

White paper:

Forest community schools: A child-centered strategy for mitigating leakage in REDD+



EARTH CHILD
INSTITUTE



In cooperation with:



Prepared to inform the forthcoming Carbon War Room report on Biodiversity Loss

Acknowledgements:

Earth Child Institute: Donna Goodman, Joyce-Lynn Njinga, Emily Rodriguez, Rebecca Berentsen

Planet2025 Network: Steven Lovink

Sincere thanks for extraordinary peer review and technical inputs to:
Dr. Reuben Sessa, United Nations Food and Agriculture Organization,
Stephanie Hodge, UNICEF, Christopher Palmer, British Council and Emmen Saeed

Abstract:

By 2025, children who are 18 years or younger today will represent more than half of the world's workforce. A critical strategic opportunity exists to 'insure' the resiliency, effectiveness, and overall return on investment on 20-30 year REDD projects by investing in innovative school-based integrated educational approaches which empower young people to build better futures through life-sustaining values, practical skills and knowledge. These essential capacities will enable forest communities to convert CO₂ into things they and the world at large will thrive on – healthy ecosystems, healthy people, and healthy economic opportunities. Such education and economic empowerment of the children of today and of tomorrow will mitigate leakage and ensure sustainability in REDD project areas, thereby strengthening investor confidence. Allocation of a percentage of REDD funds flowing to such integrated school programs will reduce risk and yield social, economic and environmental benefit for all parties concerned.

Table of Contents

Introduction	2
Section 1: Background of the problem: deforestation and children of the forest	3
Calling for action	4
Indigenous children	4
Section II: Making the case: environmental education and facilities based environmental support to schools in REDD project areas to reduce leakage and ensure sustainability	6
Section III: How it adds up: a portfolio of benefits regenerating the planet and its people	9
The way forward	11
Next steps	11
About the authors	11
Annex: Resources for supporting governments and REDD+ project developers	13

I. Introduction

The Reducing Emissions from Deforestation and Forest Degradation (REDD) concept was established by the parties to the UNFCCC in 2005¹ as a mechanism designed to use financial incentives to reduce the emissions of greenhouse gases from deforestation and forest degradation. In 2007, the Bali Road Map decision enhanced the concept to REDD+, adding consideration for environmental and social risks, noting "the role of conservation, sustainable management of forests and the enhancement of forest carbon stocks in developing countries."² One of the most serious challenges to successful implementation of, and therefore investor confidence in REDD+, at the sub-national scale, is the tendency for projects to generate leakage. In simple terms, leakage happens when a given area of forest is protected and because of this protection loggers move to an area beyond a REDD+ project area's scope to continue cutting trees and degrading the environment. In order to ensure that deforestation does not simply move to nearby areas as a result of project activity, existing leakage mitigation initiatives need to be more structured. Educational and economic measures to empower and increase resilience of forest communities can eradicate root causes of forest degradation at the source.

¹ UNFCCC. 2005

² UNFCCC Bali Action Plan, paragraph 1(b)(iii)

This paper contends that quality primary and secondary school education that includes values and life-skills based environmental programming, can be an essential tool for mitigation of leakage which will encourage the protection of ecosystems, the sustainable use of natural resources, and ensure and balance the economic and social development of local people in forest areas overall.³ Given the fact that 2.2 billion people under the age of 18 represent close to one-third of the global population and close to half the population of many developing countries, this is the demographic that will steward forest community development initiatives within one to two decades and therefore has the greatest capacity to change the story and guarantee its success in the long term.

There is broad agreement among forest specialists that sustainable and just REDD policies and incentives must fulfill criteria for effectiveness, efficiency and fairness. To be effective and fair, REDD policies at all levels must honor the principle of free, prior and informed consent and respect human rights, including the rights of indigenous peoples, women and children. The Convention on the Rights of the Child (CRC) was adopted by the General Assembly of the United Nations in 1989 and has been ratified by 192 countries of the world. It clearly affirms that a child's rights to life, survival and development should be protected and that actions should be taken in the best interest of the child. Participatory empowering education in REDD+ combined with funding for clean energy, water, sanitation and locally grown food at school facilities, will make great strides toward fulfillment of these rights and criteria.

