Effects of Climate Change on Children in the Maldives

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1. Introduction

1.1. Climate change in the context of Maldives' vulnerability

Maldives is considered one of the island countries most vulnerable to effects of climate change. Unique geographical features, including coral landscape of over one thousand, mostly small-sized and low-elevated islands, makes it constantly at risk of beach erosion and floods (Church, White & Hunter, 2006). Growing pressure to the coral reef due to human development, and rising temperature of both, water and air, cause imbalance on the local ecosystems. Temperature is likely to increase further as a result of CO2 concentrations rise (Ministry of Environment and Energy 2016). Further, as climate scientists anticipate global rise of the water level in the oceans (IPCC 2013), Maldives is going to face increased number of extreme weather patterns, such as extensive precipitation and storms (Ministry of Environment and Energy 2016).

Maldives' vulnerability to effects of climate change has been exposed especially after tsunami resulting from the Indian Ocean earthquake, which hit the islands in 2004. As a consequence, the National Disaster Management Centre (NDMC) was established, but risk management and adaptation policies developed, especially on the community level are still inefficient. First and foremost, it lacks adequate means of implementation to address the vulnerabilities, resilience

building and adaptation needs (Ministry of Environment and Energy 2016). All of the above climate change-related phenomenon directly affect children and adolescents in Maldives, who make over one third of the total population (Census 2014), at the same time being most sensitive group in the society.

On the grounds of solid data and mindful discussion, a comprehensive picture of children's well-being against environmental threats should be created, following improvement of the existing policies (e.g. related to DRR) as well as establishing initiatives addressing newly diagnosed issues. Protection from effects of climate change is considered human right, therefore most vulnerable groups in society should be supported by the national authorities and international organizations (UNICEF, date missing).

This report summarizes results of the study aimed to identify most striking issues related to climate change and children and adolescents. Comprehensive data collection and community consultations has been conducted in order to highlight perspective of children themselves[1], as well as parents. Undertaken methodological approach allowed to organizing existing knowledge regarding effects of climate change on children and adolescents in Maldives and complement the gaps in the data. Basing on the collected information, ultimate intention of the study is to propose solutions for the best interest of children and adolescent.

1.2. Children in Maldives

Childhood can be characterized as state of intense development. Depending on age, children are growing, evolve physically, acquiring news skills, developing cognition, gaining knowledge about the world and learning how to live in the society. Because of this enormous work their body and mind is doing, they need best conditions and support from adults to evolve. When these cannot be provided, because of the external impacts, children's life can be irreversibly affected (Barlett 2008). Therefore, environmental context, in which they live and grow is of the key importance, including all its negative effects and climate abnormalities.

In Maldives, children and adolescents below 18 years old represent 33% of the total population. Infants and toddlers in the age group 0-4 years consist of 32.13 percent of total child population, children from 5 to 9 years old represent 28.47 percent and the early adolescents (10-14) represented 27.45% (Census 2014). Depending on the region of residence, as well as economic status

[1] It is important to note that children and adolescents are not perceived as passive victims of climate change, but active members of the communities (Reeve in: Pegram UNICEF UK 2015). Aim of this study is to provide tools to the children and adolescents, so they are involved in formation of climate change policies.

of the family, children and adolescents in Maldives live in very diverse environments, in terms of level of development, access to education and health facilities, and exposure to effects of climate change.

Northern region of the country, considered less developed, is one of the most populated by children and adolescents. Poverty among families can be one of the reasons of child malnutrition, which is still a significant issue in Maldives. Dietary habits and low access to vitamins-rich vegetables and fruits also play a role here. Supply of the drinking water to the distant islands is another challenge. Groundwater suitable for drinking is available in only few islands. In most of cases it is contaminated with human waste or saltwater from the ocean. Many households are equipped with special tanks, but these often remain unmaintained. As a result of the poor water security, many children and adolescents are exposed to water-borne diseases (unicef.org). World Health Organization has indicated communicable diseases connected with climate change causing morbidity among children in Maldives. These include: dengue, scrub typhus, toxoplasmosis surfaced due to diarrhea and acute respiratory infections (WHO Country Office for Maldives 2013). In addition, Health Protection Agency reported that 28.36% of boys and 45.42% of girls in Maldives are anemic (2015). This may be connected with iron deficiency resulting from diet poor in red meat.

When it comes to education, Maldives shows an Excellent Primary Enrolment. Almost all children receive at least primary education, nonetheless, the quality of education is often unsatisfactory. The main reason for this state of the matter is poor training of the teachers (unicef.org).

One of the most burning issues concerning children and adolescents in Maldives is different types of violence they are exposed to (sexual, psychical, etc.). 12% of women aged 15-49 reported that they had been sexually abused before the age of 15 (Fulu 2007). Lack of institutional mechanisms, but also belief that violence in family remains its private affair, cause insufficient protection for the children. Drug use, joining gangs or other forms of juvenile delinquency is another problem among older children and adolescents in Maldives. It is both source and result of other psychosocial issues among Maldivian families. In addition, substance misuse exposes country to HIV/AIDS epidemic (unicef.org).

1.3. Scope of potential effects of climate change to children

All of the health issues described in the previous section are somehow related to environment, in which children and adolescents are living. It happens, however, that it is difficult to differentiate, what is directly connected to climate change. In many cases, determinants overlap impacts, making it challenging to clearly categorize effects of climate change to children. One of the propositions is the diagram organizing various phenomenon into cause-and-effect chain concluded as contradictory to children rights as stated in the UN Convention of the Rights of the Child (UNICEF). The diagram

