



unicef 
for every child

THE HEAT IS ON!

Towards a Climate Resilient Education System
in the Maldives

Cover: In early January, just days after the tsunami, a boy sits with his father outside their house on Kalhaidoo Island, Laamu Atoll, some 265 kilometres south of Malé, the capital. Although the house is largely undamaged, their possessions, including their fishing boat, were completely destroyed by the waves.

© UNICEF/UNI41654/Horner

Author: Fumiyo Kagawa

Suggested citation: Kagawa, F. (2022). *The Heat is On! Towards a Climate Resilient Education System in the Maldives*. Kathmandu: UNICEF Regional Office for South Asia

Disclaimer: The report presents the author's analysis of views expressed by research participants and of relevant documentation. The statements in the publication do not necessarily reflect the policies and views of UNICEF.

For further information:

UNICEF Regional Office for South Asia (ROSA)
P.O. Box 5815, Lekhnath Marg, Kathmandu, Nepal
Tel: +977-1-4417082
Email: rosa@unicef.org
Website: www.unicef.org/rosa

© United Nations Children's Fund (UNICEF)
January 2022

Permission is required to reproduce any part of this publication: All images and illustrations used in this publication are intended for informational purposes only and must be used only in reference to this publication and its content. All photos are used for illustrative purposes only. UNICEF photographs are copyrighted and may not be used for an individual's or organization's own promotional activities or in any commercial context. The content cannot be digitally altered to change meaning or context. All reproductions of non-brand content MUST be credited, as follows: Photographs: "© UNICEF /photographer's last name". Assets not credited are not authorized. Thank you for supporting UNICEF.

Table of Contents

Acknowledgements	4
Executive Summary	6
Section 1 – Introduction	9
1.1. Aims and Scope of the Study.....	9
1.2. A Brief Note on Methodology	9
Section 2 – Climate Vulnerabilities in the Maldives	10
Section 3 – Climate Change Impacts on Education System	14
3.1. Learning Facilities.....	14
3.2. Education Access	15
3.3. Student Health and Wellbeing.....	16
3.4. Education Provision and Learning Quality	17
Section 4 – Education Sector Responses to Climate Change	19
4.1. Policies, Plans and Strategies	19
4.2. Finance	20
4.3. Curriculum, Teaching and Learning	20
4.4. Teacher Capacity Development.....	24
4.5. Communication, Coordination and Partnership	25
4.6. School/Community Student Participation Platforms.....	25
4.7. Monitoring, Evaluation and Accountability	28
Section 5 – Discussion and Recommendations	29
Section 6 – Conclusion	34
References	36

Acknowledgements

This report was made possible by the generous support and contribution of many individuals while overcoming the challenges due to the COVID-19 pandemic.

This report was commissioned by UNICEF Regional Office for South Asia (ROSA) and written by Fumiyo Kagawa, PhD, Education and Climate Change consultant and Research Director at Sustainability Frontiers UK. The report was drafted with technical guidance and oversight from ROSA's Climate Change and Education sections - Reis Lopez Rello, Regional Climate Change Advisor, and Jim Ackers, Regional Education Advisor with the support of Frank Van Cappelle, Education Specialist, JiEun Lee, Education Officer and Emma Hamilton Clark, Knowledge Management Consultant. David Selby, Founding Director of Sustainability Frontiers UK, offered valuable comment on the report.

We thank the following Ministry of Education and National Institute of Education officials who made time to participate in the stakeholder survey, offered their invaluable insights and shared helpful country-specific information: Ibrahim Asif, Director General, Policy Planning and Research Division, Ministry of Education; Moosa Adam, Senior Policy Director, Ministry of Education, Fathima Azza, Head of Education Supervision and Quality Improvement Division, Ministry of Education; Ahmed Raifu, Head of Curriculum, National Institute of Education; Gulfishan Shafeeu, Curriculum Development Officer, National Institute of Education. We also thank many experts from Maldives National University, United Nations Development Programme (UNDP) Maldives and Duvaafaru primary school as well as anonymous experts who participated in the stakeholder survey, shared their invaluable insights and helpful country-specific information.

We also extend our heartfelt thanks to all the students, teachers and head teachers who participated in the focus group discussions. They were from: Haa Alif Atoll Education Centre, Haa Alif Dhidhdhoo; Hithadhoo School, Addu City; Kudafari School, Noonu Kudafari; Muhyiddin School, Malé'; Thaaajudhdheen School, Malé'; Kalaafaanu School, Malé'; Kinbidhoo School, Thaa Kinbidhoo; Mulak School, Meemu Malak. Their active participation, first-hand experiences, concerns and insightful views on climate change and education were invaluable.

Our sincere thanks go to the following Ministry of Education personnel: Ibrahim Asif Rasheed, Director General, Policy Planning and Research Division and Aminath Najfa Gasim, Education Officer, School Administration Division for all their kind support in organizing the school-level focus group discussions.

Likewise, we extend our gratitude to the following UNICEF Maldives Country Office colleagues, Mazeena Jameel and Mohamed Yasir for their time and support given to the country-specific data collection and draft report review.



Executive Summary

This Maldives country study forms part of a UNICEF Regional Office for South Asia (ROSA) study on the impacts of and responses to climate change across education systems in South Asia. The overall aims of the regional study are:

- To generate evidence on how education systems in South Asia are monitoring, assessing and responding to the impacts of climate change
- To identify the main educational tools and mechanisms being employed in planning for and addressing climate risks
- To showcase the perceptions of key education sector stakeholders regarding further embedding climate change considerations and concerns into education tools and mechanisms.

The research methodology employed includes desk-based documentary review, national-level key stakeholder surveys, school-level focus group discussions (FGDs) and a U-Report process targeting youth from 14 to 24 years old.

As a highly dispersed island nation consisting of 1,192 small flat and low-lying coral islands, the Maldives are extremely exposed and vulnerable to climate change impacts. Human destruction and modification of the coastal environment has left its fragile ecosystems significantly weakened, making the country ever more vulnerable to natural hazards such as coastal flooding and coastline erosion. Uneven population distribution and socio-economic inequalities in the country pose distinctive development challenges in the densely populated capital Malé, on the one hand, and the thinly populated and widely scattered outer islands on the other. A high dependency on climate sensitive tourism and fishery sectors, as well as an import-oriented economy exacerbate

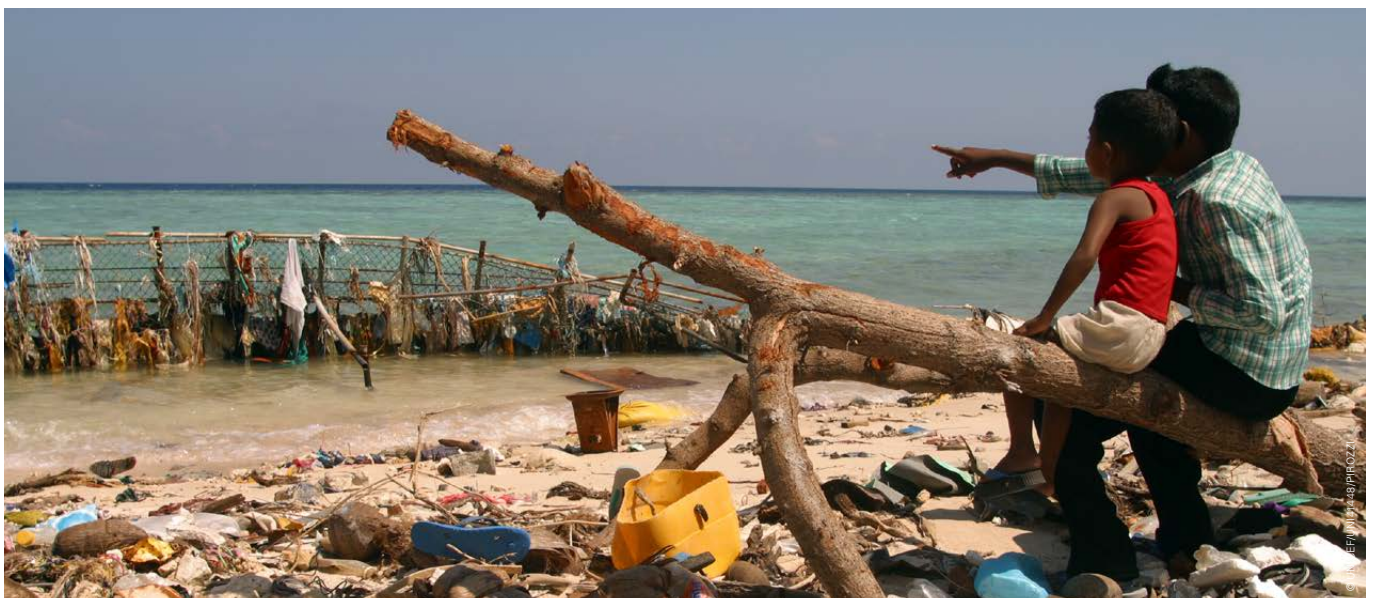
the Maldives' vulnerabilities to climate change. Food and water insecurities are already major concerns in the country and are likely to increase under current climate change scenarios.

This study has examined direct and indirect impacts of climate change on the education system in the Maldives. In terms of learning facilities, despite significant government's efforts in recent years to improve school structures and facilities and make schools safer, a majority of schools are at high risk of inundation given their close proximity to the shoreline. School infrastructures thus remain vulnerable in the face of increasing hydrometeorological hazards. Access to safe water at school is a growing concern especially during the hot and dry season.

Concerning education access, one fifth of youth participants in the U-Report claim that climate change has affected their journey to school. FGD participants report that increasingly unpredictable heavy rains, winds and flooding disrupt student journeys between home and school from time to time.

Excessive heat and strong sunlight are negatively impacting student health and wellbeing. Vector-borne disease such as dengue fever is an increasing concern. Climate change also may very well affect student emotional wellbeing. Almost 80 per cent of Maldivian U-Report respondents indicate that they are anxious about climate change and its implications for the future.

Opportunities for outdoor experiential learning, a unique educational feature, especially in the outer islands, are rapidly diminishing due to excessive heat and unpredictable and harsh weather events. There is a worrying sign that learning outcomes linked to nature-based learning in the



new national curriculum will not be achieved in some islands as the unique natural features to be studied are rapidly disappearing due to climate change impacts. Lack of nature-based experiential learning further accelerates student disconnection from the natural environment leading to lower sense of environmental care and concern and a weakened readiness to act pro-environmentally.

This study has also examined education sector responses to climate change, exploring the seven key education system components (i.e., policies, plans and strategies; finance; curriculum, teaching and learning; teacher capacity development; communication, coordination and partnership; school/community student participation platforms; monitoring, evaluation and accountability). Main research findings include the following:

- Consideration of climate change mitigation and adaptation is currently very limited in the education sector plan and in planning documentation.
- No climate change mitigation and adaptation specific resource allocation mechanisms exist in the education sector.
- The new national curriculum systematically includes a wide range of climate change adaptation and mitigation-relevant knowledge, skills, values and attitudinal learning outcomes. New curriculum rollout is ongoing at the time of this research.
- Overall, pre-service and in-service teacher training opportunities focusing on climate change risk reduction and resilience building fall short of what is required.
- There is no coordination mechanism focused on education sector climate change risk mitigation and resilience building. Inter-ministerial collaboration between the Ministry of Education and the Ministry of Environment, Climate Change and Technology is thin and limited.
- Student climate change and pro-environmental engagement opportunities outside of the classroom depend on the enthusiasm of individual teachers and schools. Most school environmental clubs are inactive. The Ministry of Education's nation-wide *Farukoe* programme in 2018 is a noteworthy exception, providing a unique transformative learning experience and inspiring students and school communities to take pro-environmental action.
- There exists no systematic data gathering mechanisms on climate change impacts on school infrastructure, education access, student and teacher health and wellbeing, education provision and learning quality.

Recommendations to make the education system in the Maldives more resilient in the face of increasing climate change risk are as follows:

Climate Change Impact Monitoring and Assessment

- Consulting with relevant stakeholders, develop climate change impact and vulnerability indicators and subsequently integrate them into the existing *School Improvement, Quality Assurance & Accountability (SIQAA) Framework*, the *Baraabaru School Indicators* and the Maldives Education Management and Information System (MEMIS) as appropriate.
- Develop inter-ministerial collaborative and partnership mechanisms between the Ministry of Education and relevant Ministries/Agencies (e.g., Ministry of Environment, Climate Change and Technology, Ministry of Health, National Disaster Management Authority) in gathering, sharing and analysing climate change impact data as it concerns children and schools.

Policies, Plans and Strategies

- Incorporate climate change risk reduction and resilience building into the next *Education Sector Plan* and also ensure robust policy implementation mechanisms. In such a process, ensure that gender and inclusivity perspectives are embedded.
- Through consultation with key stakeholders, develop policy guidelines and an action plan for 'climate proofed' schools in the Maldives considering diverse context and needs of urban and rural schools.
- Integrate education, health, water, sanitation and hygiene (WASH) and child protection interventions in a bolder and more deep-rooted way into education policy documents to ensure student health, wellbeing and safety in the face of the adverse effects of changing climate.
- Ensure that needs and roles of the education sector including those of children and young people are clearly integrated in the forthcoming *National Adaptation Plan*.¹

Finance

- Raise awareness among Ministry of Education and Ministry of Finance officials regarding the benefits of financing climate change mitigation and adaptation activities in the education sector.
- Among education policy makers, create a shared understanding of what constitutes a 'climate action' budget in the education sector and how to utilize it effectively.
- Ensure equitable allocation of a 'climate action' budget (once it is set up) across the country.
- Consider creating a financial tracking system for a 'climate action' budget in the education sector to better monitor budget allocation and utilization. This could be part of the envisaged government's tracking system for public and private climate finance flows.²

¹ See Ministry of Environment (2020a, 20).