Section 1: Background of the problem: deforestation and children of the forest

Forest ecosystem services are inextricably linked to water and food, as well as the security and health of children, their parents, and the community at large. A strong association can be found between food insecurity and primary education. More than one third of all children in the world are malnourished and 6 million children a year die of causes related to malnutrition.⁴

According to a study conducted by the University of Roma Tre and the Food and Agriculture Organization (FAO), on nutrition and education, the higher the access to primary education, the lower rural food insecurity. In a rural setting, education is a proven tool for promoting overall food security; a doubling of access to primary education can reduce food insecurity by up to 24%.⁵ During the 2nd World Summit on Sustainable Development (WSSD) in 2002, education was recognized as having a major role to play in future sustainability, while studies in countries including India, China, Sri Lanka, and Kenya illustrate how education leads to economic growth.⁶

Many indigenous communities experience increasing prevalence of domestic and community based violence in association with deforestation and the associated intrusion into their land. A case study on increasing violence and health risk in deforested areas in Papua New Guinea reported that the “real key to environmental protection, is education.”⁷ The UNDP Human Development Report in 2007-08 indicated that deforestation in the Brazilian

³ The UNREDD programme strategy 2011-2015. UN-REDD programme - The United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries.

⁴ Global Education – Food Security <http://www.globaleducation.edna.edu.au/globaled/go/pid/177>

⁵ Burchi, Francesco and Pasquale De Muro. 2007. “Education For Rural People: A Neglected Key to Food Security.” Università degli Studi Roma Tre Working Paper.

⁶ Little, Angela W. and Andy Green. “Successful globalization, education, and sustainable development.”

⁷ Wayne Melrose. Deforestation in Papua New Guinea: Potential Impact on Health Care Tropical Infectious and Parasitic Diseases Unit, School of Public Health and Tropical Medicine, James Cook University, Townsville Qld 4811, Australia http://www.tropmed.org/freh/vol1_11.htm

Forest community schools: A child-centered strategy for mitigating leakage in REDD+

Amazon carries significant direct and indirect consequences on human development, including violence and life threat to local communities and indigenous people.⁸

Further, the amount of energy and time spent by women and children, especially girls, collecting water, fuel, and fodder is proportional to the abundance level of natural resources as in many households they are still the ones most responsible for the supply of these resources. Environmental degradation intensifies the drudgery. A well-educated population is better equipped to recognize in advance the threats posed by a changing climate and a degraded environment and to make preparations.⁹

Calling for action

An international mandate for action is beginning to emerge. Most recently at the 16th Conference of the Parties to the Climate Change Convention, the parties agreed to a decision on Article 6 which includes both formal and non-formal education and child participation priorities. Further, the Millennium Development Goals, Agenda 21, the Convention on the Rights of the Child, the Decade of Education for Sustainable Development and the International Year of Forests all substantiate a call to action.

According to UNESCO (2006), the key features of education for sustainable (ESD) development include: a concern for education of high quality (which is interdisciplinary and holistic, fosters critical thinking and problem solving, and is participatory and locally relevant), an attention to values (including respect for others, for difference and diversity, and for the environment), an acknowledgement that ESD will be shaped by diverse perspectives and will take place across a range of learning spaces (formal and informal, and from early childhood through adult life).

It is clear that strong performance in science and awareness of global environmental problems go together, and support sustainable environmental management. Since the role of education is to help learners develop the knowledge, skills and capacities to think critically, to solve problems, and to address uncertainty, the focus of ESD should be on addressing climate change through high quality teaching and learning.

Indigenous children

A majority of the world's 370 million indigenous peoples are children or adolescents.¹⁰ Indigenous children in forest communities are particularly vulnerable to the impacts of deforestation, yet they are the world's best hope for maintaining the traditions of their peoples and protecting the forest ecosystems thus ensuring the well-being of all children worldwide.¹¹ The UNFCCC specifically notes that the needs of local and indigenous communities should be addressed when action is taken to reduce emissions from deforestation and forest degradation in developing countries.¹² Yet, existing REDD proposals are often vague about *which* bodies,

⁸ Volpe, Giulio. UNDP. Human Development Report 2007-2008. Climate Mitigation, Deforestation and Human Development in Brazil http://origin-hdr.undp.org/en/reports/global/hdr2007-2008/papers/volpi_giulio.pdf

⁹ Bangay, Colin and Nicole Blum 2009. "Education responses to climate change and quality: Two parts of the same agenda?" *International Journal of Educational Development* 30(1): 359-368.

¹⁰ UNICEF. The majority of the 370 million indigenous people worldwide are children or adolescents, and that they are often among the most marginalized and vulnerable members of society. UNICEF statement to the UNPFII, 2008.

¹¹ UNICEF. The majority of the 370 million indigenous people worldwide are children or adolescents, and that they are often among the most marginalized and vulnerable members of society. UNICEF statement to the UNPFII, 2008.

