

Climate-Resilient Education Planning



Module for climate-resilient integrated
planning to enhance education for
children in states of India

Editor : Joydeep Ghosh

Design : Roopa Rampura

Photography : ©Shailendra Yashwant

DECEMBER 2017

Published by:

Climate Action Network South Asia (CANSAs)

c/o Vasudha Foundation, CISRS House,

14 Jangpura B, Mathura Road, New Delhi - 110014.

Website : www.cansouthasia.net

Email : info@cansouthasia.net

Available from: www.cansouthasia.net/

This training manual has been developed by Peepal Foundation for trainers and trainees of the government officials and CSOs to make them capable of formulating children- and women-responsive DRR and climate-resilient policies and integrated planning. Peepal Foundation would like to recognize the contributions of CANSAs, THANAL, Oxfam India, and GEAG, and in particular Shailendra Yashwant, Anoop Poonia, Santosh Patnaik, Pradeep Bharwad and Ajay Singh for their consistent and constructive feedback and support for preparing this manual. We are grateful to NGOs Anthra, WOTR and Swayam Shikshan Prayog in Pune for sharing their case studies. A special thank you to Dr Veena Joshi, Retd Senior Advisor (Energy), Embassy of Switzerland, for her invaluable inputs while preparing this document. The authors of various resource materials who were consulted for preparing the document also deserve thanks.

Climate change presents one of the greatest development challenges of our time. More than anything, climate change is already disproportionately affecting the world's poor. The spectre of drought, water shortages and flooding is affecting millions of Indian farmers, and rural and urban communities who will be unable to cope with the additional burden of a changing climate. Among the poor the most vulnerable groups are women and children, who constitute over 70% of climate induced disaster victims.

It is now clear that the eradication of poverty and inequality cannot be achieved without also addressing the causes and consequences of climate change. Climatic changes are undermining livelihoods, degrading vital natural resources, and putting lives at risk through increasing frequency and severity of climate-related disasters. A twin-track approach – curbing actions that are causing climate change, and learning to live with the now unavoidable climatic changes – is crucial.

Tackling the causes of climate change has numerous co-benefits for everyone. As climate change is caused by human economic activities that fail to 'cost in' economic, social, cultural, and environmental losses caused by increased risk and instability, with particularly devastating consequences for the most vulnerable across the world, it is important to focus on the causes and consequences of climate change as a politico-economic problem, not as an environmental problem.

A systematic and scientific approach for building children's and women's resilience to climate induced disasters is the demand of the day. The existing methods and tools for disaster risk reduction (DRR) which provide powerful capacities for adaptation to climate change (CCA) are to be strengthened to make them more climate resilient.

In India, many policies and schemes at national and state levels have been launched for dealing with climate change risk through CCA and DRR practices. India's development agenda is implemented through various state administered polities and schemes with guidance from the central government. The states will urgently need access to a sound knowledge base and experience on CCA to adapt their regular development work to enhance climate resilience. A key instrument to address climate change in most Indian states has been the existing state action plan for climate change (SAPCC). Within SAPCC, various departments of the state have policies and budgetary provisions for building climate resilient communities. But the vulnerabilities of children and women, especially, are neither taken into account nor have proper measures been adopted to address them. State policies need to be reviewed to identify the gaps in this regard, and then to have specific plans with budgetary provisions for the line departments.

To develop capacities of relevant government officials and CSOs for designing climate change adaptation and resilience building plans, budgets and interventions, for continued advancement of children and women's rights to sustainable development through education, training courses for line departments and CSOs should be organised to strengthen knowledge and skills on environmental sustainability and to develop effective policies for achieving the national targets of climate co-benefit with respect to addressing climate vulnerability of children and women in respect to food and nutrition. This training manual has been developed as source material for the trainers and trainees during training of government officials and CSOs in the states of Odisha, UP and Kerala to fulfil this objective.

The training manual has been organized into five chapters. The first chapter discusses key concepts of climate change and basic terminology, causes of climate change and its local and global impacts. Chapter 2 is more a sector-specific discussion in view of climate change. This chapter intends to analyse impact of climate change on education and delivery and continuity of education for children. It addresses challenges facing the education sector and the relationship between climate resilience and education, and how education is the answer to building climate resilience among women and children. The third chapter of the manual details out the national education programmes of the government of India and state governments' schemes for strengthening the education sector and making the system climate resilient. The fourth chapter is scenario-based planning by applying the climate lens for all education programmes and plans using information of climate impact on vulnerability and inherent risks. Chapter 5 of the manual has examples of some good practices and case studies such as disaster-ready safe schools, hygiene and life-skills education, school environment and environmental education, school as a community outreach centre, child-friendly schools etc. Chapter 6 defines a strategic framework for mainstreaming climate change adaptation in education with focus on women and children.

This manual covers issues in rural and urban education, and interdependent issues such as nutrition, livelihoods, as well as cross-cutting (e.g. gender and equity) issues. It also takes a wider approach to managing sources of uncertainty and risk in the education sector – of which climate change is one. The approaches and tools introduced potentially have wide applicability. It examines the status of the national flagship programmes: the Sarva Shiksha Abhiyan and the Mid-day Meal scheme, together with ICDS or Integrated Child Development Scheme, their role and preparedness in responding to climate induced disasters, and offers solutions towards building resilience within these programmes. It also considers expansion of the scope of the programmes to build climate resilience within communities, and empower women and children to deal with additional vulnerabilities associated with poverty and climate change in the longer term. The module would build the capacity of participants by explaining the linkages between education and climate change adaptation, subsequently to reduce their states' vulnerability to climate change.

The manual focuses on two cross-cutting issues – gender and children. It also takes a wider approach to managing sources of climate uncertainty and risk in the education sector. The approaches and tools introduced have potentially wider applicability, especially scenario-based planning. The need to mainstream and integrate other approaches such as DRR is also addressed in this module.

We hope the manual will serve the purpose to inculcate the ability of government officials and CSOs for designing climate change adaptation and resilience building plans, budgets and interventions to continue advancement of children's and women's right to health, survival and development.

Glossary	6
Acronyms	8
1. CHAPTER 1: INTRODUCTION AND OVERVIEW OF CLIMATE CHANGE	9
1.1 Key Sectors for Mainstreaming Climate Change Adaptation (CCA)	
1.4 Climate Change and Vulnerability	
1.5 India: Response to Climate Change	
2. CHAPTER 2: CLIMATE CHANGE AND THE EDUCATION SECTOR	18
2.1 Education context	
2.2 Impact of Climate Change on Education	
2.3 Community Coping Mechanisms and Their Effect on Education	
2.4 Addressing the Challenges Facing the Education Sector	
2.5 Building Climate Resilience is the Answer	
2.6 Education is Also Part of the Solution	
3. CHAPTER 3: THE NATIONAL EDUCATION SCHEMES: THEIR SUSTAINABILITY AND ROLE IN CLIMATE RELATED DISASTERS	26
3.1 India and the Education Sector	
3.2 The Education Sector and Climate Change: Impact of Drought on Education	
3.3 Introducing the National Education Schemes	
3.4 Impact of the Education Schemes on Learning Goals	
3.5 Building DRR and Climate Resilience in Education Sector Schemes	
3.6 Key Considerations in the Education Sector	
4. CHAPTER 4: SCENARIO-BASED PLANNING	38
4.1 Applying a 'Climate Lens' to the Education Sector Programmes and Plans	
4.2 Elements of a 'Climate Lens' Approach	
4.3 Benefits of a 'Climate Lens' Approach	
4.4 Other Considerations	
4.5 A Stepwise Approach to Applying a 'Climate Lens'	
4.6 Questions, Responses and Actions	
5. CHAPTER 5: GOOD PRACTICES IN EDUCATION, INNOVATIONS AND CASE STUDIES	47
5.1 Practical Interventions and Education Technologies	
5.2 Case Studies/Best Practices/Innovations in Education	
References	67
Annexures	69
About Partners	72

Adaptation: The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Capacity Development: The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions.

Contingency planning: A management process that analyses specific potential events or emerging situations that might threaten society or the environment and establishes arrangements in advance to enable timely, effective and appropriate responses to such events and situations.

Coping capacity: The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters.

Critical facilities: The primary physical structures, technical facilities and systems which are socially, economically or operationally essential to the functioning of a society or community, both in routine circumstances and in the extreme circumstances of an emergency.

Disaster: A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

Disaster risk: The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period.

Disaster risk management: The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

Disaster risk reduction: The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.

Early warning system: The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss.

Ecosystem services: The benefits that people and communities obtain from ecosystems.

Emergency management: The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps.

Emergency services: The set of specialized agencies that have specific responsibilities and objectives in serving and protecting people and property in emergency situations.

Hazard: A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Mitigation: The lessening or limitation of the adverse impacts of hazards and related disasters.

Natural hazard: Natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Preparedness: The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.

Prevention: The outright avoidance of adverse impacts of hazards and related disasters.

Public awareness: The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually and collectively to reduce exposure and vulnerability to hazards.

Recovery: The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

Resilience: The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Response: The provision of emergency services and public assistance during, or immediately after, a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Structural measures: Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard-resistance and resilience in structures or systems;

Non-structural measures: Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education.

Sustainable development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Vulnerability: The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

AWC	Anganwadi Centre
AWW	Anganwadi Worker
ASHA	Accredited Social Health Activist
BBBP	Beti Bachao Beti Padhao scheme
CCA	Climate Change Adaptation
CERF	Central Emergency Response Fund
CFS	Child Friendly Spaces
DEO	District Education Office or Officer
DRR	Disaster Risk Reduction
ECD	Early Childhood Development
GoI	Government of India
ICDS	Integrated Child Development Services
MoU	Memorandum of Understanding
MWCD	Ministry of Women and Child Development
NAPCC	National Action Plan for Climate Change
NGO	Non-Governmental Organisation
NM	National Mission
OoSC	Out of School Children
PHC	Primary Health Care
PTA	Parent-Teacher Association
RTE	Right To Education.
SAPCC	State Action Plan for Climate Change
SMC	School Management Committee
THR	Take Home Ration
ToT	Training of Trainers
UNICEF	United Nations Children's Fund
VDC	Village Development Committee
WASH	Water, Sanitation and Hygiene
WHO	World Health Organisation

INTRODUCTION AND OVERVIEW OF CLIMATE CHANGE

Key Learning Objectives:

- Describe climate change, its causes and main effects
- Understand the impact of climate change in India
- Describe how climate change is affecting the sectors of Health, Nutrition, WASH, Education, Livelihoods and food security, Child Protection, and Natural resource management.
- Understand climate change related vulnerability of children and women.

Key Learning Points:

- Climate change presents one of the greatest development challenges of our time.
- Economic damage caused by extreme weather events has increased substantially over the last few decades in India.
- India has reasons to be concerned about the impacts of climate change.
- Climate change is affecting the sectors of Health, Nutrition, WASH, Education, Livelihoods and Food Security, Child Protection, and Natural Resource Management.
- While climate change affects everyone, it is not gender or age neutral. It magnifies existing inequalities, reinforcing the disparity for children and women in their vulnerability to climate change, and their capability to cope with it.
- The 2008 National Action Plan on Climate Change (NAPCC) drawn up by the Government of India fails to recognise the gender dimensions of climate change, either explicitly or implicitly.
- However, state Governments are now beginning to reflect greater gender sensitivity in their SAPCCs.

1.1 Key sectors for mainstreaming climate change adaptation (CCA)

1.1.1 Health

Disasters frequently cause destruction of health facilities and paralysis of health services through physical damage to buildings and equipment, direct loss of health staff, and lack of awareness of procedures and resources to maintain operations in different circumstances, in which demand for healthcare is greater and more urgent. Secondary disasters occur when people's health is negatively affected by overcrowding in temporary shelters, inadequate post-disaster responses in sanitation, water supply and quality, and solid waste disposal.

Climate change is increasing the number and intensity of extreme weather events, leading to more frequent destructive impacts such as those described above, as well as heat stress and pneumonia in unprecedented hot and cold spells. Changes in climate also act as a multiplier of existing health risks caused by climate-sensitive diseases. Water-borne diseases such as bacterial and parasitic infections are more likely as a result of more extensive and longer periods of flooding and drought. Vector- and rodent-borne diseases such as malaria and dengue will increase in warmer, wetter conditions, and will affect new areas as global temperatures rise.

Climate change also causes various psychological impacts like acute or traumatic effects of extreme weather events; threats to emotional well-being; and chronic social and community effects of heat, drought, migration, and climate-related conflicts.

Mainstreaming DRR and CCA in health and care means considering disaster and climate change risks and including various measures to address them, in health and care programming.

1.1.2 Nutrition

Good nutrition and health is a vital component of a resilient population. Climate change threatens to reverse improvements made in childhood nutrition. Mapping how climate change is impacting local food and nutrition security in the present and future is also an important element the government will need to get to grips with.

Mainstreaming DRR and CCA would have to consider adaptation policies in the agriculture sector to include nutritional analysis that meets the nutritional needs of children, to map climate change and food insecurity trends and hotspots, and develop an early warning system for early action in the near-term, and information to inform policy makers about longer term anticipated trends.

1.1.3 WASH

In places where water and sanitation services have not been constructed with resilience in mind, hazards can destroy or paralyze them. Earthquakes, landslides, floods and storms, for example, can damage wells, tanks, piped water distribution systems and water tanks and disrupt solid waste collection systems. Floods can contaminate water sources and block distribution and collection networks. Droughts can cause water sources to dry up temporarily or even permanently, and prevent sewerage networks from functioning adequately.

All types of hazards can negatively affect hygiene practices that are dependent on a predictable supply of water and functioning sanitation services. In particular, in disaster situations when people displaced from their homes congregate in shelters or informal camps, the health risks are increased without adequate water and sanitation for domestic and personal hygiene purposes.

Climate change is already causing massive changes to the global water cycle. These include: changing precipitation patterns resulting in longer and more widespread droughts; receding glaciers and increased flooding; sea-level rise and salinity ingress in groundwater; greater intensity and frequency of extreme events; less predictability in water availability, quality and security etc.

These changes increase the likelihood of damage and disruption to drinking water and sanitation infrastructure and systems. Climate-induced water stress is also expected to cause competition and tension between different types of water users (e.g. pastoralists, agriculturalists, industry), potentially leading to migration, conflict and displacement.

Mainstreaming DRR and CCA in WASH means considering disaster and climate change risks and including various measures to address them, in WASH programming.

1.1.4 Education

High levels of disruption to education are caused not just by specific disaster events, but by chronic conditions and the cumulative impacts of repeated small-scale disasters. Culturally, communities seem to value children's education more than ever before, but when people are faced with limited options because of eroding viability of livelihoods and increased disaster impacts, it is often children and their education that suffers the most.

The education sector faces the challenges of how to deliver quality education in a context of increasingly unstable conditions with many disruptions; how to enable children to access education when rural livelihoods are so under threat and with high levels of migration to urban areas ill-equipped to meet their educational needs; and how to educate the children about disaster risk and climate change in a way that equips them to make appropriate choices about their lives and livelihoods in anticipation and in response to the changes they will be exposed to throughout their lives. Here, school teachers play a crucial role in developing students', and parents', understanding about climate change and its impacts, by helping students feel that they can act on climate change and assure their own futures, and by involving parents through the parent-teacher associations in activities that build climate resilience and help educate members of the community as well.

Mainstreaming DRR and CCA requires knowledge, requires being able to analyse information, and to be able to make forward-looking decisions. It requires incorporation of DRR, CCA and environmental education into the educational curriculum, having policies and measures to ensure resilience of resources and infrastructure to climate and non-climate disasters, such as floods, cyclones, and earthquakes to ensure minimum disruption to education services, for example, measures to retrofit schools unsafe for predictable flood, cyclone, and earthquake risks in both urban and rural locations.

1.1.5 Livelihoods and food security

Disasters and food insecurity are directly interconnected. Floods, cyclones and other hazards destroy agricultural, livestock and fishing infrastructure, assets, inputs and production capacity. They interrupt market access, trade and food supply, reduce income, deplete savings and erode livelihoods. Economic crises reduce real income, force the poor to sell their assets, decrease food consumption and reduce their dietary diversity. Disasters create poverty traps that increase the prevalence of food insecurity and malnutrition.

Climate change has profound and far-reaching effects on the environment, ecosystems, natural resources, economy and human life, by magnifying existing patterns of disaster risk and leads to scenarios that exceed the coping capacity of the humanitarian and development communities. Its most severe consequences are likely to be on the food security and livelihoods of agriculture-dependent populations in vulnerable communities. Long-term changes in the patterns of temperature and precipitation include shifting production seasons, increasing the supply variability and risks in the fishing sector, and the emergence of new animal and plant diseases.

The multiple threats to food and nutritional security and the clear link between shocks and hunger reveal the fragility of current food production systems and their vulnerability to disruptions. In order to break this cycle, it is necessary to protect livelihoods from shocks, and to make food production systems more resilient and more capable of absorbing the impact of, and recovering from, disruptive events and to secure sustainable development gains.

Sustainable livelihoods programmes typically assess the barriers that people face in improving their livelihoods, and design programme interventions to overcome these. For example, when rising temperatures increase crop water demand and weather is ever more unpredictable, farmers struggle to know when to cultivate the land, sow, and harvest. Likewise, when violent conflict forces people to migrate, they do not have access to the resources they are normally used to.

Migration may also increase competition for natural resources such as water and pasture between migrants and host communities. Urban populations, especially vulnerable households, often face food access problems. While these types of impact are almost universal, strategies for implementing possible solutions need to be rooted in an understanding of how people sustain their livelihoods, and implemented alongside those that aim to overcome the barriers that prevent people from improving their livelihoods.

In relation to livelihoods and food and nutrition security, mainstreaming DRR and CCA means considering disaster and climate change risks and including measures to address these risks, in programming for livelihoods and food and nutrition security. One example could be to expand the scope of the school mid-day meal scheme especially during climate-change related disasters to ensure nutrition security to the most vulnerable sections of society in times of stress.

1.1.6 Child Protection

Climate change is increasing children's vulnerability by eroding people's livelihoods and ability to provide for their family's needs, and by increasing the physical, emotional, and psychological risks of disasters. Families who have lost or are losing everything have few options, and it is the children who suffer the most in such situations. Some families migrate, exposing children to new challenges often in ill-equipped and unsafe urban slums, others send their children out to work, and others marry off their girls. The impacts of climate change through disasters, as well as slower erosion of people's assets and opportunities, has the potential to put back advances in child protection. It also means that who is vulnerable and where they are located may well change.

Climate change initiatives that could be considered include pilot projects to target prevention of post-disaster/disruption child labour and child marriage, initiatives to take cash transfers /social protection measures to keep climate change vulnerable children in school post climate disruption or disaster, child-centred social protection measures to be implemented as a vital component of the government's climate change adaptation strategy, provision of child and adolescent safe cyclone shelters, education and awareness-raising of the role of climate change in increasing the vulnerability of children, and ways to identify and reduce vulnerability of at-risk children.

1.1.7 Natural resources management

Disasters and natural resources management (NRM) have a complicated relationship, as disasters can both exacerbate and be intensified by existing environmental degradation. Deforestation, for instance, directly affects the environment by reducing the amount of groundwater available downstream and destroying the natural habitat for wild animals and birds; it also increases floods, drought and climate change and causes soil erosion because trees help in binding soil with their roots. Not only can NRM support adaptation to climate change and buffer communities from some of the worst impacts of climate-related disasters, it can also offer significant opportunities to reduce carbon emissions.

