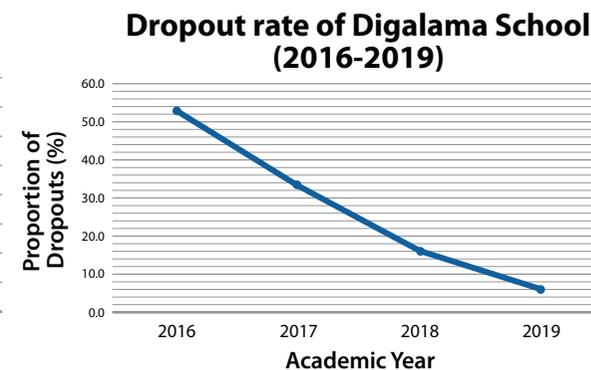
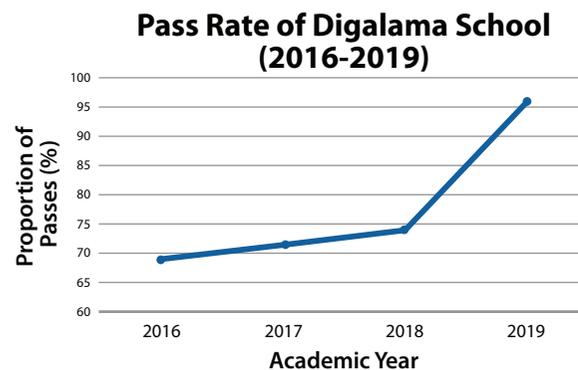
Learners, parents and teachers have gained farming and animal husbandry skills as well as beekeeping and fish farming, and are planting fruit trees such as mangoes, bananas, oranges and avocados. There has been wide replication in the community with both learners and teachers training neighbours, family members and some non-Eco-Schools. All of these skills are being widely used to provide new sources of income in Digalama village.

Key results

Quality Education (Goal 4)



The investment from the community into the Eco-Schools programme at Digalama primary school has been high, with three parents volunteering at least three days per week. This support from the community and also successful adoption of action-based teaching methodologies have had a positive influence on both attendance rates and academic performance at the school. While overall results may be attributable to other factors as well, it is notable that the pass rate has increased from 69% in 2016 to 96% in 2019, and dropout has decreased by a difference of 46.8%.



Life on Land (Goal 15)



The Eco-Schools programme at Digalama primary school is notable for its impact on local forestry conservation. The beekeeping project has had the result of reducing forest fires as the trees are now needed for the beehives. Diversification and training in agricultural skills introduced by the Eco-Schools programme such as fish farming, banana farming and beekeeping has also reduced pressure on local forests, and improved local prosperity in Digalama village.

Digalama Primary School, Mvomero

Social Return on Investment ratio 26:1

The figures were arrived at within discussion between a member of the TFCG research team, the Headteacher (Mr. Severine Senkondo), school treasurer, Eco-Schools focal point teacher and some of the Eco-Schools committee. Community investment in the projects has been high with three community members volunteering 3 days per week to the school. This represents a significant return on the original investment to the school (TZS 85,363,200, approx USD 37,000) and contributed to the success of micro-projects. The school and local community members also benefitted from materials and training donated by the local manager in charge of the nature reserve who was inspired by the Eco-Schools micro-projects.

Enrolment has increased with 73 more children regularly attending the school than before the programme. This value was calculated according to the daily cost of educating a child, it is attributed as a benefit because of the school's core mission to educate, and the increased government grant to the school per child attending. As the daily costs of education (school fees plus grant) is paid whether the child attends the school or not, the cost is wasted if the learner is absent from school. The figure has been calculated over a span of three years as the impact was not yet felt during the first year of implementation (Jan 2016- Dec 2019), at a total of TZS 81,139,500 (approx USD 35,300).

The school felt it was important to assign an equivalent value for the prevention of deforestation due to beekeeping and advocacy to prevent bushfires as it was a significant outcome of the project. Costs were calculated according to the estimated amount of trees saved over an area of land that would otherwise have been cleared annually for agriculture or firewood. This was valued in discussion with the headteacher and other members of the school present and verified by local foresters, at a total of TZS 16,000,000 (USD 7,000).

The SROI ratio was calculated according to the total value of returns (minus any cost to the school for micro-project set-up) divided by the total investment by CECOD. The SROI ratio for Digalama primary school is 24:1, meaning for every \$1 spent by TFCG, the school realised \$24.

Digalama Primary School, Mvomero

Social Return on Investment ratio 26:1

Investment

NON-RECURRING COSTS	TZS	USD
Beekeeping micro-project	4,149,700	
Fish farming	1,750,000	
Community development	800,000	
Green flag assessment	423,500	
Training 4 teachers each 320,000	1,280,000	
Eco-Pupils parliament capacity development	309,510	
Monitoring and Evaluation	249,000	
Green Flag award ceremony	1,604,800	
Exposure visit for Primary Teacher Coordinators	220,000	
Capacity building of ccts and tutors and key local government	1,080,000	
Capacity building of CSO	56,000	
Motor maintenance/transport	860,540	
Materials development	554,600	
TOTAL	13,337,650	5,800

Return

MICRO-PROJECT FINANCE PROVIDED BY OTHER INSTITUTIONAL DONORS/ SUPPORTERS	TZS	USD
Beehives	425,000	
Capacity building	480,000	
INCOME GENERATED BY ANY MICRO-PROJECTS		
Beekeeping	7,620,000	
Fish farming	348,000	
Banana farming	297,000	
INVESTMENT FROM THE SCHOOL		
Overtime 27000 per teacher for 4 teachers for 4 days in a year	5,184,000	
TOTAL	8,265,000	3,081,000

Digalama Primary School, Mvomero

Social Return on Investment ratio 26:1

EQUIVALENT VALUE OF ANY PRODUCTS/SERVICES PRODUCED	TZS	USD
Training provided to community	7,200,000	
Prevention of deforestation due to beekeeping	16,000,000	
Reduction of bushfires	20,000,000	
COST BENEFITS OR SAVINGS RESULT OF THE ECO-SCHOOLS PROGRAMME		
Teachers estimated that 3 hrs are saved in a day due to IVAC methods. Staff pay in an hour is Tshs. 3,375. The number of working days in a year is 195. The project had been operating for 4 years. The number of teachers at Digalama practicing IVAC is 5.	39,487,500	
Number of hours parents/community members have volunteered to the school (estimated equivalent cost of skilled and unskilled labour) 3 persons working for 3 days a week. Per hour is 5,700, per day x 8 (45,600) therefore 3x3x45,600 X 52 X 4	85,363,200	
Extra voluntary investment by teachers/staff outside school hours? (equivalent in hourly rate of teachers) 2 teachers x2 hrs in a week x52 weeks x 3375 hourly rate x4 years	2,808,000	
Estimated value of practical skills which can be used in the community (Number of students 221 and cost of skill 13,300 thus: 13,300 x 221)	11,757,200	
Less absences due to micro-projects (e.g. sanitation/ provision of school lunches) (daily cost of educating a child not wasted) Before absent 109 children now absent 36. Less absent 73: 73 x 1900 X 195 school days in a year x 3 years as impact not felt in first year	81,139,500	
Difference in retention/attendance of teachers as a result of the Eco-Schools programme? (daily salary of teachers not wasted)		
Teachers = 3 teachers x 27,000 TZS daily salary x 195 school days in a year X 4 years as teachers were involved from start	63,180,000	
REPLICATED MICRO PROJECTS IN THE COMMUNITY (APPROXIMATE VALUE OF PROJECT X ESTIMATED NUMBER OF HOUSEHOLDS)		
Beekeeping: 10 households. 1 beehive = 85,000, beehives = 101. 85,000 x 101 per year X 4	8,585,000	
Fish farming: 18 households. Fish pond = 450,000, fish ponds=18. 18 x 450 per year X 4	8,100,000	
TOTAL	352,790,400	153,561