¹² UNFCCC (2008) *Report on the workshop on methodological issues relating to reducing emissions from deforestation and forest degradation in developing countries*, Note by the Secretariat, 29th Session of the Subsidiary Body for Scientific and Technological Advice, Poznań, 1–10 December 2008 FCCC/SBSTA/2008/11 at paragraphs 71 and 72

Forest community schools: A child-centered strategy for mitigating leakage in REDD+

entities or persons would receive compensation payments under a national REDD scheme. Though most governments mention the need for communities to receive benefits they do not yet contain proposals on how and according to what principles local benefits would be distributed.¹³

Indigenous peoples, forestry experts, economists and social scientists increasingly point to the ‘moral hazard’ in REDD financial incentives as currently proposed, which would target payments (compensation) and rewards toward *polluters* (forest destroyers) while effective custodians, like indigenous peoples, who are already protecting forests would go unrewarded or receive only token benefits.¹⁴ Policies must be based on transparency, equitable benefit-sharing, biodiversity protection, maintenance of ecosystem integrity and be accountable to the public and affected forest peoples and forest-dependent communities.¹⁵ Recognizing the importance of indigenous knowledge is an important factor to determining ways in which to address climate change and restore and preserve the environment.

"We the indigenous peoples walk to the future in the footprints of our ancestors. From the smallest to the largest living being, from the four directions, from the air, the land and the mountains, the creator has placed us, the indigenous peoples upon our mother the earth."

Indigenous Peoples Earth Charter (1992)

It is equally important to understand the intergenerational and holistic ways in which indigenous knowledge is transmitted, the relevance of what is being taught and giving proper value to the contribution of indigenous children in their local communities will help to ensure the sustainability of REDD+. For example, it has been found in rural Ethiopia that pastoral children often do not attend school because the national curriculum does not have the capacity to prepare learners for meaningful and productive lives in the community.¹⁶

In order for forest carbon projects to be successful and sustainable in the long term, and to prevent leakage, there needs to be an understanding and promotion of local peoples’ knowledge, needs, capacities and practices, local livelihoods and rights, all of which can occur by using a systemic approach to planning and engagement of various stakeholders.¹⁷

While research has found that stakeholder processes can be expensive, time-consuming and sometimes frustrating, they are essential to delivering results.¹⁸ Working with local communities to understand and develop solutions to the root causes driving deforestation are key components to sustainable change.¹⁹ All over the

¹³ Griffiths and Martone. Seeing ‘REDD’: Forests, climate change mitigation and the rights of indigenous peoples. Updated version. http://www.rightsandresources.org/documents/files/doc_923.pdf May 2009 page 21. + REDD+ is now considering these proposals. It is the intention of this paper to inform that process.

¹⁴ Ibid

¹⁵ Tom Griffiths with contributions from Francesco Martone. Seeing ‘REDD’? Forests, climate change mitigation and the rights of indigenous peoples Updated version. May 2009 http://www.rightsandresources.org/documents/files/doc_923.pdf

¹⁶ Bekalo, S. and C. Bangay. 2002. “Towards effective environmental education in Ethiopia: problems and prospects in responding to the environment—poverty challenge.” *International Journal of Educational Development* 22(1):35-46.

¹⁷ Ifegbesan, Ayodeji, Shirley Pendlebury and Harold Annegarn. 2009. “Forest people, two countries and one continent: what empirical connections?” *International Research in Geographical and Environmental Education* 18(1): 45–56. +

UN-REDD Programme. Safeguarding and enhancing the ecosystem-derived benefits of REDD+. Multiple Benefits Series 2. October 2010 + The UNREDD programme strategy 2011-2015. UN-REDD programme - The United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries.

¹⁸ New Generation Plantations. http://newgenerationplantations.com/pdf/NGPP_Stakeholders_Engagement_Technical_Paper_Jun09.pdf

¹⁹ REDD and Rights in Cameroon – A review of the treatment of indigenous peoples and local communities in policies and projects – *Forest Peoples Programme*.

Forest community schools: A child-centered strategy for mitigating leakage in REDD+

world, community schools function as the central ‘hub’ of their communities and offer the most naturally occurring stakeholder venue for such engagement.