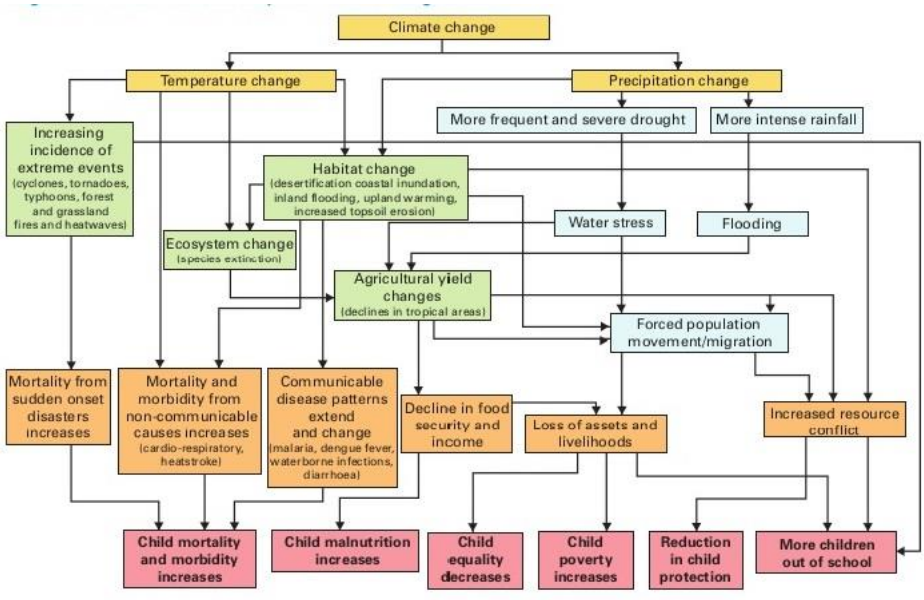
distinguishes two primary climate change patterns: temperature change and precipitation change. The first one leads to the increase of the extreme weather events, changes in the ecosystems and habitats (coastal inundation, soil erosion, inland flooding, desertification). Together with more frequent and severe droughts, as well as more intense rainfalls (connected with the second main cause - precipitation change) results in changes of the agricultural patterns and often a crop loss. All of the above factors can gave following consequences, which directly affect children and adolescent:

- decline in food security
- lower family income
- mortality from sudden disasters

mortality and morbidity from non-communicable causes (cardio-respiratory, heat stroke, hypothermia)

- communicable diseases (malaria, dengue, fever, water-borne infections, diarrhea
- loss of assets and livelihoods
- forced relocation
- conflicts over resources

Diagram 1: Direct and indirect impacts of climate change on children



Source: UNICEF UK (2008). *Our climate, our children, our responsibility: The implications of climate change for the world's children*. London: UNICEF. Retrieved from http://www.crin.org/docs/climate-change.pdf.

Ultimately, effects of the effects of climate change increase child mortality and morbidity, malnutrition, rising inequality, poverty, affecting education process and reducing of child protection (UNICEF, date missing).

Effects of climate change dominating in the relevant literature are related mainly to health. Impacts to psychological and social well-being of children and adolescents is not yet sufficiently represented. In this study, both areas are being in-depthly investigated. However, it is essential to understand that these effects are inseparable and are being categorized only for the methodological purposes. First group of consequences of climate change, such as diseases, health issues and even death, result from air contamination, poor food and water security, high temperatures, and lack of hygiene (sanitation problems). They may include malnutrition and infectious diseases, heat stress and respiratory diseases (UNDP date missing). Second group includes psychological trauma from extreme weather-related disasters, stress connected with poverty and poor living conditions (Burton 2014), dealing with hardship of separation with family members, etc. In case of Maldives, low access to health facilities connected with the dispersed nature of the islands is one of the major concerns and main factor for domestic migration (Ministry of Environment and Energy 2016).

1.4. Similar case studies

UNICEF has rich history of investigating effects, which climate change have on children and adolescents in the most vulnerable countries. The common thread in these studies is the focus on the children's own perspective and including their suggestions in the proposed solutions to the most striking issues. This approach is also adapted in this research on effects of climate change on children and adolescents in Maldives.

One of the recent studies on that matter conducted by UNICEF was based in Zimbabwe. Over one thousands of children has been interviewed in the regions, selected as most representative for the climate issues characteristic for this country. In the past years Zimbabwe is suffering from the growing irregularities in the occurrence of the rain season. Long periods of droughts and sudden flood events affect agriculture, which has severe impact to the livelihoods of the children. Results of the research showed the biggest concern that children have regarding effects of climate change. It occurred that when basic needs can't be fulfilled (e.g. due to food shortages), children are forced to undertake some of the adults' responsibilities. Being involved in activities devoted to maintain the well-being of the household, they are missing school days. Apart from difficulties in education process, children of the most vulnerable regions of Zimbabwe are fighting stress and traumas, including hardship of separation with family members, when droughts or floods force people to relocate (Manjengwa, J. et. al. 2014).

Another study highlighting children's perspective regarding climate change prepared by UNICEF was conducted in Nepal. The country is exposed to heavy rainfalls, floods, landslides and droughts. The research was conducted among the poorest families in four communities in the mid-west and central

regions of Nepal. Participatory techniques used in the research showed the whole range of direct and indirect consequences that climate abnormalities have on children's life. Among them, there are diseases, such as dehydration, cholera, diarrhea and many socio-psychological concerns. Due to floods and landslides many families are losing their main source of income - crops. Along with inappropriate infrastructure, it forces families to relocate and restrains children from attending school. One of the most interesting approaches used in the study was requesting children to propose solutions to these problems most suitable from their point of view. Among children's recommendations there are: ending with deforestation, having better access to agricultural technologies and awareness of the climate-related issues among the people (Gautam Dh., Oswald K. 2008).

UNICEF has also an experience in investigating situation of children regarding climate change in the Small Island Developing States (SIDS). In the study of the Eastern Caribbean (2009) it has examined some of the aspects of environment, which, to certain extent, can be compared to what is happening in Maldives. A warming of the ocean, sea-level rise, increased intensity of weather events like hurricanes, pressure to coral reefs, contamination of water sources, and erosion of the coastal land are among the key similarities. Authors of the study indicate the lack of reliable data on diseases related to environmental changes and stress how important it is to raise awareness of importance of monitoring of such issues. As study found that only few programs has been introduced in the SIDS of the Eastern Caribbean were designed to protect children confronting effects of environmental changes (O'Garro, Speek-Warnery, V. 2009).

2. Research methods

2.1. Aim of the study and research questions

Key aim of the study is to realize the scope of impacts, which climate change can have on children and adolescents of Maldives. Identifying specific issues resulting from various environmental changes is essential for projecting solutions, which can improve well-being of the children and adolescents. Basing on the already existing studies, many of these negative effects are already named and described. During the research it was tested, which of them concern children and adolescents of Maldives. Additionally, as the subject is especially sensitive and still partly unknown, the aim of the study was also to diagnose issues, which are not yet fully recognized.