Digalama Primary School, Mvomero

What is the change inside the School?



“Nowadays teachers are using participatory approach during learning and teaching processes, something that was not there before. It is so exciting. We have villagers now coming to learn from the school. Parents are insisting us to go to school”

Ramadhani Rashid, 14



“They can use their new skills to change challenges into opportunities”

**Mashiku Helman,
Digalama Teacher**

Teaching and learning

All individuals interviewed at Digalama primary school mentioned the improvement in teaching and learning due to the introduction of participatory and action-oriented methods. Students are now ‘learning by doing’ through vivid examples and practical participation outside the classroom. The micro-projects are used as teaching and learning aids. For example, during a fish study the learners dissected a real fish from their on-site fish farm project. The learners also said teachers are now spending enough time with learners to ensure that they have understood what is being taught. Teachers report that behaviour in class has improved, while parents and learners both say that motivation to do schoolwork has improved, and more children are studying at home. The teachers attributed the 100% best level performance reached in 2019 and drop in illiteracy to the Eco-Schools programme.

Attendance and drop out

Learners at Digalama explained that before the programme some of the students were not proud of the school or fond of going. However, since starting the Eco-Schools programme the attractive, child-friendly school environment has increased pride in the school for everyone, and made learners happier to be there. One teacher, Mashiku Helman noted a 40% rise in attendance from 55% to 95%. Several reasons were presented. All learners, teachers and parents mentioned action-based learning as a factor. Participation in the projects has increased relevance of the learning, meaning learners and their parents see more use in schooling now that the learners can bring home practical skills to improve livelihood and income. As a result, more parents are encouraging their children to attend school. Teachers also felt that IVAC has helped to simplify their work and the learners are happier to go as the lessons are more fun and easier to understand. Provision of school lunches has also removed a barrier to attending school and improved learner performance as children are no longer hungry during the school day, while teachers and learners told us that truancy and tardiness have also dropped.

Leadership and cooperation skills

The projects and learning, along with increased confidence gained through the pupils’ parliaments have introduced skills of leadership, and self-expression, and an increased tendency to work cooperatively. As a result, alliances between school and community have become strong.



Digalama Primary School, Mvomero

What is the change outside the School?



“The day before yesterday, my mother, my brother and me planted 100 banana trees, and 58 trees. We have started harvesting bananas and so far, we had sold 30 bananas. Look at my shoes; they are from banana sales.”

Jadhira Shabani, 13



“So many things among local community changed in Digalama like people implementing their own micro-projects. Its clear changes everybody coming to Digalama can notice.”

Mr. Omary Juma, Digalama parent

Improved livelihoods and prosperity

Learners have gained farming and animal husbandry skills as well as beekeeping and fish farming. With new self-reliance mentioned as learners are planting fruit trees such as mangos, bananas, oranges and avocados for themselves. Two learners have dug their own dams for fish farming. There has been wide replication in the community with both learners and teachers training neighbours and family members. Fish farming skills have also been passed on to siblings, parents and grandparents which has improved the family income. Community members are also producing and selling honey and bananas. For example, Digalama parent Mr Omary Juma, learned skills of fish farming from the school and from his last harvest of fish in October 2019, he had enough funds to support his family. He has also planted 30 mango, 12 avocado, and 53 cloves, and trained his grandchildren in tree planting. Teacher Mr Isaac Kapele believes these skills are leading their community towards development.

Local environment and conservation

Environmental and conservation education are key elements of TFCG's Eco-Schools programme and both children and adults learn the importance of forest management for ecosystem service provision. This has widely changed attitudes and behaviours and the messages have been clearly taken-up by parents. These parents are now training family members and neighbours to stop bad agricultural practices such as using forest fires for agricultural preparation. As a result, forest fires and encroachment in Digalama has reduced to almost nil. An ongoing problem with soil erosion around the school and in nearby Digoma village has also now been greatly reduced due to community tree planting efforts.

Hembeti Primary School, Mvomero

Hembeti village is in the same district as Digalama on the slopes of the Mkingu Forest Nature Reserve in the Mvomero District, Morogoro Region in Eastern Tanzania. Agriculture, subsistence farming and livestock keeping account for the majority of household incomes. The school has 748 students and 14 teachers. Similar to Digalama, Hembeti Primary School was selected because of its proximity to the high biodiversity forest where TFCG is working, and ongoing risks of forest fires, and forest encroachment for agricultural preparation and firewood. Hembeti Primary School joined the programme in 2015. However, implementation of the Eco-Schools programme commenced in 2016. The school is implementing banana farming and has begun the process of establishing fruit farming and beekeeping projects. Teacher training in IVAC and ESD principles has been carried out, and a pupils parliament was established. Parents and community members have also been trained during community dialogue meetings organised with the help of the village council. Teachers, students, community members and some nearby non-eco-schools have replicated the programme activities at home.

Key results

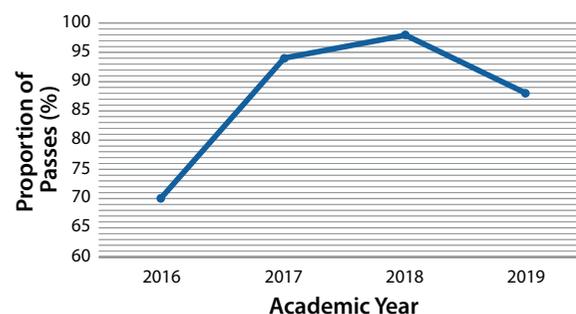
Quality Education (Goal 4)



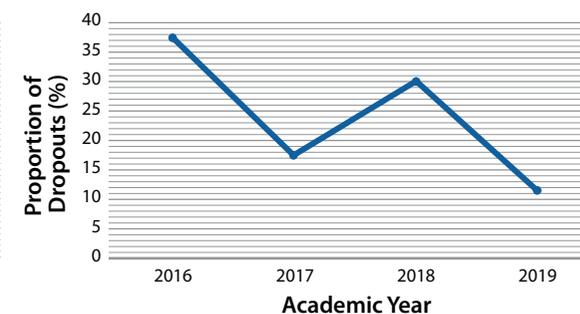
Rather than introduce several projects at once, the school has chosen to concentrate all learning and action around the banana plantation. The result is a very successful project along with a high level of technical expertise developed by learners and other community members. Action-based learning to improve agricultural knowledge and practices has also increased the relevance of the learning leading to better attendance, especially for those learners who usually struggle with schoolwork, and increased support among parents towards their children's education. Hembeti Primary School has successfully shared its methods with Makuyu Primary School and Mbogo primary schools which have now also adopted action-based learning and teach banana farming.