In many least developed countries, development activities have been unable to attain sustainable results due to short-term time frames of funding cycles.²⁰ Although not yet occurring, REDD+ initiatives are well-positioned to incorporate whole systems thinking - which includes the engagement of schools, innovative financing mechanisms, and the planting of trees that last – as the most intelligent means to mitigate leakage and benefit multiple stakeholders in communities.²¹ Quality, life-skill and values based education for sustainable development combined with the applied lessons learned through school and community-based tree plantations, renewable energy, gardens, water and sanitation solutions is the key to this lasting change.

Section II: Making the case: environmental education and facilities based environmental support to schools in REDD project areas to reduce leakage and ensure sustainability

When we break the challenges of climate change and environmental degradation down to their lowest common denominator, most of us can agree that it is caused by unsustainable human knowledge, attitudes and practices, which have gradually spread across the globe in the name of ‘development.’ The world’s addiction to consumerism has become so ingrained into mass consciousness that many people are no longer able to see the forest for the trees, quite literally. Science now clearly shows that the only way for humankind to survive and to thrive into the future is for every one of us to change our ways. To reduce human pressure on forest communities, education plays a vital role in serving as an “insurance policy” against the loss of forest “value and functionality.”²²

Through environmental education, people’s knowledge increases and attitudes and behaviors related to forest resources conservation, practices such as reforestation²³ and abandonment of illegal practices such as burning and deforestation leading to leakage and loss of investor capital are inculcated.²⁴ What adolescents can learn about environmental issues is closely predicated on the teaching methods used in school and by the parents who work for the forest enterprise and the broader community. Successful community forest policies are not being factored into the curricula designed for the community’s young people. The community forest enterprise does not play a role as a centre for environmental education for adults or for young people because it hardly takes any part in high school education in the community. Once the state authority that oversees the high school and the forest enterprise enters into a clear commitment to the environment, educational programs for sustainability can be formulated and implemented in the formal sector. This will enable young people to adopt values, attitudes and skills for employability to carry on the sustainable forest management pursued by their community and because this will be system wide, it will help reduce leakage.²⁵

²⁰ Africa and the Failure of Development Aid: Time for Designing an Exit Strategy http://aigaforum.com/articles/Africa_and_the_Failure.htm

²² Thompson, I., Mackey, B., McNulty, S., Mosseler, A.(2009). Forest Resilience, Biodiversity, and Climate Change. A synthesis of the biodiversity/resilience/stability relationship in forest ecosystems. Secretariat of the Convention on Biological Diversity, Montreal. Technical es.

²² Thompson, I., Mackey, B., McNulty, S., Mosseler, A.(2009). Forest Resilience, Biodiversity, and Climate Change. A synthesis of the biodiversity/resilience/stability relationship in forest ecosystems. Secretariat of the Convention on Biological Diversity, Montreal. Technical es.

²³ Mariano Colini Cenamo, Mariana N. Pavan. Casebook of REDD projects in Latin America, page 18 published by IDESAM and the Nature Conservancy http://www.katoombagroup.org/~forestr/documents/files/doc_2531.pdf

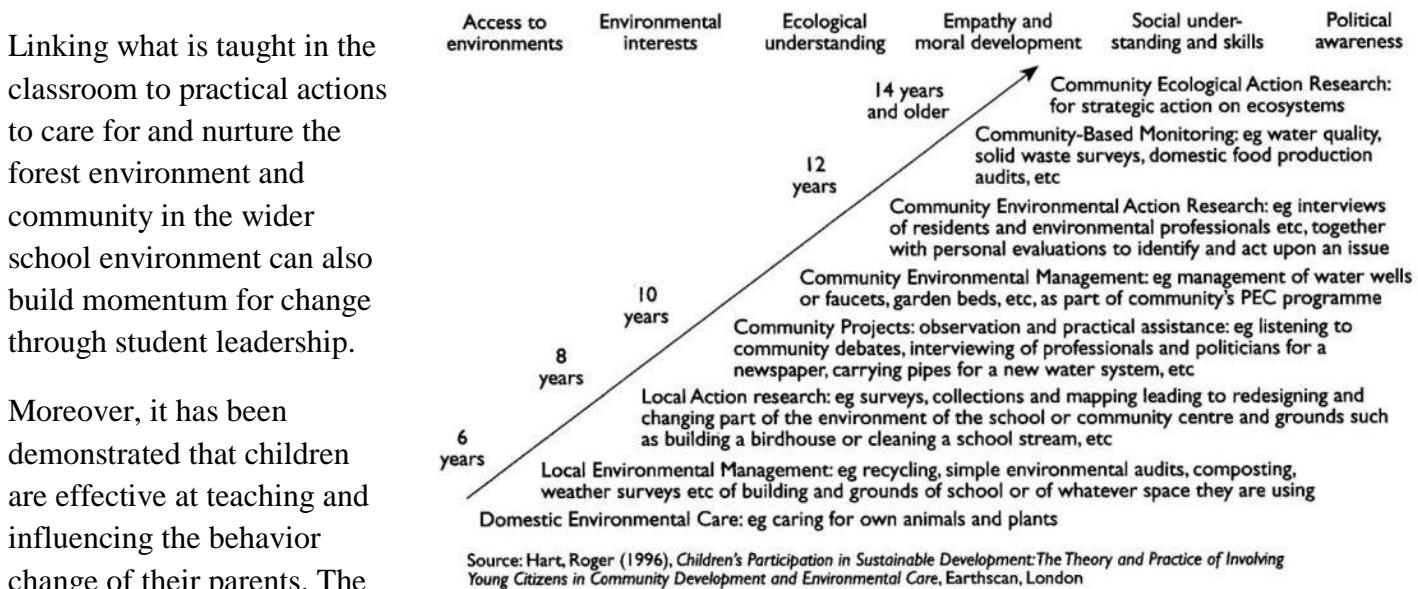
²⁴ Ifegbesan, Ayodeji, Shirley Pendlebury and Harold Annegarn. 2009. “Forest people, two countries and one continent: what empirical connections?” *International Research in Geographical and Environmental Education* 18(1): 45–56.