Apart from analysis of the effects that climate change can have on children and adolescents in Maldives, others goal of the study was to examine awareness of children and parents on the subject. Familiarity to own surroundings, but also knowledge on how it works and how humans influence it,

provides basis for eco-friendly living and sustainable development. Because Maldivian islands are vulnerable to climate change, it was important to examine the scope of familiarity with the issue of their residents.

During the research, it was equally vital to investigate if people are aware of the on-going adaptive measures aiming to reduce effects of climate change in the islands as well as their evaluation. It was planned to find out if initiatives already undertaken in the islands are communicated well to the communities, well-received by the islanders and, first and foremost, bring expected results. As a result of designing the areas of interest, described above, three main research questions are as following.

1. What is the level of awareness of climate change among children and parents?
2. What are the climate-induced child vulnerabilities in Maldives (related to health, psychological and social well-being of children)?
3. What is the level of awareness and evaluation of the preparedness activities undertaken nationally/locally and adaptation measures regarding climate change?

2.2. Research setting

Maldives consist of approximately 1,190 islands, which are grouped into 20 administrative and 26 natural atolls. According to the most recent census, total number of Resident Maldivians is 338,434. Local population maintain their houses mainly in the 188 'inhabited islands'[2], including the capital city, Malé, currently the home of more than one-third of the country's total population (Census 2014).

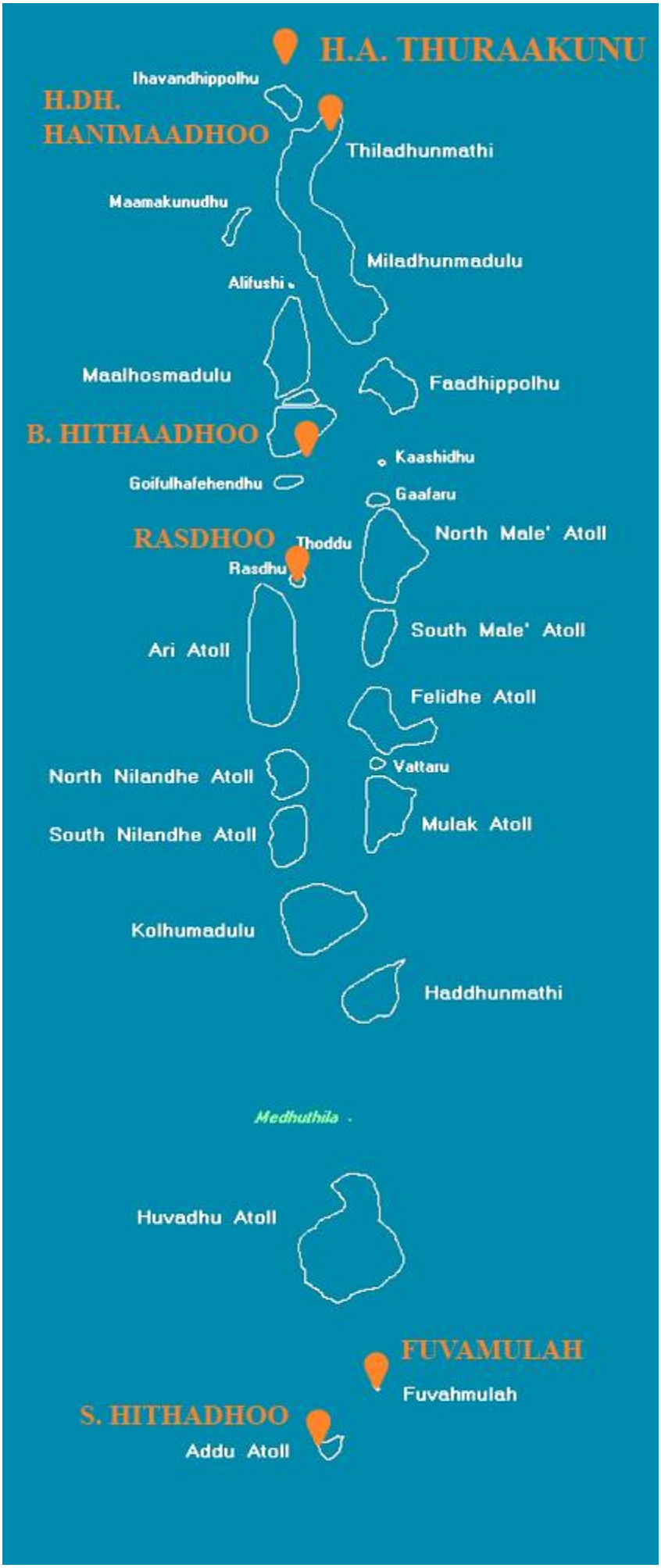
The main period of the data collection in Maldives took place in July-August, 2017. It has been conducted in Malé, and in the local islands, simultaneously. In the capital city interviews with the key stakeholders working in the area of CCA and DRR have been collected. At the same time, a group of trained data collectors traveled to the selected islands and conducted interviews among the families with children and adolescents, and local experts.

H.A. atoll Thuraakunu, H.Dh. Hanimaadhoo, B. atoll Hithaadhoo, A.A. atoll Rasdhoo, Gn. atoll Fuvahmulah and S. Hithadhoo were selected for this study based on the recommendation of the Ministry of Environment and Energy (Climate Change Section), which has chosen them for vulnerability assessments conducted for preparing the National Communications to the United Nations Framework Convention on Climate Change (UNFCCC). All six islands that has been

[2] Other than industrial islands or resorts.

researched have different environmental contexts, various stages of development, and different facilities established, but the main effects of climate change on children usually remained the same, thus to different extent.