The banana plantation at Hembeti Primary School has also improved nutrition of the learners, and also provided an important new income stream for the school, allowing the purchase of items such as books and desks. This has had a beneficial impact on attendance and attainment as learners are now provided with lunch and their motivation has improved. Since the start of the Eco-Schools programme there has been an increase in attainment from 70% in 2016 to 98% in 2018, and decrease in dropout by a difference of 26%.

Pass rate of Hembeti School (2016-2019)



Dropout rate of Hembeti School (2016-2019)



No Hunger (Goal 2)



Hembeti Primary School has been very successful in engaging local community members in capacity building and replication of the micro-projects. As such it has transformed itself into a centre of lifelong-learning. New technical knowledge of banana production and agricultural best practices are improving livelihoods and prosperity in Digalama village, and providing a sustainable means of food production.

Hembeti Primary School, Mvomero

Social Return on Investment ratio 19:1

The SROI figures were arrived at within discussion between a member of the TFCG research team with the school's headteacher. The Eco-Schools focal point teacher was also present to input figures and verify values. Until this year Hembeti Primary School has focused on setting up banana plantations, and IVAC action-based learning has focused on the development of expertise and skills in banana production. The bananas have constituted an important addition to the diets of the children, as part of school lunch which is now provided at school. The banana project produced a surplus which was double what was consumed at school. This has enabled the school to sell bananas and receive an extra income which it used to buy books and desks, improving student performance. The provision of school lunch and the introduction of action-based learning were both given as reasons for increased attendance of 22 extra learners per year. This was accounted as TZS 24,453,000 (USD 10,632.53) using the daily cost of educating a child not wasted, as it is believed the funds would have been spent by the school regardless. The amount was extrapolated over a span of three years as the impact was not yet felt within the first year of the programme. Teachers believe that new teaching methodologies were saving time. In the qualitative interviews this was expressed as extra time to teaching learners at weekends, and correcting school assignments to provide feedback. The school assigned a high value to this of 31,590,000 (USD 13,745).

The school has recently begun to set up beekeeping and fruit tree micro-projects, and materials have been purchased. However the projects are not yet operational. It is expected that both these projects will see a profit within the next year. The value of micro-project replication in the community was included in the SROI because of the emphasis of parent involvement as part of lifelong learning within the school. The figures for community replication were arrived at during a detailed discussion between the researcher, the headteacher and several other members of staff. The calculations were based on five households they knew of personally (calculated at a total of TZS 15,600,000 which is 6,782.64 USD), but the real figure could be much higher as many more families have replicated the projects to some extent.

The SROI ratio was calculated according to the total value of returns (minus any cost to the school for micro-project set-up) divided by the total investment by CECOD. The SROI ratio for Hembeti Primary School is 19:1, meaning for every \$1 spent by TFCG, the school realised \$19.

Hembeti Primary School, Mvomero

Social Return on Investment ratio 19:1

Investment

NON-RECURRING COSTS	TZS	USD
Banana planting	1,499,750	
Fruit Farming	2,432,500	
Beekeeping	1,900,000	
Community development	560,000	
Green flag assessment	423,500	
7 teachers trained x 320,000	2,240,000	
Eco-Pupils parliament capacity development	302,000	
Monitoring and Evaluation	249,000	
Green Flag award ceremony	1,604,800	
Exposure visit for Primary Teacher Coordinators	230,000	
Capacity building of ccts and tutors and key local government	480,000	
Capacity building of CSO	56,000	
Motor maintenance/transport	560,540	
Materials development	554,600	
TOTAL	13,092,690	5,689

Returns

MICRO-PROJECT FINANCE PROVIDED BY OTHER INSTITUTIONAL DONORS/ SUPPORTERS		TZS	USD
3 rakes, 3 watering cans, 3 hoes		72,000	
INCOME/VALUE GENERATED BY ANY MICRO-PROJECTS		EXTRA INVESTMENT FROM THE SCHOOL	
Bananas sold	3,100,700	27,000 x 5 x 4 x 12	Tshs. 6,480,000
Bananas eaten	4,500,000		
Saplings sold	980,000		
TOTAL	8,580,700		2,100,700

Hembeti Primary School, Mvomero

Social Return on Investment ratio 19:1

Returns (continued)

EQUIVALENT VALUE IN SAVINGS OF STAFF/PUPIL TIME AS A RESULT OF THE ECO-SCHOOLS PROGRAMME		
Staff time saved by the project (equivalent cost in staff hourly rate) efficiency in teaching due to IVAC. Estimated 3 hrs are saved in a day and staff pay in an hour is Tshs. 3,375. The number of working days in a year is 195. The project had been operating for 4 years. The number of teachers at Hembeti practicing IVAC is 4.	31,590,000	
Equivalent value of any products/services produced including capacity building and awareness raising among the community members	14,400,000	
Number of hours parents/community members have volunteered to the school (estimated equivalent cost of skilled and unskilled labour) 3 persons, and per hour is Tshs. 5700, time is 3 hours per week. Thus = $3 \times 5700 \times 3 \times 52 = 2,667,600$ x 4 years as time volunteered since inception.	10,670,400	
Extra voluntary investment by teachers/staff outside school hours? (equivalent in hourly rate of teachers) how many teachers/ hours?? 2 teachers 3 hours x once per week 52 weeks x 4 years	22,464,000	
Retention/attendance of teachers as a result of the Eco-Schools programme (daily salary of teachers not wasted) $1 \times 27,000 \times 195 \times 4$ years as impact felt in first year	21,060,000	
How many less absences have there been due to micro-projects (e.g. sanitation/ provision of school lunches) (daily cost of educating a child not wasted) Absenteeism today 52 students. Before=74 students. Less 22 students thus= 22 students x 1900 daily cost x 195 school days = 8151000 x 3 years as impact not felt in first year	24,453,000	
ESTIMATED VALUE OF MICRO-PROJECT REPLICATION AT HOME		
Farming 5 households in 4 acres. Each acre 975,000 thus $4 = 4 \times 975,000$	15,600,000	
Estimated value of practical skill per child x number of children x how often) what are these, how many children, how often used?	66,606,400	
TOTAL	246,020,500	107,037



Hembeti Primary School, Mvomero

What is the change inside the School?