² See Ministry of Environment (2020a, 19).

- Explore external climate change funding opportunities (e.g., Green Climate Fund) with a view to supporting remote rural schools so that they can enhance their climate resilience and play a key role in creating more self-reliant and sustainable island communities.

Curriculum, Teaching and Learning

- Identify contextually appropriate knowledge, skills and attitudes necessary for living within the island's ecological capacity and for contributing to the blue economy, and integrate them into the curriculum and curriculum support materials.
- Using the existing curricular opportunities, support students to take concrete actions and play leadership roles in climate change mitigation and adaptation actions at school and in their local community and beyond.
- Give students a safe and supportive space to express and share fears and concerns about changing climate.
- Ensure existing climate change-related curriculum content is taught using a wide range of participatory and action-oriented pedagogical approaches.
- Develop more contextualized and regionally-specific teaching and learning support materials for climate change education. Such materials should reflect on unique ecosystems and climate hazards of each locality in question.

Teacher Capacity Development

- Re-invest and revitalize each Teacher Resource Centres (TRCs) as a functional regional hub by providing necessary resources and support; make locally oriented climate change teaching, learning and action an integral part of the TRC.
- Build teacher capacities in employing a wide range of active/participatory and child-centred pedagogies such learning modes being vital for action-oriented climate change education.
- Build teacher capacity in providing basic psychosocial support and basic support to maintain student health and wellbeing if threatened or adversely impacted by climate change.
- Build teacher capacity in promoting environmentally sustainable practices at school and in the community that are most relevant to the locality (e.g., waste management; tree planting campaigns; mangrove and coral reef conservation and restoration; using and maintaining renewable energy technology; awareness raising and advocacy techniques).

Communication, Coordination and Partnership

- Create a national platform/mechanism focused on climate change mitigation and resilience building in the education sector.

- Enhance inter-ministerial coordination and collaboration, in particular, between the Ministry of Education and the Ministry of Environment, Climate Change and Technology.

School/Community Student Participation Platforms

- Consider reviving the *Farukoe* programme by formally embedding it within the Ministry of Education's policy/structure to ensure long-term sustainability of the programme.
- Create a sustainable support mechanism for school environment clubs including the identifying of terms of reference and stipulating minimal levels of action; also create a 'green star' recognition scheme for individuals and schools making a unique contribution to mitigating and adapting to climate change.
- Develop an online platform for sharing climate change-related experiences and actions among students in the Maldives.
- Expose the Maldivian students to regional and global climate change movements/networks through online platforms or face-to-face gatherings as appropriate.



Section 1 Introduction

1.1. Aims and Scope of the Study

This Maldives country study is one of the eight country studies undertaken as part of a UNICEF Regional Office for South Asia (ROSA) study on the impacts of and responses to climate change across education systems in South Asia.

The overall aims of the regional study are threefold:

- To generate evidence on how education systems in South Asia are monitoring, assessing and responding to the impacts of climate change.
- To identify the main educational tools and mechanisms being employed in planning for and addressing climate risks.
- To showcase the perceptions of key education sector stakeholders regarding further embedding climate change considerations and concerns into education tools and mechanisms.

In examining the interface between climate change and education, this study focuses on three areas:

- Direct and indirect climate change impacts on education systems in terms of learning facilities, access to education, student health and wellbeing, education provision (including teacher health and wellbeing) and learning quality, each having significant implications for the quality of education.
- Education system responses to climate change, exploring seven key education system components (i.e., policies, plans and strategies; finance; curriculum, teaching and learning; teacher capacity development; communication, cooperation and partnership; student participation platforms; monitoring, evaluation and accountability).
- Key education sector stakeholder experiences, perceptions and needs concerning climate change education.

1.2. A Brief Note on Methodology

The methodology employed is a desk-based documentary review, combined with consultations with, and information gathered from, key stakeholders in the Maldives through national-level stakeholder surveys, school-level focus group discussions (FGDs) and a U-Report³ targeting youth from 14 to 24 years old.

13 national-level stakeholders from the Government, UN organizations, international/national NGOs and academic institutions were identified by the UNICEF Maldives Country Office according to the criteria set for the study and each was invited to participate in national-level stakeholder surveys conducted via email or Skype/Zoom. 11 survey contributions followed (including two group contributions) between 25 June and 14 October 2020. Email follow-up communications with selected survey respondents took place for further information gathering and clarification. The SWOT (strengths, weaknesses, opportunities and threats) analysis discussion in *Section 5* was one element in the national stakeholder survey.

Two school-level FGDs were conducted on 26 and 28 October 2020 using the Google Meet platform. Eight secondary teachers (4 female, 4 male) were from different parts of the country: two islands in the northern atolls (Kulhudhuffushi, Meedhoo), the capital Malé, two islands in the central atolls (Mulaku, Kinbidhoo) and an island from the southern atoll (Fuvahmulla). Eight secondary school students (4 girls, 4 boys) were also from different parts of the country: two islands in the northern atolls (Dhidhoo, Kudafari), the capital Malé, two islands from the central atolls (Malaku, Kinbidhoo) and an island from the most southern atoll (Addu). Before the FGD, student participants were asked to draw two images, i.e., one on 'climate change in my island/community' and another on 'climate change impacts on my education'. Drawings prepared by the students were presented individually for discussion at the FGD.

Analysis of the data gathered is woven into the relevant sections of this report. The U-Report process was implemented and analysed by a UNICEF ROSA team leading to the completion of the publication, *Rising to the Challenge: Youth Perspectives on Climate Change and Education in Maldives* (Lopez Rello & Ackers 2021)⁴ upon which this report draws.



³ U-Report, run by UNICEF and its partners, is a messaging tool that empowers young people around the world to engage with and speak out on issues that matter to them.

⁴ For a full report, go to <<https://www.unicef.org/rosa/media/16306/file/Rising%20to%20the%20Challenge%20-%20Maldives.pdf>>

Section 2

Climate Vulnerabilities in the Maldives

The Maldives is extremely exposed to and vulnerable to climate change impacts due to its unique geographical features. It consists of 1,192 small flat and low-lying coral islands grouped into 26 atolls, which stretch over 860 km from north to south and 80 to 120 km from east to west. Over 80 per cent of the land areas are barely one meter above the mean sea level, so a sea level rise of 50 centimetres would mean significant portions of the islands are washed away (Ministry of Education & Ministry of Higher Education 2019; Ministry of Environment and Energy 2016a). Addressing climate change is 'crucial and essential to its very existence as a nation' (Ministry of Environment and Energy 2015a, 4).

Flooding is the most common and recurrent natural hazard. Climate change projections indicate more frequent extreme flooding events. The southern parts of the country are particularly vulnerable to rain-induced flooding, while the northern and central parts of the country are vulnerable to elongated dry periods and drought (Ministry of Environment and Energy 2016a; UNDRR 2019).

Many islands already suffer from severe and frequent coastal erosion. Human destruction and modification of the coastal environment (e.g., sand and coral mining, poorly planned infrastructure development in environmentally sensitive areas including reclamation of lagoons and development of wetlands for housing) have degraded natural defence mechanisms, leading to a higher risk of

coastal flooding and coastal erosion (Das 2010; Ministry of Environment and Energy 2017; UNDRR 2019). The small size of the islands means that the critical infrastructures such as hospitals, schools, transport and communication infrastructures are located very close to coastlines and people live very close to the sea, exposing them to sea swells, storm surges and coastal flooding (Das 2010; Ministry of Environment and Energy 2015a).

The very young, children and youth (0-24 years) constitute the largest portion of the population of the Maldives, making up 37 per cent of a total population of estimated 557,426 in 2020 (National Bureau of Statistics 2018; UNICEF ROSA 2020a). 40 per cent of the total population live in Malé, the densely populated capital, while the rest of the population is scattered across some 190 inhabited islands. An annual population growth rate of 1.69 per cent combined with rapid urbanization means that pressures on land and natural resource availability are enormous. Accumulation of waste generated by a growing local population combined with increasing tourism and with insufficient waste management capacity poses a significant threat to human health and to the natural environment (Ministry of Environment and Energy 2016a; UNDRR 2019). There are geographical inequalities in the country. Most of Maldivians in lower socioeconomic groups live in the outer islands while some of the health and education facilities in the outer atolls fall below the standard of the capital (Transparency Maldives 2015; UNDRR 2019).

The Maldives' vulnerability to climate change is also further aggravated due to its very narrow economy with heavy dependence on climate change-sensitive tourism and fishery sectors and its significantly import-oriented economy (i.e., importing almost all food items except for



tuna and coconut) (Ministry of Environment and Energy 2015a, 2016a). Malnutrition, both under-nutrition (i.e., stunting, wasting, mineral and vitamin deficiencies) and over-nutrition (i.e., overweight condition and obesity) among children under 5 years of age are already a concern in the country⁵ and food and nutrition insecurity are likely to increase as extreme weather events affect food source countries, global food prices and food supply and distribution chains as well as local fish and crop production (UNICEF ROSA 2020b). The Maldives almost exclusively depends on imported fossil fuel to meet its energy demand, which not only affects energy security but also stands in the way of transitioning to low emission development (Ministry of Environment and Energy 2015b).

In addition, access to safe drinking water is already another major concern faced by the Maldives. While nearly all residents in Malé have access to safe water, this proportion drops to 15 per cent for those living on the outer islands (World Bank 2019). Groundwater and rainwater have been two main sources of freshwater in the Maldives, but groundwater has become unsuitable for drinking due to contamination. The very close proximity of groundwater aquifers to the island surfaces makes them vulnerable to pollution and contamination from human activities as well as from saltwater intrusion. In recent years, groundwater has been depleted because of rapid population growth and human development activities. The 2004 tsunami also led to a significant contamination of groundwater due to lack of proper sewage systems. The sea level rise increases saltwater contamination of the freshwater lenses as they lie on top of the salt water (Das 2010; Orłowska 2018). In the outer islands, rainwater is the main source of potable water but changing precipitation patterns make rainwater harvesting very challenging. Desalinated water is used in Malé and resort islands despite the high production cost and its viability is very much linked to the economic wellbeing of the climate-sensitive tourism sector (UNDRR 2019; World Bank Group & Asian Development Bank 2021). Bottled water is widely consumed as drinking water in households, including in the capital (Government of Maldives 2019; Ministry of Environment and Energy 2016a).

It is important to note that the above-mentioned climate change-induced hazards, shocks and vulnerabilities do not occur in isolation. They interact with one another and exacerbate existing social and economic inequalities, while feeding from those inequalities in a complex web of relationships. Unaddressed, the combined effects of climate change hit marginalized groups in society first, hardest and longest. It is therefore critical to address multiple risk factors simultaneously (UNICEF 2015, 2021).

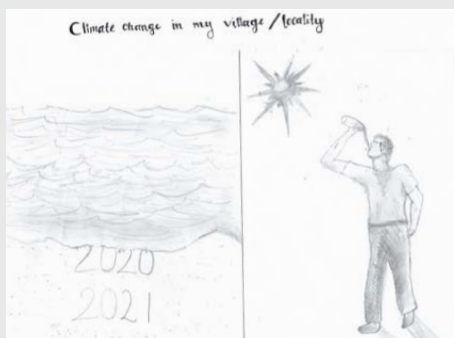


⁵ According to the 2016-17 *Maldives Demographic and Health Survey*, the rates of stunting, wasting and being overweight among under-five children were 15 per cent, 9 per cent and 5 per cent respectively (Ministry of Health 2018). According to FAO *et al.* (2019) 10.3 per cent of the total population in the Maldives was undernourished.

Climate Change in My Locality

Teacher and student FGD participants were asked about climate change impacts they have noticed and experienced in their locality.

Teacher FGD participants report that temperature rise, unpredictable weather patterns (including unpredictable very heavy rains) and beach erosion are some of the key changes they face due to climate change. Teachers share that when they were younger they felt cooler even during the hot and dry season (*iruvai* season) but they feel much hotter nowadays. The traditional weather calendar followed and understood by their forefathers has now become irrelevant as they face increasingly uncertain and unpredictable weather patterns. They point out that climate change impacts are felt very differently in different parts of the country. For instance, the northern parts of the country are becoming extremely hot compared to other parts of the country. Teachers in Malé feel that they are less affected by climate change compared to their counterparts living in the outer islands, but, on the other hand, they experience localised flash floods because of heavy rainfalls and drainage problems from time to time. In the highly congested capital Malé, they report that they are affected by air, water and noise pollution in their everyday lives.



The sea is rising year by year. It is really affecting our island. We Maldivians really enjoy going to the beach to swim. The sea is part of our life... It has become difficult for young children to go to swim without any adults. It is really changing our culture.