Mainstreaming DRR and CCA in NRM means considering disaster and climate risks and including risk reduction measures in NRM programming.

1.2 Climate Change and Vulnerability

Who is most vulnerable to climate change, and why?

- Those who depend on climate-sensitive resources and ecosystems for their families' livelihoods, such as agriculture, fisheries, and forests.

- Those who live in marginalised and more hazard prone areas, such as flood plains, urban slums, and deforested hillsides.
- Those with limited assets and political voice to enable them to respond to the impacts of climate change (lower adaptive capacity).

1.2.1 Climate Change and Children

In every crisis, children are the most vulnerable. Climate change is no exception. As escalating droughts and flooding degrade food production, children will bear the greatest burden of hunger and malnutrition. As temperatures increase, together with water scarcity and air pollution, children will feel the deadliest impact of water-borne diseases and dangerous respiratory conditions. As more extreme weather events expand the number of emergencies and humanitarian crises, children will pay the highest price. As the world experiences a steady rise in climate-driven migration, children's lives and futures will be the most disrupted.

- Anthony Lake, Executive Director, UNICEF (2015)

Climate change and environmental degradation are already harming children, especially those that are most disadvantaged. Unless action is taken, future impacts will be far more dramatic, undermining much of the progress made for children over the last decades. Each of the seven Outcomes Areas of the UNICEF Strategic Plan 2014-2017 – health, nutrition, HIV, water and sanitation, child protection, social inclusion and education – is affected in some way by climate change and/or environmental degradation.

- UNICEF Strategic Framework on Environmental Sustainability for Children 2016-2017

Global discussions and agreements on climate change rarely include children and young people, who both disproportionately suffer the consequences of a rapidly changing climate, yet also offer innovative solutions to reduce greenhouse gas emissions (climate change mitigation) and adapt to climate change. Children and women are among the most vulnerable, and face the brunt of the growing impact of natural and human induced disasters. Due to their diverse specific vulnerabilities (physical conditions, role and status defined by socio-political processes, limited access to resources, power and education, including access to life-skills training, etc.), they systematically constitute over 70% of disaster victims.

The adverse effect of climate change is already visible among these groups, and risks further jeopardizing their natural development and exacerbating pre-existing vulnerable conditions to become a life-long threat impeding their well-being through recurrent shocks and stresses. It is therefore imperative to focus particular action in reducing vulnerabilities and exposure to disaster and climate risks through the development of their own capacities and those of government departments, particularly at the State levels, who have a primary responsibility to address disaster risks and provide safe and secure living conditions for all citizens.

Making sense of the changing and unsafe conditions, and taking planned and organized action for maintaining continuum of care for children is still not an established policy or practice. Institutions responsible for planning and programming for children are yet to be included in the mainstream work on climate change mitigation or adaptation. Climate change is an issue of vital importance for children, not just because they are one of the most affected groups right now, but also because their future – and their children's future – will be so fundamentally influenced by what actions are taken now to meet this challenge.

The types of climate risks confronting children are diverse, ranging from direct physical impacts, such as cyclones, storm surges and extreme temperatures, to impacts on their education, psychological stress and nutritional challenges:

- Cyclones, floods, rising sea levels, tidal surges, and river erosion are damaging and destroying infrastructure critical to children's well-being, including schools, health facilities, latrines, houses, and roads.
- Floods, increasing salinity, and droughts are destroying crops and trees, disrupting water systems, and contaminating water resources, reducing children's access to safe water and nutritious food.
- Seasonal shifts, salinity, increasing temperatures and more erratic rainfall patterns are eroding livelihoods, increasing poverty and leaving families struggling to meet their most basic needs.
- Rising temperatures and changing rainfall patterns are exacerbating the spread of vector-borne diseases such as dengue, which disproportionately affects children.
- Land loss from flooding and river erosion, dwindling water supplies, and failing climate-sensitive livelihoods are increasing migration, disrupting families and increasing vulnerability of displaced children.

These impacts affect children far more severely as compared to adults. Children are more vulnerable to vector-borne diseases than adults; under-nutrition and diarrhoeal diseases can much more easily lead to severe and often dire consequences in children; and the physical dangers of disasters pose unique threats to young bodies and minds. Children suffer the effects of climate change and climate change policies longer than adults, making them vital stakeholders in today's decisions about climate change responses.

1.2.2 Climate Change and Women

Indian society is segregated in multiple ways, by caste/class, gender, wealth, poverty and religion. An entrenched patriarchy and gender divisions, which value boys over girls and keep men and women and boys and girls apart, coupled with child marriage, contribute to the creation of a society in which sexual abuse and exploitation of women, particularly 'untouchable' women, is an accepted part of everyday life.

India has performed poorly in removing gender-based disparities, ranking 114 out of 142 countries according to the World Economic Forum's 2014 Gender Gap Index. In 2015, only 12.2% of parliamentary seats were held by women and just over one quarter of adult women (27%) received some sort of secondary education, compared with 56.6% of their male counterparts. Female participation in the labour market is 27%, compared with 79.9% for men.

Gender issues in the context of climate change

While climate change affects everyone, it is not gender neutral. It magnifies existing inequalities, reinforcing the disparity between women and men in their vulnerability to climate change, and their capability to cope with it. Women, who form the majority of the world's poor, tend to be more vulnerable to the effects of climate change and are being affected in their multiple roles as food producers and providers, as guardians of health, care givers, and economic actors. They are more likely to become direct victims (through death and injuries) of climate-related disasters, such as hurricanes and flooding, because they are less likely to be able to swim, and are more likely to be at home when such events occur. Drought, deforestation, and erratic rainfall cause women to work harder to secure resources (such as food, water, and fuel) and mean that women have less time to earn an income, get an education or

training, or participate in decision-making processes. Families affected by poverty, many of which are headed by females, often live in more precarious situations: on low, flood-prone lands or on steep slopes.

Climate change disproportionately increases women's time burden.

These include:

- After a flooding event, women have to spend additional time collecting water, cleaning their home, and ensuring family well-being.
- Coastal flooding may lead to increased salinization of household and business water sources, which is a particular problem in coastal areas. As a result, water security and conflict will become bigger issues and multiple agencies will become involved.
- With droughts, women need to spend more time and calories on water collection and suffer physical strains from heavy loads.
- As water-borne or sanitation-related illnesses increase, so do demands for women's time for family care-giving.

Climate change increases conflicts over competing water uses.

Communities are increasingly faced with allocating scarce water across multiple uses and users, including potable water for humans and animals, irrigation, water for hydropower and other energy, and business usage. With less involvement in community water decision-making and planning, women's priorities may get less attention.

1.5 India's Response to Climate Change

1.5.1 National Action Plan on Climate Change (NAPCC) and National Missions

The National Action Plan on Climate Change (NAPCC) is a comprehensive action plan which outlines measures on climate change related adaptation and mitigation while simultaneously advancing development. Twelve Missions form the core of the Plan, representing multi-pronged, long termed and integrated strategies for achieving goals in the context of climate change. The focus of the missions will be on promoting understanding of and action on climate change, adaptation and mitigation, energy efficiency and natural resource conservation that have implications for children also. The Missions are:

National Solar Mission

- Make solar energy competitive with fossil-based energy options.
- Launch an R&D programme facilitating international co-operation to enable the creation of affordable, more convenient solar energy systems.
- Promote innovations for sustained, long-term storage and use of solar power.

National Mission for Enhanced Energy Efficiency

- The Energy Conservation Act of 2001 provides a legal mandate for the implementation of energy efficiency measures through the mechanisms of The Bureau of Energy Efficiency (BEE) in the designated agencies in the country.
- A number of schemes and programmes have been initiated which aim to save about 10,000 MW by the end of the 11th Five-Year Plan in 2012.

National Mission on Sustainable Habitats

- Make habitats sustainable through improvements in energy efficiency in buildings, management of solid waste and a modal shift to public transport.

- Promote energy efficiency as an integral component of urban planning and urban renewal through its initiatives.

National Water Mission

- Conserving water, minimizing wastage, and ensuring more equitable distribution and management of water resources.
- Optimizing water use efficiency by 20% by developing a framework of regulatory mechanisms.

National Mission for Sustaining the Himalayan Ecosystem

- Empowering local communities especially Panchayats to play a greater role in managing ecological resources.
- Reaffirm the measures mentioned in the National Environment Policy, 2006.

National Mission for a Green India

- To increase ecosystem services including carbon sinks.
- To increase forest and tree cover in India to 33% from current 23%.

National Mission for Sustainable Agriculture

- Make Indian agriculture more resilient to climate change by identifying new varieties of crops (example: thermally resistant crops) and alternative cropping patterns.
- Make suggestions for safeguarding farmers from climate change like introducing new credit and insurance mechanisms and greater access to information.

National Mission on Strategic Knowledge on Climate Change

- Work with the global community in research and technology development by collaboration through different mechanisms. It also has its own research agenda supported by climate change related institutions and a Climate Research Fund.
- Encourage initiatives from the private sector for developing innovative technologies for mitigation and adaptation.

Wind Mission

- Modelled on the National Solar Mission, it will improve the renewable share in the energy basket.
- The Wind Mission has an initial target of producing about 50,000–60,000 megawatts of power by 2022, the year the 13th five-year plan comes to an end. India already has about 22,000 megawatts of installed capacity in wind energy.

Mission on Coastal Ecosystem

- Prepares an integrated coastal resource management plan and map vulnerabilities along India's nearly 7,000 kilometres of shoreline.

National Health Mission

- Deals with the effects of climate on human health and build up capacities to respond to these and to health emergencies arising out of natural disasters.

Waste to Energy Mission

- Will incentivise efforts to harness energy from all kinds of waste and is again aimed at lowering India's dependence on coal, oil, and gas for power production.

1.5.2 State action plans on climate change in India

In 2009 the Government of India directed all state governments and union territories to prepare State Action Plans on Climate Change (SAPCC), consistent with the strategy outlined in the National Action Plan on Climate Change (NAPCC).

Twenty two states in India have since initiated the process of drafting SAPCCs, putting in motion a dynamic process involving tie-ups with multiple stakeholders, formation of new committees, cross sectoral deliberations, workshops, and significantly, the marriage of new research and plans with existing policy programmes. The state level action plans are envisaged to be an extension of the NAPCC at various levels of governance aligned with the 8 National Missions.

Procedurally, it has been a sizable effort at mapping regional climate vulnerability, examining future projections, arriving at sectoral implications, and framing actionable strategies. Environmental policy-making on such a grand scale however, is little studied and understood.

1.5.3 Other government instruments promoting climate change policy

There are other instruments that guide climate change management. The 11th five-year plan (FYP) of India (2007-2012) recognized the urgent need to balance economic growth and environmental stability. It stated that:

- (1) Since a substantial adverse change in climate appears unavoidable even with the optimal mitigation response, the process of adaptation to climate change must have priority;
- (2) All programmes and projects must have sustainable development and disaster risk reduction built in;
- (3) Mainstreaming disaster management in development planning is vital;
- (4) Every development plan of a ministry/department should incorporate elements of impact assessment, risk reduction and the 'do no harm' approach.¹ It promoted a more sustainable and inclusive growth and focused on both climate change adaptation and disaster risk reduction.²

Convergence of Green India Mission and MGNREGS: In 2015, the Ministry of Environment and Forests issued guidelines to all states for convergence of Green India Mission (GIM) and the MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme). This allowed climate change and development to be viewed with one perspective and linked both mitigation and adaptation activities.³

¹ Eleventh Five Year plan of India (2007-12), Inclusive Growth, Volume I, Planning Commission, Government of India available at http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11_v1/11th_vol1.pdf

² Ravindranth D, Chaturvedi R.K and Dr. Kattumuri R- Mainstreaming Adaptation to Climate Change in Indian, Policy Planning available at <http://www.lse.ac.uk/asiaResearchCentre/files/ChaturvediKattumuriRavindranath.pdf>

³ www.worldbank.org/en/news/feature/2013/06/19/india-climate-change-impacts

CLIMATE CHANGE AND THE EDUCATION SECTOR

Key Learning Objectives:

- To understand risks and uncertainties in the Education sector due to climate change in Indian context
- To understand climate change induced disruptions
- To understand potential (direct and indirect) impacts of climate change for delivery of education

Key Learning Points:

- Impact of climate change in Education service delivery due to climate-change induced disruptions are:
 - o School infrastructure collapse – building, toilets
 - o Inability to access school building due to flooding (staff and students)
 - o Disruption of mid-day meal scheme provision
 - o Safe drinking water unavailable
 - o Absenteeism of children due to migration
- Responses led by government Education department and Women and Child Development ministry need to be robust to climate risks alongside other pressures on resources, systems and services (so-called stressors) such as demographic change, economic transitions, increasing competition over limited resources, and conflicts.
- Integrating climate resilience into Education strategies and plans is an important entry point in working towards and delivering more sustainable Education services.
- The effects of climate change can be grouped into four categories:
 - o Increasing intensity of rainfall
 - o Greater rainfall variability
 - o Longer term decline in rainfall and run off
 - o Sea level rise

2.1 Education context

The Education sector is directly and indirectly challenged in many ways by extreme weather events and climate-related disasters. This translates into direct negative impacts on continuity of education, completion of school curriculum and hence learning outcomes. The indirect impacts are due to disruption of WASH facilities (lack of drinking water, sanitation and hygiene services), and the mid-day meal scheme (lack of nutrition). Climate change will place additional stresses on delivering and sustaining quality education and hence impact learning outcomes, and today's evidence suggests that people living in developing countries will be worst hit by changes, particularly those living in marginalised and vulnerable environments.

As the risks from a warming world intensify, so will the consequences for humanity and the natural environment—from disruptions in food, water, and energy supplies to increases in damage from extreme weather and sea level rise.

Climate variability and change

- Projections indicate warming by the end of the 21st century of between 0.3 and 5°C (Celsius).
- With a 2°C global temperature rise, up to 10 million more people could be affected by coastal flooding each year. With a 4°C temperature rise, a 50% decrease in water availability could occur in East Africa and the Middle East.
- In developing countries, the incidence of diarrhoea is expected to increase by around 5% for every 1°C increase in temperature.
- US\$2.5 trillion economic losses from disasters so far this century – 70% relate to floods and droughts.
- Since the original Rio Earth Summit in 1992, floods, droughts and storms have affected 4.2 billion people (95% of all people affected by disasters).

Source: IPCC

2.2 Impact of Climate Change on Education

- Climate change and recurring disasters region wise are already adversely affecting continuity of education in the following ways:
- In some regions, periods of excessive heat already prevent students from attending school, in other areas, where drought-parched grounds are unable to absorb rains, flash floods can make roads impassable, preventing students from reaching schools.
- Disruptions to electricity, a potential side effect, can force schools to suspend activity, while in extreme cases, severe weather can actually damage infrastructure.
- School absenteeism and drop out are higher in flood-prone areas. Flooding inhibits completion of school programmes, with schools located in flood-prone areas subject to at least one and a half months of closure due to flooding.
- Climate related disasters such as floods, landslides, have destroyed school infrastructures, and reconstruction and refurbishment have incurred huge costs at the expense of continuity of education.
- Migration due to loss of livelihood in climate change affected areas takes children away from schools.
- Interrupted and/or impeded access to education has a detrimental impact on learning outcomes, reducing the likelihood that children and young people – especially girls – will be able to break the cycle of poverty.
- The cumulative effect of these disturbances on students' education performance is not well known, but it is certain that interruptions in attendance can only have detrimental consequences for learning outcomes.

In the near future, impacts will be seen in the direct effects on educational provision (schooling and regular nutrition through the mid day meal) associated with increasing incidence of severe weather events (e.g. drought, flooding, cyclones, heat waves). Over the longer term, incremental environmental changes (e.g., sea level rise, salination, changes in season patterns, desertification, soil erosion, species loss etc.) are likely to result in deteriorating livelihoods, leading to poverty and migration, which impact upon both household expenditure on schooling and the nutritional status of children. Emergency responses to extreme weather events and their aftermath thus disproportionately affect children, their well-being and care, and their ability to participate in good quality, equitable education.⁴

⁴ www.worldbank.org/en/news/feature/2013/06/19/india-climate-change-impacts

Climate change also impacts education in other indirect ways. A warmer climate alters the geographic range of disease vectors, such as mosquitoes, thus exposing new human populations to diseases, such as malaria and dengue, for which they are unprepared. Disruptions to existing agricultural practices, another secondary effect of climate change, will lead to more widespread malnutrition because of higher food prices. Together, these have a combined impact on children that is particularly troublesome from an educational point of view.

There is strong evidence to suggest that school-age children who suffer from protein-energy malnutrition, hunger, or who lack certain micronutrients in their diet (particularly iron, iodine, or vitamin A) or who carry a burden of diseases such as malaria, diarrhoea or worms do not have the same potential for learning as healthy and well-nourished children and that they are more likely to repeat grades, drop out early and fail to learn adequately due to poor attention, low motivation and poor cognitive function. (CREATE, 2008).⁵

Climate Effect	Hazard	Impact on Education sector
Decrease in precipitation	Drought	- Children taken out of school and sent to work - Discontinuity of schooling due to migration
Increase in precipitation and severe weather	Flooding	Temporary shut-down of schools leading to break in schooling and lowered learning outcomes
Increase in temperature	Heatwaves	Children stay away from school due to greater risk of disease, and lack of water
	Melting and thawing of glaciers, snow, sea ice and frozen ground	Reduced water availability leading to risk of disease, and absenteeism from school
Sea-level rise	Flooding and saline intrusion into freshwater aquifers	Reduced water availability leading to risk of disease, hence absenteeism from school

2.2.1 Impact of disaster and climate change on delivery and continuity of education

Climate change (and disasters) damage asset and environment and disrupt delivery and continuity of education and related services such as the mid-day meal.

- Infrastructure collapse – cyclone, tidal surge or riverbank erosion may damage school buildings and toilets; school infrastructure may collapse. It could reduce children's access to school premises, and to a safe environment for learning.
- Contamination by flood water – Sewage from inundated school toilets could spread and contaminate environment and water sources. In such situations, drinking water becomes very scarce, and risk of infection is high.

⁵ <http://blogs.worldbank.org/arabvoices/education-and-climate-change-middle-east-and-north-africa>

- Displacement of homes – Cyclone and flood force people to leave their houses; people living in low lying area have to shift to higher ground. Temporary shelters rarely have arrangements for adequate supply of safe water or sanitation facilities. Moreover, displacement affects life and livelihood, and education is among the first to be impacted, with children (especially girls) forced to stay at home and help with housework or tending to younger siblings, or even sent to work for paltry sums to augment lack of resources.
- Diminishing supply of ground water – Climate change may cause ground water table to drop, especially in drought prone areas. While this is mostly induced by human actions such over-extraction of ground water for agriculture, it results in lack of potable water and hygienic latrines in schools, leading to discontinuity of children coming to school.
- Salinity intrusion and health hazards – During cyclones, saltwater intrusion forces people to migrate in search of water and livelihood, again causing discontinuity of education among the children. Saline environment and saline water causes various skin diseases and has harmful consequences on reproductive health, leading to higher dropout rates especially among girl children.

To ensure continuity of education in climate change disaster affected areas, it is crucial to look at ways to retrofit school infrastructures for disaster-resilience, ensure continuity of the mid-day meal scheme, and provision of safe drinking water and hygienic toilet facilities within school premises, that can sustain even during disasters.