“The teaching and learning processes are learner-centered and students’ study theoretically and practically that requires using the student’s environment including students going outside the classroom for learning. Studying both inside and outside the classroom including active participation enables slow learners to increase their ability of learning.”

Ms. Sekela Mwambona, Hembeti primary teacher



“Dedication from parents is now very high. Parents can now make follow-up to their children at home and to school. Parents now are coming to school to attend meetings more than before.”

Wahda Mabaraka, 12

Teaching and Learning

Teachers believe that the action-based learning has saved time by improving the effectiveness of their teaching, and explained that increased group work and varied exercises within different curriculum subjects has improved the learning in class. Hembeti parent Mr. Mbaraka Said Iddi mentioned that teachers are now giving extra time to learners at weekends, and correcting school assignments to provide feedback, which was previously not common. The income from banana selling has enabled the school to buy books and desks which has improved student learning. Students now regularly borrow books for their personal study. General understanding of the importance of education has also increased motivation of the learners and attendance at school.

School access

Teachers have found that by using the IVAC methodology they have been able to engage the less academic learners in the class who are responding better to the action-orientated and outdoor learning approaches. This has increased access to school for all children in the community. Provision of lunch at school has also increased attendance for those families who cannot afford to send packed lunches. As part of the Eco-Schools programme, Hembeti has introduced several other initiatives to improve attendance and retention such as a new sports and games programme and inter-class competitions all of which are attracting more students to attend school. Hembeti parent Hassan S. Songoro believes attendance has gone up from 75% to 90%, and academic performance is also higher.

Increased parent support for education

Dedication and follow-up of parents to their children’s education is now also high, with parents coming to school to attend meetings which was not common before. Teachers, parents and learners all commented on the change in parents’ attitudes to the value of education for their children. Hembeti parent Mr. Mbaraka Said Iddi, said the programme had increased knowledge among parents on the importance of education and they now encourage their children to participate in lessons. Several people mentioned that this had had a significant impact on school enrolment and attainment as parents are helping and supporting their children with their schoolwork.



Hembeti Primary School, Mvomero

What is the change outside the School?



“I learned income generating skills through micro-projects at home. I have planted a quarter of an acre banana plantation which has helped to increase our income.

One of my neighbours was practising bad agricultural practices; after the Eco-schools I trained him the best agricultural practises and he established his new banana farm.”

Mr. Mbaraka Said Iddi, Parent, Chair-UWAWA



“Personally I was dirty and I didn’t love my self but now I do sport and realize personal cleanliness and the environment should be clean too.”

Bakari Ally, 15

Lifelong Learning

The Hembeti Eco-Schools programme is very well connected to the specific environment and community in which it is based, described by one teacher as having been implemented ‘both inside and outside the school compound’. At first some parents felt that the banana micro-project was tedious work for their children, and some community members even uprooted banana seedlings. However, after seeing the benefits for both food and as a source of income, parents strongly encourage their children to participate in the project activities. As the banana plantation project is community owned and not for the school only, the community members feel the sense of ownership and some of them do night patrols to secure the farms. Many families have set up plantations of their own. In this sense, as teacher Sekela Mwambona explained, the banana micro-project has provided a social-learning platform for the whole community.

Agricultural expertise and livelihood improvement

The banana farming micro-project has emphasised excellence in agricultural practises with the aim of developing self-reliance and entrepreneurship skills. The school specifically aims to ensure that students and their families not only have the skills to establish their own banana plantations, but the knowledge to achieve the best quality agricultural yields using best practises, for example planting with intervals between the banana seedlings.

Advocacy and self confidence

Teacher Sekela Mwambona, explained that Makuyu Primary School and Mbogo Primary School came to learn banana farming. The Ward Councillors and Ward Executive Officers have also paid field visits to the schools banana farm and have transferred the knowledge to non-Eco-School in their districts. Hembeti parent Hassan S. Songoro described a new sense of confidence in the learners when talking to people. He believes they are becoming good leaders and that is helping them to gain the trust of community members.

Lusanga Primary School, Mvomero

Lusanga is also in the same district as Digalama and Hembeti village on the slopes of the Mkingu Forest Nature Reserve in the Mvomero District in Morogoro Region, Eastern Tanzania. The school, which has 1432 students and 14 teachers, was selected to join the Eco-schools programme in 2015 and implementation commenced in 2016. Because of its proximity to the high biodiversity forest, Lusanga Primary School has focused its efforts on the establishment of a tree nursery and agroforestry micro-projects. The school has also installed a water tank, for reserving water that comes from the village supply. Teacher training in IVAC and ESD principles has been carried out, and a pupil's parliament was established. Parents and community members have also been trained during community dialogue meetings organised with the help of the village council. Teachers, students, community members and some of the non-eco-schools have replicated the programme activities at home. The school is among the first five schools in Tanzania to receive a Green Flag Award.

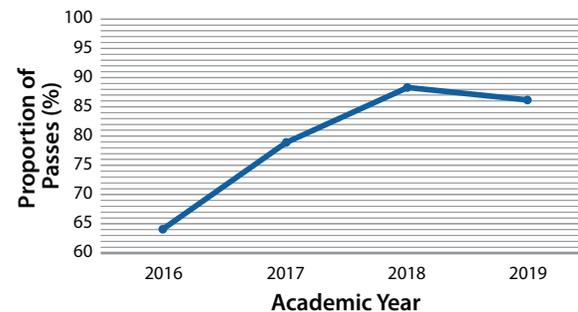
Key results

Quality Education (Goal 4)

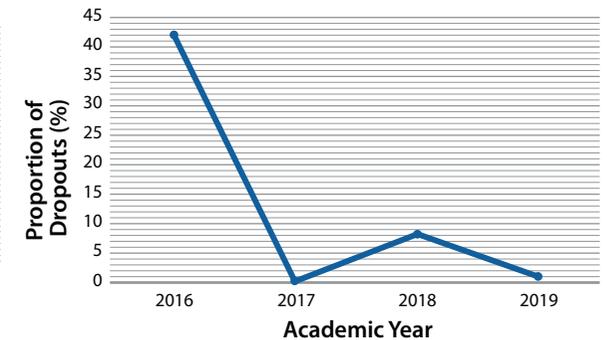


Lusanga Primary School has given education new relevance for learners through adoption of new action-based learning methodologies and use of the tree nursery project as a learning resource. This has had a significant impact on learner attendance and retention, with increases in enrolment by 60% and reduction in dropout from 42% in 2016 to 1% in 2019. Academic performance was raised from 64% in 2016 to 88% in 2018. The IVAC methodology has also saved an estimated 3 hours a day across the teaching staff.