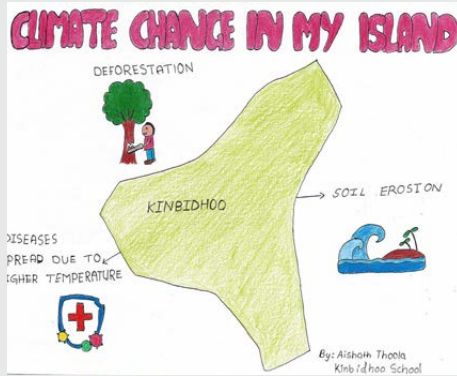
We are very much suffering from dehydration and skin problems. However, not many locals are aware of climate change issues. I hope that we can conduct many awareness programmes and make locals become more aware of these things. We should all work together for a better climate in our islands.

Saajiu Shafeeg, Grade 9, Haa Alif Atoll Education Centre, Haa Alif Dhidhdhoo



My drawing shows temperature and sea level rises, erosion and dying trees. One person is thinking about the beach. How they miss the beach and how they miss the trees! In Malé, there are so many buildings and so little or no trees. If we have trees, they have fewer leaves than before. Trees are dying. I feel so sad and devastated to see this. Climate change has had so much impact on us. I really want to create a better future for the next generations so that they can live in a better world without these issues related to climate change.

Sama Saeed, Grade 9, Kalaafaanu School, Malé'



Deforestation, soil erosion and rising temperatures affect us mostly. Soil erosion is the major climate change impact in my island. Beaches are eroded day by day. We do not have any chance to save our beautiful beaches now. I have seen these changes in my lifetime. I feel very sad about it because people are not aware of these things. I learn those things in our Science classes and I am very interested in these things.

Aishath Thoola, Grade 9, Kinbidhoo School, Thaa Kinbidhoo



On my island, I see many issues - deforestation, water pollution by sewage, beach erosion and coral bleaching. I am very sad about coral bleaching and beach erosion. When we go snorkelling, if corals are bleached we cannot see the nice corals.

I would like to say 'Stop cutting down trees! Stop deforestation!' I want my island to be green. I want to plant more trees, save the beaches and corals. I want to save my island. I would like to have support from all of you, all the Maldivians.

Ibrahim Shaariq Mohamed Rameez, Grade 9, Kudafari School, Noonu Kudafari



In our island, during the rainy season, school children go to school like this through the water with difficulties. The kid is stuck in the water when flood water comes suddenly. In the background I drew buildings destroyed by tsunami or tidal waves. People cannot live in a place destroyed like this.

They have to move to another place. I lived in Haa Alifu Atoll, but I now live in Malé. There are many families suffering from floods, air and water pollution and poverty and the government and other people should help them financially or in other ways.

Fahudh Bin Abdul Bari, Grade 9, Thaajudhdeen School, Malé'

Section 3

Climate Change Impacts on Education System

While the impacts of climate change in the education sector have not been researched systematically in the Maldives, the national-level stakeholders participating in the survey (n=11) consider climate change impacts to be 'serious' or 'extremely serious' in the following areas: clean water at school (5 responses); student physical health and wellbeing (4 responses); student access to school (4 responses); teaching and learning materials and facilities (4 responses). According to the U-Report survey conducted for this study, overall 56 per cent of Maldivian youth respondents (n=199) claim that their education/studies have been affected by climate change (Lopez Rello & Ackers 2021).

3.1. Learning Facilities

In the Maldives there has been significant investment in improvement of school infrastructure and facilities in recent years (Ministry of Education 2019a). After the 2004 tsunami, schools were rebuilt and relocated to allay safety concerns (National Stakeholder 10). However, a majority of schools are still located very close to the shoreline and therefore are at high risk of inundation. According to Das (2010), a '1 meter rise in the sea level will submerge 80 per cent of the country's land area including 135 schools' (11). The Maldives National Building Codes exist but they are not always implemented in the local building construction (Orlowska 2018).

In recent years, flooding incidents in the southern parts of the country damaged school facilities and learning materials. Schools were also damaged by strong winds (National Stakeholder 9). National stakeholders point out that school buildings and premises are 'not climate proofed' and they are vulnerable to flooding, tidal surges and extreme weather events (National Stakeholders 3, 5). New school infrastructure investments 'need to feature risk-informed climate resilient designs' that ensure safety of students and staff while securing access and continuity of education (National Stakeholder 2). Schools are often used as temporary shelters during disasters such as severe flooding, but schools lack the necessary infrastructures and facilities (e.g., independent power sources) to better cope with such situations (National Stakeholders 3, 5).

On each island, there are both household and community rainwater harvesting systems and government institutions such as schools have their own adequate rainwater storage capacity (National Stakeholder 5). In 96 per cent of the schools, rainwater tanks are available (Ministry of Education

2019a). Developing infrastructures for clean water and assuring the water quality are indeed the 'top priority in all the schools' in the Maldives (National Stakeholder 7). In spite of on-going efforts, access to safe water at school is a growing concern. Rainwater harvesting is increasingly challenging with extended dry periods and unpredictable precipitation patterns. Schools using ground water for non-potable purposes (e.g., washing and toilet) are impacted by increasing saline contamination of ground water posing health risks to children (National Stakeholder 2). At the FGD, a male student in Kudafari reports that students in his school can get water at school, but 'it is not really good water for drinking so it is very difficult to do things at school.' According to a male principal in Kinbidoo, 'During the *iruvai* season, no rain and it affected our school as we ran out of water.' He goes on to say that 'the government has provided water two, three times before. I feel that water shortage is getting more serious.' To cope with the potable water scarcity, schools commonly rely on students' own drinking water brought from home (National Stakeholder 3). This option, however, may no longer be viable when sufficient rainwater has not been harvested at home and in the community.

The government has extended its efforts and resources in supplying potable water to vulnerable islands each year during the dry period and it plans to develop an island-wide water supply network by the end of year 2023 (National Stakeholder 5).



3.2. Education Access



Climate change has made the weather ever so unreliable and unpredictable. Monsoons have lost their patterns so we do not know when it is going to rain. There are students who take a ferry to the main island crossing atoll lagoons to reach the school every day. Suddenly weather changes. Strong winds, rough seas and storms prohibit them from reaching the school safely. They might be absent as the transport is cancelled due to the bad weather.

Aishath Yumnu Arushad, Grade 9, Muhyiddin School, Malé'

The Maldives has realized the goal of achieving universal primary and lower secondary education. While net enrolment rates for primary and lower secondary education are both 100 per cent in 2019, the net enrolment rate for higher secondary education dropped significantly, i.e., by 37.2 per cent in the same year (Ministry of Education 2019b). The Maldives Education Management and Information System (MEMIS) monitors enrolment and retention of children in schools (National Stakeholder 3). At the school level, it is common that student attendance records are kept daily, prolonged absences with no apparent justifiable reason being investigated first by the school, and then by social services if necessary (National Stakeholder 2). Before the COVID-19 pandemic, school closures were very rare in the country and did not last more than one day (National Stakeholders 9, 10).

In the U-Report survey conducted for this study, 20 per cent of Maldivian youth respondents (n=199) report that climate change has affected their journey to school and 12 per cent state that their family's ability to afford schooling has been affected (Lopez Rello & Ackers 2021). Participants at the student and teacher FGDs explain that heavy rains and winds as well as flooding incidents have greatly disrupted

student travel to school. They point out that those who have to cross atoll lagoons by ferry and those who live in the northern and southern parts of the country are most affected. For instance, a male student from Dhidhdoo Island in the north explains that most of the students in his school have to travel a long distance from one side of the island to another. Heavy rains and winds make it 'impossible for the students to go to school without soaking even if they carry an umbrella'. Transportation options are very limited in his island and taxi drivers raise the price as the demand increases. 'As a result, many students skip school'. He further explains that not only students but also teachers tend to be absent on rainy days. This means that covering the whole syllabus has become difficult. In the case of Malé, students' journey to the school has been disrupted by localized flooding events that take place from time to time.

Most of the roads in the Maldives are unpaved and uneven with many potholes, so flooded roads after heavy rains make it very hard for children to travel to school. In some islands, after heavy rains the water stays for a few weeks unless it is physically pumped away from roads to the sea. Maintaining safe roads to school and providing a school bus service on the larger islands become important strategies in ensuring education access (Orlowska 2018).

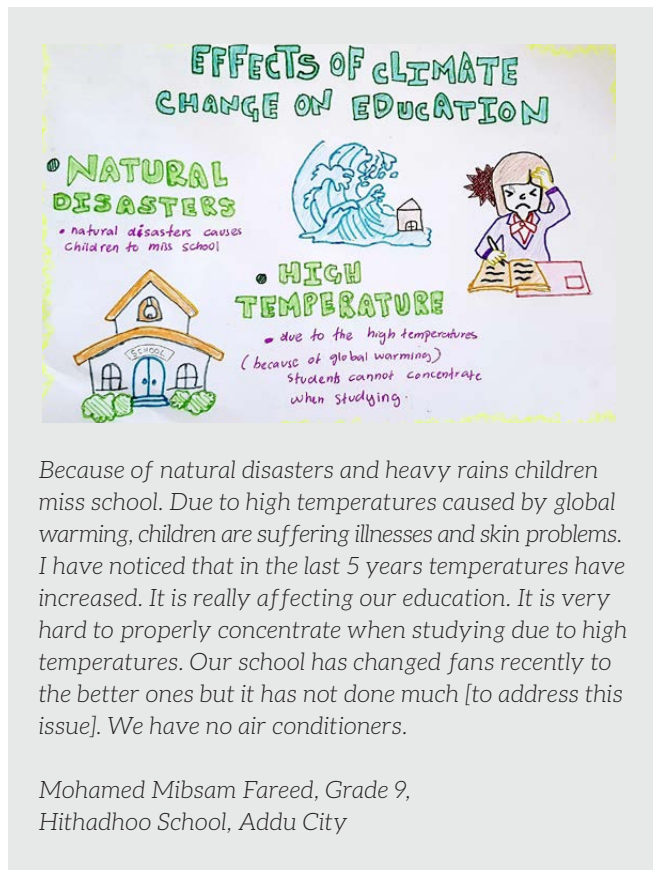
Internal migration from the outer atolls to Malé is on the rise because of the better health, education and economic opportunities concentrated in the capital (Transparency Maldives 2015). The number of children who migrate to Malé for better education - better facilities, more qualified teachers and more diverse classes and educational activities - will continue to rise unless education services improve in the outer islands. A previous study conducted by the Ministry of Education & UNICEF Maldives (2015) has found that many migrant students had adjustment problems and often suffered from bullying and peer pressures at the new school, resulting in frequent absence, poor academic performance, lower self-esteem and emotional stress, among other manifestations.

There are some concerns that increasing severe coastal erosion and resultant loss of land might further accelerate internal migration with profound effects for schooling:

It is projected that [coastal erosion] will cause climate-induced migration, resulting in children having to move to other schools which are not necessarily equipped or built better [to accommodate them]. Migration for education already has posed several child protection challenges for boys and girls.⁶ If migration increases, the child protection [issues are] likely to increase, especially if children move without parental supervision (National Stakeholder 3).

⁶ When children migrate alone from small to larger islands to attend a secondary school, they are at risk of exploitation such as drug abuse, crime and sexual abuse (UNICEF Maldives undated).

3.3. Student Health and Wellbeing



A recent study on the effects of climate change on children in the Maldives identifies a number of adverse climate change impacts on children's health. Due to excessive heat and strong sunlight, children suffer from headaches, fevers, allergies, skin reactions and eye problems (Orlowska 2018). In the teacher FGD, a male teacher explains that since his school was re-opened after the COVID-19 school closures in 2020, there have been daily incidents of two or three students complaining of headaches and wanting to go home. He explains that this is due to the high temperatures. A female teacher shares that during the outdoor camping programme organized by her school in the previous year one of her students fainted due to the excessive heat.⁷

Student FGD participants commonly report 'dizziness' and 'tiredness' due to high temperatures in the classroom, which makes it very difficult to concentrate on their studies. They also report that fans in the classroom are not effective enough to cool the temperature down. According to the above-mentioned study, there are no adaptive measures to protect children from the increasingly unbearable temperatures in the classroom and so far the issue 'was not yet recognized by the authorities' (Orlowska 2018, unpaginated).

Dengue fever is a major public health problem in the Maldives. A combination of heavy rainfalls and poor waste management has created ideal breeding places for mosquitos. Poor WASH facilities in some schools and lack of proper sanitation and drainage systems in most of the islands means that flooding also drives up the risk of dengue (National Stakeholder 2). In recent years the rainy season has shifted from the June/July period to the May/June period and this corresponds with the peak season for dengue incidents (Orlowska 2018). A national stakeholder points out that 'children are particularly at risk of developing dengue haemorrhagic fever and there are reported deaths every year'. Children in the remote islands are particularly vulnerable due to lack of advanced medical care on their own island should their condition deteriorate (National Stakeholder 2). Vector-borne diseases are likely to increase in the future due to hotter and wetter weather conditions requiring the education system to find ways of proactively addressing these issues (National Stakeholder 1).

A small number of schools in the Maldives have a health room and a counselling room (14 per cent and 5 per cent, respectively) and first-aid kits are available in 42 per cent of schools (Ministry of Education 2019a). Counsellors are provided in approximately 25 per cent of the government schools to support student emotional and psychological wellbeing. At the time of research, the Ministry of Education is in the process of re-training school counsellors (alternatively, two teachers per school if a counsellor has not been appointed) to offer psychosocial support to the students who suffer from stressful COVID-19 pandemic situations (National Stakeholder 9).

