

Climate change, children and education for sustainable development: A child-friendly schools approach to adaptation and risk reduction

Purpose: Today, more than ever before, children are faced with increasing and chronic degradation of natural resources, greater prevalence and severity of natural disasters, and the growing necessity for forced migration. The main purpose of the **Environmental Education Resource Pack (EERP)** is to provide a tool which will support countries in strengthening children's knowledge, skills, attitudes and ability to adapt to a changing physical environment, while providing a mechanism to promote and support the use of facilities-based environmental solutions.

Rationale: The EERP is a pathway to quality education through child-friendly schools which is intended to support government policymakers, school administrators and teachers to grasp the challenges and opportunities posed by climate change, desertification and pollution. It is a rights-based tool for skills and empowerment which is designed to fill a perceptual gap between a child's physical environment and his or her daily life. The EERP is aligned with Education for All (EFA), the Convention on the Rights of the Child (CRC), the UN Decade of Education for Sustainable Development (DESD), A World Fit for Children (WFFC) and Article 6 of the Climate Change Convention.

Background information: The resource pack takes a child-centered, skills-based approach to empowered learning and is being designed to support the equitable involvement and engagement of children of both genders. It aims to increase children's understanding of the interdependent relationship between the environment and their life, community and country. The resource is disaggregated by four climatic zones (highland/mountain; flood plains and small island developing states (SIDS); rainforest; and dryland/desert) and is designed to address community-level vulnerabilities to chronic and sudden impacts of climate change and environmental degradation. It includes formal and non-formal activities and resources for policymakers, school administrators, teachers and youth facilitators and is unique in that it is designed to integrate practical guidelines for 'facilities-based solutions' such as renewable energy, school gardens, tree planting and rainwater harvesting, with a participatory, child-centred skills-based curriculum.

Objectives are to:

- Step up natural disaster risk reduction, emergency preparedness and response education in light of increased frequency and intensity of extreme weather events.
- Support governments, communities and schools to develop capacity to promote environmentally sensible and sustainable solutions which will improve learning environments for children while taking the ownership of maintaining the good health of fresh water resources and associated ecosystems, reducing greenhouse gas emissions and restoring local environmental conditions.
- Integrate facilities-based environmental solutions with a child-centred, gender responsive, skills-based curriculum employing participatory tools and community interventions to strengthen linkages and empower learners.
- Ensure that girls' and boys' rights, needs and capacities are central to all adaptation and risk reduction policy frameworks and action protocols.

Outcomes: Children and young people with skills and knowledge to address the challenges faced by their local community are empowered to take action and better prepared to respond to threats, evacuations and restoration activities, thereby reducing injuries and impacts. Further, as the success of facilities-based solutions is demonstrated to administrators and policymakers they implement similar programs which improve local environments and offer an unparalleled opportunity for children to engage in action and skills-based learning, thereby acknowledging their rights, needs and capacities. Partnerships with Governments, UN agencies, youth organizations and other partners are strengthened and redundancy reduced as partners each offer specialized tools and skills to deliver a quality education for children while reducing the impact of climate change on water resources and associated ecosystems.

Pedagogy: The resource pack will tap into participatory child-centred learning and teaching methods including: rights-based and skills-based approaches to learning associated with peace education, inquiry, critical thinking, dialogue and action learning as set forth in the child-friendly schools framework. As well as using water systems as

open air laboratories, community mapping activities, strategic planning, role plays and simulation games supporting learning and development towards greater equity, social justice and personal well-being.

The Environmental Education Resource Pack (EERP) for Child Friendly Schools and Learning Spaces is comprised of seven interactive modules plus twelve facilities-based modules. All modules are available and present to all users at all times and all have access to resident elements and background information.

Who will use the EERP?

The EERP includes resource and training materials for three types of users:

1. National government/policymakers and development professionals
2. Sub-national/district and school administrators
3. Teachers, non-formal education facilitators and other para-professionals who work with children and young people

What are the resident elements?

Resident elements are all functions of the EERP that are available to all users at all times. They are either accessible by a menu button on the side of the screen (or sidebar reference within the hard copy), or as hyperlinked words for glossary definitions, further information, etc. *These elements are:*

1. **Interactive glossary** (*hyperlinks to new words throughout*)
2. **Additional resources:** games, websites, NGO partners, bibliography (*appropriate resources available at appropriate junctures: ie: Water Alert! Game in water lessons, Food Force game in food related lessons, etc*)
3. **Non-formal education facilitator's guidelines** (*gender-responsive guidebook with Big 6 youth organizations resident for facilitation tips*)
4. **Fact sheets** (*25 thematic background information resource*)

What are the environmental facility guidelines?