Pass rate of Lusanga School (2016-2019)



Dropout rate of Lusanga School (2016-2019)



Sustainable Cities and Communities (Goal 11)



The central role of the community in the mission of Lusanga Primary School has brought benefits both inside and outside the school. Learners at Lusanga have been very involved in passing on their skills through training of others and replication of their school agroforestry project outside school. This has had an impact within the confidence and self-esteem of learners as they are increasingly seen as important people in their society. Local community members have learned new livelihood skills and many have established tree nurseries on the roadsides.

Lusanga Primary School, Mvomero

Social Return on Investment ratio 17:1

The figures were arrived at within discussion between the headteacher and a member of the TFCG research team, supported by the treasurer and Eco-Schools focal point.

Lusanga Primary School has focused efforts on a tree nursery micro-project, meaning that yields are slow and for that reason not yet showing a high project return. However, it is believed that tree seedlings planted from seeds in the nursery will start to bear fruit within the next year. The learners will then be able to harvest seedlings for sale and also replant seedlings produced. 500 seedlings from two different varieties of the indigenous hardwood trees were donated to the school by the district.

The action-based learning which is centred around the tree nursery micro-project is however attributed to a high increase in student attendance by 73 learners each year. As before, this is calculated at 81,139,500 (35,217.32) according to the daily cost of educating a child not wasted, as it was felt that the education costs are spent regardless of whether the learner turns up to school. An efficiency in teacher time is also recognised as a benefit of the teaching methodologies as reduced time trying to explain subjects in the classroom was being used by the teachers to increase the quality of their teaching. This was calculated by dividing the average daily teacher salary (TZS 27,000) by eight hours (average working day) to get the hourly rate of TZS 3,375. The school estimated that a total of three hours a day was saved across the teaching staff, thus multiplied by 195 working days per year, the total staff saving was valued at TZS 7,897,500 (USD 3,429.85).

The SROI ratio was calculated according to the total value of returns (minus any cost to the school for micro-project set-up) divided by the total investment by CECOD. The SROI ratio for Lusanga is 17:1, meaning for every \$1 spent by CECOD, the school realised \$17.

Investment

NON-RECURRING COSTS	TZS	USD
Tree nursery project	5,899,960	
Community development	800,000	
Green flag assessment	423,500	
6 teachers trained x 320,000	1,920,000	
Eco-Pupils parliament capacity development	309,510	
Monitoring and Evaluation	249,000	
Green Flag award ceremony	1,604,800	
Exposure visit for Primary Teacher Coordinators	220,000	
Capacity building of ccts and tutors, and key local government	1,080,000	
Capacity building of CSO	56,000	
Motor maintenance/transport	860,540	
Materials development	554,600	
TOTAL	13,977,910	6,073

Lusanga Primary School, Mvomero

Social Return on Investment ratio 17:1

Returns

MICRO-PROJECT INCOME		TZS	USD
Tree nursery Income generated	Investment from school funds 27,000 X 6 X 4 X 12 (year) TZS 7,776,000	2,180,000	
Selling of tree seedlings			
TZS 9,956,000			
MICRO-PROJECT FINANCE PROVIDED BY OTHER INSTITUTIONAL DONORS/SUPPORTERS			
Tree seedlings – 500 indigenous Khaya timber trees each 500		250,000	
Wheelbarrow, Hosepipe, Polythene tube, Watering can, spade, rake, manure, soil, sand		619,500	
Water tank		300,000	
EQUIVALENT VALUE IN SAVINGS OF STAFF/PUPIL TIME AS A RESULT OF THE ECO-SCHOOLS PROGRAMME			
Staff time saved by the project (equivalent cost in staff hourly rate) 3 hrs per day from more efficient teaching using IVAC x 3,375 (hourly rate) x 195 school days per year over 4 years		7,897,500	
Extra voluntary investment by teachers/staff outside school hours? (equivalent in hourly rate number of teachers = 3, teachers volunteer three time per week. Thus is 3 x 3,375 hourly rate x 3 staff x 3 days x 52 weeks per year x 4 years (time volunteered since programme inception)		6,318,000	
Less pupil absences due to micro-projects (e.g. sanitation/provision of school lunches) (daily cost of educating a child not wasted) Absenteeism now =145 and before it was 218 pupils. 218-145 = 73 x 195 x 1,900 daily cost of educating a child x 3 years (as impact not felt in first year)		81,139,500	
MICRO-PROJECT REPLICATION IN THE COMMUNITY			
Acquired valuable practical skills which can be used in the community? (estimated value of skill x number of children x how often (Per skill = 13,300) number of children = 400 thus = 400 x 13,300 x 4 years		21,280,000	
How many households have replicated micro projects at home? Which type? (Approximate value of project x estimated number of households Households = 6 in 10,900 teak tree planting. Each seedling is 1,000		10,900,000	
TOTAL		239,071,500	103,996



Lusanga Primary School, Mvomero

What is the change inside the School?



“The Eco-schools programme has indeed improved the teachers’ morale. The teachers are inspired by the programme approach and have

been saying that their work had been simplified by IVAC and students are easily understanding the subjects. Teachers are proud of their work, thanks to IVAC.”

Mr. Ignas Magubikila, Lusanga parent



“Before the Eco-schools’ programme, teachers and students were not so much inspired by the teaching and learning processes. However, after the introduction of

the programme, teachers started using IVAC that is going on to date and had shown great success and vivid changes. Students are now so neat in writing and themselves. Their work is so clean.”

Ms. Ruth Sifael Meena, primary teacher and Eco-Schools focal point Lusanga.

Improved learning environment

Hamza S. Said, 14 described improvements that had been made to the learning environment at Lusanga, with gardens, grass, trees and agroforest project, making it look much more attractive. Several teachers, parents and students mentioned the effect that the beautification of the school environment had in encouraging children to attend school and parents to attend meetings. Teachers have been motivated and morale has increased. The planting has also reduced dust and need for learners to sweep the compound which they previously did not like, this has reduced truancy. Several people mentioned that the cleanliness of the learners has improved due to the reduction of dust, and the effect this has had on improving self-esteem.

Localisation of curriculum

Lusanga teacher and Eco-Schools focal point, Ruth Sifaeli Meena used the phrase ‘Localisation of curriculum’ to describe how the Eco-Schools action-based learning methodologies and micro-projects have increased relevance of the education by connecting it to the specific context and lives of the learners. This was directly linked by Ruth to several outcomes such as improved standards of writing and academic performance. It seems that this curriculum localisation is key to the improved quality of education at Lusanga, and was also attributed to improved attendance and reduction of dropout, for example Ruth believes attendance is more than 90% and only 1 pupil has dropped out this year.

Lifelong learning

Due to the community engagement element of the Eco-Schools programme, the community is now seen as a central part of the school mission and vision at Lusanga Primary School. The school has been turned into a learning centre serving both students and community members. Community members have been trained in skills of agroforestry, tree planting, fruit tree budding, environmental management, and soil fertility. This has the added benefit to the school of providing a workforce on the micro-projects from the local community.



Lusanga Primary School, Mvomero

What is the change outside the School?