Climate change also may very well affect student emotional health and wellbeing. Asked how worried they were about climate change and what it means for the future, 78 per cent of Maldivian youth U-Report respondents (n=167) indicated that they are 'very/extremely worried' (38 per cent) or 'a little worried' (40 per cent) (Lopez Rello & Ackers 2021,16). One national stakeholder points out that there is increasing anxiety about the future among communities in the Maldives. This is because of the experience of climate change impacts in every aspect of daily life combined with greater awareness of potential future scenarios linked to the sea level rise (National Stakeholder 2).

⁷ In the past students fainted not necessarily because of the excessive heat but because of lack of breakfast. After the introduction of the Ministry of Education's breakfast school programme, the incidents of students being faint have stopped (National Stakeholder 10).

3.4. Education Provision and Learning Quality

CLIMATE CHANGE IMPACTS ON MY EDUCATION

- HIGH TEMPERATURE CAUSES DIZZINESS AND TIRED
- NO SHADE DUE TO FEW TREES AFFECTS THE OUTDOOR ACTIVITIES
- IN WINDY AND RAINY DAY IT IS HARD TO ATTAIN SCHOOL

By: Aishath Thoola, Kinbidhoo School

I experience three main impacts of climate change. High temperatures cause dizziness and I feel tired. High temperatures and no tree shades. We cannot conduct outdoor activities. It is very sad. Because of strong winds and rain, it is really difficult to attend the school. Many students miss school when the weather conditions are very difficult.

Aishath Thoola, Grade 9, Kinbidhoo School, Thaa Kinbidhoo

CLIMATE CHANGE IMPACTS ON MY EDUCATION

With our teacher, we went to see our unique natural features as part of our curriculum. We students were asked to observe them. These features were not there so we could not study them. We did not see any birds and animals. Life on the islands is dying... When I was swimming, I found that reefs were bleached and most of the corals were dead. Fish are also dying, as they do not have homes. Mangroves are shelters for a lot of birds and other animals protecting them from the heat caused by global warming. Our mangroves are getting dry and plants are dying day by day. Some trees do not really have green colour anymore. Until recently they were very beautiful. I don't see any people taking any action to protect our mangroves.

Aishath Alya Binthi Ismail Ahmed, Grade 9, Mulak School, Meemu Malak



In the Maldives, traditionally children and their families spend a lot of free time outside at the beach (Orlowska 2018). It is very common that the schools in outer islands offer a lot of curricular and extracurricular outdoor activities. However, outdoor learning activities are increasingly disrupted due to excessive heat and unpredictable and extreme weather events. A male school principal in Kinbidhoo explains that his school has a policy that instructs students to bring their hats every day and wear them during any outdoor activities. That measure notwithstanding, 'due to hotness and rising temperatures we are facing difficulties in carrying out outdoor activities.' Teachers commonly express that organizing outdoor activities such as field trips, outdoor nature observations, school competitions involving schools from different islands have become very challenging. They normally plan the activities very carefully so as not to expose the students too long to the hot sun and they prepare alternative plans to better cope with various eventualities including bad weather events. However, some activities had to be cancelled in the end. A female principal comments:

Waste of time and energy. Education is not only about reading books, but also about exposures and experiences, and most importantly learning by experience. Climate change turns things upside down. We cannot keep postponing [the activity] and change dates. Sometimes we have to cancel it, which has a very negative impact on our kids' education.

When outdoor nature observation visits were implemented, some teachers and students faced a stark reality. A female teacher in Malaku shares that when she took her students to observe local coral reefs and mangroves, they found that the coral reefs were badly bleached and only a few species were seen in the small mangroves. 'We have the curriculum with a lot of learning outcomes [linked to] nature observations and experience-based activities.' However, the loss of the unique natural features due to climate change has deprived her students of unique learning opportunities. 'We don't have any [unique natural] features to share with the students of coming generations.'

Nowadays many students in the Maldives are disconnected from the nature in their everyday lives and they take the nature for granted (National Stakeholders 8, 11). In the face of rapid biodiversity loss in the country, students are losing first-hand experience of nature, which will further accelerate their sense of disconnection from the natural environment. Exam-oriented and competitive learning culture at school undermines the importance of learning about the environment, too (National Stakeholder 11). Schools need to consider creative ways to teach about their unique local place. 'If students are not taught about the place, made to love the place, they do not care for it and they do not own it. If kids look after the local environment, it is sustainable in the long run' (National Stakeholder 10).



Section 4

Education Sector Responses to Climate Change

4.1. Policies, Plans and Strategies

The Government of Maldives has invested extensively in climate change mitigation and adaptation over the past few decades and has been one of the foremost advocates for international climate action. *The Maldives Climate Change Policy Framework* (MCCPF) provides a comprehensive framework to realize low carbon and climate resilient development considering short-, medium- and long-term effects of climate change. The MCCPF has laid out detailed objectives and strategies under each of the following five strategic goals:

- 1) Sustainable financing;
- 2) Low emission development;
- 3) Adaptation and opportunities;
- 4) Capacity building and leading advocacy at climate negotiations;
- 5) Fostering sustainable development (Ministry of Environment and Energy 2015a, 24).

These strategic goals have both direct and indirect implications for the education sector. For instance, the third goal touches upon climate proofing of critical infrastructures, schools being included by implication. Two objectives under the fourth goal are: 'to apply a strategic approach to integrating climate change awareness into education and training' and 'to mobilize public interest and engagement on the subject of climate change including youth, who make up a high percentage of the Maldivian population' (ibid., 29). Integrating and updating climate change elements within the secondary school curriculum and encouraging student research focused on local climate change issues are specific strategies mentioned under the fourth goal. The fifth goal includes climate change considerations in all sectors and broad stakeholder participation in the decision-making and planning process concerning climate change issues.

In the *Maldives' Intended Nationally Determined Contribution* and the *Update of Nationally Determined Contribution of Maldives*, education is not flagged as a priority sector (Ministry of Environment and Energy 2015b; Ministry of Environment 2020a). It should be noted that the latter highlights the bold ambition 'to reach net-zero by 2030 provided that it gets the extensive support and assistance from the international community' and states renewed

commitment to shift imported fossil fuel dependency to 'more cost-effective, reliable and sustainable energy sources' (ibid., 3, 12). Across the above-mentioned three key national climate change policy and strategy documents, 'gender' was mentioned but once and an 'inclusivity' perspective is overall lacking.

The *National Biodiversity Strategy and Action Plan* suggests the inclusion of environmental conservation and biodiversity literacy in both primary and secondary school curricula so that children are educated about the importance of natural environment and encouraged to take on environmentally friendly practices and behaviours at home (Ministry of Environment and Energy 2015c).

The *Strategic Action Plan (SAP)* for 2019-2023, the government's overarching development policy framework and planning document, highlights five priority sectors that include 'blue economy' and '*Jazeera Dhiriulhun*' ('island life'), each accompanied by detailed lists of goals, strategies and actions relevant to each priority area. Blue economy⁸ recognizes that the economy and overall wellbeing of the Maldives heavily depend on the health and wellbeing of the ocean, coral reefs, beaches and marine life. *Jazeera Dhiriulhun* ('island life')⁹ is underpinned by the philosophy of 'living in harmony with the island environment, where citizen's livelihoods, economies, cultural identity and wellbeing are derived sustainably through connectivity and management of natural resources' (Government of Maldives 2019, 251). Overall, the link between climate change resilience building and the education sector is not clearly articulated in the *SAP*. However, under the strategy of implementing 'large-scale and innovative tree planting programmes' with a view to reducing the effects of temperature rise, each school is called upon to establish nurseries in support of community tree planting efforts (328). From here it is but a short step to involving students in actively contributing to tree planting programmes. It is worth highlighting that the *SAP* includes a target concerning youth leadership in international advocacy in climate change: 'by 2023, at least 30 per cent of the Maldivian delegations participating in international climate conferences consists of young males and females' (331).

Further to the 2004 tsunami, the Ministry of Education developed the *Guide for School Emergency Operation Plan* (Ministry of Education 2009). This is focused on fast-onset hazards (i.e., fires, flooding, sea swell, earthquakes, tsunami) but does not consider slow-onset climate-induced events such as sea level rise, drought and saline intrusion. While the *Maldives Education Sector Plan 2019-2023* acknowledges the education sector's vulnerabilities to climate change, the sector's response to climate change is limited to emergency preparedness.

⁸ The 'blue economy' sector consists of the following subsectors: fisheries & marine resources; agriculture; tourism; small scale fishery businesses; labour, employment & migration; economic diversification (Government of Maldives 2019).

⁹ The '*Jazeera Dhiriulhun*' sector consists of the following subsectors: decentralization; transport network; environmental protection and preservation; clean energy; waste as a resource; water and sanitation; resilient communities; information, communication and technology; arts, culture and heritage (Government of Maldives 2019).

According to the U-Report survey conducted for this study, 74 per cent of Maldivian youth respondents consider that the government should be taking most action to address climate change, the highest among the countries surveyed in the region, followed by children (16 per cent) (see *Box 1*). 44 per cent of Maldivian youth respondents (n=182) also think that it is at least 'likely' that the government will take action to address climate change in the wake of the COVID-19 pandemic (Lopez Rello & Ackers 2021).

4.2. Finance

The Government of Maldives has prioritised educational spending over the past several years. While the percentage share of education in the national budget is slightly on the decline, in 2018 the government allocated over 9 per cent of the national budget to education. Over 90 per cent of education funding comes from domestic sources, while the rest comes from foreign sources and is dedicated to specific projects (Ministry of Education 2019a). In a dispersed island nation, public service delivery tends to be expensive. For instance, a majority of education infrastructure projects were carried out on islands with a population of less than 2,000 people (ibid.).

The Ministry of Education currently does not have specific funding for climate change mitigation and adaptation activities. However, it is in the Ministry's strong interest to scale up the school solar panel project on lines similar to the successful Addu High School PV Project (see *Box 8*) and help students understand the importance of renewable energy if resources are mobilized (National Stakeholder 10).

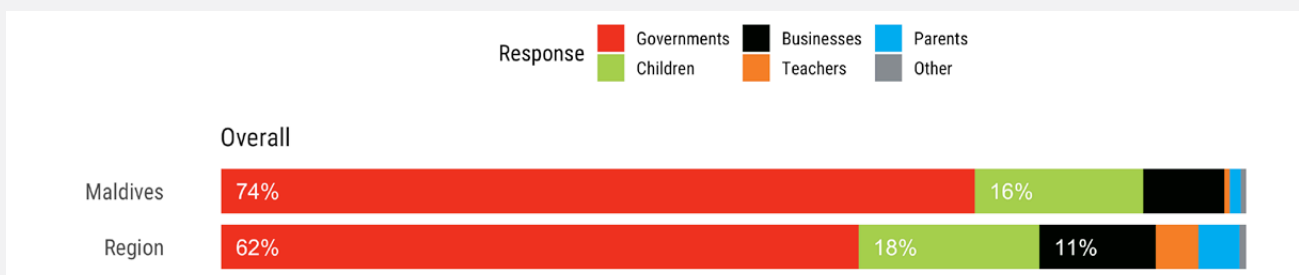
In the event of disasters, the Ministry can make a special request to the Ministry of Finance or can tap into its own funds for immediate use (National Stakeholder 9). Making disaster funding available for school repairs, however, often takes a long time (National Stakeholder 10).

4.3. Curriculum, Teaching and Learning

The *National Curriculum Framework (NCF)* has a number of unique characteristics that offer fertile ground for advancing climate change education in the Maldives. First, the *NCF* is underpinned by key values including those of the environmental protection and conservation. Appreciating richness of native habitat and their fragility and promoting sustainable practices are part of the environmental values. Second, the *NCF* specifies eight crosscutting interrelated key competencies, each consisting of a set of skills, knowledge, values, attitudinal and other social and behavioural components, that all students are required to acquire through schooling. While each key competency has both direct and indirect relevance to climate change mitigation and adaptation learning and action, the *Using Sustainable Practices* competency is the most pertinent.¹⁰ It aims at raising student environmental awareness and promoting pro-environmental behaviours so that they can satisfy basic needs and have quality of life without harming the life of future generations (National Institute of Education 2015a, 2015b). Third, the *NCF* systematically and cumulatively develops key competencies through each key stage. It also elaborates and maps out how each learning area contributes to each key competency, hence forging cross-curricular linkages.

Climate change-related topics mainly appear in three learning areas: *Health & Physical Education*, *Science* and *Social Science*. Caring for the environment is also part of the *Islam and Spirituality* learning area. Protecting and preserving the environment, showing 'kindness towards all living things on Earth' and realizing 'the balance and harmony that exist between things on Earth by the will of Allah' are part the *Islam and Spirituality* curriculum (National Institute of Education 2015a, 29).

BOX 1. UNICEF ROSA U-Report: Who should be taking the most action to address climate change? (n=189 in the Maldives; n= 13,532 in the region)
(Lopez Rello & Ackers 2021, 21)



¹⁰ Other key competencies are: Practicing Islam; Understanding and Managing Self; Relating to People; Making Meaning; Thinking Critically and Creatively; Using Technology and Media.