2.3 Community Coping Mechanisms and Their Effect on Education

Across the world, coping mechanisms adopted during climate related stress (in this case, drought) exhibit a similar pattern. In Zimbabwe, Africa, for example, affected families borrowed money to buy food, begged for food from neighbours, and withdrew their children from school. Among the Oraon tribe (a BPL community) in Sundargarh district of Odisha, it was observed that there was reduced food intake and a change in pattern of food consumption, there was a change of occupation due to failed agriculture, with families selling or mortgaging their land and assets, and temporary migration for livelihood. In Delhi slums, families reduced size and number of meals a day, bought less expensive foods; they borrowed food/money from friends or relatives, bought food on credit or relied on food aid, or ate at religious places, and withdrew their children from school to save on school fees, and sent them to work. In case of extreme insecurity, they were observed to migrate.⁸

Table 11: Progression of Drought and Response⁵²

Drought Types & Probable Period	Early Warning Signs	Coping Strategies Adopted by Affected Populations (large scale)	Conventional Public Response	
			From the Central/ State/ District Government (large scale)	From the NGOs (limited scale)
Socio-economic Drought March-May	Inflation Absenteeism from schools Migration	Seeking loans from private moneylenders Pawning, borrowing Distress sale of livestock & assets Distress migration, with family Reduced expenditure on food, health and education	Drought mitigation Intensive labour and mechanized earthwork Extended MNREGS Increased PDS allocations, Crop loan waivers Mid-Day-Meals ICDS Outbreak control Credit provision Summer schools	Rainwater harvesting work Migration Monitoring Water quality improvement & provision fodder & food camps

⁵² Adapted from Drought: A Humanitarian Emergency, RedR India/ Deepak Malik

⁸ “Conclusions Coping Strategies Adopted by Households to Prevent Food Insecurity in Urban Slums of Delhi, India”, Palak Gupta¹, Kalyani Singh¹, Veenu Seth¹, Sidharth Agarwal², Pulkit Mathur¹ Department of Food and Nutrition, Lady Irwin College, University of Delhi, New Delhi, India,²Urban Health Resource Centre, New Delhi, India.

Drought has a disruptive effect on education of children. They end up working after school hours in exploitative conditions or migrating for cheap labour.

There is a lack of community-based protection mechanisms to look after the 'left-behind' children, and drought conditions cause an increase in the risks towards safety and security of children, particularly girls. Girls tend to get withdrawn from schools to support their mothers in fetching water, doing household chores and tending to younger siblings.

Caste and class discrimination denies children and women access to minimal water resources. Drought conditions compel women to spend extra hours and trudge extra distances to fetch water. This adds to their daily strenuous routines of household chores, besides providing a helping hand at the farm or available non-farm income generation avenues.

Women in rural India wake up the first in the family to tend to daily domestic chores and sleep the last. During the droughts, they walk the farthest to fetch water but eat the least to ensure that the children and males are fed.

This takes a toll on the menstrual cycle and reproductive and overall health of women during scarcity. Water scarcity compromises hygiene, especially for girls and women, as the little water available is prioritised for drinking and cooking. Continued undernourishment of women during the scarcity puts their health and wellbeing at risk. The administrative system tends to augment the indigenous coping capacities through external support, bringing a multi-faceted, multi-stakeholder relief machine into operation. This includes the conventional delivery of tanker water supplies, food distribution and employment generation.

Anganwadi centres and mid-day meals are initiated to prevent starvation, malnutrition and consequent vulnerability of children and pregnant women or lactating mothers to diseases. Good governance plays a vital role in effectively minimizing risks and impacts of drought. However, lack of systems that bank on knowledge management for effective strategizing, robust architecture for enforcement of regulations, real-time monitoring, comprehensive planning and coordination of stakeholders for convergence lead towards farmers falling into debt traps and risking overall protection and welfare of women and development of children.⁹

The administrative system supplements the indigenous coping capacities through external support, providing a multi-faceted, multi-stakeholder relief mechanism, which includes the conventional delivery of tanker water supplies, food distribution and employment generation. Anganwadi centres and mid-day meals are initiated to prevent starvation, malnutrition and consequent vulnerability of children and pregnant women or lactating mothers to diseases. Good governance plays a vital role in effectively minimizing risks and impacts of drought. However, lack of systems that bank on knowledge management for effective strategizing, robust architecture for enforcement of regulations, real-time monitoring, comprehensive planning and coordination of stakeholders for convergence lead towards farmers falling into debt traps and risking overall protection and welfare of women and development of children.¹⁰

⁹ From: Drought in India 2015-16. When coping crumbles: A Rapid assessment of the impact of drought on children and women in India, Unicef.

¹⁰ Drought in India 2015-16. When coping crumbles: A rapid assessment of the impact of drought on children and women in India, Unicef.

2.4 Addressing the Challenges Facing the Education Sector

The immediate response to build a sustainable and climate resilient education sector entails a better general understanding of the concept of climate change, as well as awareness of its impact at a regional and local level, both of which will:

- allow policy-makers to better climate-proof education systems, and
- help school communities be better prepared in the event of weather-related disasters.

Climate-proofing education' includes elements such as reviewing existing infrastructure to ensure that it is safe in the event of a climate-related disaster, and having a school disaster risk management plan in place. For new schools, it would involve carrying out better risk assessments when making decisions about school location and selecting more suitable infrastructure, designed to withstand severe weather events; and at the same time, incorporate features that are more adapted to the evolving climate of the region, with buildings that are more energy efficient, that rely on the abundant regional potential of solar power for example, that capture rainwater for reuse, and so on. In these ways, the physical infrastructure of education systems would become more climate-resilient.

In short, elements for a sustainable and climate resilient education sector strategy and plan would include:

- Uninterrupted schooling and sustainability of the mid day meal programme in emergencies will ensure more children stay in a safe, secure, and learning environment.
- Development of school infrastructures as climate resilient disaster shelters and 'safe places' during emergencies.
- Better preparedness and effective response strategies – evacuation facilities if needed, logistical challenges addressed, accelerated response for scale and shortage of time.
- Climate Change Education (CCE) conceptualized as more than simply climate change science, and to be effectively integrated as a central theme within Environmental Sustainable Development.¹¹

2.5 Building Climate Resilience is the Answer

“Climate change is a 'threat multiplier,' . . . and resilience is the answer to addressing the climate challenge.” —Sherri Goodman, public policy fellow, Woodrow Wilson Center, and former Deputy Secretary of Defense for Environmental Security

“Anticipate—do not wait for crisis.” —Leaders' Roundtable on Managing Risks and Crises Differently, World Humanitarian Summit, Istanbul, May 2016

While the changing climate will impact everyone in some manner, poor citizens in developing countries will suffer the most. They tend to live in places more exposed to climate risks, and they have fewer resources to adapt to changing conditions or recover from extreme weather events. Furthermore, governing institutions often lack the tools, resources, and other capacities that they need to effectively serve these populations, and the people themselves have limited power, voice, and access to information.

¹¹ www.worldbank.org/en/news/feature/2013/06/19/india-climate-change-impacts

Climate Resilience facts

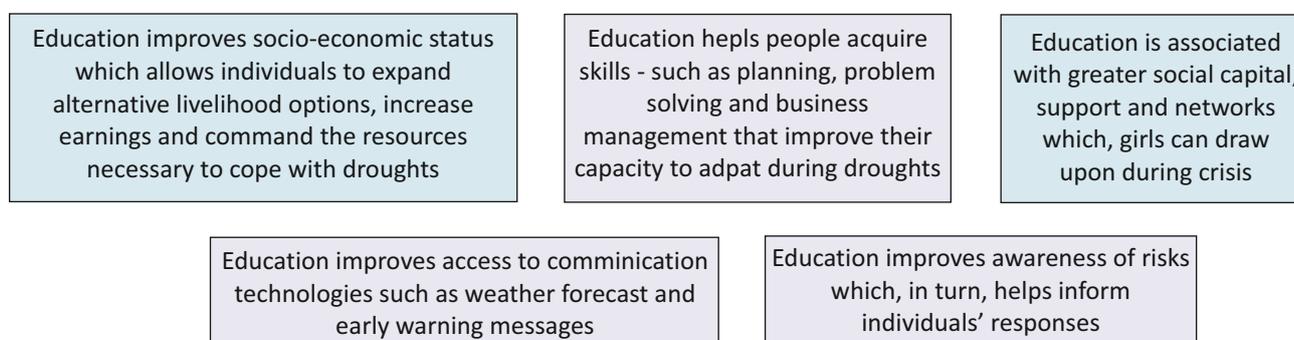
- Developing countries will need more than three times the adaptation finance currently available. (UNEP 2014, CPI 2014)
- By 2100, climate change is expected to increase the number of poor people in both developed and developing countries, jeopardizing sustainable development. (IPCC)
- Drought could increase by more than 20% in most of the world by 2080, and the number of people exposed to droughts could increase by 9-17% in 2030 and 50-90% in 2080. (World Bank)
- The number of people exposed to river floods could increase by 4-15% in 2030 and 12-29% in 2080. (World Bank)
- At the global level, warming of 2°C or 3°C could increase the number of people at risk for malaria by up to 5%, or more than 150 million people. (World Bank)

Resilience can be defined as the ability of people and systems to anticipate, adapt to, and recover from the negative effects of shocks and stresses (including natural disasters and climate change) in a manner that reduces vulnerability, protects livelihoods, accelerates and sustains recovery, and supports economic and social development, while preserving cultural integrity.¹² Climate resilient development promotes measures and approaches that will deliver benefits now as well as under potential future climate changes scenarios, and enhancing disaster risk prevention and preparedness is often a first line of defence in adapting to future climate change.

2.5.1 Relationship between Education and Resilience

Education does more to reduce deaths from climate-related disasters than economic growth. A study (R. Mutarak and W Lutz, 2014) has shown that education helps reduce vulnerability to disasters and enhances adaptation to climate change. Improvements in education can give people the skills and knowledge to be better prepared for, and better able to recover from, natural hazards. For example, better-educated people in Cuba, Haiti and the Dominican Republic were faster at responding to hurricane alerts and recuperated more quickly once one had struck. The results suggest that rising GDP has not reduced the number of deaths from climate-related disasters in the past four decades, while having a greater number of women in education has.

The figure below has been adapted from a flowchart showing how education reduced vulnerability to crises such as droughts.¹³



¹² Interpretations and definitions will vary across organisations, for example “The ability of children, households, communities and systems to anticipate, manage, and overcome shocks and cumulative stresses” (UNICEF) and “The ability of a social or ecological system to resist, absorb, accommodate and recover from the effects of a (climate) hazard in a timely and efficient manner while retaining the same basic structure and ways of functioning” (GWP)

¹³ “Is Education the Key to Reducing Vulnerability to Natural Disasters and Hence Unavoidable Climate Change?”, R. Mutarak and W Lutz, *Ecology and Society* 19, no 1(2014): 42.

At a global level, the Millennium Development Goal (MDG) 2 to “ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling” is still a distant dream. While enrolment in primary education in developing regions reached 91% in 2015, 57 million children of primary school age were still out of school. However, literacy rate improved globally among youth aged 15 to 24, with gap between women and men having narrowed. In developing regions, children from poorest households are four times as likely to be out of school as the richest households. In countries affected by conflict, proportion of out-of-school children was 36% in 2012.

The Sustainable Development Goal (SDG) 4 to “ensure inclusive and quality education for all and promote lifelong learning” built on the MDG2 recognizes that obtaining a quality education is the foundation to improving people's lives and sustainable development. Education is the key that will allow many other Sustainable Development Goals (SDGs) to be achieved (among them being SDG 13: Climate Action). When people are able to get quality education they can break from the cycle of poverty. Education therefore helps to reduce inequalities and to reach gender equality. It also empowers people everywhere to live more healthy and sustainable lives. Education is also crucial to fostering tolerance between people and contributes to more peaceful societies.¹⁴

2.6 Education is Also Part of the Solution

While building up the resilience of education systems, it is critical to focus on the role education itself plays in adapting to climate change. Education – formal and non-formal, primary to tertiary and adult education – has an important role to play in addressing climate change. Education is recognized as an important first step in increasing resilience.

Indeed, Article 6 of the United Nations Framework Convention on Climate Change, called the New Delhi work programme (2002-2012), proposes that education, training and public awareness are integral to climate change responses. For the moment, climate change – if it is taught in schools at all – is usually only a part of science classes in middle and high schools.¹⁵

The role of education to encourage sustainable development and combat climate change, should be a combination of the following:

- Teach people to adopt appropriate behaviours, like recycling, conserving energy, or reducing one's carbon footprint,
- Encourage them to develop the skills to confront and overcome rapid change and uncertainty, through critical thinking and problem-solving,
- Promote certain values, such as respect for self, for others and for the environment.

...the longer and more challenging task is to develop education systems that equip learners with the requisite skills, knowledge and attributes to deal with future challenges. In many ways [this] is nothing new, but is at the heart of the very purpose of both education and development agendas. What has changed, however, is the nature and urgency of the challenges faced – locally, nationally, and globally (Bangay and Blum, 2009).

¹⁴ “Quality Education: Why it Matters”, www.un.org/sustainabledevelopment/

¹⁵ <http://blogs.worldbank.org/arabvoices/education-and-climate-change-middle-east-and-north-africa>

THE NATIONAL EDUCATION SCHEMES: THEIR SUSTAINABILITY & ROLE IN ADDRESSING CLIMATE IMPACTS

Key Learning Objectives:

- Understand the institutional arrangements for delivering education – the sectoral set-up in India
- Understand key strategies and principles for managing the education sector in climate-change induced uncertainty
- Learn about key considerations in ensuring education delivery i.e. mobilising resources and accountability

Key Learning Points:

- Details of institutional setup for delivery of education in India
- Key strategies for delivery of uninterrupted education in climate change induced uncertainty
- Principles in managing uncertainty

3.1 India and the Education Sector

Education helps shape the future

It is universally acknowledged that development and education go hand in hand. Society cannot progress and transform itself without investing in educating its citizens, and the foundation for economic and social development is laid through elementary education.

In 2000, 191 member countries of the United Nations together committed to achieving eight Millennium Development Goals (MDGs) by 2015; “to achieve universal primary education” was the second MDG, and it was accepted that education was vital to meeting all other development goals.

In 2009, the Indian parliament enacted the Right of Children to Free and Compulsory Education Bill, to provide education to all children between 6 to 14 years of age. The bill also reserves a fourth of seats in private schools to weaker sections of society. With the Right to Education (RTE) Act, 2009, India made a momentous leap towards universalising elementary education. The RTE Act is anchored in the belief that values like equality, social justice and democracy and the creation of a just and humane society can be achieved only through provision of inclusive elementary education for all.

However, change in policy does not immediately translate into practice - focused and consistent efforts are needed by states and departments of school education to ensure that good quality education is made available to every child. It is a huge challenge to ensure consistent, equitable, quality education for all.

3.2 The Education Sector and Climate Change: Impact of Drought on Education

Drought as a climate change impact has a drastic effect on continuity of education. Village schools have extended summer vacations due to severe heat conditions. As a result, academic operations are discontinued. During early summer months, school dropout cases marginally increased as children accompanied their parents, who migrated in search of livelihoods.

Drought-induced scarcity exacerbates the situation as more and more children are required to contribute towards the family, either in terms of supporting the incomes that have gone meagre due to loss in agricultural productivity or in terms of supporting the harnessing of water as and when the exogenous supplies arrive. Attendance at schools is hampered by the fact that children are required to spend time in supporting families, fetching water, grazing livestock, sometimes through wage earning. Younger children are forced to accompany parents who migrate in search of better livelihood options. Ultimately, the children's education suffers.

Dropout rates for girl students is higher. The absence of schools close to home, lack of women teachers, and lack of early childhood care contribute to girls dropping out from school. Lack of adequate and appropriate (separate and clean) WASH facilities at schools also force girl students out of the educational system. Further, as a conventional practice in many parts of the country, many girls drop out due to early (child) marriages. There are already close to three million out-of-school girls in India. Stereotypical gender roles and societal perceptions can be blamed for this.

However, children attending school have benefitted, even during vacations, due to the extended mid-day meal (MDM) scheme. MDM ensured quality meals (milk, eggs and fruit) for children at Anganwadis and schools. Extending the MDM during vacations kept children from exposure to heat and in a safe, secure school environment during the drought periods.

3.3 Introducing the National Education Schemes

The education sector plays a crucial role in addressing the impact of climate change in India and especially on the vulnerable populations. Two national education schemes – the Sarva Shiksha Abhiyan (SSA) and the Mid Day Meal (MDM) scheme – have already helped bring large numbers of children especially from vulnerable populations into the mainstream and thus allow them to be included in climate resilience planning, and equip them in ways to better cope with increasing climate related disasters.

The education sector and especially the SSA plays a crucial role in strengthening community resilience to climate change through knowledge, infrastructure, and community life skills and entrepreneurship development.

While enrolment in schools for the country at primary level is high, it is a concern at upper primary level and shows enormous variation across states. Therefore, although more children are entering the education system, many are not progressing through the system. The dropout rates go on increasing as the students graduate to higher classes. Dropout rates, particularly for girl students, are almost double for secondary classes (VI-X) compared to the primary (I-V). In rural areas, this has a bearing on the fact that adolescent girls are more involved in domestic work (tending to siblings, helping mothers with domestic chores, or livestock herding), letting education take secondary priority.

3.3.1 Sarva Shiksha Abhiyan (SSA)

The Sarva Shiksha Abhiyan remains the single-most effective programme to bring maximum children to school – without the SSA a lot of children would have never entered the school boundary. There are now 19.67 crore children in 14.5 lakh elementary schools. With dropout rate reduced to 16% at primary and 32% at upper primary level. All effort is being made to bring the last remaining child to school.

Launched in 2001, the Sarva Shiksha Abhiyan aims to improve enrolment, retention, and quality of education to enable children to achieve grade appropriate levels of learning. It also aims to eliminate gender differences and gaps between different social categories. At the time of SSA's launch, there were 3.40 crore out-of-school children between the ages of 6-14. Four years later in 2005, with more than 85% funds utilized, only 1.35 crore children remained out-of-school – a reduction of 60% in four years. It went down to 81.5 lakh in 2009 and currently over 96% children are enrolled. 2014 figures show only 61 lakh children are out-of-school.

The SSA is implemented in partnership with the state governments to cover the entire country and its aim is to open new schools in those habitations which do not have schooling facilities and strengthen existing school infrastructure through provision of additional class rooms, toilets, drinking water facility, maintenance grant and school improvement grants. Existing schools with inadequate teacher strength are provided with additional teachers, while the capacity of existing teachers is being strengthened by extensive training, grants for developing teaching-learning materials and strengthening of the academic support structure at cluster, block and district levels.

SSA seeks to provide quality elementary education including life skills, and has a special focus on girls' education and children with special needs. SSA aims to bridge the digital divide through computer education. The SSA recognizes the need for improving the performance of the school system and providing community-owned quality elementary education in mission mode.

SSA effectively involves the Panchayati Raj institutions, school management committees, village education committees, parent-teacher associations, mother-teacher associations, the tribal autonomous councils in the management of elementary schools. Other levels of mission include tea garden education committee and municipal ward education committee.

SSA aspires to bridge social and gender gaps, with the active participation of the community in the management of schools. As it does not alienate any section, it helps develop community solidarity. It is a process of value-based learning that allows children an opportunity to work for each others' well-being.

Provision of community-owned quality education, improved school infrastructure and teaching resources through the SSA can ensure that children are in a climate-change safe environment and are equipped to deal with climate change related disasters. Expanding the scope of school infrastructure as disaster shelters and the mid day meal scheme to feed the entire community will go a long way in building climate change resilience.