²⁵ Ruiz-Malle'n, I and L. Barraza. 2007. “Environmental learning in adolescents from a Mexican community involved in forestry.” UNESCO.

Forest community schools: A child-centered strategy for mitigating leakage in REDD+

The figure below is adapted from Roger Hart's "*Children's Participation in Sustainable Development: The Theory and Practice of Involving Young Citizens in Community Development and Environmental Care*" (1997), illustrates children's developing capacity to participate in the development and management of environments, demonstrating that from the age of six (or even earlier), there is an interest and capacity in caring for animals or plants. As the child gets older, their interest and involvement can be broadened, to helping with local environmental management, and then to working on local action research and monitoring.

Figure 1: Children's developing capacity to participate in the development and management of environments



Linking what is taught in the classroom to practical actions to care for and nurture the forest environment and community in the wider school environment can also build momentum for change through student leadership. From a gender perspective, environmental stewardship is empowering for girls and young women, often enabling them to build social networks and increase social capital improving economic and environmental conditions of the community.

When the curriculum used in a REDD forest area school is well-designed and implemented, children entering the school can be confident that they will acquire the basic tools for learning as well as a range of knowledge and skills in various subject areas that will enable them to know about, participate in, and contribute to their community and society. A life skills curriculum that includes information on nutrition and health, water and sanitation, environmental education for sustainable development and adaptation to climate change will help them make informed decisions and judgments about the challenges and risks they encounter in daily life.

²⁶ TreePeople

Forest community schools: A child-centered strategy for mitigating leakage in REDD+

Participatory relevance of environmental education is also essential to successful integration within the project area. Linking schools in developed countries and developing countries where the REDD projects typically are can provide essential values toward global citizenry for children worldwide. For example, a study of children in Australia demonstrated that there is a general confusion between environmental issues, such as littering and global warming. Children seem to understand the general idea that the environment is being destroyed, however they do not understand why and therefore cannot alter their behaviors. Tests and interviews after these children received environmental education showed an increase in their ability to differentiate between different environmental issues, thus enabling them to make conscious behavioral changes of positive impact to the environment.²⁷ Exposure of children in wealthy countries to the values and benefits for life experienced by the children of the forest and likewise empowering forest children to bridge the digital divide and share their stories can increase relevance of environmental education everywhere.

In Mexico, a study was done to assess the impact of an environmental education program on the ecological knowledge of 72 students (aged 14 to 20 years old) in a rural, indigenous community in Oaxaca, Mexico. Students' active participation in the community-supported environmental education program increases their ecological knowledge and raises their environmental awareness. This community is known for ensuring the continuing wellbeing of the forest, the maintenance of its biodiversity and its effective resistance to external threats to sovereignty over their valuable forests. Because the mainly indigenous communities use a variety of forestry products locally and can benefit from the free market through the use of their forests, these populations have avidly resisted external threats seeking to profit from their forests.²⁸ For example, forests in Sierra Norte (in northeastern Oaxaca) are very vulnerable to exploitation by timber companies due to the valuable pine forests and proximity to markets and transportation networks. With the community's strong capacity for local organization and high cultural and ecological diversity, community based initiatives for managing their environment proved very effective. Sierra Norte mobilized in 1980 with local resistance to government concessions with large external timber companies and their action culminated in 1986 with the legal transfer of control of the timber industry to local communities. Now Sierra Norte has a strong community-based and operated forest industry that appeals to the short term and long term needs of local people and ultimately is developing the community sustainably²⁹.