The EERP includes twelve facilities-based guidelines, each of which is a free standing module on its own and is interlinked and cross-referenced to each of the other six modules. These modules are designed for non-technical decision makers to understand the educational, environmental and health benefits and costs of possible infrastructure investments and to support these decision makers in planning and implementing chosen elements for their school.

Each of the twelve modules include climate zone-specific guidance and practical insight for implementation, including case studies. There is a participatory lesson plan with a number of hands on activities to help children understand the need for and functionality of these environmental solutions and to instill an awareness of the interdependence between human action, health and environmental sustainability.

The twelve facility guidelines are grouped thematically into three groups of four, they are:

I. Renewable energy solutions for rural schools (with community outreach info) off the grid

1. Solar power
2. Solar water pumping
3. Solar cookers
4. Wind water pump

II. Ecological solutions Ecological sanitation

5. Greywater reuse
6. Waste management
7. Biogas

III. Environmental/adaptation solutions

8. School gardens
9. Tree planting (indigenous tree nurseries at schools)
10. Watershed restoration

11. Rainwater harvesting

Module #1: National causality analysis for policymakers

This module seeks to integrate education for sustainable development priorities and children's rights, needs and capacities into national legislative and policy guidance on the preparation of sector-wide approaches and poverty reduction strategy documents. Special attention will be given to emerging climate change frameworks, including National Adaptation Plans for Action (NAPA) and natural disaster risk reduction and preparedness strategies, employing a human rights-based approach. The guidelines are being developed with inputs and guidance from UNESCO in consultation with UNEP, UNFCCC and others and will provide tools and support for planning workshops which bring together sectoral ministries from Education, Environment, Health, Culture, Finance and others (as appropriate) to identify regional vulnerabilities and opportunities to build local capacity, improve environmental conditions and reduce risk through implementation of the EERP in target areas.

Contents within this module include resources for understanding where the EERP fits within:

- Child-friendly schools framework
- Article 6 of the Climate Change Convention
- Decade of Education for Sustainable Development
Education for All

Modules #2-5: Climate-zone specific

There are four modules which are defined by climate zone, following the same basic framework. Each module includes four units, each with four lesson plans. All units are child-centred and sensitive to the local cultural and social context; they include the introduction of concepts, outdoor observation, intergenerational dialogue, and the scientific skills of hypothesis building and problem solving. Although the framework is identical, a number of elements within the units and lessons are unique to each climate zone.

An additional two lessons on sustainable consumption developed in cooperation with UNEP and UNESCO (*a children's adaptation to Youth Xchange*) are also included per climate zone.

Climate zones are:

Module #2: Drylands and Desertification: Almost one half of the Earth's land surface (*equal to 6.45 billion hectares*) is made up of drylands. Drylands are particularly affected by desertification. They are comprised of arid, semi-arid and dry sub-humid areas. Aridity is the result of climatic factors (rain, temperature, wind) and evapo-transpiration. Degradation is the result of human activities, such as cutting trees, overgrazing and pollution which cause desertification to happen.

Module #3: Flood plains and Small Island Developing States (SIDS): A flood plain is an area of land over which a river or seawater flows or is stored in times of flood. Flood plains usually extend beyond the land immediately next to a watercourse. A flood occurs when water pours over dry land. If a lot of rain falls quickly, the earth is unable to soak it up, and the water builds up on the ground. When it runs off into the rivers, the rivers overflow their banks. Due to sea level rise resulting from climate change small islands are vulnerable to similar flood risks as riverine flood plain areas in addition to several unique risks including the salinization of freshwater resources and the permanent loss of land area.

Module #4: Rainforest: The climate of tropical rain forests is generally hot and humid. It rains almost every day, usually in the afternoon, for most of the year (approximately 10-11 months). Rainforests are extremely important in the ecology of the Earth. The infinitely diverse and abundant plants of the rainforest generate much of the Earth's oxygen. These plants are also very important to people in other ways; many are used in new drugs that fight disease and illness.

Module #5: Highlands: Highland climate zones are mountainous areas where altitude plays a role in determining climate and weather. Generally the average temperature of each month is about 5-6 °C for each 1,000 meters of elevation than the sea-level value. Days are generally warm due to solar irradiation and during nights temperatures drop to very low levels. Plants and trees are small and are adapted to withstand sub-zero conditions.

Module #7, Phase II: Urban slums

Contents of a climate zone module include:

- **Unit 1: Where We Live**

Lesson One: Culture, Community and Science

This lesson explores the environment today and as it was in the past. Was it always a desert here? If not, how was it before? How does our culture view the environment? What happened, etc? The lesson's pedagogical approach includes an intergenerational survey, outdoor exploration, observation of cause and effect behaviours and an introduction of the climate zone.