Diagram 1. Map of the field work


H.A. THURAAKUNU
Ihavandhippolhu
H.DH.
HANIMAADHOO
Thiladhunmathi
Maamakunudhu
Miladhunmadulu
Alifushi
Maalhosmadulu
Faadhippolhu
B. HITHAADHOO
Kaashidhu
Goifulhafehendhu
Gaafaru
RASDHOO
Thoddu
North Male' Atoll
Rasdhu
South Male' Atoll
Ari Atoll
Felidhe Atoll
Vattaru
North Nilandhe Atoll
Mulak Atoll
South Nilandhe Atoll
Kolhumadulu
Haddhunmathi
Medhuthila
Huvadhu Atoll
FUVAMULAH
Fuvahmulah
S. HITHADHOO
Addu Atoll

2.3. Sampling and organization

Each visit of the research team in the selected islands has been previously announced to the Island Council. They were providing general information about the island and, if possible, delivering demographic records. After recognition part, research team has been visiting local households, looking for opportunities for the interviews. Houses has been picked randomly, with the condition of including children and adolescents of maximum 18 years old. One of the main features of Maldivians, especially these living in the local islands, is maintaining close relations with neighbors and other members of the local communities. Therefore, the first-wave contacts was often inspiring recruitment of the future subjects from the already existing networks ('snow-ball sampling').

Specific, less random sampling has been used in the island of Hanimaadhoo. After recognizing the conflict between migrant and host population, some data collectors moved to the ward inhabited by the migrants, in order to compare their accounts with these of the hosts. Further, in big islands like Fuvahmulah that had eight wards, the data collectors tried to interview people from different wards. In Ha. Thuraakunu, due to limited children and adolescents available on the island, the team had to seek assistance from school for the interviews. Similarly, In Gn. Fuvahmulah and Rasdhoo, research team members approached sports event in order to seek children and adolescents available for the interviews.

Most of the interviews have been recorded in Dhivehi and translated to English by data collectors for further analysis. Few interviewees, refused to be recorded, and data collectors took notes of their accounts. Houses of the interviewees were the preferred setting for the interviews as they provided most comfortable conditions for the families to speak freely about the sensitive subjects. In addition, visiting the houses will allow the researchers to investigate the context in which children and adolescents are living. Most interviews were held inside the household where the interviewee felt comfortable, however, some were recorded in a Café', streets or near a playgrounds or schools, where younger where interviewees were available.

2.4. Research tools

The initial idea for the research tools to investigate effects of climate change to children and adolescents in Maldives was a combination of questionnaires and qualitative interviews. First one would aim to gather possibly widest range of answers, and the second one would focus on thorough investigation of the threads most relevant to the researched subject and looking for non-evident answers to the research questions. However, after the pilot study conducted in the island of

Thulusdhoo, quantitative method has proven not to bring expected results. Therefore, it was decided to focus entirely on the in-depth interviews, which allowed children and parents to freely express their feelings and opinions, and to acquire useful data by the research team. In case of qualitative interviews, the principal aim is to understand the researched phenomenon, empathize with the interviewees, rather than focus on number of the interviews to collect.

Table 1. Summary of the collected interviews

Name of Island	No. of interviews with Children	No. of interviews with Parents	No. of interviews with Experts	Total
AA. Rasdhoo	8	13	8	29
B. Hithaadhoo	9	12	6	27
S. Hithadhoo	16	26	6	48
Gn. Fuvahmulah	28	17	5	50
HA. Thuraakunu	12	17	2	31
HDh. Hanimaadhoo	14	22	6	42
Total	**87**	**107**	**33**	**227**

The total of 227 interviews has been conducted in the selected islands during a one-month fieldwork. Two main groups of interviewees were children from 9 to 18 years old and parents of children (0-18 years old). In addition, data of additional value has been collected from the local experts in the islands. They were key people in the community (councilors, teachers, medical staff) and elderly residents who seem to be willing to deliver interesting piece of information relevant to the scope of the study. Main aim of these interviews was to acquire more objective knowledge about the specific island community.

Apart from interviews with children and parents, interviews and records has been collected from the local experts, such as medical staff, teachers, counselors, if present, and elderly representatives of the community. Interviews were collected mainly in Dhivehi, about 30 were given in English (only from Fuvahmulah and S. Hithadhoo). While the shortest interviews lasted less than 5 minutes (HA. Thuraakunu and HDh. Hanimaadhoo), some interviews recorded lasted over 40 minutes (S. Hihadhoo).

In addition to interviews in the selected six islands, 13 interviews has been conducted with the key stakeholders. They have provided relevant objective data, reports, and insight of various aspects of well-being of children and adolescents in Maldives and effects that climate change have on them. These have been done and recorded in English in the capital city, Malé.

2.5. Challenges and limitations

Nonprobability sampling

It is important to note that the quantitative methods most relevant for this type of research cannot serve statistical inference. Structure of the island communities is mostly unavailable, therefore quota sampling for the surveys in the specific islands had to be substituted with snow-ball sampling. The choice of islands was also based on nonprobability sampling, therefore it does not intend to be used to infere from the sample to the general population in statistical terms.

Unavailability of interviewees

The researchers aimed to collect interviews from widest possible scope of the islanders of different age, gender and backgrounds in order to be authorized to draw certain conclusions with regard to the researched problem. This, however, was often biased due to general unavailability of certain groups for the interviews. During the day, mainly women were present at households. Most of middle-aged men would be either at work in another island, or I n the sea fishing. In some cases, women staying alone at home were reluctant to give interviews and share their feeling and opinions with researchers. The reasons given were such as lack of time, felt uncomfortable being recorded, or they assumed that they will not know the answers. Also, some island communities were quite introvert, such as Baa Hithaadhoo, contrary to others, where people freely shared their opinions on the researched subject.

One of the biggest difficulties during the study was to recruit children and adolescents fitting desired age category for the interviews. Most of them have been occupied at school from morning till afternoon, and many also in the evening for extracurricular activities or too tired for interviews. In one islands, children were getting ready for the Independence Day therefore were employed until late evening with activities related to celebrations. In another island, the children were occupied with their annual football tournament and therefore unavailable together with their parents who were involved in this activity. Therefore, it was difficult to get their times for an interview during a two day visit to the island. They were much more accessible during the weekends.

Unavailability of hard data

It is not standard for all island institutions to collect and organize data. Therefore, only some councils managed to provide demographic data on island population, especially number of children by age

and gender, and medical centers to present medical records. Some statistics were delivered later, some were available from institutions of national level, and some weren't possible to retrieve at all.