In the context of forest communities, support to schools should include: school-based vegetable gardens, access to safe water, sanitation and hygiene facilities combined with life-skills based environmental education, renewable energy for electrification of the school and computers with which students and teachers can communicate with students and teachers in other parts of the world to enhance shared learning and global citizenship. Although costly on the front-end, environmental facilities at school are known to significantly improve health, increase enrolment and retention of students and reduce vulnerability of children and the community at large.³⁰ When aligned with culturally and environmentally relevant pedagogy, these measures

²⁷ Taber, Fiona, Neil Taylor. "Climate of Concern – A Search for Effective Strategies for Teaching Children about Global Warming." *International Journal of Environment and Science Education*. 4.2 (2009): Web.

²⁸ Ruiz-Mallen, Isabel, Laura Barraza, Barbara Bodenhorn and Victoria Reyes-García. 2009. "Evaluating the impact of an environmental education program: an empirical study in Mexico." *Environmental Education Research* 15(3): 371–387.

²⁹ Asbjørnsen, Heidi, Mark S. Ashton. "Community Forestry in Oaxaca, Mexico." *Journal of Sustainable Forestry* 15.1 (2002): 1-16.

³⁰ Goodman, D., Iltus, S. UNICEF, Innocenti Research Center, Climate Change and Children, A Human Security Challenge. 2008. http://www.unicef-irc.org/publications/pdf/climate_change.pdf

Forest community schools: A child-centered strategy for mitigating leakage in REDD+

will help to nurture the knowledge, skills and actions necessary to ensure economic and environmental prosperity for all, thereby mitigating leakage and increasing likelihood of project success in the long term.

School based tree nurseries provide a sustainable solution for REDD projects meeting the need to care for saplings for initial 3-5 year period until they can be planted in the forest, while simultaneously functioning as a platform for action based learning, fostering confidence and competence among the children and their families. School-grown saplings sold to the forest project will generate a sustainable source of funds to the school for continuing improvement of learning environments and infrastructure. Further, by using strategic planting methods that correspond to the region, ecosystem-derived benefits can be enhanced. Benefits may include prevention of flooding and erosion and the promotion of biodiversity.³¹

Section III: How it adds up: a portfolio of benefits regenerating the planet and its people

National policies and practices that promote investment in human capital and an active citizenry, can, in the long run, boost economic growth, reduce poverty, and promote regional peace and stability.³² New research proves that human capital formation (a population's education and health status) plays a significant role in a country's overall economic development, but that this development is also sustainable when citizens are informed and active participants in their governments.

A quality education at least through lower secondary level leads not only to higher individual income but is also a necessary (although not always sufficient) precondition for long-term economic growth. Broad based secondary education and universal primary education is likely to give poor countries the human capital boost necessary to bring large segments of the population out of poverty.³³ A single year of primary school increases the wages people earn later in life by 5-15%. For each additional year of secondary school, an individual's wages increase by 15-25%.³⁴ We also know that educated communities are far better able to utilize new and emerging technologies that in turn boost productivity, profits and wages.³⁵

Forestation, reforestation, and integrated agro forestry projects can remove and sequester CO2 from the atmosphere at about 50-80 pound per tree per year (for trees in the tropics, 50 pounds is a conservative estimate). Forest gardens are more efficient in photosynthesizing and can remove on average 70-80 pounds per tree per year.³⁶ Research indicates that farmers' profits increase over time when farmers learn from their own farms and from profitable patterns at neighbors' farms and more schooling leads to higher wages according to international research.³⁷

Cooperation on the financing and implementation of multiple tree and forest garden projects on a large scale can be an efficient, cost effective, win-win approach for people, organizations and countries to regenerate the planet and its people. Innovative school-based integrated educational approaches which empower young people

³¹ UN-REDD Programme. Safeguarding and enhancing the ecosystem-derived benefits of REDD+. Multiple Benefits Series 2. October 2010

³² Economic Policy and Equity Conference Issues Paper Washington, DC, June 8–9, 1998.

³³ (International Institute for Applied Systems Analysis - Economic Growth in Developing Countries: Education Proves Key, IIASA Policy Brief # 03.