3.3.2 Mid-Day Meal (MDM) scheme

“Drives out classroom hunger and builds the nation by providing nutrition to its future citizens”

The Mid Day Meal scheme is a school meal programme of the Government of India launched in 1995 to improve nutritional status of school-age children across the country.

As part of the MDM scheme, a cooked mid day meal with 300 calories and 12 grams of protein was required to be provided as a free lunch on working days for children in primary and upper primary classes in government, government aided, local body, education guarantee scheme, and alternate innovative education centres, madrassas supported under SSA and National Child Labour Project schools run by the Ministry of Labour. Serving 120 million children in over 1.3 million schools, this is the largest such programme in the world.

The MDM scheme was initiated as National Programme of Nutritional Support to Primary Education (NP-NSPE) to help improve effectiveness of primary education by improving the nutritional status of primary school children.

Initially implemented in 2,408 blocks, in October 2007 its scope was expanded to include upper primary classes of six to eight in 3,479 educationally backward blocks. Its name was changed to National Programme of Mid Day Meals in Schools.

The Supreme Court order of 29 November 2001 required all government-assisted schools to provide cooked midday meals as opposed to dry rations that states earlier preferred to give as an incentive for regular school attendance i.e. provision of uncooked three kg rice to children with 80% attendance.

A subsequent Supreme Court interim order of 20 April 2004 makes provision for CC related measures where MDM scheme is extended through summer vacations as well, to support children's nutritional requirement and prevent migration. MDM is now covered under the National Food Security Act 2013.

The MDM scheme has defined nutritional guidelines for minimum amount of food and calorie per child per day – a hot cooked meal to provide an energy content of 450 calories and 12 grams of proteins for primary classes, and 700 cal, 20 g protein for upper primary classes. The National Rural Health Mission school health programme also provides for students to receive a supplement of micronutrients Vitamin A, iron and folic acid tablets and de-worming medicines, on a regular basis.

Implementation of MDM scheme in states

There are two models that are prevalent for implementation of the MDM scheme in states. The decentralised model is more widespread – here meals are cooked onsite by local cooks and helpers or SHGs. The advantage of the decentralized model is that local cuisine is served, it provides jobs in the area, and minimises waste. It also allows better monitoring by parents and teachers. This has disadvantages as well, where the absence of adequate infrastructure (kitchen shed, utensils etc) can lead to accidents and maintaining hygiene can be difficult.

The centralized model, wherein an external organization cooks and delivers meal to schools, through public-private partnerships, is seen mostly in urban areas where density of schools is high and transporting food is a financially viable option. The advantages are better hygiene maintained as large-scale cooking is mostly an automated process. Several NGOs have been operating the provision of MDM in several states under this model.

3.3.3 Integrated Child Development Scheme (ICDS)

One of the world's largest programmes for early childhood development is the Integrated Child Development Scheme (ICDS) under the Ministry of Women and Child Development, Government of India. With a component aimed at pre-school education of children aged 3-5+ years through Anganwadi centres, the coverage of the ICDS scheme increased from 4,068 to 7,025 projects during the period 2001-02 to 2012-13. The number of Anganwadi Centres (AWCs) increased by 145% (from 545,714 to 1,338,732 centres) during the period 2001-02 to 2012-13. The total number of children aged 3-5+ years, who received preschool education in Anganwadi Centres, increased by 112% (from 16.7 million to 35.3 million) during the period 2001-02 to 2012-13. Girls constituted 49% (17.3 million) of the total number of children who received pre-school education during the year 2012-13.

While the MDM scheme caters to children six years and above, the ICDS or Integrated Child Development Scheme's objective is to cater to the nutritional needs of children from 0-6 years. It is the world's largest integrated early childhood programme.

ICDS was launched in 1975 with the following objectives:

- Improve the nutritional and health status of children in the age-group 0-6 years.
- Lay the foundation for proper psychological, physical and social development of the child.
- Reduce the incidence of mortality, morbidity and malnutrition.
- Achieve effective coordination of policy and implementation amongst the various departments to promote child development.
- Enhance the capability of the mother/care giver to look after the normal health and nutritional needs of the child through proper nutrition and health education, and monitoring of the various activities.

Services	Target Group	Service Provided by
Supplementary Nutrition	Children <6 years & Pregnant Lactating Women	(AWW)
Immunization	Children <6 years & Pregnant Women (PW)	ANM/MO
Health Checkup	Children <6 years & Pregnant Lactating Women	ANM/MO/AWW
Referral Services	Children <6 years & Pregnant Lactating Women	AWW/ANM/MO
Pre-School Education	Children 3-6 years	AWW
Nutrition & Health Edn	Adolescent Girls & Women (15-45 years)	AWW/ANM/ASHA

The District Collector heads the ICDS Coordination Committee, which meets every month to discuss issues related to ICDS. Sub-Collectors as Chairpersons of ICDS provide support and guidance through reviews. At the village level, ward members, Jaanch Committee and Mothers Committee are involved in implementation and monitoring of the various activities.

ICDS's Supplementary Nutrition Programme

Supplementary nutrition under ICDS is made to supplement the inadequate daily intake of children and pregnant and lactating women. State Governments/UTs must provide 300 days of supplementary food to the beneficiaries in a year which entails giving more than one meal to the children from 3-6 years who visit AWCs. This includes morning snacks in the form of milk/banana/egg/seasonal fruits/micro-nutrient fortified food followed by a hot cooked meal (HCM). For children below three years of age, pregnant and lactating mothers, Take Home Rations (THR) in the form of pre-mixes/ready-to-eat food are provided. Besides, for severely underweight children in the age group of six months to six years, additional food items in the form of micro-nutrient fortified food and/or energy dense food as THR is provided. These norms have also been endorsed by the Supreme Court on 22 April 2009.¹⁷

Educational Programmes of ICDS

Apart from immunization against six vaccine-preventable diseases to protect children, regular health check-ups for pregnant, lactating mothers, post-natal care of newborn and regular check-ups of children till the age of six years, referral services that provide medical care, ICDS also manages pre-school education. It supports the SSA goal of universal and quality primary education, by providing the child of 3-6 years with the necessary preparation for primary school, especially in remote and socio-economically backward areas. Various activities relating to physical, cognitive, social, emotional, creative development of children are facilitated by the Anganwadi Worker.

¹⁷ <http://icds-wcd.nic.in/icds/icds.aspx>

Apart from ICDS, the Ministry of Women and Child Development's flagship 'Beti Bachao Beti Padhao' (BBBP) programme also ensures education and participation of the girl child, apart from ensuring her survival and protection. BBBP's social campaign aims to generate awareness and improve efficiency of welfare service intended for girls. MWCD's SABLA Scheme for Adolescent Girls aims at all-round development of adolescent girls of 11-18 years (with a focus on out-of-school adolescent girls) to make them self-reliant by improving their nutritional status, promoting awareness about health, hygiene, nutrition, adolescent reproductive and sexual health, family and child care, counselling and other interventions and mainstreaming the out-of-school adolescent girls into formal/non-formal education.

3.4 Impact of the Educational schemes on learning goals

3.4.1 SSA and its impact on learning goals

- It has allowed the inclusion of maximum children into the formal schooling system
- Its tracking system checks number of children in school and allows for measuring deliverables
- There has been an improvement in teaching facilities through the use of digital learning tools
- Teacher training programmes have helped in better teaching methods
- Parent teacher associations have helped build greater accountability, safety and robustness in the school programme
- The programme has helped in the development of life skills
- Focus on improvement of school infrastructure has provided a safe, secure, hygienic learning environment for children
- Toilet facility with separate toilets for girls, water for washing, has helped in reinforcing hygienic practices, better health, and hence improvement in attendance figures
- Free education kit (books & stationery, schoolbag), and uniform

3.4.2 MDM and its impact on learning goals

- MDM attracts children from disadvantaged sections (especially girls, dalits, adivasis) to school.
- The nutritional requirements of children through the provision of a mid day meal with calorific specifications, use of iodized salt; the provision of vaccinations; and supplements such as Iron, folic acid, all keep children healthy and able to come to school.
- The school environment makes provision for eating together allowing for socialization and interpersonal skill development.
- Women are assured of their children being provided with a meal, which reduces the burden of making provision for one more 'mouth to feed'. It also allows the child to be in a safe place when parents are away at work.
- MDM has had positive effects not only on the enrolment of disadvantaged children, but also on their regular attendance, their learning effort, improvements in nutritional outcomes and in being in a safe and hygienic environment.
- It has also had a positive effect on women, especially working women.

There have been some implementation issues, such as caste based discrimination, irregularity, corruption (pilferage of foodgrain, schools inflating attendance to obtain foodgrain, or teachers embezzling midday meals), deaths, sickness after consumption. As more and more states adopt technology for MDM scheme management through computer or mobile apps, it has enabled greater transparency and better organization. On the whole, the MDM scheme has played a huge role in bringing children to school and keeping them there.

3.4.3 Integrated Child Development Scheme and its impact on learning goals

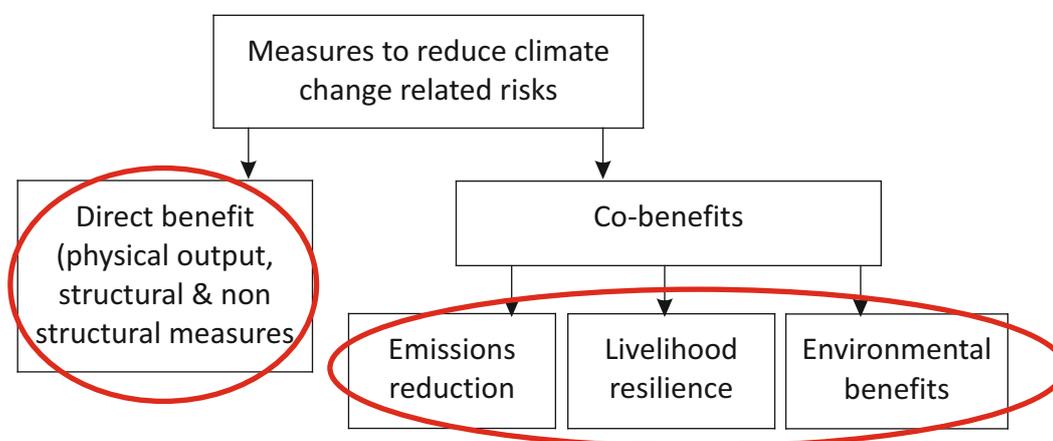
- Improved language development
- Better cognitive development – as appropriate aids and tools are used for early learning techniques
- ICDS children are better in almost all the areas of development than non-ICDS children – it has shown that pre-school experience is important in learning goals
- Pre-school education proves to be a solid foundation stone for entire educational superstructure of a child
- There is greater involvement of the community in the ICDS programme and this is useful in building social resilience.

3.5 Building DRR and Climate Resilience in Education Sector Schemes

Climate change mitigation yields multiple benefits – or 'co-benefits' – in addition to the reduction of greenhouse gas emissions. Many co-benefits, such as diminished local air pollution resulting from reduced use of fossil fuels, occur in the short run, are relatively certain to be achieved, and are primarily enjoyed by the country doing the abatement. The potential co-benefits are seen across multiple domains: environmental, economy-wide, and sector-specific.¹⁸ And they matter, as evidence suggests that citizens are more likely to take action on climate change, or more likely to support governments that take action on climate change, if the wider co-benefits of those actions are emphasised. At the same time, policies that are aimed at supporting innovation, delivering economic benefits and enhancing the quality of life of citizens can potentially lead to major climate co-benefits (e.g. reduced greenhouse gas emissions) which would be more challenging to achieve if climate action were the primary objective.¹⁹

Measures to build CCA and DRR in education schemes have direct benefits such as better infrastructure and continuity of education, but its multiple co-benefits are also significant – they directly have an impact on livelihood resilience and indirectly on emissions reduction as well as environmental benefits (due to greater awareness as a result of education).

Co-benefits of climate change mitigation²⁰



¹⁸ <http://www.lse.ac.uk/GranthamInstitute/publication/multiple-benefits-from-climate-change-mitigation-assessing-the-evidence/>

¹⁹ <http://www.c40.org/researches/c40-lse-cobenefits>

²⁰ Figure from Odisha SAPCC (2016-2020)

3.5.1 Building DRR and Climate Change Adaptation in SSA Programme

Integrating climate change adaptation and disaster risk reduction in education, particularly in the primary and upper primary school programmes through the Sarva Shiksha Abhiyan, requires that the schemes and programmes relating to adaptation and mitigation be integrated in state plans. A few elements of these are listed below:

- Develop schools as disaster shelters with improved infrastructure facilities. There is inadequate instruction and practice in safety measures and procedures in the event of hazard, at school, at home or out in the community. Inadequate familiarization with or unavailable hazard early warning signs and signals, instruction in evacuation or sheltering procedures, drills and exercises, and unavailability of basic first aid and the contents of a first aid kit also need to be addressed.
- Ensure access to schools during CC disasters
- Ensure quick resumption of school programmes after disaster
- Include climate change education in the school curriculum
- Help communities build resilience, or even cope with disasters. Health and safety measures, and guidance on how to stay safe after a hazard has subsided need to be given, and workshops at regular intervals conducted. Occasional learning that is inactive in nature, limited in its practical, action and decision-making scope, and unreflective is not best suited to fostering safety knowledge and practice.
- Caste and religious bias among some parents in some places needs to be tackled.
- Limited opportunities for parental and community participation in the programme to be addressed through greater involvement of community in school disaster management programmes.

3.5.2 Building DRR and Climate Resilience in MDM Scheme

The Mid Day Meal scheme has already effectively drawn children from the ages of 6 to 14 into a safe and protected school environment. Expanding its scope through the summer months has ensured more children stay safe and healthy, and able to learn. Strengthening the MDM scheme by integrating the schemes and programmes relating to adaptation and mitigation in state plans and through the following means will go a long way in building resilience:

- Establish a system to ascertain improvement in nutritional levels of children. It should coordinate with the concerned department and ensure maintenance of health cards in all the schools to monitor the health status of the children.
- Identify ways to narrow the gap between enrolment vs. actual number of children availing MDM.
- Monitoring and supervision mechanisms should be implemented effectively. The State government needs to strengthen the internal controls as well as the inspection and monitoring mechanism at all levels.
- The quality of cooked food served needs to be enhanced.
- Transfer of funds up to school level is needed to ensure full utilization of funds.
- The Grievance Redressal Mechanism should be widened and implemented at all levels.
- There should be provision for training of cooks-cum-helpers on aspects of hygiene, health, sanitation, cooking and serving. Health card to monitor health status of Cook Cum Helpers as well to ensure hygiene.
- It is essential that the children and the parents are given nutrition education, so that MDM is not taken as a substitute for home food but as an addition to the food provided by the family.²¹

21 Ref: Author Dr Gracious James, <http://yojana.gov.in/mid-day-meal-scheme.asp>

3.5.3 Challenges in Building DRR and Climate Resilience in SSA and MDM Schemes

Challenges in management of primary and upper primary education in schools, and the MDM scheme are many and vary across states and regions, and in rural and urban areas.

- Poor infrastructure facilities (school building, cooking shed, water supply, utensils)
- Lack of maintenance of school buildings and kitchen sheds
- Access to schools during climate change disasters limited
- Climate change education missing in the school curriculum; wherever available it is inadequate to help communities build resilience, or even cope with disasters. Occasional learning, limited in its practical, action and decision-making scope, and unreflective is not best suited to fostering safety knowledge and practice
- Inadequate instruction and practice in safety measures and procedures in the event of hazard, at school, at home or out in the community
- Inadequate familiarization with or unavailable hazard early warning signs and signals, instruction in evacuation or sheltering procedures, drills and exercises
- Unavailability of basic first aid and the contents of a first aid kit. In cases where a first aid kit is available, there is little or no understanding of how to use its contents
- Health and safety measures are inadequate, and guidance on how to stay safe after a hazard has subsided has not been imparted
- Irregularity, corruption (pilferage of foodgrain, schools inflating attendance to obtain foodgrain, or teachers embezzling midday meals)
- Insufficient budgetary allocation toward conversion costs
- Irregular and delayed delivery of food grains and funding in some cases
- Caste and religious bias among some parents in some places
- Limited opportunities for parental and community participation in school education, safety, or mid-day meal programmes.

3.6 Key Considerations in the Education Sector

In addition to the principles for managing uncertainties in delivering education, there are some very important considerations. They are:

3.6.1 School Infrastructure

- School building with walls, roof for sheltering from sun, wind, rain, and adequate ventilation, light, electricity
- Toilet block, separate for boys and girls, with proper drainage, running water facility, adequate ventilation and light, with door for privacy
- School compound with safe and easy access to school building, classrooms, and toilets
- In case of gate, gate width should be wide enough to allow for vehicles, fire engine, buses to enter.
- Efficient and safe transport facilities
- Kitchen (enclosed but properly ventilated), with safe cooking facility and dining space for cooking and serving of MDM
- Anganwadi/Balwadi space with adequate facilities for checking health parameters of child and mother, pregnant women, space (cupboard with lock) for storage of health cards, dispensing THR (Take Home Ration), diet supplements etc.

3.6.2 School Staff

- School teachers with appropriate grade teaching ability

- Assistant teachers and helpers
- Cook cum helper for cooking Mid-Day Meal, in case of localized model

3.6.3 Teaching Material, Uniform, Stationery, Timetable

- Availability of teaching aids – blackboard, chalk, charts etc.
- Presence of adequate, safe, ergonomic furniture, seating for students and teachers
- Uniform and footwear to be clean and worn daily
- Schoolbag, books to be carried and checked regularly

3.6.4 Safe Water & Sanitation

- Drinking water source in schools must be safe – it should be free from harmful substance, mineral, chemical and microorganism.
- Mid-Day Meal cooking facility to be clean, adequate space for cooking, water for washing of cooking, serving and eating utensils. Clean, fresh and adequate ingredients for cooking MDM. Cook Cum Helper (CCH) hygiene to be checked regularly.
- Proper and separate toilet facilities for girls and boys – proper enclosure for privacy and safety, running clean water for washing, adequate light and ventilation, and outlet to proper drainage facility.
- Toilet facility infrastructure should be durable, resistant to cyclone and floods, and with regular repair and maintenance.

3.6.5 Hygiene

- Good hygienic practices should be taught in school – proper use of toilet, hand-washing, menstrual and reproductive health practice to protect oneself against illness and prevent disease transmission.
- Eating healthy, nutritious food during the Mid-Day Meal and hand-washing before and after meals to inculcate good behaviour of individuals and communities to reduce disease prevalence.
- Personal hygiene – oral hygiene, eyes, ears, hair, nails, etc., to be taught to school children and inculcated as part of healthy habits. Health card of students, teachers, CCH to be maintained.

3.6.6 Mobilizing Community Support

- The role of the local government bodies in provision of education is to raise awareness within communities of the role of education in building resilient citizens. While the local government can involve people from the communities, they need to be trained, which requires material resources and technologies. Financial assistance requires a specific work plan, that clearly defines the activities and indicates the types and quantities of resources required for each of the activities.
- Non-governmental agencies involved in the education sector may provide support for teaching in terms of innovative teaching methodologies, soft-skill training programmes, counselling, teacher training programmes, mobilization of support for management of PTA meetings, auditing of MDM and learning outcomes, management of Balwadis, Anganwadis, and support for pregnant and lactating mothers.

3.6.7 Accountability

Accountability refers to using authority and power in a responsible manner. Key issues of humanitarian accountability include informing people about intervention and progress, get suggestions and feedback from the parent body/community and receive complaints and respond to them.