3. **Results of the study**

Objective of this study was to answer three main research questions. First question referred to the level of awareness of climate change among children and their parents. Second, and the broadest one was, what impact climate change has on Maldivian children. One of the specific questions, which has been especially interesting within this area was, are climate-induced migration patterns of families existing in Maldives. Third research question was to examine evaluation of the on-going preparedness activities undertaken nationally/locally and adaptation measures by interviewees. Basing on the in-depth interviews with children, parents and local experts from the six selected islands, interviews with stakeholders, as well as participant observation conducted in the islands, it was possible to find answers for all three research questions.

3.1. **Awareness of climate change of children and parents**

The research conducted shows high level of awareness of climate change among Maldivian children. Only 7 out of 86 interviewed children and adolescents had nothing to say on the subject. School is the primary source of knowledge here and environment is a crucial part of curriculum. Depending on engagement of the teachers and support form NGO's in the particular islands, some schools have environmental clubs, which allow students to upgrade knowledge about climate change and to participate in the local events, such as island cleaning. Children and adolescents in Maldives generally know, how pollution is connected with global warming, realize importance of proper waste management and often attribute weather anomalies to climate change.

> *Climate change affects different people in a different way, on a global level it's global warming and sea level rise, in Maldives we experience extreme heat, sea serge, high tide. [12 year old boy]*

> *(Climate change is when – note form the author) greenhouse gases cause global warming, changing weather patterns, air pollution from people smoking waste, beach erosion. [13 year old boy]*

Many of them also declare using this knowledge in practice, mainly by cleaning the beaches, watching their parents to recycle, etc. They love their islands and hate to see them being destroyed

by effects of climate change, which they attribute to humans. They see many possibilities for improving protection of environment in their islands, but they count on more guidance from adults.

> *Reducing pollution would be very important as this is a main cause of climate change, planting trees would be helpful for beach erosion; we could switch to paper bags [12 year old boy]*

Some gaps in knowledge regarding water security has been noticed. Children showed rather little concerned on the subject, which may be connected with little awareness of the issue. Also, in one of the islands it was quite alarming to find out false beliefs about cleanness or healthiness of various types of water. One of the interviewees mentioned that in his island people believe that drinking mineral water may be harmful.

Most of interviewed parents also recognise environmental issues in their islands. Sometimes, however, they would not associate issues, such as beach erosion, or presence of mosquitoes with climate change. People generally seem to be familiar with issues, which are directly affecting their lives. They clearly notice increase of temperatures in the past years, but would not necessarily call it 'a global warming'. The biggest confusion arises when talking about beach erosion. Some interviewees see it solely as a natural process, resulting from the monsoon activity. There is little knowledge on the scientific fact of climate change (sea level-rise, intensification of storms) significantly exacerbating coastal erosion, hence people feel little can be done to prevent it.

Probably the biggest challenge in terms of awareness is waste management. Many interviewed Maldivians seem not to realize how improper waste management harms local environment and affects their own life. Those, who do realize its negative impact, don't see alternative for their practices, which has been repeated for years.

3.2. Effects of climate change to children in Maldives

3.2.1. Health-related effects of climate change

<u>Extreme heat</u>

Rising temperatures as one of the effects of global warming is heavily affecting lives of people in Maldives. In addition, low daily temperature amplitude, makes it impossible to catch their breath, while before it was possible in the evenings. Some interviewees noticed that one of the hottest moments in year occurs right after rainy season, emphasising that this change in the weather is quite

rapid (dramatic change of weather conditions with the beginning of dry season). Two seasons are common for Maldivian climate, but, according to interviewees, weather became more extreme now.

Intense heat is considered a major struggle of everyday life by majority of the interviewed people. Out of 86 interviewed children in all six islands, 53 (61%) indicated that it is seriously affecting their lives. Some of them voluntarily mentioned high temperatures and extensive sunlight as the biggest problems they face when living in their island. In all researched islands, except Rasdhoo, more than half of the interviewed children and adolescents, mentioned extreme heat as problematic for their everyday lives. The biggest per cent of interviewed children (almost 88%) complained on high temperatures in S. Hithadhoo, which can be explained by the equatorial location of the island (the sun is overhead at the equator most time of the year).

Maldivian children and adolescents indicate that because of extensive sunlight and unusually high temperatures, they experience health related issues, such as migraines, headaches, fever, heat-strokes, sunburns, and allergies, mainly skin reactions.

When it gets too hot outside, there'll be white spots on my skin [11 year old girl].

Figures available for the local health centres confirm these statements. Hanimaadhoo Hospital staff admitted increased cases of the reported skin diseases during hot weather. Medical reports from S. Hithadhoo indicate 439 cases of fever in 2016 among children below 12 years old, with the peak of reported cases in August and September, although it is uncertain if they had been connected with heat.

In addition, one of the interviewed parents mentioned that her kids get stomach issues when temperature increases too much. Further effects of extreme heat, which can be today observed in Maldives include difficulties in sleeping, focusing and studying, apathy.

Our island[3] is also very hot (…) sometimes I find it hard to sleep because of the heat, I try to get up, take a shower and fall asleep again; because I can't sleep well at night, I feel sleepy every day at school. [12 year old boy]

There are 3 fans in the classroom and in class there would be 27-30 kids and it gets really difficult. [34 year old teacher]

[3] Original names of the islands has been removed for the stake of anonymity and security of the interviewees.

In some cases, interviewed children mentioned eye problems connected with too much light from sun (probably reflecting from the sandy roads). It has also been noted that extensive heat prevents children and adolescents from going outside to socialize, hence they prefer to stay indoors (because of shade, air conditioning or fan). They stay in front of TV, or playing with their phones, rather than play outside with their friends, although heat is probably only one cause for this state of the matter. Better access to technology connected with changing culture may be another reason, not related to the main aim of this study.