³⁴ Global Campaign for Education 2010

³⁵ Rosenzweig 2010. Microeconomic Approaches to Development: Schooling, Learning, and Growth

³⁶ Lake Tana Finance Initiative – Planet 2025 Network

³⁷ Rosenzweig, Mark R. 2010. "Microeconomic Approaches to Development: Schooling, Learning, and Growth." Yale University: Economic Growth Center Discussion Paper No. 985.

Forest community schools: A child-centered strategy for mitigating leakage in REDD+

to build better futures through life-sustaining values, practical skills, and knowledge enhance *effectiveness, efficiency and fairness* and enable the scale up and replication of such cooperative efforts.

For example, a case study conducted in the Tawahka community in Honduras found that each additional year of education reduces the amount of old growth forests cut by households by 12% each year³⁸. In Tawahka, 49% of households cut old-growth rain forests to plant crops. While there is a 67% probability of cutting with a head of household with no education, there is only a 12.77% probability of cutting with a head of household who is a high school graduate. From carbon sequestration, soil and water conservation, and biodiversity, a hectare of old-growth rainforest yields yearly benefits equal to \$441 per hectare and each additional year of schooling leads to a net benefit of \$26.5 per year.

A challenge in low-income countries is that it is difficult to predict long-term returns on human capital investment. Therefore households are often unaware of the payoffs of schooling, especially if mobility costs are high and if schooling occurs outside of immediate environment.³⁹

A comparative analysis of land tenure and natural resource management suggests that social capital among natural resource users in Guatemala fosters a sense of ownership and respect for boundaries, which provides a foundation for rules, monitoring, and enforcement mechanisms. Further analysis of this research shows that democracies function best where there is a strong and robust independent civil society, and that the empowerment of women and girls ensures better environmental governance, better response to climate change induced disasters.⁴⁰

The above examples describe how investing people and trees builds human capital, natural capital, social, and financial capital. Historically, the reasons for lack of investment in long-term integrated community based programming are typically related to the uncertainty of carbon market value post Kyoto, transaction costs of small projects are perceived to be high. Further, the market is relatively young and investors who are not familiar with small scale reforestation projects can perceive them to be cost prohibitive.

Locally-based entrepreneurial capacity which is developed appropriately will enable tree planting on a large scale, through capacity building and training, thereby ‘connecting the dots’ and speeding the learning process. Knowledge sharing through use of available technologies will enhance accounting for and verifying tree planting results, thereby addressing a barrier to entry for investors who seek to offset their emissions through the carbon exchanges. It is imperative that barriers to investment in people and trees be lowered through innovative project designs as the only ways in which significant progress can be made is by engaging the world’s, 2.2 billion young people, to become an integral part of the solution.

³⁸ Godoy, Ricardo, et al. 1998. “The Role of Education in Neotropical Deforestation: Household Evidence from Amerindians in Honduras,” *Human Ecology* 26(4): 649-675.

⁴⁰ Foa, Roberto. 2009. “Social and Governance Dimensions of Climate Change: Implications for Policy.” The World Bank Policy Research working paper.

Section IV: The Way Forward

With trees disappearing at a rate of 13 million of hectares per year,⁴¹ it is easy to be discouraged about the real possibilities of turning the tide. Moreover, without sufficient trees that convert CO₂ into things people need, the future for humankind is in peril. This is particularly true for 2.2 billion children, a number that is steadily growing each year and will represent more than half the of the world's population by 2040, when most REDD projects are anticipated to mature.

While REDD projects and policies implicitly recognize this, the essential position, role of, and indebtedness to future generations has not yet resulted in concrete policies and actions that internalize the fact that the fate of trees is intimately linked to the fate of the worlds' children. A strategic opportunity exists to 'insure' the resiliency, effectiveness, and overall return on investment on 20-30 year REDD projects while also making them truly socially responsible investment opportunities for a wide range of investors, donors and sponsors.

Next steps

- 1) **Expand research toward an in-depth paper:** Preliminary findings herein are compelling, yet, it is necessary to build upon the evidence base toward a goal of informing COP17 in Durban and to full recognition of schools as a critically important component of the Green Economy to be addressed at the Rio+20 Summit.
- 2) **Establish policy guidance** based upon the evidence presented at the completion of step 1, to establish a budget line item, allocating a meaningful percentage of REDD+ project financing to primary and secondary schools in the project areas.
- 3) **Action research:** After funding has been secured and educational programming installed in two or three REDD+ project areas, impact assessment will be conducted to inform scaling up.