Accountability	
Inform the community	<ul style="list-style-type: none"> • What is the information to be disseminated • When is the information to be disseminated • What are the processes applied for disseminating information • Who in the community should get information
Know from the community	<ul style="list-style-type: none"> • When should the agency seek information • What are the issues that the agency should explore • Whom should the agency contact to get information • What are the processes that the agency applies to get information • How should the agency use information received from the community
Receive suggestions and complaints	<ul style="list-style-type: none"> • When may the community lodge complaints • What are issues open for lodging complaints • What are processes that have to be applied to lodge complaints • How should the agency respond to the complaints • What feedback should the community get

Accountability Target

Information sharing

- All information, including financial information, related to the intervention is disseminated in a way that all members of the community, regardless of gender and educational achievement, understand.
- All information, including direct and indirect cost, to be disseminated at regular intervals, progress report published regularly and methods of information to be discussed and agreed with community.

Participatory decision making

- Local community have key role in decision making and they feel ownership
- Recognize specific needs of the poor and marginalized groups, including women
- Resolve conflicts among different groups impartially

Feedback mechanism

- Establish feedback mechanism through discussing with the community, and in way that local people, including women, can give feedback without any fear
- Local government bodies monitor communities' satisfaction level at regular basis

Behaviour

- Workers of the local organization show trust and respect in their behaviour with the community members
- Regular contact and discussions with the community to find new options and opportunities

Accountability structure

Ensuring accountability requires a structure and process. The local government body should do the following to ensure accountability.

- Inform community about the current and future interventions related to ensuring climate-ready schools in their area. The community should know details of the interventions as well about their roles in ensuring proper functioning of schools, especially MDM, proper toilet facilities in schools, robust school infrastructure, and ensuring that all children from the community are included and supported to ensure that schools are a safe and secure environment for their children and their role in a good education. The community should get reports on implementation and progress of the project; for example, on the activities being conducted, processes and how long they would continue; resources required and how resources are being mobilised; the progress as well as constraints and challenges faced.
- Get disaster education related information from the community. Consult community at all stages of the programme intervention – e.g. situation analysis, problem identification, preparing plans, implementation and monitoring. To consult with the community the local government body should apply participatory tools and methodology; and processes that ensure participation of all parents –women, disabled and disadvantaged groups.
- Establish mechanism to receive complaints and respond to that timely. Inform community how they could send their complaints and suggestions about the intervention and its progress, and how the agency responds to the complaints received. These mechanisms can be made use of during disasters, and schools' infrastructure can be used to support communities; here the scope of the MDM can be expanded to include the entire community, the school premises can be used as a community training space for educating community about the climate change and what they need to do to build community resilience.

SCENARIO-BASED PLANNING**Key Learning Objectives:**

- Apply the 'climate lens' to education strategies and plans to understand limitations of existing planning approaches
- Know the key elements of a climate lens approach
- Learn the benefits of a climate lens approach
- Understand how scenario-based planning (in entirety or influenced by key ideas) can be used as a practical framework/tool to improve education planning processes at different levels (from high level strategic to operational) and one in which it is easy to understand climate change.

Key Learning Points:

- A step by step approach to application of the climate lens to existing education strategies, programme, and plans.

Planning in education is a continuous and a dynamic process and has to be closely monitored, updated, with respect to planning for equitable access such as infrastructure and expanding reach through ICT, related recruitment and deployment of teachers and other human resources; for quality such as training and continuous professional development of teachers, curriculum reforms, use of ICT, standardisation of pedagogy, examination etc.

Recognising the importance of education in national development, the Twelfth Plan places an unprecedented focus on the expansion of education, on significantly improving the quality of education imparted and on ensuring that educational opportunities are available to all segments of the society (XII Plan, Govt. of India). What initially began as a move towards universalising elementary education through Sarva Shiksha Abhiyan got greater fillip and a new perspective with the Right to Education Act. Consequent to these developments there has also been an increasing demand for secondary education in the country.²³ Despite many gains, education in India faces several challenges which have been addressed in the Twelfth Plan.

4.1.1 Focus on Education in the Twelfth Plan

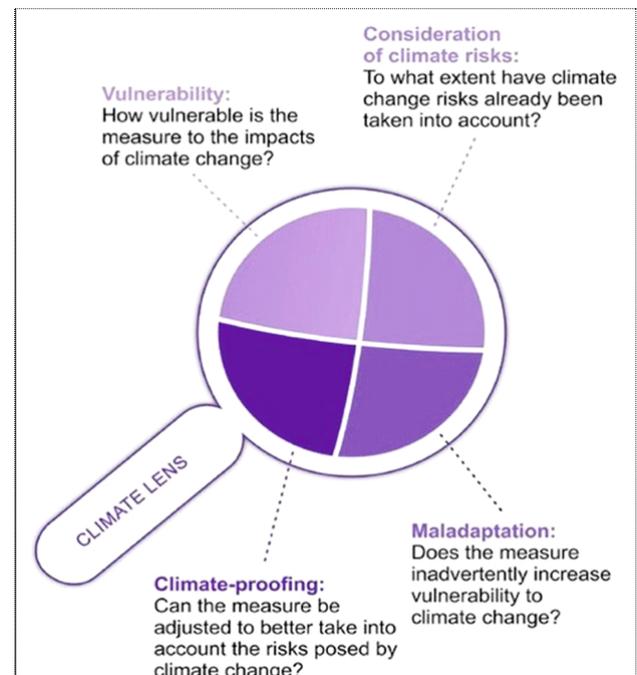
1. Ensure universal access and, in keeping with letter and spirit of the RTE Act, provide good-quality free and compulsory education to all children in the age group of 6 to 14 years;
2. Improve attendance and reduce dropout rates at the elementary level to below 10% and lower the percentage of OoSC at the elementary level to below 2% for all socio-economic and minority groups and in all States;
3. Increase enrolments at higher levels of education and raise the Gross Enrolment Ratio (GER) at the secondary level to over 90%, at the Senior Secondary level to over 65%;
4. Raise the overall literacy rate to over 80% and reduce the gender gap in literacy to less than 10%;
5. Provide at least one year of well-supported/well-resourced pre-school education in primary schools to all children, particularly those in educationally backward blocks (EBBs); and
6. Improve learning outcomes that are measured, monitored and reported independently at all levels of school education with a special focus on ensuring that all children master basic reading and numeracy skills by class 2 and skills of critical thinking, expression and problem solving by class 5.

²³ http://rmsaindia.gov.in/images/Approach_Principles_planning.pdf Approach and Principles of Planning, RMSA, GoI

4.2 Elements of a 'climate lens' approach

A 'climate lens' approach is essentially an analytical method that stimulates a questioning mode of analysis, as illustrated in the figure. Ideally, a 'climate lens' should be applied during the formulation of national education sector strategies and plans. However, there are also many benefits in applying this retrospectively (at state level for example) to identify areas where existing strategies and plans, and the implementation priorities and approaches recommended within these, could be strengthened with respect to climate resilience during review and reformulation processes.

With respect to national / state education strategies and plans it can serve to examine the following:



- To what extent have climate risks already been taken into account? Examine the extent to which national/state education strategies and plans draw on already identified climate change and climate-related DRR priorities and analyses, and how these have been taken into consideration in the course of the formulation of national/state education strategies or plans.
- How vulnerable are strategies and plans to the impacts of climate change? Examine the extent to which climate change risks and impacts are understood, and the extent to which identified approaches are resilient to climate change.
- Does the strategy or plan inadvertently increase vulnerability to climate change? Examine the extent to which there is a good understanding of how to manage climate risks, and whether good practice and innovation can help to reduce vulnerability and enhance climate resilience.
- Can strategies and plans be adjusted to better take into account the risks posed by climate change? Examine the extent to which knowledge, information and good practice for climate resilience are integrated into national/state education strategies, programmes, and plans.

4.3 Benefits of a 'Climate Lens' Approach

The application of a 'climate lens' to national/state education strategies, programmes and plans will help to improve their overall formulation, with positive impacts subsequently materialising during the implementation of on-the-ground activities and investments. Anticipated benefits would be to:

- Ensure national/state education strategies, programmes and plans are aligned with existing national climate change adaptation and climate-related priorities and actions
- Ensure vulnerabilities and risks arising from climate variability and change are considered in national/state education strategies, programmes and plans, and subsequent implementation

- Strengthen and supplement country/state analyses by incorporating climate change considerations and ensuring measures are responsive to the impacts of climate variability and change
- Assist with the prioritisation of measures by identifying children and their communities living in high-risk locations, and targeting investments to areas where the needs are most pressing
- Provide a foundation to ensure that subsequent programming and implementation incorporates considerations of climate risks
- Identify elements of good practice for managing current climate variability and risks that may also contribute to managing future risks
- Identify opportunities for innovative approaches to manage climate risks and to strengthen climate resilience
- Identify cross-sectoral influences on delivery of education services and provide the impetus for engagement, collaboration and shared learning with stakeholders from outside the education sector
- Provide evidence on what amendments might be warranted in order to address climate risks and to strengthen climate resilience.

4.4 Other considerations

The integration of climate resilience into national/state education strategies, programmes and plans is not an end point in itself. The challenge is to also integrate climate resilience into subsequent programmes and implementation actions, including those of the government's education partners and support agencies. Implementation approaches across education services should be selected or adapted to reinforce climate resilience. Benefitting from existing good practice and the identification of innovative measures and approaches that help manage current climate risks is likely to be a good starting point. This is particularly true where these innovative measures and approaches also provide a foundation for managing future climate risks. Strengthening awareness and sharing knowledge will help to ensure that considerations of climate risks are incorporated in subsequent programming, project planning and implementation cycles.

The concept of building climate resilience in the education sector is relatively new. It is now being recognized as an important step in using education to build a holistic climate resilient approach across all development sectors. Cross-fertilization and the sharing of ideas and approaches are to be encouraged, and can help to speed up the identification of reliable and affordable responses and solutions. Making use of evidence and good practice that has been compiled at the national level can help to supplement state-level knowledge. Out-of-the-box thinking is also very useful in order to take preventive measures in allied sectors, such as WASH and nutrition, which directly have an impact on education and learning outcomes. An integrated approach to identifying climate resilient solutions will ultimately be one that considers all sectors and stakeholders having an impact on the effective delivery of education.

The process of integrating climate resilience into education sector strategies and plans should result in greater awareness among education sector planners and decision-makers of the implications of climate change risks on the sector and the appropriate responses to manage these.

4.5 A stepwise approach to applying a 'climate lens'

A step-wise approach to applying a 'climate lens' to national/state education sector strategies, programmes and plans is recommended. Quick wins can be achieved by considering the following initial questions:

- Does your state already have a state education sector strategy and plan, and is it aligned with overarching national climate change and climate-related priorities and actions?
- Is there a good understanding of climate change impacts on the education sector, and has this knowledge and information been used to inform strategies and plans?
- Is there a good understanding of how to manage climate risks, and has good practice and innovation been built into strategies, programmes and plans?

A flow chart centred on these questions, and their responses, is presented later in this chapter. The pathway through the flow chart will vary from state to state as some states may be further advanced in terms of integration than others.

Suggested actions for different steps in the process are further elaborated in the following section.

4.6 Questions, responses and actions

Q 1 Does your state already have a state education strategy and plan?

State education strategies and plans can be adapted from the wider national education sector strategies and plans, as the national strategies and plans aim to anchor education objectives within wider development strategies and goals (e.g. Poverty Reduction or Alternate Livelihood Strategies, the Sustainable Development Goals or similar). They highlight the critical contribution education makes to national development objectives with respect to health, poverty alleviation, enhanced quality of life, gender equity, productivity and growth, good citizenship and a robust democracy. In the context of state development, education strategies, programmes and plans should also be aligned with existing national climate change adaptation and climate-related DRR priorities and actions.

Climate change adaptation is being increasingly mentioned in national economic, social and environmental development policies, and in many cases national priorities and actions have already been identified. **The education sector however needs to be identified as a priority sector in many of these overarching national documents.**

Q 2 Is there a good understanding of climate risks in your state?

State education strategies and plans should be informed by analyses of the impacts of climate variability and change. Climate change intensifies risks to education systems and risk-based planning is essential.

Education strategies and plans that are informed by climate risk assessments will help to deliver solutions more likely to withstand climate-related shocks and stresses, in order to provide uninterrupted, quality education. Climate-informed decisions help to identify and prioritise high-risk locations and target investments in areas where the risks are highest.

Strengthening and supplementing situational analyses by incorporating climate change considerations will help to ensure that strategies and plans become more responsive to the impacts of climate variability and change. Upfront climate risk assessments will also facilitate appropriate contextual customisation of adaptation approaches and solutions to climate resilience.

Cross-sectoral influences will need to be taken into consideration when improving the climate resilience of education services. Engagement and collaboration with stakeholders from outside the education sector, as well as between the various levels of governance within the education sector itself, will be an important factor.

A key element for the integration of climate resilience into education strategies and plans is the prioritization of no/low regrets measures and approaches (low-hanging fruits). These measures have a high chance of success against the full range of uncertainty in climate change projections and other future drivers. In addition, they often allow climate change adaptation agendas to be brought together more explicitly to tackle underlying climate-related issues.

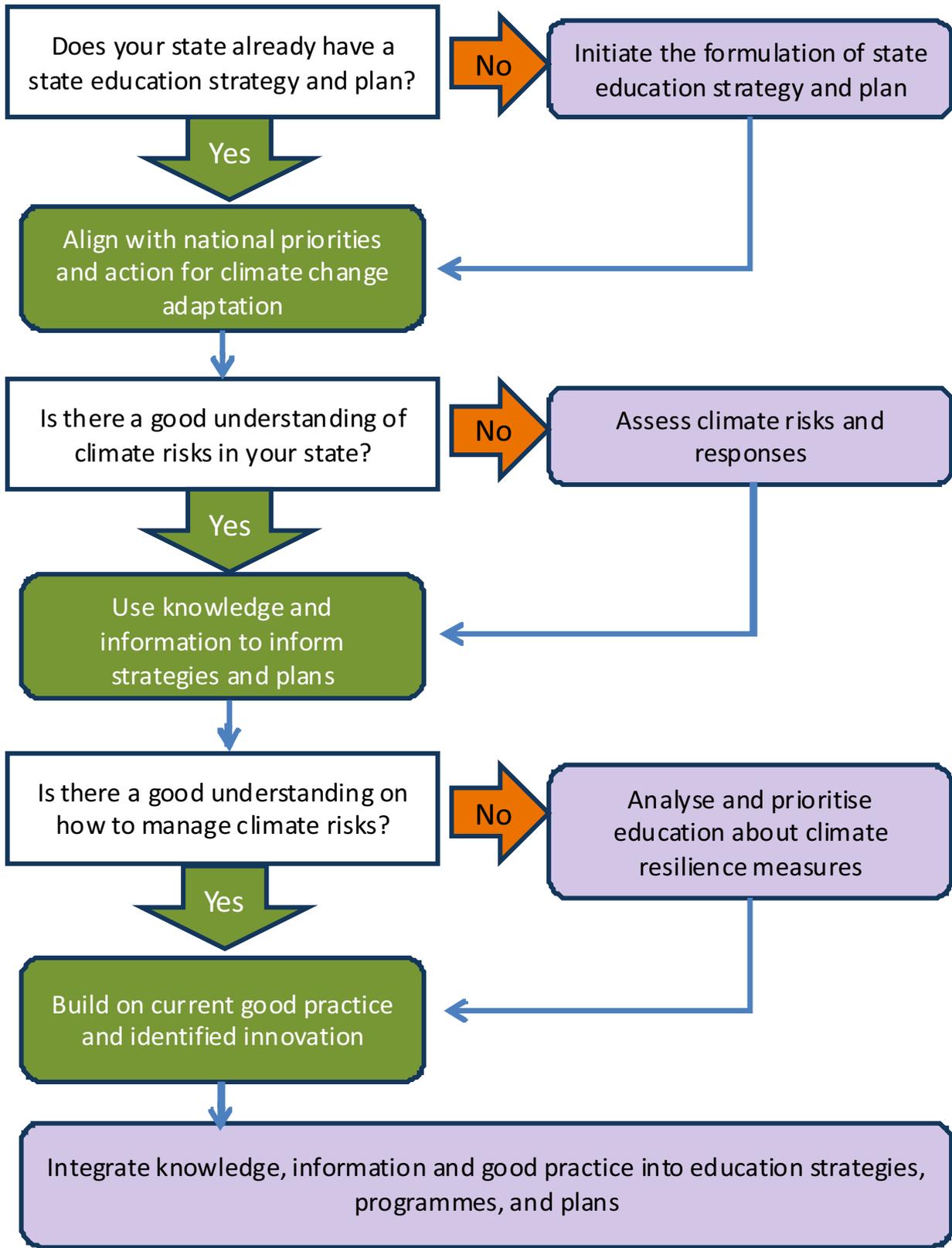
Q3 Is there a good understanding of how to manage climate risks?

Many elements of good practice for managing current climate variability will also provide opportunities to enhance resilience to future climate variability and change. For example, careful siting and design of school infrastructure (such as avoiding building in a flood plain or close to a sea coast) can help to ensure that it retains its ability to operate under climate-related hazards such as floods and droughts. In areas where there is likely to be increased flooding in and around school premises, raising the height of the school building, constructing barriers (levees, beams, flood walls) that would stop flood water from entering, but allow it to flow towards an area of low inhabitation, may be a solution to tackle this.

However, building climate resilience is not just about infrastructure and management practices. Raising awareness and stimulating behavioural change can also bring benefits by encouraging the use of energy-efficient technologies and promoting conservation of natural resources. Climate hazards such as floods affect sanitation facilities as well. Flood affected latrines can lead to negative changes to sanitation hygiene behaviour with negative impacts on public health, and children will need to be protected from disease in the aftermath of floods, for example.

By adopting approaches that make education services more resilient and adaptable to climate change there is the potential to improve the overall performance of the sector. Integrating these at a state education strategy and planning level is beneficial and helps to ensure that existing good practice and innovation provide a foundation for subsequent refinement during more detailed programming and project implementation levels.

A stepwise approach to integrating climate resilience



Q4 Does your State already have a state education strategy and plan?**If YES – Align with national priorities and actions for climate change adaptation**

The alignment of state education strategies and plans with national adaptation priorities is an important first step and ensures coherence between education sector development and national agendas for action on climate change.

Specific actions would be to:

- Review existing national climate change policies, strategies, plans and associated documentation to identify national adaptation and climate-related DRR priorities, noting in particular those that relate to, or have an influence on, the education sector, such as the nutrition or WASH policies
- Establish to what extent existing state education strategies and plans encompass and align with national climate change adaptation priorities, and in particular note any gaps or omissions
- Communicate and disseminate state climate change priorities relevant to the education sector among education ministries, departments and partner agencies at all levels of governance
- Work with education ministries and departments to align education strategies and plans with national climate change priorities
- Ensure realigned priorities are captured in outline plans for strategy implementation, including those for financing, budgeting, monitoring and evaluation.

If NO – Initiate the formulation of state Education strategy and plan

Where state education strategies and plans do not exist, a process to develop these is recommended. This will bring opportunities to integrate climate resilience from the outset. Processes will vary from state to state, but many of the other considerations and actions will also remain valid. The reformulation or revision of state education strategies and plans also provides an excellent opportunity to strengthen the integration of climate resilience.