“The adjacent community members have been seeking advice of how to conduct grafting and budding of seedlings from me. I have been so helpful to them and the technology acquired from me has made them acquire some money after selling the fruits. Because of my confidence, I have been informing and sharing what I learnt at Lusanga Primary School and the results have been so fruitful. I am trusted by so many people.”

Bonasi Jekonia, 17

Improved livelihoods and income

The tree nursery micro-project at Lusanga has had a clear impact outside the school with many community members establishing tree nurseries on the roadsides. For example, Lusanga parent and chair of the Eco-Schools committee, Ignas Isdory Magubikila, has planted 8 acres of teak and plans to plant 12 acres in total. He has also trained several of his neighbours who have established their own teak tree nursery. For example, a Mr. Dimogwa has sold 4,000 teak seedlings which accrued a total of 2,000,000 TZS last harvest. Several other community members have been given from a government teak farm for establishing nurseries and are now selling seedlings. While establishing banana plantations is improving both income and nutrition.

Improved confidence and community standing

Lusanga pupil Hamza S. Said attributes his growing confidence and ability to talk to people to his involvement in the Eco-schools pupils parliament. As with the other Eco-Schools in Tanzania, the learners at Lusanga have been very involved in passing on their skills through training of others and replication of their school agroforestry project outside school. For example, during a visit by Lusanga Secondary School, the primary school learners trained members of the secondary school in gardening and forestry micro-projects. These have now been replicated there. Former pupil at Lusanga, Hassani Ally, 18 explained that while before the Eco-schools' programme he had very little confidence and could not talk openly in front of people, the process of meeting different people and sharing his experiences had 'cemented his confidence'. Other community members admit that he is seen as an important person in their society.

Eco-Schools Tracer Study



Hajra Said, 14.
Pupil at Diglama Primary 2012-2018.
Current occupation: Student at Diongoya Secondary School



Sunaiya Omari, 14.
Pupil at Digalama Primary 2012-2018.
Current occupation: Student at Diongoya Secondary School



Juliani Daniel, 16.
Pupil at Diglama Primary 2011-2017.
Current occupation: Farmer



Asnath Yusuf, 15.
Pupil at Digalama Primary 2013-2019.
Current occupation: Waiting to join secondary school



Hassani Ramadhani Akili, 16.
Pupil at Lusanga Primary 2011-2017.
Current occupation: Poultry Keeper



Hassan Ally Dumwe, 18.
Pupil at Lusanga Primary 2012-2018.
Current occupation: Student at Lusanga Secondary School



Bonasi Jekonia Gwali, 17.
Pupil at Lusanga Primary 2012-2018.
Current occupation: Student at Lusanga Secondary School



Matherine Nasasira, 14.
Pupil at St. Aloysius 2012-2018.
Current occupation: Student at Mary Hill High School



Elizabeth Munezero, 13.
Pupil at St. Aloysius 2011-2018.
Current occupation: Student at Mary Hill High School



Ndagire Brendah, 23.
Pupil at St. Aloysius 2011-2012.
Current occupation: Studies at Makere University School of Law



Marle Emmanuel, 16.
Pupil at Queen of Peace 2015-2018.
Current occupation: Student at Uganda Martyrs Secondary School



Nakalula Hasifah, 14.
Pupil at Queen of Peace 2015-2017.
Current occupation: Student at St. Paul's Secondary School



Mukulu Varen, 13.
Pupil at Queen of Peace 2016-2018.
Current occupation: Student at Our Lady Queen of Africa Secondary School



Shakira Athumani Mwenjuma, 16.
Pupil at Lusanga Primary 2011-2017.
Current occupation: Entrepreneur

Introduction

In order to determine the long-term impact of the Eco-Schools programme on the learners themselves and the wider community in which they live, a tracer study has been carried out. Fourteen past-pupils from four schools (Queen of Peace and St. Aloysius in Uganda, and Lusanga and Digalama in Tanzania) were contacted as part of this study. The individuals, ranging in ages from 23 – 13 years, were interviewed within informal focus groups. The past-pupils were all asked the following four questions;

1. *What Eco-Schools projects were implemented at your Eco-School and how did they affect your learning?*
2. *What practical and entrepreneurial skills did you learn during the Eco-Schools programme and micro-projects, and how do you use these today?*
3. *How did the Eco-Schools programme affect your attendance at school? Has this had any impact on your further education/career prospects?'*
4. *How has the Eco-Schools programme affected your own confidence to make changes in your community? Has this made any difference in your daily life? Have you been involved with other projects/ agendas as a result?'*

The answers were analysed for themes and common impacts. The answers given by the past-pupils showed consistency in several areas. This allowed the answers to be categorised under the following headings: Improved attendance at primary school; Improved attainment at primary school; Increased ability to attend secondary school; Improved income/livelihoods; Improved confidence and community standing. A brief summary of the results under each category is presented along with some illustrative quotes.

The sequence in which the data has been presented is significant as it provides a vague chronology of the impact which involvement in the Eco-Schools programme has had on the life of each past-pupil.

This was seen in progressive changes in their ability to attend primary school, and their resulting attainment, to better success either at secondary school or within their chosen livelihood, to an improvement in their quality of life and local environment, and finally their increased confidence and standing within their local communities.

1. Eco-Schools improved their attendance at primary school

During informal focus group discussions with 14 past-pupils from four of the case study Eco-Schools, 79% mentioned that the Eco-Schools programme increased their attendance at primary school. A range of reasons were given. These included improved health and reduced illness due to access to clean water; improved air quality and improved nutrition; better motivation to attend due to participatory and fun teaching approaches; attractive and child-friendly school grounds; new relevance of education due to acquisition of life-skills; improved attitudes of parents towards the school; new sense of pride in attending the school; and provision of lunch. Six out of 14 past pupils directly linked improved attendance due to Eco-Schools with their current success in either secondary education or work.

"The Eco-schools programme influenced and enhanced my school attendance due to the fact that I had an opportunity of acquiring new life skills that were so instrumental to my life. I liked coming to schools because there was lunch and I did not like to miss the food. It enabled me to learn more because I was attending daily to school."

Juliani Daniel, 16, Diglama, Tanzania

"Absenteeism at Lusanga Primary School was so common before the programme. However, after the inception of the programme, students had improved their attendance and my frequent attendance had improved my knowledge and skills. The skills I gained that included raising of fruit and timber trees, vegetable farming is raising my income".

Hassani Ramadhani Akili, 16, Lusanga, Tanzania

“Before the energy-saving stoves smoke used to fill the main hall. It would affect my chest. My mother would never allow me to stay at school”.

Matherine Nasasira, 14. St. Aloysius, Uganda

2. Eco-Schools improved their attainment at primary school

93% of past pupils attributed increased success and attainment in primary education to the participatory action-based teaching methodologies which were introduced to their schools by the Eco-Schools programme. 71% said that the programme inculcated a love of learning. However, one student felt that the micro-projects had had a negative impact on their exam results as they had detracted from core subjects.