In the U-Report, 47 per cent of Maldivian youth respondents (n=340) report that they are able to explain what climate change and global warming are about. 68 per cent of the youth respondents (n= 225) state that they have learned about climate change through *Science* lessons (Lopez Rello & Ackers 2011).

Box 2 below highlights climate-change related topics within the three learning areas. In the Maldives curriculum, each learning area in each key stage consists of several strands (i.e., broad conceptual areas). Climate change-related topics consistently appear under a specific strand (strand being indicated in blue italic in Box 2) within each learning area.

BOX 2. Climate Change-related Topics in the Maldivian Curriculum

	Key stage	Grade	Learning Areas		
			Health & Physical Education	Science	Social Science
Primary	1	1	<i>Health of Individual & Community</i> <ul style="list-style-type: none"> • Types of environment • Unsafe place in the environment • Pollutants (air and water) • Safe and unsafe situations 	<i>Earth & Beyond</i> <ul style="list-style-type: none"> • Local weather and its effects 	<i>People, Place & Environment</i> <ul style="list-style-type: none"> • Physical features of immediate environment • Local weather and its impacts on humans • Caring for self and the surrounding environment
		2	<i>Health of Individual & Community</i> <ul style="list-style-type: none"> • Healthy and unhealthy environments • Environmental hazards • Health risks of sun strokes • Clothing at different weather • Pollutants (industrial and motor vehicle) 	<i>Earth & Beyond</i> <ul style="list-style-type: none"> • Local weather patterns • Weather impact on society and the environment 	<i>People, Place & Environment</i> <ul style="list-style-type: none"> • Local weather, weather conditions around some parts of the world and its impacts on humans • Care for the environment
		3	<i>Health of Individual & Community</i> <ul style="list-style-type: none"> • Environment and human health • Care for the environment • Waste disposal • Health risk of pollutants • Safety equipment 	<i>Earth & Beyond</i> <ul style="list-style-type: none"> • Elements of weather and features of season • Weather impact on society and the environment • Sense of responsibility for taking care of and improving the environment 	<i>People, Place & Environment</i> <ul style="list-style-type: none"> • Monsoons and Nakais¹¹ in the Maldives • Inter-link between people and the environment • Environmental problems in the islands and their solutions
	2	4	<i>Health of Individual & Community</i> <ul style="list-style-type: none"> • Human influence on the environment • Water safety • Emergency situations and how to deal with them • Care for the environment • Waste disposal • Health risk of pollutants • Safety equipment 	<i>Earth & Beyond</i> <ul style="list-style-type: none"> • Disaster impacts on humans and the environment 	<i>People, Place & Environment</i> <ul style="list-style-type: none"> • Local weather and its impact on people • Local environment/ecosystems • Local environmental problems and individual roles in minimizing them
		5	<i>Health of Individual & Community</i> <ul style="list-style-type: none"> • Global warming and environmental protection • Safe and unsafe environments • Safety equipment 	<i>Earth & Beyond</i> <ul style="list-style-type: none"> • Weather and climate • Mechanisms and effects of greenhouse gases • Natural disasters in the Maldives and preventive measures 	<i>People, Place & Environment</i> <ul style="list-style-type: none"> • Weather and climate • Safety procedures during bad weather • Ecosystems • Local environmental problems and individual roles in minimizing them
		6	<i>Health of Individual & Community</i> <ul style="list-style-type: none"> • Laws designed to promote healthy environment • Sunlight and ultra-violet radiation risks for human health • Hazard in the environment 	<i>Earth & Beyond</i> <ul style="list-style-type: none"> • Causes and effects of climate change 	<i>People, Place & Environment</i> <ul style="list-style-type: none"> • Weather impacts on people • Ecosystems • Environmental problems in other countries and individual roles in minimizing them

¹¹ A 14-day period according to a traditional calendar with distinctive weather patterns.

BOX 2. Climate Change-related Topics in the Maldivian Curriculum

	Key stage	Grade	Learning Areas		
			Health & Physical Education	Science	Social Science
Lower Secondary	3	7	Health of Individual & Community <ul style="list-style-type: none"> • Human and technological impacts on the global environment • Effects of improper waste disposal and better waste management • Water safety and management in the community 	Chemistry <ul style="list-style-type: none"> • Climate change impacts on water • Gases present in air and ways to reduce air pollution 	Geography: People, Place & Environment <ul style="list-style-type: none"> • Natural hazards (causes & impacts)
		8	Health of Individual & Community <ul style="list-style-type: none"> • Causes and effects of overconsumption and environmental pollution • Better care of air, land and water • Ill effects of air pollution • Impacts of natural disasters on human health • Importance of maintaining a healthy ecosystem 	Biology <ul style="list-style-type: none"> • Ecosystems • Human impacts of coral reefs 	Geography: People, Place & Environment <ul style="list-style-type: none"> • Climatic patterns and their impacts on the environment • Natural hazards (impacts & losses)
	4	9	N/A	Details not obtained	N/A
		10	N/A	Details not obtained	Geography: People, Place & Environment <ul style="list-style-type: none"> • Ecosystems (roles, threats & protection) • Weather and climate patterns in the Maldives • Environmental deterioration • Caring for the environment (working for sustainability & environmental management)
Higher Secondary	5	11	Details not obtained	Details not obtained	Details not obtained
		12	Details not obtained	Details not obtained	Details not obtained

(National Institute of Education, 2017a; 2017b; 2016; 2015c; 2014a; 2014b; 2014c; 2014d; 2011)

These curriculum topics notwithstanding, a majority of the national stakeholders participating in the survey think that climate change curriculum development in the Maldives is ‘limited’ and that there should be more opportunities for climate change and environmental learning and action.

The *NCF* emphasizes the importance of employing a range of diverse pedagogies and engaging students in active learning. There is specific reference to ‘learning outside the classroom’ through field visits, working with community and engaging with networks of schools in the local atoll and beyond as well as with the networks of NGOs and other organizations (National Institute of Education 2015a). See *Box 3* for some suggested pedagogical examples to develop the *Using Sustainable Practices* competency.



BOX 3. Pedagogical Approaches Beyond the Classroom

- To form proactive student groups or clubs to address sustainability issues throughout the school’s operations
- To organize nature trips to inspire students to enjoy the natural environment and to promote a caring and responsible approach towards it
- To have students maintain school gardens
- To encourage students to take part in community activities
- To invite senior citizens to school and ask them to share their stories to the students
- To rear animals in the school and allow students to take responsibility for taking care of the animals
- To organize events such as ‘food days’ that promote healthy, local and sustainable food/drink
- To plan learning activities that help develop cooperation and team work skills

(National Institute of Education 2015b, 93)

National stakeholders commonly consider that participatory and student-centred forms of pedagogies such as project-based, inquiry-based and outdoor teaching and learning are desirable for climate change education. For instance, a national stakeholder states that schools could work more closely with local diving centres and community groups to motivate young people to look after the environment (National Stakeholder 1). Another stakeholder points out that many students do know about climate change and what they need is more engagement opportunities to exercise their agency and leadership (National Stakeholder 8). In terms of climate change learning assessment, a majority proposes employing formative assessment modalities using group and project work.

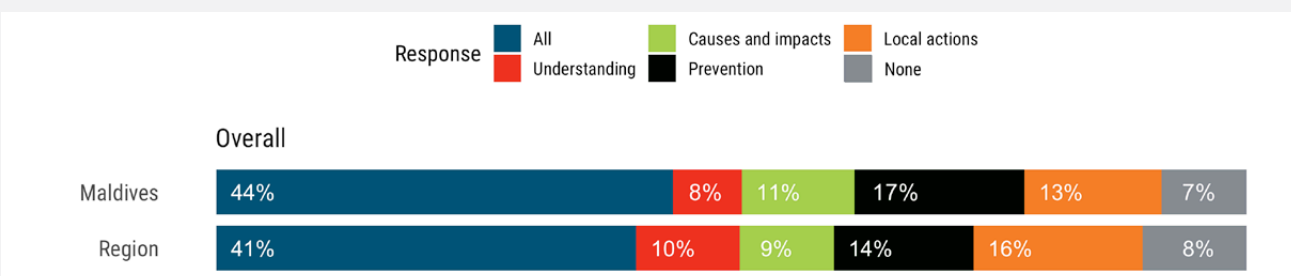
Earlier in 2008, a set of six modules called *School for a Healthy Environment* (Ministry of Education & UNICEF 2008a, 2008b, 2008c, 2008d, 2008e, 2008f) was developed as supplemental teaching and learning materials to be used in *Environmental Studies*¹² lessons or for environmental club activities. The modules are contextualized for the Maldives and cover topics such as island environment and traditional knowledge, environmental resource management, weather and water, ecological interdependence, unique local natural habitats (e.g., mangroves and coral reefs) and renewable energy. While this is a noteworthy resource development, applying generic national materials to different islands in the archipelago each often with their own distinctive ecosystems remains a challenge (Selby & Kagawa 2018).

When asked about what they most wanted to learn about climate change in the U-Report, 44 per cent of Maldivian youth participants (n=254) report that they would like to learn about all aspects of climate change. 17 per cent of Maldivian youth respondents report that they would like to learn how society can prevent climate change (see *Box 4*).

Student FGD participants acknowledge that there are some curriculum opportunities to learn about key climate change concepts, but they would like to have more practical learning opportunities. For instance, they would like to learn about how to reduce climate change impacts, prevent erosion and environmental pollution. Importantly, they would like to acquire advocacy skills so that they can influence others in the community and help future generations become more aware of climate change. When asked to imagine if they were the Minister of Education in the Maldives and what they would like to do to help children and young people to contribute to positive actions tackling climate change challenges, students were keen to share their creative visions (see *Box 5* for some examples of student remarks).

BOX 4. UNICEF ROSA U-Report: What do you most want to learn about climate change? (n=254 in the Maldives; n=18,266 in the region)

(Lopez Rello & Ackers 2021, 18)



¹² *Environmental Studies* was a subject introduced in 1984. During the 2014 curriculum review its components were integrated into *Science and Social Studies*.

BOX 5. If I were the Minister of Education in the Maldives...'

I would like the schools to carry out interesting programmes to reduce the impacts of climate change so that students are actively and willingly participating in the activities, rather than participating in conferences and forums where students have to just sit and listen to the lectures. I would also like to create more skill-based and action-oriented trainings for the students and more club activities [that] are not limited to one school (Sama Saeed, Grade 9, Kalaafaanu School, Malé).

I would like to set a budget which can be spent on student climate change actions. There are a lot of skilled students and they have lots of new good ideas but they cannot do much due to the financial problems. I believe that having financial sources is a good thing if you want students to be more involved in the activities to reduce climate change impacts ... Many of our friends are very interested in solving the climate change problems. In our island, financial support is really, really low (Saajiu Shafeeg, Grade 9, Haa Alif Atoll Education Centre, Haa Alif Dhidhdhoo).

I would love to bring the Farukoe programme (see Box 8) back to students and local people who are passionate about local environmental conservation. I would also give acknowledgement to students, schools and other institutions that are making changes to protect our environment. [Such recognition and endorsement by the Minister] will motivate others to do the same (Aishath Yumnu Arushad, Grade 9, Muhyiddin School, Malé).



4.4. Teacher Capacity Development

Insufficient teacher capacity is one of the key challenges in ensuring quality learning in the Maldives (Orlowska 2018; UNICEF ROSA 2018). Everyday classroom teaching is predominantly didactic and heavily exam-oriented (National Stakeholders 8, 11). In order to shift towards a learner-centred approach promoted by the *National Curriculum Framework*, more support is clearly required. Increased teacher as well as student migration from rural islands to Malé also has implications for teacher capacity development (National Stakeholder 11). For instance, teachers in the small outer island schools need to be fully equipped to facilitate multi-grade teaching, a policy endorsed by the Ministry of Education back in 2014 in order to deliver quality teaching and learning in schools with a shrinking number of teachers and students (Ministry of Education 2019a).

Since 2007 using the above-mentioned *School for a Healthy Environment* modules, about 600 primary school teachers have been trained in teaching environmental topics by Ministry of Education Science curriculum developers. In the pre-service programme, there is a small module focusing on the environment (National Stakeholder 11). However, overall systematic pre-service and in-service teacher training opportunities for climate change education fall short of what is required. They are short-lived and ad hoc and lack continuity (National Stakeholders 3 and 11). As the above-section indicates, there are a number of climate change-related themes and topics in the new national curriculum, but in the on-going new curriculum rollout teacher training for the new curriculum lags behind (National Stakeholders 10, 11).

In a dispersed island nation, reaching out to teachers has significant human resource and financial implications. To address this issue, Teacher Resource Centres (TRCs) were set up in 2007 in 20 atolls by the Ministry of Education supported by UNICEF. TRCs act as regional hubs to offer cost-effective teacher training and connect teachers and administrators through the virtual learning environment (UNICEF 2007; UNICEF ROSA 2018). At the time of this research, the Ministry of Education is in the process of re-investing and re-empowering all the 24 TRCs across 20 atolls in order to better implement the new national curriculum. As the government is moving towards decentralization of the education system, TRCs are expected to play a vital role in ensuring quality education delivery across the country. Climate change related components could be integrated into the Teacher Training Centres (National Stakeholder 10).