Lesson Two: Water, Waste, Energy and Trees

This lesson focuses on basic needs related to water, sanitation, energy and trees in the context of each climate zone, building on the outdoor exploration and intergenerational survey from lesson one.

Students will understand the interdependent relationship between water, energy and trees through concepts such as i) photosynthesis, and ii) the ethical balance between harvesting trees for fuel wood and conserving them for the ecological services they provide including their partnership with us for balancing excess CO₂ in the atmosphere and their sponge-like effect which holds the ground during floods, etc. The lesson's pedagogical approach includes hands on experimentation with energy and water, planting an indigenous seedling and games.

Lesson Three: Children's Environmental Health (CEH)

This lesson focuses on the local environment using WHO-UNEP-UNICEF and CEH guidelines, encouraging the student to explore ways that the environment affects her/his life. A series of children's environmental health lessons have been developed for use within the framework of this lesson and can potentially expand its scope considerably.* It seeks to enhance practical understanding of the link between the local environmental situation observed in lessons one and two and community health issues, for example dirty water leads to diarrhoea, unclean energy leads to acute respiratory illness, etc. The lesson's pedagogical approach includes hands-on science, hygiene education and games, such as the PALU Malaria board game developed by PAHO.

Lesson Four: Weather, Plants and Food

This lesson introduces the element of weather, building from the previous three. Using the WMO weather watching curriculum and a connection to the National Weather Service in their country, students will understand the connection between rainfall patterns, droughts, floods, food and water security. The local food chain will be introduced and students will learn about the interdependence between species. The lesson's pedagogical approach includes hands on science and mathematics including: rainwater measurement, weather monitoring, observation of seedlings planted in lesson two, understanding how things grow in different climates, etc.

- **Unit 2: Risks and Opportunities**

Lesson One: Review of Unit One

This lesson introduces a gender lens to the review of unit one and is primarily a situation analysis/problem solving exercise based on the findings. What did we learn from our elders? What can they learn from us? How does human behaviour affect the environment? How do we perceive our challenges and opportunities? How do floods affect child health? The pedagogical approach includes critical thinking, team building exercises and peer evaluation.

Lesson Two: Introduction to Climate Change

This lesson brings climate change into the equation, in an empowering way without fear. Circling back to elements of unit one, students will apply their new knowledge of water, trees and energy to the changing global environment in the context of their own local environmental situation. For example if we consider rising sea levels in the flood plains climate, how will this affect our community? What can kids do to make a difference? The pedagogical approach includes hands on science activities, hypothesis building and problem solving.

Lesson Three: Risk mapping

This lesson introduces the concept of school and community risk mapping. Using an understanding of the local situation gained in lesson two, students build consensus on which key indicators they want to identify in their mapping exercise and then they implement the mapping process. The pedagogical

approach includes scientific measurements, graphing, role playing, the Riskland game and consensus building to address conflict resolution in the face of scarce resources.

Lesson Four: Presentations and Reporting

Students present the outcomes of the community mapping exercise from lesson three, including consensus building on risks and opportunities, and then prepare presentations on findings for adult decision makers, ie: School administrator, Parents group, local government, etc.

Please note that Units 3 and 4 are incomplete and scheduled for completion in phase two of development.

- **Unit 3: Planning and Action (Phase II)**

Lesson One: Review outcome of presentations from unit two

Lesson Two: Phases of planning

Do we need a school evacuation plan? What other actions can reduce risk and vulnerability? Who needs to be involved? What resources do we need? How can we generate the necessary support?

Lesson Three: Activity implementation

Based on findings from lesson two: ie: link to facilities-based solutions, plus household water treatment, evacuation plans, 'Clean up the World'

Lesson Four: Activity implementation, continued

- **Unit 4: Monitoring, Maintenance, Evaluation and Scaling up (Phase II)**

Lesson One: What has changed, quantify outcomes

Lesson Two: Short and long term goals

Lesson Three: Sharing experiences and learning with other schools

Lesson Four: Peer-to-peer networking, regional event

Module #6: Livelihoods, skills for employability, linked to UNICEF Talent Academies (Phase II)

This module is specifically targeted to out-of school youth in post-conflict, post-natural disaster and other transitional situations. The objective is to create vocational opportunities in trades associated with implementation of the EERP. In conjunction with UNICEF Talent Academies and the Youth Environment Corps and with concept development in cooperation with UNDP, UNEP and UNV, this module will build capacity of adolescents to work with renewable energy technologies, green construction related skills, masonry, eco-sanitation, irrigation and other related trades.

*** Titles of Children's Environmental Health Modules are:**

Outdoor air pollution and me

Indoor air pollution and me

Water and me

About vector-borne diseases (Malaria, Dengue Fever, Lyme Disease, etc)

Ozzy Ozone: The ozone layer and me

Undernutrition, obesity and me