“My education is easier due the Eco-Schools programme, it’s easier to answer questions and because of that I passed highly at all levels.”

Ndagire Brendah, 23. St. Aloysius, Uganda

“Hopefully my improved attendance gave me enough time for learning that contributed to improved academic performance and joining secondary education. I am so happy about that.”

Hassan Ally Dumwe, 18. Lusanga, Tanzania

“Sometimes on weekends we came to school for eco projects rather than revising. This had a negative effect on exam results.”

Mukulu Varen, 13. Queen of Peace, Uganda

3. Eco-Schools increased their ability to attend secondary school

57% of past pupils linked the Eco-Schools programme to their increased ability to attend secondary education. Reasons given included completion of primary education (4), and improved attitude towards education (9). 50% of learners also mentioned that the income generating skills which they learned at primary school were enabling

the learners or their families to raise funds which can support them through secondary education. However, one past pupil said that due to the Eco-Schools programme his community had actually tried to stop him from attending secondary school so that he could stay at home and train them in the micro-project skills.

“Right now, I have the tree nursery at home, I am doing grafting myself and have planted some mangoes. I am getting money from the selling of mangoes that is facilitating my studies at Lusanga Secondary School.”

Hassani Ramadhani Akili, 16. Lusanga, Tanzania

“Since the inception of the programme, teachers have changed and now using learning that is inspiring learners. This approach made me pursue with schools and now I am in secondary education.”

Juliani Daniel, 16. Diglama, Tanzania

“The community tried to keep me at home to teach them skills rather than going to secondary school. But I showed my new school the projects and now they want to buy the machines to make chalks and books.”

Marle Emmanuel, 16. Queen of Peace, Uganda

4. Eco-Schools has improved their income/livelihoods

While not all past pupils have progressed to secondary education, 100% have continued to replicate skills or micro-projects they learned during the Eco-Schools programme. 64% have used entrepreneurial skills to set up their own businesses, and 42% mentioned that their parents were also generating an income from skills learned through the programme. 79% said that the skills were also improving their quality of life either through food production, provision of essentials such as water, energy or soap, or saving money.

“I convinced my grandfather to establish fish farming because I learnt from schools that fish farming improves income and provides food. The funds for my education are coming from the fish farming project.”

Hajra Said, 14. Diglama, Tanzania

“My involvement in the Eco-Schools programme has given me options for working in business as a sustainability manager.”

Mukulu Varen, 13. Queen of Peace, Uganda

5. Eco-Schools has improved their local areas

12 out of the 14 past pupils confirmed that these skills had been shared among their neighbours. 57% specifically mentioned an improvement in the conditions or standard of life in their local area as a result.

“The skills acquired have been so helpful to the entire society of Lusanga and the income of the schools and village has improved. The adjacent community members have been seeking advice of how to conduct grafting, and budding of seedlings from me. I have been so helpful to them and the technology acquired from me has made them acquire some money after selling the fruits.”

Bonasi Jekonia Gwali, 17. Lusanga, Tanzania

“Due to the Eco-Schools programme everywhere I go I involve myself in environmental activities, today I lead the youth in doing several activities also in my village I teach people to take care of their gardens. So, I find pleasure in doing all that. I have even been in Rwanda where I taught my siblings to do the same and also in Kisoro , Kampala, Kasubi, Makindye and the schools where I went after St. Aloysius.”

Brendah Ndagire, 23. St Aloysius, Uganda

In the holidays I was making a table mat. An old lady passed by and asked me to teach her daughter. Those people, they were not financially stable, but now they make the mats and sell them to live.”

Elizabeth Munezero, 13. St. Aloysius, Uganda

6. Eco-Schools improved their confidence and community standing

13 out of 14 past pupils interviewed (92%) directly attributed increased self-confidence to their participation in the Eco-Schools programme. 64% expressed a sense of pride in having passed on their skills to others. 6 past-pupils specifically made reference to the effect this had on their own reputation or standing in their community.

“In African culture a young person like me speaking to a big person seems like disrespect. But Eco-Schools has given me the ability to speak to community members confidently and politely. The first time I was scared but they accepted it. They followed my advice on waste management. The community leaders listened and even now there is less scattered rubbish and less disease.”

Mukulu Varen, 13. Queen of Peace, Uganda

“Making the liquid soap has made my parents proud of me, even the community. At school I stand out because I have a different skill.”

Nakalula Hasifah, 14. Queen of Peace, Uganda

“Because of my confidence, I had been informing and sharing what I learnt at Lusanga Primary School and the results have been so fruitful. I am trusted by so many people.”

Bonasi Jekonia Gwali, 17. Lusanga, Tanzania

Conclusions

The social return on investment ratios calculated as a result of Eco-Schools implementation in the six case-study schools provide a compelling case for further investment in Eco-Schools replication and mainstreaming of the approaches in many more schools. Immediate improvements are seen in learning environments which make them healthier, safer and more child-friendly, and incomes from micro-projects are contributing to this change by funding new investment in schools. Micro-projects installed as part of action-based learning have dual benefits of addressing critical issues at school such as lack of water, sanitation or food, whilst transforming teaching through learner involvement in real-world problems and solutions.

Large returns for schools were seen as a product of increased parent and community support for education. Parents are actively filling gaps in education provision by paying for extra teachers and donating time and materials to micro-projects. This has a reciprocal value for the parents as income generating skills are transferred from the school to the community.

The increased attendance of learners was valued according to the daily cost of educating a child, and recorded as a benefit to schools because of the schools' mission to educate. Although increased attendance and over-population of schools could present a disadvantage because of the extra strain put on teachers and resources, this was not seen in the case-study schools. In fact, as the schools receive a grant per child enrolled, increased enrolment has brought extra funds. The capitation grant to schools was not recorded as a return of the programme however as it is part of the general running costs of the school.

The perceived improvement in teaching was expressed within the SROI as total time saved by teachers due to the efficiency of the new action-based teaching methods (reducing time spent trying to explain

subjects in the classroom) or time saved by the micro-projects (e.g. supervising the collection of water). The values were calculated from an estimation given by the teachers of their total time saved in a week, multiplied by the average hourly teacher's wage. This figure was seen as a return for the schools as the teachers and headteachers explained that time saved (both inside and outside lessons) was being used by the teachers to increase the quality of their teaching. Either giving more help to individual learners and carrying out practical and group work activities within lesson time, or to mark and provide feedback on assignments, plan interactive lessons, and work on micro-projects outside lesson time. Therefore, the school was receiving more value for teacher time by the amounts shown. The results are reflected in learners action competences (e.g. critical thinking, skills of analysis, problem solving) and in the rise in academic performance at each school.