4.5. Communication, Coordination and Partnership

Currently there is no national platform/mechanism for climate change risk mitigation and resilience building focused on the education sector. Cross-sectorial collaborations and inter-ministerial coordination with regard to climate change education at the national level are very limited and ad-hoc (National Stakeholder 3). While there have been a lot of environmental education activities provided by the Ministry of Environment, Climate Change and Technology targeting students, the Ministry of Education does not always know about them. Limited coordination between these two ministries that seems to arise from lack of human resources need to be addressed (National Stakeholders 9, 11).

In contrast, communication and coordination mechanisms for emergency responses are well established between the Ministry of Education and the National Disaster Management Authority at the national level. Vertical communication and coordination between the Ministry of Education and its focal points at island/school levels is also well established (National Stakeholder 9), but whether the communication channels are well used and for what purposes remains a moot point.

See *Box 6* for a successful solar energy school project involving multiple partners.

BOX 6. Low Emission Climate Resilient Development (LECRd), 2013-2018

The Low Emission Climate Resilient Development One-UN joint programme supported 11 islands in the Laamu atoll to mainstream climate change-related issues into local level development planning and service delivery ensuring community level ownership. As part of the programme, solar panels were installed in 11 schools to reduce fossil fuel dependency and provide affordable, reliable and clean energy solutions. This initiative has contributed to less energy consumption and electricity cost saving for schools. The electricity required by eight schools was solely covered by the solar panels. The project brought an overall reduction in electricity costs of 53,000 USD per year (estimate) for the entire atoll (Hill *et al.* 2016; Mosneaga 2017).

4.6. School/Community Student Participation Platforms

One of the key student participation platforms to be galvanized behind climate change learning and action are school environment clubs. *An Environment Club Guideline* (Ministry of Environment and Energy 2016b) is available and describes how to set up the clubs and what the clubs can do. However, before the pandemic, most of the school environment clubs were inactive for a number of reasons including students being very busy with their academic study and schools lacking capacity to run the clubs by themselves (most of the environmental NGOs that can give support are based in Malé, while the majority of the schools are based in the outer atolls).

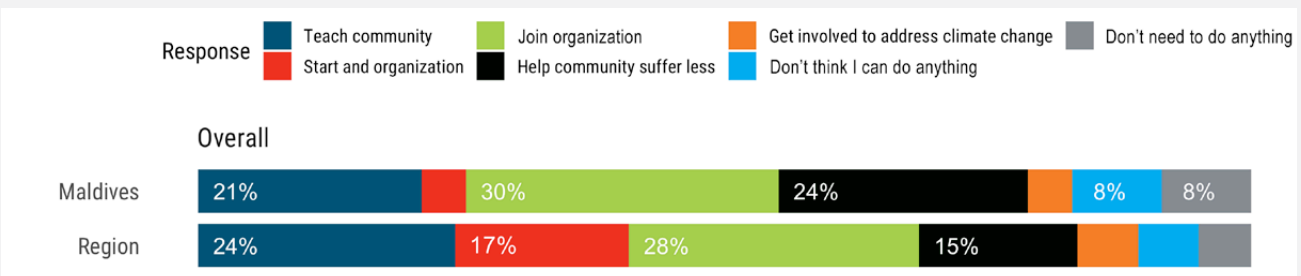


According to the U-Report survey conducted for this study, 92 per cent of Maldivian youth respondents express that they would like to do something to address climate change with necessary support. 'Join an organization that addresses climate change' is the most dominant response expressed

(30 per cent), followed by 'help own family and community to suffer less from the impacts of climate change' (23 per cent) and 'tell/teach own community the impacts of climate change' (24 per cent) (see Box 7).

BOX 7. UNICEF ROSA U-Report: If you had the necessary support, what would you like to do to address climate change in the future?
(n= 166 in the Maldives; n=11,607 in the region)

(Lopez Rello & Ackers 2021, 26)



© UNICEF/UNAIDS/HORNBY

Child and Youth Engagement and Action

The Farukoe Programme

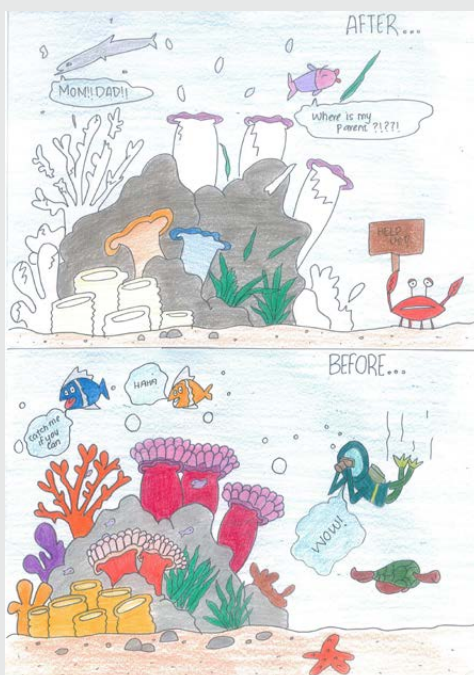
The Ministry of Education implemented a nation-wide ocean exploration programme called *Farukoe* (which means 'child of the reef' in the Dhivehi language) in 2018. Through this programme, students across the whole country had a chance to explore the local reefs through snorkelling. Before this initiative the majority of the students including those who lived in the outer islands had never seen the reefs. The *Farukoe* programme is based on the belief that when students develop 'a strong love and bond with the ocean' through direct exposure to the reefs, a passion for protecting the ocean will follow organically' (Ministry of Education 2018a). The Ministry of Education's goal is 'to inspire every child to become a Voice for the Ocean' (ibid.). A female teacher FGD participant summarizes the essence of the *Farukoe* programme as follows: 'We protect what we love.'

Before taking students to the sea, teachers raised student awareness on the reefs by holding discussion sessions. A female principal explains that local fishermen and elders were invited to her school to share their experience during their childhood and how beautiful the reefs were, which made students so excited even before they actually saw the reefs. After the reef exploration, teachers facilitated debriefing sessions by inviting students to share their feelings and what they

saw and also by asking students to document their experience through drawing and/or writing. Importantly, post-snorkelling sessions also included discussions with students on pro-environmental projects they can take up.

In the FGD, students share that they felt 'very shocked' and 'very bad' at seeing the bleached coral reefs. At the same time, this direct encounter has inspired them to do something about it. For instance, a female student in Malé comments that 'I want to bring some awareness to my island about coral bleaching because it is mainly caused by human beings and politics' and she is now active in her school environment club. At the school level, the *Farukoe* programme triggered positives actions, such as beach cleaning, banning plastics at school, collecting single use plastics, planting trees, creating school gardens and conducting awareness raising campaigns, to name a few.

In the FGD, a female principal points out that many learning and action opportunities emerged around the *Farukoe* programme and 'immense knowledge and experiences were given to the students.' She goes on to say that 'we always talk about how vulnerable our community is [due to climate change] and how much we have to take care of the environment. We always keep saying that "the reefs are important", but this time each and every one of them understood why it is important.'



Climate change increases atmospheric and ocean temperatures... It leads to coral bleaching and depletes our corals... I knew that the Maldives had beautiful reefs but had never had a chance to see it. When I saw it [through the Farukoe programme] it was very different from what I imagined. I was very shocked and disappointed.

Aishath Yumnu Arushad, Grade 9, Muhyiddin School, Malé

Child and Youth Engagement and Action

Student National Symposium on Environment

Since 2015, three Student National Symposia on Environment have been jointly organized by the Ministry of Environment and Energy and the Ministry of Education. Targeting students from 12 to 18 years old across the country, the Symposia aim at raising student awareness on environmental changes and the importance of nature conservation and protection. During the second Symposium in 2018, schools submitted project proposals for locally specific environmental projects (including climate change-focused projects). 10 schools were selected and given grants to implement the projects (National Stakeholder 5).

Addu High School PV Project

With a grant from the UN's Global Environmental Facility Small Grants Programme (GEF SGP) the local NGO VESHI (Volunteers for Environment, Social Harmony and Improvement) installed 2.8kW solar PV in Addu High School as part of renewable energy demonstration project in 2014. VESHI provided a series of practical workshops to students on low-emission climate resilient development, including awareness raising on climate change and energy security, conducting energy audits at home and school and designing and executing a complete solar energy system capable of powering one classroom. As a result of the project, Addu High school won the Abu Dhabi-based Zayed Future Energy Prize in 2015 to install additional solar panels to increase its solar power production from 2.8kW to 45kW, which led the school to become carbon neutral by providing 100 per cent of the school's energy needs (GEF *et al.* 2016; Ministry of Environment and Energy 2016a).

4.7. Monitoring, Evaluation and Accountability

There are no mechanisms and tools to systematically monitor climate change impacts on the education sector. The Ministry of Education reports disaster impacts to the National Disaster Management Authority that keeps the records. Disaster incidents have been very infrequent (National Stakeholder 10). The Maldives Education Management and Information System (MEMIS) does not capture data concerning climate change impacts on the education sector (National Stakeholders 9, 10).

Since 2009, the Ministry of Education has employed a school-monitoring framework initially called the *Baraabaru School Framework* and now called the *School Improvement, Quality Assurance & Accountability (SIQAA) Framework*. The *SIQAA Framework* has five dimensions (i.e., inclusivity; child-centred teaching and learning; health and safety; family and community partnership; leadership and management) and each dimension has standards and indicators for school self-evaluation with external verification (Ministry of Education 2018b). Climate change-related components do not form part of this framework or the accompanying *Baraabaru School Indicators*. Some national stakeholders agree that climate change considerations could be integrated into this well-established school-level monitoring and accountability framework and tools (National Stakeholders 9, 10).



Section 5

Discussion and Recommendations

Box 9 below synthesises the perspectives of the national stakeholders participating in the survey for this study. It indicates the overall strengths and weaknesses of the education system’s response to climate change in the Maldives as well as opportunities presented and threats/obstacles to be faced.¹³



BOX 9. Education System Response to Climate Change in the Maldives: National Stakeholders’ Perspectives

Strengths

- The *National Curriculum Framework* stressing sustainable practices
- Universal education access (being able to influence nearly 100 per cent of students through schooling)
- Environment clubs
- School-wide programmes and competitions
- High awareness of changes in climate amongst people living in small islands
- Climate change and the environment in the national curriculum, syllabuses and textbooks
- Current government’s (including the Ministry of Education) policy prioritization of the environment

Weaknesses

- Limited outdoor activities and inquiry-based learning
- Underdeveloped climate change education curriculum
- Weak cross-sectorial linkages and collaboration
- Weak translation of theory and policy into practice; limited teacher capacity to deliver the curriculum and use diverse pedagogies
- Lack of teacher training opportunities to enable delivery of climate change education
- Lack of initiatives from the national universities
- Limited dedicated financial resources
- Lack of awareness among policy makers
- Poor curriculum monitoring and evaluation
- Insufficient coordination/collaboration between the Ministry of Education and the Ministry of Environment, Climate Change and Technology

Opportunities

- Local venues and facilities (e.g., local diving centres, resorts)
- Local community groups
- Training through the Maldives National University
- Inclusion of climate change education in offerings from Teacher Training Centres
- Dissemination of technical knowledge concerning climate change education
- Accessibility of community members (e.g., fishermen and elders) who can be brought into the school/classroom
- Links to regional and global climate change movements
- Support by UN organizations and NGOs
- Bringing in more private parties (e.g., resort hotels)

Threats/Obstacles

- Limited budget and time
- Overcrowded curriculum as obstacle to embedding climate change education
- Perceived low level of awareness and motivations among students, teachers and policy makers
- Influence of big industries and diversionary effects of superficial green wash
- Unsustainable development practice at expense of coral reefs and coastal environment
- Very exam-oriented attitudes of parents and students and strong emphasis on academic grades (hence lack of demand for climate change/environmental education)

¹³ Note: SWOT entries indicate participants’ own placement of ideas but some entries are open to different interpretation as to where they should be placed.

Climate Change Impact Monitoring and Assessment in the Education System

There are no mechanisms and tools in place to monitor climate change impacts on school infrastructure, student and teacher health and wellbeing, education provision and learning quality. The Maldives Education Management Information System (MEMIS) is not designed to capture climate change impact data.

The well-established *School Improvement, Quality Assurance & Accountability (SIQAA) Framework* and the *Baraabaru School Indicators* provide a unique, but so far unexploited avenue for addressing climate change concerns in the Maldives.

Recommendations

- Consulting with relevant stakeholders, develop climate change impact and vulnerability indicators and subsequently integrate them into the existing *SIQAA Framework*, the *Baraabaru School Indicators* and MEMIS as appropriate.
- Develop inter-ministerial collaborative and partnership mechanisms between the Ministry of Education and relevant Ministries/Agencies (e.g., Ministry of Environment, Climate Change and Technology, Ministry of Health, National Disaster Management Authority) in gathering, sharing and analysing climate change impact data as it concerns children and schools.

Policies, Plans and Strategies

While the government's bold visions and strong commitment to addressing the existential threat of climate change to the Maldives have been articulated in a number of key national climate change policy and strategy documents, intentions are yet to be translated into actuality in the education sector. The next *Education Sector Plan* should be aligned closely with key national climate change policies and strategies such as the *Maldives Climate Change Policy Framework* and the *Maldives' Intended Nationally Determined Contribution*. It should be noted that the existing key climate change policy documents lack gender and inclusivity perspectives. Hence, in integrating climate change considerations in the education sector policy, the policy makers should be reminded of the importance of incorporating gender and inclusivity perspectives.