About the authors:

Earth Child Institute (ECI) www.earthchildinstitute.org is an international not-for-profit 501(c)(3) organization based in the United States of America. Associated with the United Nations Department of Public Information and accredited as an NGO observer to the UNFCCC, ECI works with governments, donors, the private sector and intergovernmental organizations to develop and facilitate innovative practical, values-based and cost-effective and participatory solutions across-sectors to meet the rights, needs and capacities of children as key stakeholders of the future. The core focus of our work is related to climate change, water, children's environmental health and education for sustainable development.

The cornerstone campaign of Earth Child Institute is called 2.2 Billion: The Power of One Child + One Tree = A Sustainable Future for All which seeks to empower and mobilize the world's 2.2 billion people under the age of 18 to reforest Mother Earth. The campaign is endorsed by UNEP's Plant for the Planet, Billion Tree Campaign and UNICEF's Unite for Climate initiative.

⁴¹ United Nations Framework Convention on Climate Change. "Fact sheet: Reducing emissions from deforestation in developing countries: approaches to stimulate action." Feb 2011

Forest community schools: A child-centered strategy for mitigating leakage in REDD+

ECI is collaborating with government ministries, schools and youth organizations in eight countries at this time. Further, the organization is presently working in partnership with Cartoon Network of Latin America (Turner Broadcasting) to develop interactive resources for engaging and empowering children and young people to learn about environmental themes and works closely with UNICEF, most recently preparing a case study on the impact of climate change on child health and nutrition in Central America (for Latin America Regional Office) and as developer of their soon to be released Climate Change, Children and Environmental Education Resource Pack for Child Friendly Schools (name to be finalized at this writing) and associated resource pack for school-based implementation of resources.

Planet2025 Network <http://planet2025.net/>

Planet2025 Network's non profit organization with a mission to mobilize new and additional sources of sustained financing for long term investment in the globe's life-supporting ecosystems in order to achieve a globally sustainable way of life by 2025.

- We seek to accomplish our mission through outreach, accelerated learning approaches, cooperation with others, and catalyzing potential paradigm shifting development concepts, including for example our collaborative Lake Tana Finance, Power of One School, and Planet2025 Communities initiatives.
- A recent initiative is also Power of One, a 501(c)3 charitable organization which seeks to inspire and empower integrated action by people and organizations toward transformation to a peaceful, sustainable global society.
- Drawing on advanced sciences and collective consciousness, Power of One develops initiatives, partnerships, and collaborations that stimulate creativity, entrepreneurship, and innovative financing and business models in service to the whole.

Annex: Resources for supporting governments and REDD+ project developers

British Council's Climate4Classrooms project is supporting capacity building of teachers through an interactive website of digital resources which are scientifically based, unbiased and culturally sensitive. Through a series of teaching and learning modules teachers and their students are encouraged to learn about climate science and actively apply their learning locally by engaging in community initiatives and internationally by developing partnerships with other schools and their communities around the world. Based on research carried out in a number of countries^{29b} it was found that teachers are desperately short of such capacity building and resources. Currently the countries involved in the project are China, Indonesia, Mexico, Bangladesh and the UK with other countries across Africa and the Americas expected to join in the coming year.

UNICEF's soon to be released Climate change, children and environmental education policymaker's toolkit

The Climate Change and Environmental Education Resource Pack (CCEERP) is a practical, rights-based guidance tool which enables quality education through mainstreaming climate change and environmental education in the educational system. The resource pack is designed primarily for use by education sector professionals - planners, officers, teacher educators and UN programme officers. It is also intended to bridge gaps between sectors relevant to the mitigation of and adaptation to climate change, thereby improving the quality of education while increasing the adaptive capacity of children and their families in response to a changing physical environment.

Power of One School

In cooperation with Planet2025 Network, Earth Child Institute is developing a structure for supporting schools to implement recommendations of this paper through a project called Power of One Schools. The Power of One School kit will provide an opportunity for children all over the world to experience in play how they can regenerate the planet and build their future by means of a massive multiplayer computer or cell phone applets amongst schools globally. They can download video clips on how to set up school nurseries and how to grow their trees and the fruits they bear. They can record on their computers what they planted where and when, including GPS location and health. These tools can link to a Voluntary "Future Generations" Carbon Market Mechanism, which aggregates the data from participating schools, calculates the amount of CO2 sequestered and issues Future Generations Emissions Certificates that are sold to socially responsible individual and corporate investors interested to offset their Carbon Footprint. The technology and know how to do all this is available, what may prevents us from realizing it is lack of imaginations and political will.