Specific actions would be to:

- Engage in education sector strategy and planning processes and ensure climate resilience becomes an integral component from the outset
- Make the case for climate resilience as an integral component of state education strategies and plans, drawing on evidence of existing climate impacts on education outcomes, and highlighting how climate change can further exacerbate these
- Engage in cross-sectoral dialogues, not simply within the education sector itself, to ensure factors outside of the education sector's realm of influence are taken into account within climate resilience strategies and plans.

Q5 Is there a good understanding of climate risks in your state?**If YES – Use knowledge and information to inform strategies and plans**

Climate-informed decisions help to identify and prioritise high-risk locations and target investments to areas where the risks are highest. Findings from climate risk assessments will also help to deliver education approaches and solutions that are more likely to withstand climate-related shocks and

stresses. See also, “Guidance Note: Education Sector Risk Assessment”, ADB, for managing risks in the education sector, which in turn will act as a tool for better climate resilience overall.²⁴

Specific actions would be to:

- Strengthen and supplement education situational analyses by incorporating climate resilience considerations
- Ensure the formulation of strategies and plans has been responsive to the impacts of climate variability and change, and does not inadvertently increase vulnerability
- Review priorities and ensure these consider communities and locations most vulnerable to climate risks
- Prioritise no/low regrets measures and approaches as these will help to manage current climate variability as well as future change
- Ensure cross-sectoral influences and actions are identified and taken into consideration as a mechanism to improve climate resilience.

If NO – Assess climate risks and responses

Risk assessment is a central component of most situational analyses. In the education sector, where risk analysis has been done, it would be ideal to expand its scope to encapsulate climate risks. Strengthening and supplementing situational analyses by incorporating climate change considerations will ensure strategies and plans become more responsive to the impacts of climate variability and change. In cases where there is no documentation, it would be advisable to conduct the exercise of making an education risk analysis, with the five steps being: (1) Identify the hazard (2) Determine who is at risk (3) Identify how likely it is that the risk will occur (4) Assess how significant the risk is (5) Determine how to minimize the risk.

Specific actions would be to:

- Gather evidence on the impacts of climate variability and change at the state level, including an analysis of climate hazards, vulnerabilities, exposure and adaptive capacity
- Draw on past experiences and benefit from previous studies and information on the impacts of climate variability and change
- Identify the most serious and plausible climate-related threats, and how these impact specifically on the education sector
- Reach agreement among education ministries, departments and their implementation partners on the most important climate risks, and how best to respond to these risks
- Increase understanding among state education ministries and departments, and their implementation partners, of the ways climate change influences education service delivery outcomes and response measures.

Q6 Is there a good understanding of how to manage climate risks?

If YES – Build on current good practice and identified innovation

Many elements of good practice to manage current climate variability will also provide opportunities to enhance resilience to future climate variability and change. Building on existing good practices and proven methods is a good place to start.

²⁴ <https://www.adb.org/sites/default/files/institutional-document/31318/guidance-note-education-sector-risk-assessment.pdf>

Specific actions would be to:

- Collate evidence on existing good practices and integrate recommended approaches into strategies and plans
- Maximise the use of approaches to influence and change behaviour to ensure this also supports the climate resilience agenda
- Ensure innovation benefits from lessons learned nationally and internationally, and from institutions specialising in the piloting and testing of innovative techniques and approaches
- Where appropriate, incorporate the piloting of approaches to test their effectiveness in managing climate variability and change
- Raise awareness among key education stakeholders on current good practices and innovative approaches for enhancing climate resilience.

If NO – Analyse and prioritise Education climate resilience measures

Prioritisation should aim to ensure education resilience measures target areas of highest risk and meet the needs of those most susceptible to these risks, often the poorest and most vulnerable groups, including women and children.

Specific actions would be to:

- Evaluate the performance of education facilities and services under existing climate hazards such as floods, droughts and storms
- Gather evidence from local stakeholders on what worked well and what did not during extreme events, and from community experiences of coping with historic climate variability
- Identify aspects or components of education facilities and services that contributed to robust performance and those that led to failure or under-performance under different climatic hazards
- Draw on identified national and international best practices and innovations, and contextualise and customise recommended approaches and solutions for your own state context
- Agree recommended approaches (e.g. for different hazard types) and incorporate recommendations into strategies and plans.

GOOD PRACTICES IN EDUCATION, INNOVATIONS AND CASE STUDIES

Key Learning Objectives:

- Learn about practical interventions and education technologies
- Review case studies on good practices and innovations for climate change adaptation in education

Key Learning Points:

- Practical interventions and education technologies
- Good practices and innovations for climate change adaptation in education

5.1 Practical Interventions and Education Technologies

There are numerous practical interventions and technologies which directly or indirectly help strengthen resilience of the education sector to the impacts of climate change. Some also include building resilience within the education sector, for the education sector itself to be an effective tool for climate resilience.

5.1.1 Disaster ready, safe schools

Safety of children is of top-most priority when considering development of climate-resilient schools. For this school infrastructure must incorporate robust school buildings, with a strong durable foundation and location to be able to withstand cyclones/floods, and use of fireproof material for the school buildings. Due attention needs to be given to vertical durability of buildings, safe connection between building parts, and strong connection between suspended roofs. The internal school structure should have large corridors, with many evacuation routes (with proper evacuation plans and mock drills). The electrical devices should be standardised, with proper earthing, and even more favourable is the use of renewable energy sources such as solar PV. In tandem with this is a school disaster risk reduction and disaster management plan: strategy and plan to prevent or reduce impact of climate-related disasters, keeping children safe in schools, handling students with medical needs, preventing and dealing with trafficking, and emergency planning.

5.1.2 Hygiene and life-skills education

Health, hygiene and wellness programmes are needed in schools through workshops (with provision of hygiene kits) on how to maintain bodily hygiene during climate stress events such as heat waves and drought. Children need to be empowered to take care of themselves and others through age-appropriate programmes that educate on protection of the self and other and how to raise an alarm in case of need. Healthy, confident children are better able to look after themselves and others in the event of a climate-related disaster.

5.1.3 School environment and environmental education

Environment-friendly school premises with access to drinking water and toilet/sanitation facilities. Use of renewable energy sources for lights, fans in school rooms, use of clean fuels for cooking of mid-day meals. Trees and gardens within school premises provide for more aesthetic and greener ambience, encourages the development of ecosystems, and the fruit trees, and vegetables in gardens to provide supplements to the MDM. Greener environments reduce the impact of global warming, while also sustaining and protecting ecosystems. They also provide for supplementary nutrition which helps keep the children healthier. This has a direct impact on learning outcomes at school, and hence a better ability to respond to climate change.

5.1.4 School as a community outreach centre

- Schools could be the hub of community outreach programmes in villages, towns, through development of Parent Teacher Associations (PTA) that forge partnerships between parents, teachers and school governing boards. Organization of regular PTA meetings allow for greater involvement of parents in the management of schools, school audit activities, 'one day at school' for parents on a weekly/monthly basis which positively affect the learning outcomes of children at school. Allowing communities to use the school premises (after-school hours) for training programmes on disaster management, or resilience building, awareness programmes on waste management, and other climate-resilient programmes, gives the community a greater stake in the development of their local school and feel a greater sense of ownership for it.
- Development of a young people's organization through the school that assists in activities related to planning and management of community activities – this helps develop closer community ties and greater social resilience, which in turn helps in disaster risk reduction and protection of children and vulnerable sections of the community during climate-related disasters.

5.1.5 Child Friendly Schools (CFS) Model

- Development of child friendly schools to fulfil the education-related MDGs to not only get all children to school but to make sure that the schools work in the interests of the child entrusted in their care – to provide a safe, secure, learning environment. This makes the child central to the education process and the main beneficiary of key decisions in education. They adhere to the principle of 'progressive realisation' of children's right to quality education. While a basic framework has been provided by UNICEF, there are regional variations according to the needs and capabilities of the individual regions, countries, and environments where the schools are situated. Because of UNICEF's inter-sectoral approach to programming for children, it works to improve water supply and gender-sensitive sanitation facilities; promote good hygiene practices; address nutritional needs through school-based interventions; increase access to energy; and address challenges posed by climate change through improvements in disaster risk reduction, preparedness and response capacity. Its child protection measures also help reduce the negative impact of child labour, child trafficking and gender-based violence, and have serious implications for education. Measures taken in school, such as providing water and sanitation, school meals and counselling, have become essential components of overall quality of education. Studies have consistently shown that they influence access, retention and completion. Links between water and sanitation in school access and retention rates are well documented, as are links between school meals and access and attendance among children in disadvantaged communities.
- The environment for learning is a critical feature of child-friendly schools – learning to know; learning to be; learning to live together; learning to do.



5.1.6 Innovative WASH practices in schools

Elevated water points for schools

- These are hand pumps installed on elevated platforms in flood-prone areas. They tap into groundwater.
- They provide access to groundwater during floods. If the borehole the pump draws from is well-sealed, it is possible that water supplies will be protected from inflow of contaminated water.

Elevated latrines for schools in flood-prone areas

- These are latrines built on stilts or a concrete or brick plinth. Waste may drain into a sealed chamber to be emptied, or into a septic tank buried beneath the ground.
- Elevated latrines provide access to sanitation facilities during floods, and also reduce the risk of disease among children and school staff in the aftermath of floods, cyclones etc.

Rainwater harvesting (rooftop catchment with tank) for school buildings

- Rainwater falls onto a clean roof surface and is channelled by guttering and pipes into a storage tank. Storage tanks can vary in capacity, and can provide for schools, anganwadis and balwadis. People draw water from a tap connected to the storage tank.
- They provide a means of capturing and storing a relatively clean supply of water that can be used in times of scarcity. If used sparingly, for drinking, washing and cooking only, rainwater can provide essential supplies during dry periods. Supplies may not last for a full dry season, but can act as a buffer, supplementing water available from other sources, thus meeting children's water needs by keeping them hydrated, and thus better able to adapt to impacts of climate change.

Rainwater harvesting (ground catchment with water flowing into protected tanks) in school premises

- Where schools are in areas with impermeable rock, the rainwater runoff is captured and directed into storage tanks. Relatively large catchments can be enclosed within small walls, resulting in collection and storage of large amounts of water. In some desert areas in South Asia this ancient practice is employed to capture precious rainwater in protected tanks.
- It provides a means of capturing and storing a relatively clean supply of water that can be used in times of scarcity. Supplies can be used for school kitchen gardens and for cleaning toilets and premises, allowing for drinking water conservation, and resulting in people being better able to adapt to impacts of climate change.

Improved sanitation in school toilets

- This involves promoting solutions that remove faecal waste from the environment. Sanitation solutions typically capture, store, transport, treat and safely dispose of faecal waste.
- Safe capture, storage, transportation, treatment and disposal of faecal waste are critical if exposure to disease is to be minimised. With reduced exposure to disease, people are better able to cope with the impacts of climate change.

Hygiene promotion in schools

- This involves promoting improved hygiene behaviours, such as hand washing with soap at critical times of the day, for example after using the toilet, and before food preparation and meals.
- Improved hygiene behaviours help reduce exposure to waterborne and water-washed diseases that occur now and may be accentuated by climate change. With reduced exposure to disease, people are better able to cope with the impacts of climate change.

5.2 Case Studies/Best Practices/Innovations in Education

The case studies given below are best practices in education that either help manage disaster risk reduction, or help mitigate GHGs in the education sector, or do both, i.e. help schools adapt to climate change impacts.

1. DRR: Long-term strategy but local issue
 - Building child-friendly spaces
 - School cum Cyclone Shelters / Flood shelters
 - Education on the move

2. Mitigation: Long-term strategy and local & regional/global issue
 - Equipping school buildings with RWH, rooftop Solar PV, solar heating
 - MDM kitchens in rural areas to use improved smokeless chulhas, better cooking technology solar heating
 - Tree plantation in schools
 - Adopting new cultural practices

3. Adaptation: long-term issue and global / regional issue
 - Climate change curriculum
 - Nutrition gardens in schools
 - Education – Green Army



5.2.1 Child Protection in Disaster Situation: Post-Phailin Experience, Odisha Child Friendly Spaces - A Case Study by CYSD

Cyclone Phailin was the most intense tropical cyclone to strike the east coast of India in 2013 since the 1999 Odisha cyclone (Super Cyclone). At highest wind speeds of 260km/hr, it was a Category 5 Hurricane (SSHWS) Very Severe Cyclonic Storm (IMD), that killed 45. Date: 5 October 2013 – 14 October 2013. Affected areas: India, Myanmar, Thailand, Odisha, Nepal.

Children are the worst affected by a natural disaster, especially in its aftermath. They are usually neglected by their parents who are busy trying to get their lives back on the rails – repairing houses, salvaging items, getting food etc. This often has a negative impact on their health and education. In some cases, they are orphaned or separated from their families, and fall prey to anti-social elements. This is why there is an urgent need to provide special care and protection and counselling in the post-disaster scenario to traumatised children.

Post-Phailin, a new approach was introduced by the Centre for Youth and Social Development (CYSD) to create Child Friendly Spaces (CFSs) to reduce fear, mitigate the risk of migration and prepare children to go to Anganwadis and schools.

Objectives:

- Mobilise communities for protection and wellbeing of all vulnerable children
- Provide scope for children to play, joyful learning, and receive social support
- Provide counselling support for psycho-social care of vulnerable children
- Build confidence in them for relief from stress and fear

Programme:

Post-Phailin 40 CFSs contributed towards providing care and protection to affected children in their village environment. The children (below 14 years of age) were assembled in a community place and provided ample opportunity to be together, play with toys and games and told stories to lessen their trauma. It was a unique programme designed to make the children happy and enable learning.

23 CFSs were set up in Polasara block, 12 in Ganjam block and five in Badasahi block. The process started with village sensitization meetings being conducted by the project team with the help of Village Disaster Management Committees (VDMCs) about the concept of CFSs and their objectives etc. Next, community buildings or spaces were selected for CFSs and their operating time fixed (6 a.m. to 9 a.m.). It was decided to use local languages, such as Odia, Sabara and Telegu, for better communication in the CFSs.

Forty female CFS facilitators, drawn from local communities, were selected by VDMCs and appointed by CYSD. As part of their capacity building, a five-day intensive training programme was held in Gopalpur, Ganjam in December 2013 by CYSD with the support of Plan-India.

The experts from Plan-India oriented the facilitators on issues that affect children, such as migration, early marriage, child trafficking, child abuse etc. Training was also provided on child psychology, how to engage children in various creative activities and the process of reporting. Stress was laid on the fact that their main responsibility was to create a favourable environment for children to enable them to share openly, explore, think and read.

Activities Conducted:

The CFSs were in operation for three months, i.e. January to March 2014. During this period the children were engaged in a variety of activities, which included playing, drawing painting and storytelling from different story books like Kasturi, Jhulu re hattijhul etc. produced by CYSD.

There were also confidence building activities to reduce stress among children and activities for parents, group discussions on parenting skills, effective hygiene and waste management, children's rights, child participation etc.



All activities were designed in harmony with the local culture and discussions on child rights, child education, child marriage, maintenance of health and hygiene were held regularly. Parents as well as community members were sensitized on child protection issues. Full community participation at all stages was ensured through CFS programme design and implementation. Local people (boys, girls and women) helped maintain, monitor and manage the CFSs regularly.

Exit and process of handing over of materials:

Prior to closing down the CFSs, several meetings were held and 'Handing Over Agreement' signed between CYSD, Child Development Project Officers (CDPOs) and VDMCs. This was done to ensure a protective and child friendly environment in the communities, admitting non-starters/dropouts back to formal schools, including Anganwadis, and handing over of CFSs Playing and Learning items to nearby schools and Anganwadi centres for furtherance of quality learning.

Results:

- Facilitators drawn from villages, especially girls, for the programme
- Orientation programme held for facilitators to make CFSs more productive in rural areas
- Places provided by the community
- Children happy with toys and other playing materials provided to them
- Timing decided by the community
- CFSs - a source of encouragement for Anganwadis
- 1,322 children mainstreamed
- Migration of children reduced
- Anganwadi centres activated through demonstration effect of CFSs
- Children, especially girls, got an opportunity to learn and share freely
- CFSs considered a centre for exploring innate potentialities of children
- Children could come together to share openly

Lessons learnt:

- Children from poor families can discover their latent talents if they are provided a platform.
- CFSs made functional immediately after a disaster will be more effective in fulfilling their objectives.
- There is a need for an intensive programme in the context of child protection, life skill development and maintaining personal as well as community hygiene.

The CFS experience was well received by children, their parents and the community. The children were productively engaged and their despair and sorrows lessened. The experiment has provided valuable experience-based learning and is recommended to be used for all disaster mitigation and rehabilitation processes. This successful experience has tremendous scope for replication.

5.2.2 School Safety Programme, Odisha, OSDMA²⁶**School Safety Programme**

The School Safety Programme was a sub-component of Gol-UNDP Disaster Risk Management (DRM) Programme on pilot basis in collaboration with the School and Mass Education Department. The programme covered 150 high schools in 15 districts (10 schools per district).

Objectives

- Identify schools in most vulnerable areas of disaster-prone districts and undertake disaster management plans in the schools selected.
- Spread awareness among stakeholders and involve them in school safety programme.
- Increase the capacity of students, teachers and school management to build up a culture of disaster resistance.
- Inculcate a culture of preparedness at school level among school management, students and stakeholders.
- To make schools a hub for disaster preparedness activities, link to the neighbourhood community.

Output of School Safety Programme

- 150 school safety plans prepared.
- Mock drills conducted in schools.
- Management authorities, PTA, teachers, students of 150 schools trained/oriented in disaster preparedness.

²⁶ Ref: OSDMA website <http://www.osdma.org/ViewDetails.aspx?vchglinkid=GL006&vchplinkid=PL043>

- Capacity of 750 students / teachers enhanced through training in specialized skills.
- Schools linked to disaster management institutional set up and
- Students and teachers participated in local disaster management and mitigation activities.

The Flood Shelters used for:

- Sheltering people of the locality during any flood.
- Facilitating the distribution of food and relief material to the sheltered people.

The flood shelters are used normally as:

- School (Primary / Upper Primary / High School)
- Training Centre for Disaster Preparedness Activities
- Cultural Activities as per need of the people
- Any other purpose which Government may decide from time to time.

Special features

- Earthquake resistant design, high approach road connected to nearest all-weather road; facilities for boarding by boat to rescued people; facilities for cross-drainage, separate toilet for women, well-lit terrace and rooms. Water and borewell and pump facilities.

Ramp with slope for easy movement for the old and disabled.

- Super structure: with a stilt floor three metres high with circular columns to allow storm surge and flood water to pass through without causing damage to the structure with reduction of scouring effect of turbulence of water.

Maintenance & Management: by Flood Shelter Management Maintenance Committee under the BDO of concerned block and members from village. They will develop a corpus for day to day maintenance of the building, payment of electric charges and cost of watch and ward.

Detailed instructions relating to use engraved in local language on a marble plaque.

5.2.3 Education on the move: the case of children of mobile communities, Anthra, Pune

Formal schooling sometimes takes children away from their surroundings by introducing and enforcing a curriculum which has little relevance to the everyday lives that pastoralists and small livestock holders lead.

In Anthra's model for nomadic communities:

- Children not removed from their regions and their contexts
- Easy to access and follow, edu-kit can be carried easily
- Relevance to their knowledge systems
- Opportunities for the community itself to participate in curriculum design, and take it forward without external facilitation
- Learning at their time and convenience; this way women also become a part of the process
- Learning a joyful and empowering experience

The Nomad's Edu-kit

Hands-on, simple, easy-to-use model for individual / collective learning

- Helps community achieve basic literacy and numeracy through three phases: 'Out of the Darkness', 'Wherever You Go' and 'Into your pockets'.