What 'climate proofed' schooling in the Maldives should look like in the short-, mid- and long-term needs to be urgently addressed and necessary policies and guidelines developed. Key components might include ensuring functional WASH facilities, installing and maintaining renewable energy facilities/ technologies and relocating schools to safer locations.

Current rural to urban migration is not necessarily triggered by climate change impacts (direct links have not been discerned during this research). In the face of a potential increase in the volume of domestic migration linked to climate change-induced shocks, the education sector should be proactive in anticipating and thinking through potential challenges. For instance, bullying and child protection issues experienced by many migrant students are likely to be part of such challenges. Schools should promote a culture of inclusiveness and social cohesion by enhancing student life skills.

In parallel, building the capacity of schools in the outer islands is critical and is in line with the government's decentralization aspiration as expressed under the *Jazeera Dhiriulhun* ('island life') priority area within the 2019-2023 *Strategic Action Plan*. Island schools should be empowered so that they can play an important role in creating self-reliant and sustainable island communities that stay within the islands' ecological limits and reduce the need to migrate to urban centres.



When education access is likely to be disrupted by recurring extreme weather events, alternative learning pathways become vital in efforts to ensure education access, retention and quality of learning. During the COVID-19 pandemic school closures, distance education programmes were developed by the government.¹⁴ These programmes potentially help to develop standard operating procedures for education which can also be implemented in other emergencies.

Recommendations

- Incorporate climate change risk reduction and resilience building into the next *Education Sector Plan* and also ensure robust policy implementation mechanisms. In such a process, ensure that gender and inclusivity perspectives are embedded.
- Through consultation with key stakeholders, develop policy guidelines and an action plan for ‘climate proofed’ schools in the Maldives considering diverse context and needs of urban and rural schools.
- Integrate education, health, WASH and child protection interventions in a bolder and more deep-rooted way into education policy documents to ensure student health, wellbeing and safety in the face of the adverse effects of changing climate.
- Ensure that needs and roles of the education sector including those of children and young people are clearly integrated in the forthcoming *National Adaptation Plan*.¹⁵

Finance

The Ministry of Education currently does not have resource allocations specifically earmarked for climate change risk reduction and resilience building. This might be because of policy makers’ assumption that climate change, disaster risk reduction and resilience building fall primarily under the heading of emergency/disaster response. Lack of climate change impact data in the education sector might be another reason for this gap. As one national stakeholder suggests, producing the evidence and investment cases for mitigating climate change risks and enhancing resilience in the education system (National Stakeholder 3) is an important way forward.

As the Government of Maldives has been increasing annual budgetary allocations for climate action in recent years and is committed to further mobilizing additional climate finance (Ministry of Environment 2020b), the education sector should urgently clarify what constitutes ‘climate action’ in

the education sector so as to optimally benefit from the national budgetary allocations.

Considering the existing socioeconomic disparities between the capital and the outer atolls/islands, resource allocations at the atoll/island level should be made equitable so as to meet the significant needs of outer island school communities with less capacity to cope with greater climate change impacts. Detailed analysis of equitable funding mechanisms in the education sector in the Maldives lies outside this study and requires further exploration in the context of government’s overall decentralization agenda.

Recommendations

- Raise awareness among Ministry of Education and Ministry of Finance officials regarding the benefits of financing climate change mitigation and adaptation activities in the education sector.
- Among education policy makers, create a shared understanding of what constitutes a ‘climate action’ budget in the education sector and how to utilize it effectively.
- Ensure equitable allocation of a ‘climate action’ budget (once it is set up) across the country.
- Consider creating a financial tracking system for a ‘climate action’ budget in the education sector to better monitor budget allocation and utilization. This could be part of the envisaged government’s tracking system for public and private climate finance flows.¹⁶
- Explore external climate change funding opportunities (e.g., Green Climate Fund) with a view to supporting remote rural schools so that they can enhance their climate resilience and play a key role in creating more self-reliant and sustainable island communities.

Curriculum, Teaching and Learning

The new curriculum in the Maldives is a curriculum of very good intention. It is carefully developed to cumulatively and holistically develop student competencies. The *Using Sustainable Practice* competency is particularly relevant to action-oriented climate change learning.

Outdoor experiential learning - one of the very unique features in the national curriculum - is becoming less viable and practicable given the unfolding climate change impacts. Ultimately, this requires urgent actions at all levels

¹⁴ In response to school closures due to the COVID-19 pandemic, the Ministry of Education, supported by UNICEF, trained 3,885 teachers in online learning, benefitting 54,218 students. UNICEF also supported televised lessons that reached 68,720 children. Children with special needs in Greater Malé were identified and home-schooling resources were provided (UNICEF Maldives 2020).

¹⁵ See Ministry of Environment (2020a, 20).

¹⁶ See Ministry of Environment (2020a, 19).

- from local to global - to urgently and drastically cut down greenhouse gas emissions.

Students should be given a safe space to express and share their difficult feelings (e.g., sadness, fear) linked to climate change impacts now and in the future as an integral part of empowering them to become advocates and agents of change.

In line with the Maldivian government's emphasis on more 'effective and bold actions to address the climate crisis' (Ministry of Environment 2020a) and 'blue economy' (Government of Maldives 2019) students should also develop new skills and competencies necessary to contribute to such transformation. This may involve competencies concerning marine environmental protection, sustainable environmental management, sustainable waste management, renewable energy, sustainable fisheries and sustainable tourism, among others. Also, importantly, new competencies should include knowledge, skills, attitudes directed towards sustaining community and thriving within the island's ecological limits.

Recommendations

- Identify contextually appropriate knowledge, skills and attitudes necessary for living within the island's ecological capacity and for contributing to the blue economy, and integrate them into the curriculum and curriculum support materials.
- Using the existing curricular opportunities support students to take concrete actions and play leadership roles in climate change mitigation and adaptation actions at school and in their local community and beyond.
- Give students a safe and supportive space to express and share fears and concerns about changing climate.
- Ensure existing climate change-related curriculum content is taught using a wide range of participatory and action-oriented pedagogical approaches.
- Develop more contextualized and regionally-specific teaching and learning support materials for climate change education. Such materials should reflect on unique ecosystems and climate hazards of each locality in question.

Teacher Capacity Development

Prevailing didactic and exam-oriented teaching and learning practices in the classroom are a huge obstacle standing in the way of implementing action-oriented climate change learning in the Maldives. While there is no systematic pre-service and in-service training provision focused on climate change,

the on-going new curriculum rollout process opens up opportunities for embedding climate change education and associated pedagogies in the pre-service and in-service teacher training programmes.

Developing cost-effective and sustainable teacher capacity development mechanisms is key in a widely dispersed island nation. Considering regionally diverse climate change impacts as well as the huge differences across the many eco-systems of the Maldives, Teacher Resources Centres can play a critical role by giving locally-specific support to teachers to facilitate climate change learning and action. The government decentralization intention should go hand in hand with developing locally contextualized climate change education.

Recommendations

- Re-invest and revitalize each Teacher Resource Centres (TRCs) as a functional regional hub by providing necessary resources and support; make locally oriented climate change teaching, learning and action an integral part of the TRC.
- Build teacher capacities in employing a wide range of active/participatory and child-centred pedagogies such learning modes being vital for action-oriented climate change education.
- Build teacher capacity in providing basic psychosocial support and basic support to maintain student health and wellbeing if threatened or adversely impacted by climate change.
- Build teacher capacity in promoting environmentally sustainable practices at school and in the community that are most relevant to the locality (e.g., waste management; tree planting campaigns; mangrove and coral reef conservation and restoration; using and maintaining renewable energy technology; awareness raising and advocacy techniques).

Communication, Coordination and Partnership

There is no national platform/mechanism focused on education sector climate change mitigation and resilience building. Inter-ministerial collaboration and coordination between the Ministry of Education and the Ministry of Environment, Climate Change and Technology are currently very limited.

In developing climate-proofed schools as well as promoting community/island-wide environmental actions involving students, it is vital to pool and mobilize expertise and resources from the wider Ministry of Education partners – the Ministry of Environment, Climate Change and Technology, Ministry of Fisheries, Marine Resources and

Agriculture, Ministry of Tourism, Ministry of Health), the UN, NGOs/CSOs, Atoll/Island Councils, private sector organizations (e.g., resort hotels), academics. The above-mentioned Low Emission Climate Resilient Development One-UN project as well as the Addu High School PV project (see *Box 8*) present successful examples of wide collaboration and partnership.

Recommendations

- Create a national platform/mechanism focused on climate change mitigation and resilience building in the education sector.
- Enhance inter-ministerial coordination and collaboration, in particular, between the Ministry of Education and the Ministry of Environment, Climate Change and Technology.

School/Community Student Participation Platforms

Student climate change engagement opportunities outside of the classroom (e.g., tree-planting, school gardening, creating plastic-free school, collecting plastic bottles) very much depend on the enthusiasm of individual schools and teachers. Most of the school environment clubs remain inactive and tokenistic.

The Ministry of Education's *Farukoe* programme in 2018 was a successful initiative involving all schools in the Maldives. Seeing the awe-inspiring beauty of the coral reefs as well as the shocking reality of coral bleaching, together with pre- and post-snorkelling activities, helped students internalize the issue of climate change and understand what that means for their locality. Most importantly, the programme inspired them to take pro-environmental actions. The *Farukoe* programme has also opened up school and community-level action opportunities, involving students, teachers, parents and community members. Some teachers at the FGD reported that they linked the *Farukoe* programme and formal curriculum subjects such as *Social Studies, Science, Arts and Language*. It should be well noted that during the FGDs there was a strong call from students and teachers to revive the *Farukoe* programme, most of the national stakeholders proposing the same. When revived, this admirable place-based learning programme can be further strengthened by engaging students in 'cosmopolitan dialogue' through which students in a particular island engage in dialogues and ideas exchanges with other students in different islands in the Maldives as well as with students in other small island developing states (SIDs). Cosmopolitan dialogue particularly helps island students go beyond the insular towards a more expansive and global sense of environmental concern and activist engagement (Selby & Kagawa 2018).

Recommendations

- Consider reviving the *Farukoe* programme by formally embedding it within the Ministry of Education's policy/structure to ensure long-term sustainability of the programme.
- Create a sustainable support mechanism for school environment clubs including the identifying of terms of reference and stipulating minimal levels of action; also create a 'green star' recognition scheme for individuals and schools making a unique contribution to mitigating and adapting to climate change.
- Develop an online platform for sharing climate change-related experiences and actions among students in the Maldives.
- Expose the Maldivian students to regional and global climate change movements/networks through online platforms or face-to-face gatherings as appropriate.



Section 6

Conclusion

This study has highlighted some examples of adverse impacts of climate change on school system as experienced in the Maldives. These impacts include: school infrastructural damage caused by flooding and strong winds; insufficient clean water at school especially during the dry season; interrupted student journeys to school due to unpredictable and hostile weather events; negative impacts on student health and wellbeing of rising temperatures, strong sunlight and flooding; loss of outdoor learning opportunities.

Key gaps in education system responses to climate change include: insufficient consideration of climate change in existing education sector policy and planning documents; absence of education sector resource allocations for climate change risk reduction and resilience building; still-awaited full delivery of the new national curriculum which includes a wide range of climate change-related topics; the challenges in offering continuous teacher capacity building support in a dispersed island nation; absence of systematic climate change impact data gathering mechanisms in the education sector and consequent lack of monitoring and data-informed policy development.

Key recommendations include: developing and integrating climate change impact and vulnerability indicators into existing and well established mechanisms and tools (e.g., MEMIS, the School Improvement, *Quality Assurance & Accountability Framework*, the *Baraabar School Indicators*); creating strategic alignment between education sector policy and strategy documents and those from other sectors with respect to climate change and the inclusion of gender and inclusivity perspectives; raising awareness

and building commitment amongst government officials regarding the benefits of financing climate change mitigation and adaptation in the education sector; developing locally contextualized and regionally-specific teaching and learning support materials for climate change mitigation and adaptation learning and action; revitalizing each Teacher Resource Centre as a regional teacher capacity building hub and making climate change learning and action an integral part; enhancing inter-ministerial coordination especially between the Ministry of Education and the Ministry of Environment, Climate Change and Technology; considering reviving the unique *Farukoe* programme within the Ministry of Education's formal structure.