The difference in SROI ratios between the Tanzanian schools (17:1, 19:1, and 26:1) and the Ugandan schools (43:1, 49:1 and 51:1) could be accounted for by the difference in time since starting to implement the programme in each country (TFCG started nine years after CECOD). It could also be as a result of the different mission of each organisation (forest conservation rather than community development). Nevertheless, the ratios in both cases provide an excellent return on Eco-Schools investments for both organisations, and an interesting example to other organisations of the types of impacts which can be achieved using the Eco-Schools approach.

Recognising enrolment and academic performance as key indicators of Quality Education (Goal 4), the qualitative section of the study explored mechanisms behind these results in the schools, before looking at knock on benefits being seen in the community (related to other SDGs). Some of the mechanisms identified include:

Quality Education (Goal 4)

- The Eco-Schools programme guides the learners and teachers to identify and address critical issues within the learning environment which are affecting wellbeing and stopping them coming to school. Resolving these issues through sustainable natural resource management micro-projects therefore increases learner attendance and prevents dropout. Better teacher attendance and retention is improving education quality and attainment.
- The training of teachers in action-based teaching methodologies (particularly IVAC) and introduction of sustainable livelihood skills through participation in micro-projects, improves the experience of learners at school by making learning more practical, relevant, fun and easier to understand. This is improving the quality of teaching, increasing retention of the knowledge gained, and motivation of learners to come to school, improving academic performance and preventing dropout.
- Micro-project income generated at school is paying for better educational facilities (e.g. computer lab) and extra teachers. This is improving education provision in schools, raising both attainment and enrolment.
- Mechanisms to involve parents (e.g. Eco-Parents Associations and community training) relieve pressure on schools by bringing financial and practical support from parents. It also encourages parent attitudes to, and follow-up of, their children's education. This is also having a positive effect on attainment and decreasing dropout.
- Providing ways for learners to share these skills with families and neighbours through community events and eco parents' associations, means that through schools, new sources of income are being found, and local quality of life is improved. Increased prosperity of parents and learners makes them better able to pay school costs, preventing dropout and increasing likelihood of attending secondary education. Improved general health of children reduces absences due to illness.

- Engaging parents and local community members in capacity building and training for micro-project management is creating a new role for schools within technical and vocational lifelong-learning.
- Seeing micro-projects and skills replication in the community is encouraging other community members to send their children to the schools to gain useful skills. This may be affecting numbers of local 'out-of-school' children.

Other SDGs

No Poverty (Goal 1)

The focus on developing skills specifically tailored to meet the needs in the communities surrounding schools have made a significant difference to the livelihoods and incomes of parents and other community members, increasing local prosperity. One parent described this as a spiral effect whereby community members are learning from their neighbours.

No Hunger (Goal 2)

New technical knowledge of agricultural skills and best practises such as vegetable and fruit growing, banana plantations, cassava production, poultry and rabbit keeping, and fish farming are improving nutrition and providing a sustainable means of food production.

Good Health and Wellbeing (Goal 3)

Through an increased confidence and understanding of their own ability to create change, learners have carried out advocacy in their communities and achieved significant improvements in areas such as waste management and sanitation. Chest complaints caused by smoke and dust in the school compounds have also reduced. Agricultural and agroforestry skills in their homes to improve their nutrition, health and standard of life.

Clean water and sanitation (Goal 6)

Access to a reliable supply of clean water through rainwater harvesting micro-projects, has had a dramatic effect on the health of the children,

reducing waterborne diseases and danger from drowning while collecting water from the river. Schools are successfully sharing the technology and many other schools, and households now practice rainwater-harvesting.

Life on Land (Goal 15)

Micro projects such as agroforestry, woodlots, energy saving stoves and banana charcoal briquettes have a positive effect on local habitats and biodiversity. The Eco-Schools programme in Tanzania is notable for its impact on forestry conservation. The beekeeping project has had the result of reducing forest fires as the trees are now needed for the beehives. Diversification and training in better agricultural practises has also reduced pressure on local habitats.

Peace, Justice and Strong Institutions (Goal 16)

The Eco-Schools programme has fostered closer relationships between pupils, teachers and parents. Parents report more involvement of children in decision-making at home and better quality of discussions between children and their parents. Children are actively sensitising community members about children's rights, and this has reduced instances of abuse. Parents also believe the programme has improved community cooperation through the community trainings, collective responsibility for micro-projects, and new advocacy structures created.

Goals 11 (Sustainable cities and communities) and Goal 13 (Climate action) are cross-cutting throughout the Eco-Schools activities and impacts.

The results of the tracer study provided insight and assurance of the long-term impacts of the Eco-Schools programme. The answers provided insight into the progressive process of change being achieved by Eco-Schools over the long-term. From affecting the individual's ability to attend primary school, resulting in better retention and attainment, to better success either at secondary school or within their chosen livelihood, to an improvement in their quality of life and local environment, and finally their increased confidence and standing within their local communities.

Recommendations

- 1.** The clear relationships which have been identified within this study between the Eco-Schools programme and increased attendance, enrolment and academic performance, make a strong case for the reprioritisation of rights based ESD programmes within national efforts to achieve Education 2030 (Goal 4).
- 2.** The social return on investment ratios calculated as a result of Eco-Schools implementation in the six case-study schools provide compelling evidence of the value for money of the Eco-Schools approach. This study recommends further investment in Eco-Schools replication, and mainstreaming of the approaches in many more schools within East Africa and globally as an effective and efficient mechanism to achieve sustainable development targets.
- 3.** The Eco-Schools programme has demonstrated that reorientation of education curriculums around sustainable livelihood skills should be an essential part of national Education for Sustainable Development strategies. By involving more parents and community members in technical training and micro-project management, schools can become effective local institutions of lifelong learning. This brings new skills and incomes to the community improving quality of life and local prosperity. It also brings new knowledge to ensure sustainable resource management, and new support to schools in the form of human and material resources.
- 4.** The adapted SROI used in this study proved to be an engaging and participative tool for involvement of headteachers and other Eco-Schools leaders in the evaluation of their own programmes. The framework can be used as an ongoing tool to monitor performance and highlight added value of the Eco-Schools programme in East Africa and beyond.

Recommended further research

- 1.** Broader statistical data of school enrolment, dropout and academic performance across the Eco-Schools in East Africa is currently being collected by the Danish Outdoor Council and partners. It is recommended that this should include qualitative questions which may help identify any other factors which may be responsible for the changes being seen. Including information on the types of micro-projects implemented in each school may also provide illuminating data to help understand the causes and effects between different projects and different categories of learners.
- 2.** A further statistical study of termly attendance data in a selection of the case-study schools would provide a more nuanced understanding of correlations between different micro-projects put in place, and impact on the attendance of different learners (m/f, rural/urban, age).
- 3.** Qualitative information within this study suggested that the Eco-Schools programme has a positive role in reducing local numbers of out-of-school children. Because enrolment figures include children transferred from other schools, it is difficult to verify this within the data collected for this study. It is recommended that a separate study is carried out with new learners within Eco-Schools to clarify any causative relationships between Eco-Schools and increased access to education.



Danish Outdoor Council

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