- Uses subjects and topics familiar to community – livestock, plants, fodder species
- Encourages nomadic communities to tell their own stories, draw their own pictures which are then used to make the training aids.
- Initial pilot tests on this model successful. Easily replicable.

This model of learning can be used in temporary shelters in times of disaster:

- Edu-kit is easy to use and portable
- Ensures continuity of school curriculum
- Innovative learning format can keep up spirits in times of disaster
- Flexi-use – adults and children involved together
- The “use-in-the-dark” overhead transparency sheets can be projected on walls or ground, using solar lamps.
- Solar lamps can be used for lighting spaces



1. Connecting pictures (relevant to the nomadic community) with words
2. Dice cubes have letters. When rolled together, the nomads are to make words of the letters that come up on top.



3. Words made using dice cubes are then connected to the word displayed on the flex banner



4. Using solar lamp to project words from transparent film onto flat surfaces

5.2.4 Indian School in Delhi powered by Solar reduces carbon footprint

Delhi's polluted air has affected children who have persistent cough and lung diseases. The Indian School decided to install solar power system after energy audit of its consumption pattern. Among the first few entities in Delhi to get 'net metering' capability – school exports excess electricity generated on Sundays and vacations to the grid in return for credits.

The plant of 71.2 kW accounts for at least 65% of the school's present electricity consumption. The school saves close to 10 lacs per annum in electricity bills leaving more money for things that matter – such as sport equipment and books.

Most importantly, the system will offset 87 tonnes of carbon dioxide emissions in the first year itself, which is equivalent to the CO₂ sequestered by 71 acres of mature forest land.



5.2.5 Mid-Day Meal using renewable energy ²⁷

Parabolic community solar cookers for mid-day meal schemes in rural schools in Sangamner district, Maharashtra, a project by WOTR, Pune

- Solar parabolic cookers can be used as a supplement to conventional cooking methods that use gas or fuel-wood for cooking. The cooker works best under direct sunlight. When the sunlight is partly

²⁷ https://wotr.org/system/files/research_outputs/Parabolic%20Cookers%20for%20Mid-day%20Meal%20Schemes%20in%20Rural%20Schools.pdf

hindered by clouds, its effectiveness is reduced. Nevertheless, under direct sunlight, the performance of the cooker is remarkable. On clear sky days of eight months a year the cooker helps reduce dependency on gas and firewood considerably.

- The cooker works well between 10a.m. and 4p.m. during October to March, and 9a.m. to 4.30p.m. during summer months. This timing suits most schools and anganwadis.
- Size of cooker of four square metre aperture can effectively cook for 30 adults (or 50 students) in one hour. If cooker usage is extended to two or more batches, it can cater to larger numbers. All cooks at present use open pot cooking. With open pot cooking upto six kg rice is cooked, but bigger batches require stirring. And larger pots require assistance for lifting, as women generally do the cooking

Advantages

- LPG saving of 15-25kg reported in a month, with usage time of 45 minutes to 90 minutes per day. LPG was used only on rainy days or foggy days of winter.
- Money saved was used for buying more vegetables and fruits for children.
- No need of matchboxes and lighters, small saving.
- Solar cooking required less water.
- Reduced drudgery as LPG cylinder sourcing led to stress. For schools with 12 students, cylinder lasted 10 days, closest town is 25-40 km away. School teachers have to handle this which meant long absence from school to fetch cylinders on motorcycle etc. Situation is worse when there are only 1-2 teachers.
- Cook said it was a big relief not to worry about food getting burnt – even extra half hour does not burn food in solar cooker.
- Food cooked in solar cooker was tastier, and children got hot and tasty food.
- Less water and detergent for cleaning pot.
- Cooking less drudgery for cooks, who got more time for other school work, and to look after their homes which were mostly on school premises.
- Clean fuel being used, promotion of renewable energy. Children see food being cooked using this technology, brings confidence in practice of green technology for own use, and for the future.
- Reduction of carbon dioxide and other greenhouse gas emissions.
- Saving of Rs 500-1,000 per month at subsidised rate, or Rs900-1,600 at market rate.
- Opportunities in skill development and income generation as localised fabrication centres could be developed.
- Training and capacity-building – utilising the cooker, its maintenance, livelihoods training for village youth (women and men) in additional ways of using cooker, save fuel, and generate supplementary sources of income through cottage industries for manufacturing candles, snacks, biscuits, cakes, papad, through women SHGs.
- Application of solar parabolic for autoclaving, sterilising, cooking at primary health centres.
- Alternative livelihood as 'energy entrepreneurs' – marketing, training and capacity-building – utilising the cooker, its maintenance, livelihoods training for village youth (women and men) on additional ways of using cooker, save fuel, and generate supplementary sources of income.
- In this example, PRINCE-40, an approved technology by MNRE, is a square dish concentrator of four square metre aperture area, has been used. The unit is manually tracked and available in a DIY (do it yourself) kit form. It has won the Innovation 2009 award by IIT Bombay Alumni Association.

5.2.6 Growing mini-forests on school premises²⁸

Children's Forest Programme (CPF) is a programme to develop green campus and to introduce

²⁸ http://www.cceindia.org/cee/project_pages/cfp.html

environmental education to create better school environment. The programme focuses on schools – children, teachers, school management and local community.

In Uttar Pradesh, CFP was introduced in five districts under Uttar Pradesh Participatory Forest Management and Poverty Alleviation Project (UP-PFMPAP) of UP Forest Department supported by JICA where 100 schools were selected from each district. Centre for Environment Education was the implementing agency for CFP in Lucknow district to focus on the following objectives:

1. To grow mini forest by planting various suitable indigenous tree species in areas designated by the school and maintain for long-term.
2. To educate and sensitize students and in turn their families and society on the importance of forest to maintain our environment.
3. To promote a sense of affection towards nature through environment education.
4. To motivate students in initiating networking and mobilizing community to undertake activities for environment protection and ecological conservation.
5. To use incomes generated from mini forest for improving school facility and/or enhancing the school meal programme.

As part of their school environment club, school children have been planting trees in their premises

- Children can watch, and water the saplings until they are able to find their own water
- They can monitor the growth of the trees
- They know the usefulness of trees – fruit bearing, flower bearing etc.
- Manage the health of the soil
- They know that trees are major contributors to oxygen, cleaner air, act as carbon sinks, contribute to mitigation
- Shelter birds and provide support to smaller plants/creepers
- Provide food to birds and insects
- Form an ecosystem around themselves

5.2.7 A proposal: Adopting ecofriendly ways by presenting cultural practices through new concepts

We Indians take pride in our strong cultural heritage, which is intrinsically linked to nature. We worship the sun, wind, land, trees, plants, and water which are the very base of human survival. Likewise, respect and conservation of wildlife, the peacock, lion etc., are part of Indian cultural ethos from time immemorial. Industrialisation and globalisation have impacted our culture and the process of economic growth and development, while vital for the nation's progress, have caused environmental degradation. These have brought the concerns for environmental conservation and sustainable development to the forefront. For centuries, indigenous communities were used to surviving and adjusting their agriculture, fishing and hunting in the event of changes in climate. It is ironic that now when the threat of climate change is so imminent we are looking for solutions outside.²⁹ Using this intrinsic connect our culture has with nature, communities and schools could be made to adopt ecofriendly (3R's) practices.

- Schools to adopt ecofriendly practices – 3 Rs – through packaging it in a 'cultural' way
- Indians respect and worship nature – the sun, the wind, rivers.
- Worship nature – plant more trees, nurture them, look after their soil, use natural fertilisers and pesticides.
- Worship the sun – use it more through adopting solar energy, in the form of solar lighting, solar water heaters, solar cookers.
- Worship the wind – use wind energy

²⁹ <https://www.mainstreamweekly.net/article746.html>

- Worship rivers – look after the rivers, keep them clean
- Enhance nature through non-polluting technologies, package it in a cultural way
- Make people aware of renewable technology – as women use energy more, reach out to them for adoption of ecofriendly practices.
- Outside school, children spend time with mothers mostly cultural activities or a trade. Allow them to use their time with children as a strategy to promote old cultural practices in new packaging, and then to their peers.

5.2.8 Best innovative practices in SSA and MDM in Odisha

1. Handwash Abhiyan

For hygiene of students HWA taken up in all schools. Health and hygiene both contribute to nutrition of students, which in turn contributed to learning outcomes. A bar of soap, and a bottle of handwash prove insufficient to cater to the needs of hand washing and dish-cleaning of so many students during the lunch break. So, the used, discarded cold-drink plastic bottles were collected, 2-3 small holes were made in the cap. Handwash liquid such as Dettol / Lifebuoy from the market was diluted with water, filled into 20-30 plastic bottles and kept ready for use of 200 students.

Benefit: cost-effective, saves time, reduces rush and congestion among children, ensures protection of environment by reuse of plastic bottles.

2. Multi tap multi cap system (MTMC)

Children need water for drinking and washing at MDM time. School having single tubewell or single tap water source cannot serve the above purpose for 100 or more children. Innovative device multi-tap water source at tubewell point or at the pipe source point has been introduced with little expense, plastic pipe and few taps and if required a rubber pipe. With the help of a rubber pipe multitap water source can be installed at any suitable place. 2,000 model handwash stations have been set up.

Benefit: cost-effective, saves time, reduces rush and congestion among children, flexible and easy to install. With a pipe multitap water source can be extended from the water source to any convenient place.

3. Model dining hall

Government issued instructions to all districts for the construction of a model dining hall for safe and hygienic MDM.

4. Mobile app

The MDM Mobile App allows for the scheme to be monitored from anywhere. Has provision for reporting untoward incidents, unhygienic food served, social discrimination, misuse of funds, and if emergency plan exists. Schools also have important phone numbers (Primary Health Centre, Hospital, Fire Brigade etc.) prominently displayed on the walls of the school building.

5. Rashtriya Bal Swasthya Karyakram (School Health Programme)

The RBSK maintains health records of students, provides micro-nutrients, de-worming medicine, iron and folic acid (WIFS). Eye-testing and distribution of spectacles to children with refractive error has also been undertaken through RBSK. In many schools, height recorder on wall is available, and in 5,000 schools, weighing machines have been supplied under sponsorship of banks, to regularly check growth parameters of the children.

6. Grievance redressal mechanism

A Student Helpline opened at OPEPA and is being used. The department has a control room with toll-free telephone number as a measure for grievance redressal mechanism. Complaints received from students/parents through student helpline are being sent to concerned Collectors for immediate redressal. Video conferencing is being held at regular intervals with district collectors and other senior officials of the district for smooth implementation of the program.

7. Awareness programmes

Awareness generation and Information, Education and Communication (IEC) activities, and media campaign, are carried out at State/district/block/school level. Information such as MDM Awareness Mela, Video, Audio, IEC material is available on the site.

8. Community involvement

Involvement of SHGs and NGOs in functioning of the MDM programme in Odisha is to increase quality and free teachers for academic work. They prepare hot cooked food for the students. Successful implementation has contributed a lot to the objectives of the programme. Also, involvement of mothers in testing the quality of food grains and overseeing the programme in turn at school has intensified monitoring at the grassroots level.

Issues and suggestions related to MDM

- Insufficient quantity of food grains supplied from local depot of FCI
- Inadequate funds for construction of kitchen sheds
- High transportation cost for hilly areas
- Abrupt increase in the market price ingredients of MDM like dal, oil, vegetables etc.
- Very low honorarium of CCH (Cook cum Helper)
- Disparity of cooking cost of primary and upper primary
- Constraint of dining hall and sometimes serving utensils/plates
- Provision of MDM for CWSN schools
- Provision of MDM for Blind and Deaf Schools

5.2.9 Green Army – Thanal, Thiruvananthapuram, Kerala³⁰

The Green Army is a formal and semi-formal structured state-wide school programme that comprises mentor volunteers from among youth, professionals, and college students 18 years and above. In Thiruvananthapuram, it is registered with the City Corporation, and works as an extended arm of the corporation for its campaigns, monitoring and even policing. The format works as follows:

- After a three-month orientation programme on environment education (waste, climate, health, bio-diversity, energy, etc.) volunteers become Green Army mentors.
- These Green Army mentors, in turn, develop training tools and/or processes for a year-long programme that include camps and other activities for schools.
- Regular (daily/weekly) meetings are conducted at the City Municipal Office, where a minimum of 20% volunteers is expected to attend. The meetings are informal and allow for discussions.
- Volunteers then take the lead, become mentors and as smaller groups (sometimes the existing youth associations/clubs) take charge of a school, where they interact with students through teachers. They help teachers to develop an action plan for the school and start working on it.

³⁰ <http://thanal.co.in/article/view/green-army-fellowship-an-initiative-by-thanal-thiruvananthapuram-municipal-corporation-green-army-47791800>

- Every school forms a Green Army with minimum 50 students with gender balance. Two student leaders and a teacher in charge lead the army. A school can have any number of units.
- The city corporation funds the camps, contests, clean-up campaigns, door-to-door campaigns, production of awareness materials etc.

5.2.10 Schools Grassroots Programme– VYUH, Pune, Maharashtra

This initiative by a youth group VYUH (Voice of Youth for Unity and Harmony) in Pune city involves urban school students in social and environmental development. Its goal is to build an integrated society through creating a powerful network of schoolchildren across the city.

The VYUH Youth group approach is as follows:

- Form School Grassroots Clubs in urban schools
- Get urban children familiar with their surroundings, and aware of the problems of the ecosystem
- Intra-school activities are aimed at making them aware of local problems and give them tools to tackle the problems
- Inter-school activities bring together children from diverse economic backgrounds, for the common good and enable best practice sharing
- Participation in all planned activities is not limited to VYUH Club members, and welcomes teachers, students or parents to participate, to create a better Pune
- The VYUH Club members spearhead these activities and help fully maximise local potential to tackle local problems
- Weekly meetings are planned, where the members could suggest ideas for betterment of society which are then fleshed out as VYUH Club Activities. VYUH helps implement these ideas to reach a larger audience and through recruiting volunteers to act on them. They work with the principle of “People most affected by a problem are in the best position to determine the solutions.”

Some regular activities of VYUH are:

- Workshops on making clay Ganapati idols and their benefits over Plaster of Paris idols.
- Clean neighbourhood drives to make citizens aware of waste management, littering etc.
- Tree plantation drive in conjunction with local NGOs and authorities. Regular follow-ups organised to ensure the trees are taken care of.
- Traffic safety awareness workshops—a citizens' traffic watch organized with the help of local citizens
- Data acquisition with the help of local residents/homemakers/senior citizens, to help identify the problem areas and possible solutions for them. This activity will be held in conjunction with Pune Data.
- Free roads movement, where certain heavily trafficked roads are shut down for a period of time for social activities and fun
- Participation in the renovation of a major thoroughfare, JM Road – renovate this major road, and turn it from a dirty, chaotic stretch of shops and parallel parked vehicles to a beautiful, eco-friendly and most importantly, 'Clean Road'.

5.2.11 Children's Biodiversity Register (CBR) – WOTR, Pune ³¹

Biodiversity is an interesting subject for children. It creates a good opportunity to engage children in collecting data on biodiversity through the Children's Biodiversity Register (CBR), specially prepared for

³¹ <https://wotr.org/books/making-biodiversity-community-resource-people%E2%80%99s-biodiversity-register-pbr-%E2%80%99Chow-to%E2%80%9D-manual>

schools. Children are encouraged to create a narrative of their village.

The idea is to encourage children to explore their surroundings, their village, their community, their peers and themselves fundamentally. The activity-based explorations are designed to arouse and involve a child completely, reinforced with curricular and co-curricular elements.

The ecological modules are modified/designed specific to each village based on surrounding landscape ecosystems and ecological factors unique to the village.

Objectives:

Make children understand concepts of ecology and the various modes of interaction with the ecosystems. Help them realise and understand how the surrounding Landscapes and Lifescapes determine their growth and development, and how the crucial balance amongst all these is maintained by the forces of nature.

Topics that may be selected by children for their project work:

1. Wild and pet animals
2. Wild edibles
3. Diverse Landscapes around the village
4. Honey bees
5. Types of crabs
6. Traditional hunting techniques
7. Medicinal plants
8. Traditional songs for auspicious occasions
9. Story of the village – history
10. Agriculture and crops
11. Types of butterflies
12. Types of soil
13. Water supply systems
14. Birds and their nests
15. Diverse carvings on door frames
16. Lifestyle in selected villages
17. Cattle and fodder
18. Wild fruits

5.2.12 The Common Bucket: A Game for children & adults – Watershed Organisation Trust (WOTR), Pune³²

The resources we use are limited. It demands a sustainable way of using so that not only us, but also the future generations might be able to enjoy it. This simple message is however very difficult to put across sometimes. "The Common Bucket" is a fun game designed to get this message across.

Objective of the Game:

In the face of climate change and increasing global water shortage, to create awareness about sustainable water use to meet intergenerational needs.

For Whom is the Game:

The game can be played with any of the following groups: (1) People in rural areas from various professions. (2) In an urban setup like Housing Societies etc. (3) In Schools among students to create social awareness.

³² <https://wotr.org/sites/default/files/The%20Common%20Bucket%20Game%20-%20Instruction%20Manual%20-Design-2.pdf>



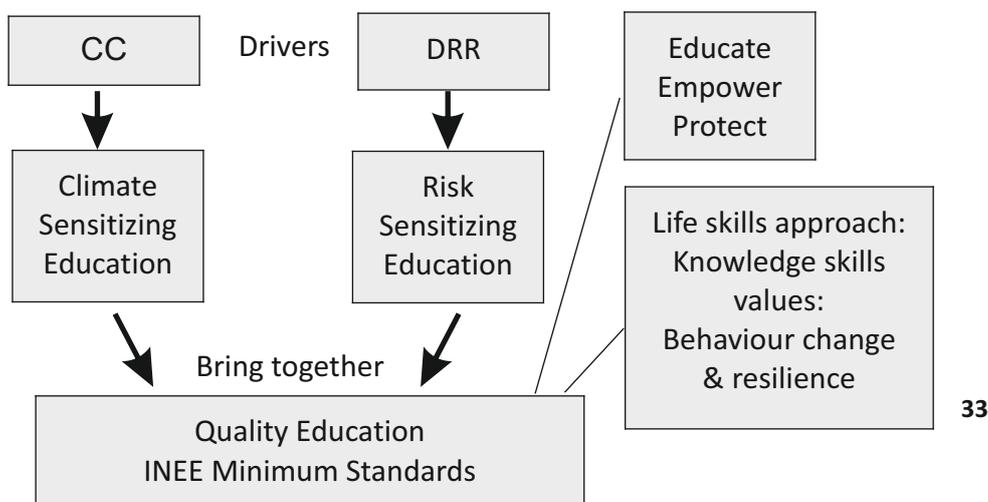
Number of participants: (1) Facilitator-1; (2) Observers - 3; (3) Active Players - 9
 12 players divided into three groups signifying generations. Total time required: 80 minutes.
 Each 'generation' needs to fill the water from common bucket into their given bucket, the water from the common pool is depleting with use.

Questions to be asked:

- (1) What does the game signify?
- (2) What do the fights signify?
- (3) What about water wastage?
- (4) Why does the winner of Round 1 keep winning? Connect this to what's happening in real life.

5.2.13 Climate Change Curriculum and Climate Change Education

Climate Change Education and DRR in the classroom-Change Agenda should not be burdensome! Build on what exists and keep children and teacher’s interest at the center of education reform efforts.