As one of the small island developing states (SIDs), the Maldives faces multiple challenges arising from smallness, remoteness, ecological fragility, vulnerability to external shock, and susceptibility to natural hazards, among others. Their vulnerabilities notwithstanding, small and remote islands are suggestive of latitudes for innovation as seen in the *Farukoe* programme and the Addu High School PV Project among others. The education sector has a critical role to play in protecting children and preparing present and future generations to face the full consequences of the climate crisis and in helping them to play a proactive part in finding solutions to the multi-pronged threats we face. It is hoped that this report helps stimulate the discussion and action that is urgently needed to make the education system in the Maldives more climate change resilient and to empower Maldivian students – both girls and boys – to become advocates and agents of change possessing the knowledge, skills and dispositions to actively contribute to building a greener, low-carbon and safer future for their island communities and country, and beyond.



ves

Supporting
Child Friendly
Learning Environments

EDUCATION

unicef 

References

- Das, P. K. (2010). *Climate Change and Education: Maldives*. <https://www.preventionweb.net/files/16354_climatechangeedmaldives.pdf>
- FAO, IFAD, UNICEF, WFP & WHO. (2019). *The State of Food Security and Nutrition in the World 2019*. <<https://www.unicef.org/media/55921/file/SOFI-2019-full-report.pdf>>
- GEF, SGP & UNDP. (2016). *Country Programme Strategy for OP6 2015-2018. Country: Republic of Maldives*.
- Government of Maldives. (2019). *Strategic Action Plan 2019-2023*. <<https://storage.googleapis.com/presidency.gov.mv/Documents/SAP2019-2023.pdf>>
- Hill, L., Shifaz, A., & Camarinhas, C. (2016). *Low Emission Climate Resilient Development: Building Resilience from the Ground Up in the Maldives*.
- Lopez Rello, R. & Ackers, J. (2021). *Rising to the Challenge: Youth Perspectives on Climate Change and Education in Maldives*. <<https://www.unicef.org/rosa/media/16306/file/Rising%20to%20the%20Challenge%20-%20Maldives.pdf>>
- Ministry of Education. (2019a). *Education Sector Analysis Maldives*. <<https://www.globalpartnership.org/sites/default/files/2019-05-maldives-education-sector-analysis.pdf>>
- Ministry of Education. (2019b). *School Statistics 2019*. <https://www.moe.gov.mv/assets/upload/School_Statistics_20191.pdf>
- Ministry of Education. (2018a). *Farukoe*. <<https://www.farukoe.com>>
- Ministry of Education. (2018b). *School Improvement, Quality Assurance & Accountability Framework*. Ministry of Education: Malé.
- Ministry of Education. (2009). *Guide for School Emergency Operation Plans: Maldives*. <https://www.preventionweb.net/files/14226_14226GuideforSchoolEmergencyOperati.pdf>
- Ministry of Education & Ministry of Higher Education. (2019). *Maldives Education Sector Plan 2019-2023*. <<https://www.globalpartnership.org/sites/default/files/2019-05-maldives-education-sector-plan-2019-2023.pdf>>
- Ministry of Education & UNICEF. (2015). *Assessment of the Situation of Students who Migrate to Malé for Education and Strategies to Address Vulnerabilities: Abridged Report*. <<https://www.unicef.org/maldives/media/381/file/Assessment%20of%20the%20Situation%20of%20Students%20who%20Migrate%20to%20Malé%20for%20Education.pdf>>
- Ministry of Education & UNICEF. (2008a). *Schools for a Healthy Environment. Modules 1: Ourselves*. <https://livelearn.org/assets/media/docs/resources/SchoolsforHealthyEnv_1Ourselves.pdf>
- Ministry of Education & UNICEF. (2008b). *Schools for a Healthy Environment. Module 2: Earth*. <https://livelearn.org/assets/media/docs/resources/SchoolsforHealthyEnv_2Earth.pdf>
- Ministry of Education & UNICEF. (2008c). *Schools for a Healthy Environment. Module 3: Life around Us*. <https://livelearn.org/assets/media/docs/resources/SchoolsforHealthyEnv_3LifeAroundUs.pdf>
- Ministry of Education & UNICEF. (2008d). *Schools for a Healthy Environment. Module 4: Resources from the Environment*. <https://livelearn.org/assets/media/docs/resources/SchoolsforHealthyEnv_4Resources.pdf>
- Ministry of Education & UNICEF. (2008e). *Schools for a Healthy Environment. Module 5: Interdependence*. <https://livelearn.org/assets/media/docs/resources/SchoolsforHealthyEnv_5Interdependence.pdf>
- Ministry of Education & UNICEF. (2008f). *Schools for a Healthy Environment. Module 6: Science and Technology*. <https://livelearn.org/assets/media/docs/resources/SchoolsforHealthyEnv_6SciTech.pdf>
- Ministry of Environment (2020a). *Update of Nationally Determined Contribution of Maldives*. <<https://www.environment.gov.mv/v2/wp-content/files/publications/20210128-pub-maldives-nationally-determined-contribution-2020.pdf>>
- Ministry of Environment (2020b). *National Strategic Framework to Mobilize International Finance to Address Climate Change in the Maldives 2020-2024*. <<https://www.environment.gov.mv/v2/wp-content/files/publications/20200303-pub-national-strategic-framework-to-mobilize-international-climate-finance-2020-2024.pdf>>
- Ministry of Environment and Energy. (2017). *State of the Environment 2016*. <<https://www.environment.gov.mv/v2/wp-content/files/publications/20170202-pub-soe-2016.pdf>>
- Ministry of Environment and Energy. (2016a). *Second National Communication of Maldives to the United Nations Framework Convention on Climate Change*. <<https://www.environment.gov.mv/v2/wp-content/files/publications/20161030-pub-second-national-comm-oct2016.pdf>>
- Ministry of Environment and Energy. (2016b). *An Environment Club Guideline*. Malé: Ministry of Environment and Energy.

- Ministry of Environment and Energy. (2015a). *Maldives Climate Change Policy Framework*. <<https://www.environment.gov.mv/v2/wp-content/files/publications/20150810-pub-maldives-cc-policy-framework-final-10aug2015.pdf>>
- Ministry of Environment and Energy. (2015b). *Maldives' Intended Nationally Determined Contribution [INDC]*. <<https://www.environment.gov.mv/v2/wp-content/files/publications/20150929-pub-maldives-intended-nationally-determined-contribution-sep2015.pdf>>
- Ministry of Environment and Energy. (2015c). *National Biodiversity Strategy & Action Plan 2016-2025*. <<https://www.environment.gov.mv/v2/wp-content/files/publications/20160804-pub-nbsap-2016-2025.pdf>>
- Ministry of Health. (2018). *Maldives Demographic and Health Survey 2016-17*. <<https://dhsprogram.com/pubs/pdf/FR349/FR349.pdf>>
- Mosneaga, C. (2017). *Final Evaluation: Low Emission Climate Resilient Development Programme (LECReD) in the Republic of Maldives. Final Report*. <<https://erc.undp.org/evaluation/documents/download/11746>>
- National Bureau of Statistics, Government of the Republic of Maldives (2018). *Maldives Population Projections 2014-2054: Assumptions and Results Analysis*. <<https://maldives.unfpa.org/sites/default/files/pub-pdf/UNFPA%20-%20Report%20-%20Spread%20-%2005082018.pdf>>
- National Institute of Education. (2017a). *Science in the National Curriculum. Key Stage 3 (Grades 7 & 8)*. Delhi: Cambridge University Press. <<https://www.nie.edu.mv/index.php/en/national-curriculum/syllabuses/key-stage-3/241-science-syllabus-key-stage-3/file>>
- National Institute of Education. (2017b). *Social Studies in the National Curriculum. Key Stage 3 (Grades 7 & 8)*. Delhi: Cambridge University Press. <<https://www.nie.edu.mv/index.php/en/national-curriculum/syllabuses/key-stage-3/242-social-studies-ks3-syllabus-2016/file>>
- National Institute of Education. (2016). *Health and Physical Education in the National Curriculum, Key Stage 3 (Grade 7 & 8)*. <<https://www.nie.edu.mv/index.php/en/national-curriculum/syllabuses/key-stage-3/417-ks3-h-pe-syllabus-revised/file>>
- National Institute of Education. (2015a). *The National Curriculum Framework*. <<https://www.nie.edu.mv/index.php/en/national-curriculum/curriculum-framework/92-national-curriculum-framework-english/file>>
- National Institute of Education. (2015b). *Turning the Key Competencies into Reality: A Practical Guide for Teachers*. <<https://www.nie.edu.mv/index.php/en/national-curriculum/competency-guide/266-key-competency-guide/file>>
- National Institute of Education. (2015c). *Science in the National Curriculum*.
- National Institute of Education. (2014a). *Health and Physical Education in the National Curriculum. Key Stage 1 (Grade 1, 2 & 3)*. <<https://www.nie.edu.mv/index.php/en/national-curriculum/syllabuses/key-stage-1/106-health-and-physical-education-syllabus-key-stage-1/file>>
- National Institute of Education. (2014b). *Health and Physical Education in the National Curriculum. Key Stage 2 (Grade 4, 5 & 6)*. <<https://www.nie.edu.mv/index.php/en/national-curriculum/syllabuses/key-stage-2/114-health-and-physical-education-syllabus-key-stage-2/file>>
- National Institute of Education. (2014c). *Science Studies in the National Curriculum. Key Stage 1 (Grade 1, 2 & 3)*. <<https://www.nie.edu.mv/index.php/en/national-curriculum/syllabuses/key-stage-1/105-social-studies-syllabus-key-stage-1/file>>
- National Institute of Education. (2014d). *Social Studies in the National Curriculum. Key Stage 2 (Grade 4, 5 & 6)*. <<https://www.nie.edu.mv/index.php/en/national-curriculum/syllabuses/key-stage-2/117-social-studies-syllabus-key-stage-2/file>>
- National Institute of Education. (2011). *Science in the National Curriculum. Key Stage 1 (Grade 1,2 & 3)*. <<https://www.nie.edu.mv/index.php/en/national-curriculum/syllabuses/key-stage-1/127-science-syllabus-key-stage-1/file>>
- Orlowska, J. (2018). *Effects of Climate Change on Children in the Maldives*. <<https://www.unicef.org/maldives/media/291/file/Climate%20Change%20and%20its%20Effect%20on%20Children.pdf>>
- Selby, D. & Kagawa, F. (2018). Archipelagos of Learning: Environmental Education on Islands. *Environmental Conservation* 45 (2), 137-146. <<https://www.cambridge.org/core/journals/environmental-conservation/article/abs/archipelagos-of-learning-environmental-education-on-islands/CB02924B1D5561C8CC2C02DC8A1E0D27>>
- Transparency Maldives. (2015). *Youth Opportunities and Corruption in the Maldives: A Situational Analysis*. <<https://transparency.mv/v16/files/media/f82d894fa49e31e239eb9f9d904d601e.pdf>>

UNDRR. (2019). *Disaster Risk Reduction in Republic of Maldives Status Report 2019*. Bangkok: UNDRR Regional Office for Asia and Pacific. <<https://www.undrr.org/publication/disaster-risk-reduction-republic-maldives>>

UNICEF. (2021). *The Climate Crisis is a Child Rights Crisis: Introducing the Children's Climate Index*. <<https://www.unicef.org/media/105376/file/UNICEF-climate-crisis-child-rights-crisis.pdf>>

UNICEF. (2015). *Unless We Act Now*. <https://www.unicef.org/media/50391/file/Unless_we_act_now_The_impact_of_climate_change_on_children-ENG.pdf>

UNICEF. (2007). *News Note: Teacher Resource Centres Launched in the Maldives*. <https://www.unicef.org/media/media_41952.html>

UNICEF Maldives. (2020). *Country Office Annual Report 2020*. <<https://www.unicef.org/media/100391/file/Maldives-2020-COAR.pdf>>

UNICEF Maldives. (2018). *Country Office Annual Report 2018*. <<https://www.unicef.org/maldives/media/1381/file/UNICEF%20Maldives%20Office%20Annual%20Report:%202018.pdf>>

UNICEF Maldives. (Undated). *Child Protection*. <<https://www.unicef.org/maldives/what-we-do/child-protection>>

UNICEF ROSA. (2020a). *Maldives*. <<https://www.unicef.org/rosa/media/10571/file/Maldives.pdf>>

UNICEF ROSA. (2020b). *Mega Trends in South Asia: A Report by the Economist Intelligence Unit for UNICEF ROSA*. <<https://www.unicef.org/rosa/media/9546/file/MEGATRENDS%20IN%20SOUTH%20ASIA:%20A%20report%20by%20The%20Economist%20Intelligence%20Unit%20for%20UNICEF%20ROSA.pdf>>

UNICEF ROSA. (2018). *Improving Education Quality in South Asia (1): A Review of UNICEF's Efforts*. <[https://www.unicef.org/rosa/media/6991/file/Improving%20Education%20Quality%20in%20South%20Asia%20\(I\)_30Aug_019_Web.pdf.pdf](https://www.unicef.org/rosa/media/6991/file/Improving%20Education%20Quality%20in%20South%20Asia%20(I)_30Aug_019_Web.pdf.pdf)>

World Bank. (2019). *Maldives Ventures into the Blue Economy*. <<https://www.worldbank.org/en/news/feature/2019/07/11/maldives-ventures-into-the-blue-economy>>

World Bank Group & Asian Development Bank. (2021). *Climate Risk Country Profile*. <<https://reliefweb.int/sites/reliefweb.int/files/resources/climate-risk-country-profile-maldives.pdf>>



unicef

UNICEF
170 Avenue des Nations Unies
1211 Geneva 19, Switzerland
Tel: +41 22 514 9000
Fax: +41 22 514 9004
www.unicef.org

voliball
Handsewn stitch

voliball

THE HEAT IS ON!

Towards a Climate Resilient Education System in the Maldives



For further information:

UNICEF Regional Office for South Asia (ROSA)

P.O. Box 5815, Lekhnath Marg, Kathmandu, Nepal

Tel: +977-1-4417082

Email: rosa@unicef.org

Website: www.unicef.org/rosa