Interviewed parents also indicated extreme heat as a top effect of climate change on their children's lives. 47% of them called it a serious problem. In comparison, to their offspring, they have better overview of how temperature has risen within the past decades. Many say that today it is much hotter in the islands than when they used to be kids themselves. Some of the parents bring up the issue of skin irritations among their children during unusually hot days and difficulties in staying outdoors (*Heat makes it difficult for my 5-year old to do anything outside* - 34 year old mom), including going to school, which can be distant from home in the larger islands. Especially alarming is the fact that some schools and even health facilities lack proper equipment to cool the air. Some of the interviewed teachers admitted that students are complaining that they can't stand the heat in the classroom.

> *Because the school is newly built, there are no trees in the compound, so it's very hot. We want shade. When the children come back from school, they are soaked in sweat (…). The fans are a very big problem too - there are three in each classroom, but they barely turn (…). Considering that the class has around 26 children. [34 year old mom].*

In such conditions, it would be unreasonable to require children and adolescents to focus and study, not mentioning taking tests. In addition, one student complaining about difficulties because of the unbearable heat in the classroom, attended school, which used to be just next to the forest. This unfortunate location prevented teachers from opening windows for better air circulation as this would let mosquitoes from the forest fly in, creating another danger of vector-borne diseases. In one of the islands, parent also complained about lack of air cooling devices in children's ward in the hospital. This shows how extreme heat and lack of preventing measures, not only inspires diseases, but also can make sick children suffer even more.

Apart from health issues that Maldivian children and adolescents are suffering from, which are directly linked to unusually high temperatures and extensive sunlight in the past years, there are also second-hand effects of the heat worth mentioning. The most serious of them is dust occurring on the roads during dry season. In all six researched islands, parents and children reported that unpaved

roads get extremely dusty, especially during the time of the year, when rainy season is followed by a heat wave, initiating dry season. Basing on the interviews with both children and parents, it can be said that there is a common belief that start of the dry seasons is a peak season for respiratory issues. Common colds, flu and allergies has been mentioned as most common health problem occurring during this period. Because in this time of the year, there is much more dust on the roads due to dryness, some allergies can be confused with common colds, usual for transit from one season to another. In S. Hithadhoo medical records show peak of the acute upper respiratory infections cases among children below 12 years old in August and September 2016 (282, 162 cases respectively). In Fuvamulah, total number of respiratory infections and common cold for this age group in 2016 was 4129, making it the most common health issue in the island among younger children. 17% of the interviewed children and adolescents indicated that increased dust in the roads during dry season makes living in the island harder. Half of them admitted they personally suffer allergy or cold during these days.

> *I am allergic to dust, every time when it is not raining, there is so much dust, before all trees were white from the dust [12 year old girl].*

24% of the interviewed parents indicate that dust in roads, which is increasing during dry season, is an issue for them and their children. Apart from the same respiratory problems, already enumerated by children, one parent mentioned that exposure to dust causes skin rashes to her kids (however, this can be directly caused by heat, which coincides with dust). Two parents remarked sinus infection of their kids related to dust and one mentioned asthma as its effect.

Communicable diseases

Change of seasons is usually the peak time during the year for many diseases, such as common cold, or dengue. Despite many interviewees believe, common colds are connected with climate change[4], there is no scientific proof to confirm it. On the other hand, the connection between climate change and dengue incidence is quite certain.

Dengue fever is an endemic mosquito-borne disease caused by the dengue virus. Aedes aegypti and Aedes albopictus, the main vectors for the disease, are widespread in the country. The first cases of dengue were identified in 1979. Symptoms typically include a high fever, headache, vomiting, muscle and joint pains, and a skin rash. Dengue is sixth most common communicable disease in Maldives. In 2016 there has been 1866 cases of dengue fever reported, 53% of which were children (Health

[4] It is possible that when linking common cold with climate change, many people do not differentiate natural changes in weather with the long term changes of the weather patterns.

Protection Agency 2016; Ministry of Health). 'There are three dengue peaks throughout the year, proven to be connected with rainfall patterns. During rain, small containers around the island are being filled with water. Clear, stagnate water is the breeding site for mosquitoes, so it can increase the number of the vector's carrying the virus, explained Sana Saleem from the Vector-borne diseases Department of Health Protection Agency, Maldives. She noticed that, the peak season for dengue incidence corresponds with Ramazan. In the past years rainy season has shifted from June-July to May-June, and this is where most of the cases are being reported. The same observation has been made on the local level of the islands, as found out during field work. 16% of interviewed children and 10% of the parents indicated presence of mosquitoes as a problem in their island.

Apart from heavy rainfall, another factor has been identified as strongly increasing possibility of dengue epidemic in Maldives: poor waste management. Interviewed people reported that empty containers (usually cans and bottoms of the plastic bottles) can be easily filled by water during precipitations and creating reservoirs of stagnant water, which are ideal places for mosquitoes to breed. These containers are not only found on the dumping grounds, but all over the islands. One of the interviewed parents in HD.Hanimaadhoo noticed that in the island there is a lot of abandoned houses, which are unkept and full of garbage, which attracts insects, transmitting diseases.

Poor waste management

In the previous section, a direct link has been shown between increase of dengue cases in the Maldivian islands and combination of heavy rainfalls and poor waste management. The way, in which garbage is being handled in Maldives is currently one of the biggest challenges. Not only, it contributes to global warming (waste is considered one of the key accounts for the greenhouse gas and methane emissions) (Ackerman 2000), but also destroys environment, especially fragile marine ecosystems of coral reef. Two key industries in Maldives, fishery and tourism, heavily depend on wellness of the coral reef, therefore learning how to protect it, should be a common concern.

Definitely, the biggest obstacle to transfer to more environmentally friendly garbage management in Maldives is people's mind-sets and fighting consolidated habit of discarding waste anywhere. Until recently, most of waste were generally degradable since it was organic in nature and Maldivians got used to throw it to the road, beach or sea as it was considered a part of the natural surroundings. Unfortunately, this custom continues even after the introduction of plastic and paper bags to the islands. There is some difference noticed in beliefs regarding what is waste and were is its place between children and adults. Older generation seem to be used to throwing waste anywhere, meanwhile youngsters seem to be a little more sensitive in this case, most probably because environment is covered in the school curriculum.

I tell my mom not to throw garbage to the sea, she says it just food, but she throws it in plastic bag [17 year old girl]

Research shows, that children and adolescents are being very much bothered by the fact that trash can be found in the places they go to play and relax, such as beach and the sea. 32% of them mentions improper waste management as a significant problem in their island.