Climate Change Education

Case Study: Schools in New England area, USA ³⁴

33 From UNICEF: Learning for Sustainable Development

34 https://shelburnefarms.org/sites/default/files/climate_change_case_studies_.pdf

Students are learning about climate change in ways that build a complex understanding of the issues and connect everyday actions to collectively make a big difference. Four schools are engaging in climate change education, focusing on resilience and adaptation, as part of a project of the New England Environmental Education Association's "Advancing Climate Change Education in New England" in which all six states compiled case studies of climate change education in action. Each story is unique to the school, its people, and its place. All of them are inspiring and offer hope for the future.



Students in the Green Team carry out school-wide recycling projects



Making frames for beehives as part of their study of climate change and pollinators

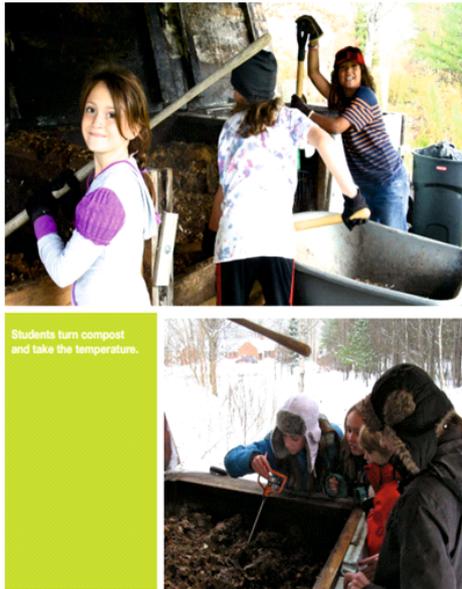


Students assist with menu planning, ordering and meal preparation, using active participation to delve into the larger issues of food systems, food justice, and affordability.



Students from an elementary school harvesting in the school garden, and transporting harvested pumpkins using a wheelbarrow

"Kids love getting their hands dirty and being outdoors. They are more likely to eat what they pick from the garden."



Students turning the compost and taking the temperature of the composting material (the composting process generates heat which helps in speeding up the composting process).

The school mission of developing citizens who "learn actively and collaboratively, think creatively and critically, live responsibly and respectfully, contribute positively to their community, and pursue excellence in their individual endeavours", is amply displayed in all that they do. Right from the approach road the schools are clearly different:

- Neat, clean, safe walking paths, cycle lanes, and proper signages for safe routes to school
- Bicycle racks with bicycles on them, and helmets neatly fixed to them
- Weekly 'walking Wednesdays' to encourage walking to school
- Well-tended-to school flower gardens
- Composting system that uses canteen waste makes compost that is used in the gardens (composting is managed by students with teacher supervision)
- Vegetable gardens managed by students who also harvest the produce and take it to the canteen for use in the school lunches
- Floors and toilets cleaned using a non-chemical cleaning agent
- Fuel-oil boiler converted to natural gas boiler for hot water provision
- Radiant floor heating system, motion detector lighting controls, rooftop solar array
- The FEED (Food Education Every Day) committee of parents and teachers oversee the gardens and our cafeteria "Table to Farm" composting programme
- School recycling programme has reduced landfill contribution by 40% in four years.
- Active partnerships with many local groups
- Teacher professional development regularly
- Regular field trips always centred around the topics of sustainability and ecology

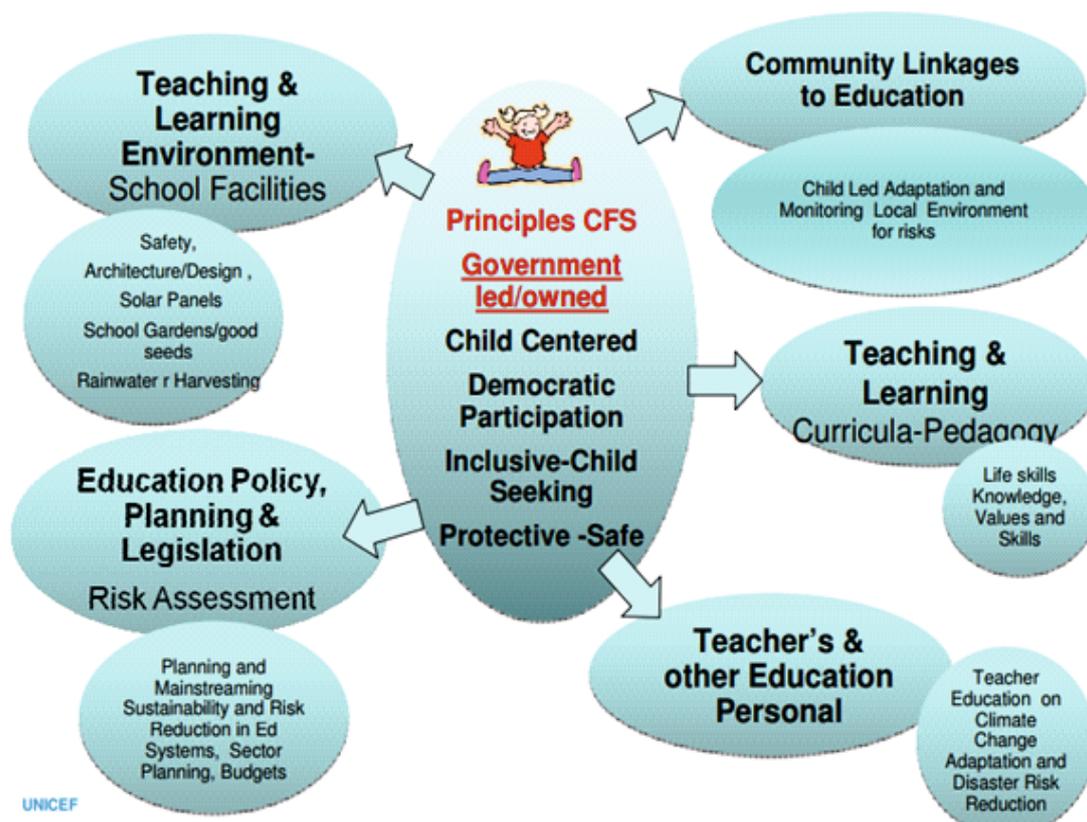
5.2.14 UNICEF's Child Friendly Education Approach³⁵

"Brightly painted rooms, clean floors and colourful displays on walls; child appropriate furniture arranged flexibly for a variety of learning approaches; pupil activity centres or learning corners around the classroom; adequate water and sanitation facilities; provision of recreation kits; nutritious school meals" – these are what child friendly schools could look like in some countries. UNICEF's Child Friendly School is a flexible approach that allows countries to interpret the guidelines provided to suit their own social, cultural and economic needs and capabilities.

35 https://unfccc.int/files/cooperation_and_support/education_and_outreach/application/pdf/unicef_learning_for_sustainable_development.pdf

A child-friendly school is not just a child-welcoming school but also a child-seeking school. It works to attract and retain children from different backgrounds, respects diversity and ensures non-discrimination. Some innovations that have helped make schools more inclusive are:

- Local school mapping and community monitoring systems to help track enrolment and identify children who are out of school.
- Satellite schools that ensure younger children in remote communities can go to school close to home until they are old enough to attend existing primary schools farther away;
- Community schools that provide education opportunities for children who do not have access to the existing standard schools;
- Mother tongue instruction in the early grades and multi-linguistic/multicultural education designed to ease transition from home to school and render education more relevant to minority populations;
- Non-formal education programmes that are equivalent to the formal system but have flexible schedules to cater the learning needs of children engaged in daily or seasonal income generating activities (working children);
- Special efforts to combat exclusion and stigmatization of children affected by HIV and AIDS;
- Safe spaces to facilitate children's right to education in emergency situations;
- Promoting both registration and strengthening community-based early learning opportunities that help meet the legal requirements for enrolment and better prepare children from disadvantaged populations for schooling (school readiness);
- Building partnerships through a mix of education and non-education partners to promote the principle of inclusion.



From UNICEF: Learning for Sustainable Development

The case studies clearly demonstrate that:

- Climate change curriculum is a first step towards building climate resilience
- Education needs to be redesigned for the future – to address the realities of our culture and our world and equip young adults with the behaviour and skills they need to tackle challenges that lie ahead
- Hands-on practical approach through building a community, where students trust each other, know how to work with each other, and see the interconnectedness between all disciplines. Allowing children to think of climate resilience as a guiding thread rather than a single subject helps integrate climate and sustainability (that are bigger questions) into most lessons and projects, and hence seamlessly into our lives
- Exposure to current, real-world issues keeps climate resilience work compelling for students. This holistic way of approaching education leads to greater motivation and ownership for the students
- A robust mechanism to ensure continuity of primary and upper primary education, with introduction of skill-based education.

A Framework for Building Resilience to Climate Change through Girls' Education Programming, Center for Universal Education. Ellen Chigwanda: <https://www.brookings.edu/wp-content/uploads/2016/12/global-20161202-climate-change.pdf>

Climate Change Adaptation, Resilience and Hazards, Eds Walter Leal Filho, Haruna Musa, Gina Cavan, Paul O'Hare, Julia Seixas, Springer: https://www.wmo.int/pages/themes/climate/climate_projections.php

Child Friendly Schools Manual, UNICEF Publications, UNICEF:
https://www.unicef.org/publications/files/Child_Friendly_Schools_Manual_EN_040809.pdf

Climate Resilient Kerala, Thanal, 2017: <http://thanal.co.in/uploads/resource/document/climate-resilient-keralastakeholder-recommendations-for-kerala-state-action-plan-on-climate-change-70307602.pdf>

Drought in India 2015-16. When coping crumbles: A rapid assessment of the impact of drought on children and women in India, UNICEF.

'Education Responses to Climate Change and Quality: Two Parts of the Same Agenda?', Bangay, Colin, Blum, Nicole. 2009. International Journal of Educational Development, 30 (4): 359–68.

Eleventh Five Year plan of India (2007-12), Inclusive Growth, Volume I, Planning Commission, Government of India: http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11_v1/11th_vol1.pdf

Fighting Classroom Hunger – Achievements of the Mid-Day Meal Scheme, James, G (2013):
<http://yojana.gov.in/mid-day-meal-scheme.asp>

'Household Livelihood and Coping Mechanism during Drought among Oraon Tribe of Sundargarh District of Orissa, India', Suchismita Mishra, Journal of Social Sciences, 15 (2):
https://www.researchgate.net/publication/228342309_Household_Livelihood_and_Coping_Mechanism_During_Drought_among_Oraon_Tribe_of_Sundargarh_District_of_Orissa_India

IPCC (Intergovernmental Panel on Climate Change): <http://www.ipcc.ch/>

'Is Education the Key to Reducing Vulnerability to Natural Disasters and Hence Unavoidable Climate Change?', R. Muttarak and W Lutz, Ecology and Society 19, no 1(2014): 42.

<http://blogs.worldbank.org/arabvoices/education-and-climate-change-middle-east-and-north-africa>

<http://blogs.worldbank.org/arabvoices/education-and-climate-change-middle-east-and-north-africa>

http://shodhganga.inflibnet.ac.in/bitstream/10603/39731/9/09_chapter%203.pdf

<http://icds-wcd.nic.in/icds/icds.aspx>

<http://www.lse.ac.uk/GranthamInstitute/publication/multiple-benefits-from-climate-change-mitigation-assessing-the-evidence/>

<http://www.c40.org/researches/c40-lse-cobenefits>

http://rmsaindia.gov.in/images/Approach_Principles_planning.pdf Approach and Principles of Planning, RMSA, Gol

<https://www.adb.org/sites/default/files/institutional-document/31318/guidance-note-education-sector-risk-assessment.pdf>

https://wotr.org/system/files/research_outputs/Parabolic%20Cookers%20for%20Midday%20Meal%20Scheme%20in%20Rural%20Schools.pdf

http://www.ceeindia.org/cee/project_pages/cfp.html

<https://www.mainstreamweekly.net/article746.html>

<http://thanal.co.in/article/view/green-army-fellowship-an-initiative-by-thanal-thiruvananthapuram-municipal-corporation-green-army-47791800>

<https://wotr.org/books/making-biodiversity-community-resource-people%E2%80%99s-biodiversity-register-pbr-%E2%80%99Chow-to%E2%80%9D-manual>

<https://wotr.org/sites/default/files/The%20Common%20Bucket%20Game%20%20Instruction%20Manual%20-Design-2.pdf>

https://shelburnefarms.org/sites/default/files/climate_change_case_studies_.pdf

https://unfccc.int/files/cooperation_and_support/education_and_outreach/application/pdf/unicef_learning_for_sustainable_development.pdf

https://en.m.wikipedia.org/wiki/Climate_resilience

Kerala State Action Plan on Climate Change, 2010

Learning for Sustainable Development, UNICEF

Mainstreaming Adaptation to Climate Change in Indian Policy Planning, Ravindranath D., Chaturvedi R.K. and Dr Kattumuri R.: http://www.lse.ac.uk/asiaResearchCentre/_files/ChaturvediKattumuriRavindranath.pdf

MoEF's letter to Chief Secretaries of all states on convergence of MGNREGS and GIM:
http://envfor.nic.in/sites/default/files/MGNREGS-GIM_0.pdf

Odisha Climate Change Action Plan (2015-20)

OSDMA website: <http://www.osdma.org/ViewDetails.aspx?vchglinkid=GL006&vchplinkid=PL043>

Quality Education: Why it Matters, http://www.un.org/sustainabledevelopment/wp-content/uploads/2017/02/ENGLISH_Why_it_Matters_Goal_4_QualityEducation.pdf

State Action Plan on Climate Change, Uttar Pradesh, 2010

Strategic Framework on Environmental Sustainability for Children 2016-2017, UNICEF

The Listen First Framework: <http://www.listenfirst.org/materials; Handout, ALNAP Training – Leadership in Action>

www.worldbank.org/en/news/feature/2013/06/19/india-climate-change-impacts

www.worldbank.org/en/news/feature/2013/06/19/india-climate-change-impacts

Possible DRR and CCA measures proposed by participants at the capacity building and ToT workshops held in Bhubaneswar, Thiruvananthapuram and Lucknow

Centrally Sponsored Schemes and Mainstreaming of DRR and CCA			
Sr. No.	Name of the Scheme	Elements / Benefits	Possible DRR and CCA measures
1	Sarva Shiksha Abhiyan	<p>1. School infrastructure</p> <ul style="list-style-type: none"> • School building • Toilet • Drinking water <p>2. Inclusive system with quality equitable education</p> <p>3. Textbooks, school stationery, bag, uniform</p>	<ul style="list-style-type: none"> • Green school infrastructure – rainwater harvesting, use solar lighting [Adaptation and Mitigation] • Schools to be disaster ready: (Ensure that school gates are wide enough to let ambulances pass through) Hazard specific school design and construction retrofit existing schools to withstand future hazards [DRR] • Clean toilets and separate toilets for girls with adequate water for cleaning • Clean potable water provision – clean water source, with solar pump and proper taps (ensuring no leakage) • Schools should be disaster shelters – but separate space for schoolrooms to continue schooling [CC Adaptation] • Provision for children with special needs (easy access to classrooms, railings, ramp, seating) • School Management Committees • PTAs/MTA – Ensure 50% active women participation in all groups like PTA, mother PTA and sectoral PTA, PEC. Include senior citizens to provide guidance and improve interaction with students; programmes such as “1 day with your child at school” • Social audit – community involvement in monitoring of school operation • School audit programme – quarterly or half yearly audit of school performance in academics, sports, other activities, intra-interschool activities. • School activities monitoring – Swachh Bharat Abhiyan; recycling projects • Ensure proper distribution of books, etc – audit. Include shoes as part of uniform – a lot of children walk to school – footwear keeps them safe

Sr. No.	Name of the Scheme	Elements / Benefits	Possible DRR and CCA measures
		4. Teachers / Non-teaching staff 5. Teacher training / appraisal	<ul style="list-style-type: none"> • Theme based teacher training programmes, health cards for teachers and non-teaching staff
2	Mid-Day Meal Scheme	1. Hot cooked meal for all children 2. Covered space for cooking 3. Raw rations 4. Cooking medium and utensils 5. Cook-cum-Helper (CCH)	<ul style="list-style-type: none"> • Cooking material – eco-friendly – solar, or Biogas • Food – organic, nutritious, locally grown • Introduce Health Card systems(children, women, cooks and helpers) • Nutritional supplements to be added with MDM (replace tablets with natural food items) • Cooking of traditional food once in a month (include grandparents)
3	ICDS	1. Anganwadi / Balwadi infrastructure <ul style="list-style-type: none"> • Building • Toilets • Drinking water 2. AWW/ ASHA workers 3. Textbooks, Balwadi stationery, bag, uniform 4. Audit of AWW 5. Anganwadi curriculum	<ul style="list-style-type: none"> • Anganwadis and day care centres should become data bank for collecting all details regarding women and children. Anganwadis should be mapped to maintain a proper structure. Anganwadis should be linked to the schools of specific areas which is interlinked to PHCs, LSGI, ICDS etc. • Other than ASHA workers, SC/ST promoters, tribal volunteers etc. should be linked to the Anganwadis • Designing of tools to impart climate related education for tribal communities • Area and work specific policies should be introduced

Centrally Sponsored Schemes and Mainstreaming of DRR and CCA			
Sr. No.	Name of the Scheme	Elements / Benefits	Possible DRR and CCA measures
1	Alternate systems “Education on the move”	'Education on the move' model (Nomad Edu-kit) could be used for STs, nomadic tribes, that are not willing to join SSA formal schooling system. Develop system where they have basic 3Rs	<p>New model to help them improve their own lives, and if necessary allows them opportunities for alternate livelihoods. They can also be included in the Aadhaar Card scheme.</p> <p>The model (nomad edu-kit) is portable and versatile, allows adult and children learning together and wherever they go.</p> <p>The model can be used to ensure continuity of education in temporary shelters during times of climate related disaster.</p>
2	Proposed: Rashtriya Climate Change Shiksha Abhiyan (RCCSA)	RCCSA as a platform to be used to integrate and monitor climate change related issues.	<p>Education to be included in the SAPCC and RCCSA to be the first element in schools</p> <p>Students activities on climate change to have academic value, i.e. to be graded, for it to be taken seriously.</p>
3	Proposed: Reorganise districts in states, states in country as a climate change adaptability measure	When states and districts are reorganised according to vulnerabilities, in order to tackle climate change, it makes dealing with climate change impacts easier	Management of climate change impacts will be easier, with better DRR and resilience.



Climate Action Network South Asia (CANSAS) is a coalition of over 160 civil society organizations working in eight South Asian countries to promote government and individual action to limit human-induced climate change in a manner that promotes equity and social justice between peoples, sustainable development of all communities and protection of the global environment.

CANSAS has been at the forefront of representing the southern perspectives at international climate negotiations and undertakes inter-governmental, regional, and national actions. With its large membership base CANSAS works towards linking policy work, research and action based work in the region to address and set workable solutions to the adverse effects of climate change affecting the region.

www.cansouthasia.net



UNICEF is mandated by the UN General Assembly to advocate for the protection of children's rights, to help meet their basic needs and to expand their opportunities to reach their full potential. UNICEF is guided by the Convention on the Rights of the Child and strives to establish children's rights as enduring ethical principles and international standards of behaviour towards children. UNICEF mobilises political will and material resources to help countries, particularly developing countries, ensure a “first call for children” and to build their capacity to form appropriate policies and deliver services for children and their families.

www.unicef.in

Other Partners