Throwing plastic to the ocean and garbage to the road - that is something I really don't like in this island [12 year old girl]

Unpleasant sight of waste in the island is not the only problem. Poor waste management can also be dangerous for children.

(…) *One day I was almost suffocated by a plastic bag when diving with my brother [10 year old boy]*

Situation described by a boy is extreme, but shows real issue. Children playing on the beach or in the sea can get hurt by thrown can or touch toxic waste. Some kids claimed that human waste or food leftovers are also thrown near beach. This is extremely unsanitary and may be source of various diseases affecting children and adolescents.

Despite these dangers for children and adolescents resulting from poor waste management, adults seem to be less harsh, when talking about this, in comparison to children. 25% of the interviewed parents notice issue of poor waste management. They are aware of the connection between unkept containers thrown around the island and more mosquitoes. In the islands, where there has been recent changes in waste management, people often appreciate the efforts and see the decrease of dengue cases.

Even though positive reception of the changes has been observed, many behaviours remain alarming. In one of the researched islands, people admit to deliberately throw some types of garbage to the sea, because they believe this is the only possible option. They seem to understand and see that this is ineffective system (complain that garbage flows back to the beach instead of disappearing – note from the author), but don’t know the alternative way.

The islanders want a good management system for the waste problem. Some people burn the waste and others do not. There is no procedure to deal with plastic or metal waste, and they

just stay in the dump yard, collecting rain water and creating a mosquito breeding ground. [40 year old mom]

Another striking issue, is improper utilisation of waste, which has been already successfully transported to the dumping yard. In most islands it is not properly stored, nor utilised. One of the local experts from S. Hithadhoo highlighted that establishing of the dumping area and calling it a Waste Management Centre is not enough.

Waste is not managed. They just move waste from one place to another and make piles.

[middle-age man]

Open burning of the mixed trash produces toxic fumes, creating hazard to the local children and adolescents. Rasdhoo is being proud of introducing system of collecting garbage from the household and transporting it to the dumping ground. Local health centre, as well as the community itself, noticed that because of this number of dengue cases has decreased. However, the way in which garbage is being utilized still need improvements. Waste Management Centre is not properly fenced, staff is not wearing any protection uniforms, nor masks, and is not trained how to segregate and dispose waste. Open burning and segregation of non-degradable waste has been found, producing toxic fumes, bothering children and adolescents in the island.

We drive by the garbage dump on the way to school and sometimes they burn too much of it and the smell is everywhere. It makes it difficult to breath. [12 year old girl]

The same issue has been observed in B. Hithaadhoo. Also, one person brings up issue of improper utilisation by saying that toxic fumes coming from the garbage burnt cause skin rashes.

Photo 1: Waste burning producing toxic fumes
Credit: Justyna Orłowska

Water security

Another issue related to climate change is the quality of water available in the islands. Especially, parents are found to be concerned about it. 49% of them indicated water security as serious issues, while 16% of children mentioned it as a problem.

Traditionally, islanders have been using ground water from wells for various purposes, from drinking to washing and ablution. Nowadays, this type of water is no longer appropriate for all these activities. After 2004 tsunami and due to lack of proper sewage systems in some of the islands, ground water became contaminated. Despite this fact, it continues to be used by many households for washing and bathing. Furthermore, all islands lack drainage systems, therefore the scarce water lens is not being replenished. Taking into account predictions of prolonging dry seasons, this may become even more problematic in the future.

The primary source of drinking water these days in the local islands of Maldives is rain. However, harvesting rainwater became challenging due to changing patterns of precipitation, which is considered one of indicators of climate change. Traditionally, there have been always rainy season during the month of June and July. People called this season 'June-July' and it have been associated with the time of collecting water supplies by adults, and the time of staying at home and not being able to play outside for children. Some interviewees noticed significant shift in when and how rain occurs. In the recent years, it is more likely that it will be rather raining during May and June, however it also became highly unpredictable. In addition, many people report that weather elements have intensified: rains are heavy and accompanied by strong wind and dry season became extremely hot and dry often leading to droughts. Due to intensified precipitation during rainy season, dry season has also extended, creating even more need of drinking water and less opportunities to harvest it.

Most of the households have large water tanks designed to collected harvested rainwater and secure access to it during dry season. Before, roofs were cleaned on certain time of the year to ensure it will be ready to collect water when rainy season comes. These days however, due to unpredictability of its start, families find it hard to prepare for the proper water harvest. Cleaning of the roof is traditionally done by men, as women are staying home and taking care of children at that time. These days, men are often staying outside of the island, earning living in the resorts, fishing or being engaged in business in the larger islands. Since, rain season is now unpredictable, they often are absent from home when precipitation occurs and there is nobody to clean the roof. It may sound as

trivial problem, but it can have quite serious consequences for many families in Maldives: they either don't have enough rainwater to secure dry season, or don't have it clean and safe to drink.

> *Our tanks are empty, because we haven't been able to collect water as there isn't anyone to clean the roofs and I feel as though we shouldn't take water, if we haven't. We get water from one of our neighbours. [45 year old mom]*

Due to difficulties in predicting rainy season, accurate preparation of the water tanks, as well as the growing pressure on one water source, water shortages occur on the islands. Most of them occur during the droughts every year (usually between January and April/May). In such cases people can use communal tanks. If these also face shortages, islands are allowed to request drinking water from the government. According to Ahmed Shifaz from UNDP, approximately 70 out of about 188 inhabited islands in Maldives use this opportunity annually. It is important to note, however, that transporting of the water to distant islands is extremely costly: one-unit production equals 10 units transport. There have been cases reported, when due to bad weather conditions, water has not been delivered to the community with its shortage.

Final option of acquiring water during dry season is to purchase it in bottles from the shops. Bottled water is the safest for drinking, especially for infants and younger children, but this solution also has its limitations. Firstly, for many less-wealthy families this is the last choice, due to financial reasons. Secondly, supplies of the bottled water are not guaranteed, since country has only few water centres. Finally, depending on water distributed in plastic bottles in Maldivies, which has such a fragile environment and no advanced waste management system, would be rather inefficient.

Photo 2: Boy helping his friend to load water buckets
Credit: Aminath Shooza

Many families are forced to prioritise needs and diversify usage of water from different sources accordingly. As a result, they would use the least reliable ground water for washing and rain water for drinking. Some people buy mineral water for infants. This practice seems reasonable, however, even bathing in contaminated water may still have hazardous implications, e.g. cause skin conditions. In case of small children, it is almost certain that some water can be swallowed during bathing. Many people blame improper sewerage system for contamination of ground water lenses. They claim that sewerage can sometimes drain into fresh water and infect it.

> *Water is not as fresh as it was before, but doesn't smell; there are septic tanks, junction it seeps to the ground and may be mixed with ground water. [16 year old girl]*

> *Water is not clear, it smells really bad and has dusty particles, it is not salty its milky, for showering also it is not something that you should use, ground water is usually contaminated [29 year old mom]*

> *The school's ground water is also really bad, and some kids get diseases from using this water. Some kids refuse to use the bathrooms of the school because the water is so bad, they will sometimes cry. [48 year old mom]*

Apart from skin rashes, mentioned by some of the interviewees as a result of contact with contaminated ground water, proximity of septic tanks to the water lenses can result in diarrhoea/ gastroenteritis. In 2016 there has been 34318 cases reported, and the number is steadily increasing

within recent years (Health Protection Agency 2016). In small island communities, it is enough for one child to get infected for many more children in the community to influenced. However, there is lack of awareness of the linkages between use of the contaminated water and water-borne diseases.

> *If we have diarrhoea, it spreads, but we are not sure what is the reason (maybe different diet during Ramadan, sometimes also water (small kids can drink a bit of water during bath), rather viral then food and water. [nurse]*

Access to safe drinking water and level of development of sanitation facilities varies on the six researched islands. For B. Hithaadhoo, contamination of ground water is one of the biggest challenges, which most probably is related to lack of sanitation system in the island. Council has also reported cases of infiltration of the ground water lenses with diesel. Local health centre reports persistent urine infections among adults. Similarly, S. Hithadhoo lack proper sanitation facilities, which led to contamination of the ground water lenses. Despite this, islanders use it for bathing and washing. Most of the households have rainwater tanks to harvest rain and use it for cooking. For drinking, many people claim to purchase mineral bottled water. There are communal water tanks in the island, however they are unmaintained, hence are not used. S. Hithadhoo is one of the islands depending on the possibility of water requests from government during rainy season. In addition, large migrant population of workers has been found in the island, lacking access to water tanks. In Rasdhoo, people believe that introduction of the sewerage system negatively influenced quality of ground water. Not all households find it easy to collect rainwater, instead.

Examination of water quality in Fuvamulah also showed its contamination beyond usage. This water is being used for bathing and washing, rain water for cooking, and bottled water for drinking. The island also requests water shipments during droughts between January to April. Local health centre in Fuvamulah claims that, despite there are few skin conditions reported due to lack of dermatologists, school health screening programmes does note the appearance of white patches on children.

In Hanimaadhoo, most of the people depend on rain water for drinking, but some new houses lack water tanks. In addition, there are communal tanks, maintained by volunteers. There has been a foreign company stationing in the island and implementing irrigation system, however, it resigned due to conflict with authorities.

Thuraakunu has probably the best water situation within the six researched islands as each household has clean water tap as ground water seems to be of good quality. There is a sewerage system in the island completed with contribution from a private company.

Flooded roads

Intensified and unexpected precipitation and more frequent and severe typhoons as result of climate change have another impact on life of children and adolescents in Maldives. Because of the poor quality of roads, which, in most of cases are unpaved and uneven with lots of potholes, after rain it is very difficult to move around the island. 32% of children and 50% of parents complain on conditions of roads in their island. Both children and parents mention that it is challenging to go to school after heavy rain. In some days, the only way to get there is to take a taxi, but – not everyone can afford it. One of the moms is carrying her 10-years old son to school through the puddles, every time the roads are being flooded.

> *When roads are flooded It makes it harder for me to go and come from school. On those days we take off our shoes and walk. We have to come to school with wet clothes, by the time we get here we're soaked. We have to sit in school with our socks and shoes off until we dry. [14 years old girl]*

It is important to note that communication is not disrupted only during particular days of extremely heavy rainfalls. In islands like Hithadhoo, the water puddles after such rain sink into the ground very slowly, making it difficult to use roads for weeks. It happens that the water has to be physically pumped out from bigger roads to the sea.

Some people reported that when the flooding is especially heavy, the water may reach schools and houses, and cause damage. It happens that school is being temporarily closed and schools dismissed. Some children may also not be sent to school because of the flooding appearing in the island. Most of interviewed people are equally concerned about the flooded roads during heavy rains. However, most alarmed about houses being damaged are, quite understandably, people living closer to the sea.

Photo 3: Flooded roads
Credit: Aminath Shooza

Beach Erosion

Beach erosion is another issue mentioned by interviewees. This, partly natural process, has been observed in Maldives since older times as seasonal shifting of the material making up the island. Due to monsoon activity, at a particular time of the year, islands erode one side and builds up the other. Nonetheless, due to climatic changes, such as sea level rise, as well as increased number and strength of storms, it is being dramatically intensified (Mimura 1999; Dickinson et al. 2005).

50% of the interviewed children indicated beach erosion as problematic when living in their island. Additionally, 0.8% mentioned existence of beach erosion, but didn't strongly feel it was an issue. Among parents, beach erosion proves to be one of the top island affairs. 58% of them admitted that it is a large concern for them. Three additional people highlighted beach erosion as a serious issue in the island, but were not sure if it is connected to climate change. They seemed to believe that the process is equipotential in the annual context and does not significantly change the total surface area of the island (decrease during one monsoon and grown during another one).

Large overall awareness of the problem of coastal erosion results from the beach being traditionally a place for spending free time, especially for family picnics during the weekends. Parents seem to recognize the issue to much bigger extent, as they can compare development of the process through decades. Many of them conclude it in a simple, but strong statement: 'the beach where I used to go when I was a kid, is not there anymore'. Children and adolescents also notice it, but in the smaller scale. Many interviewed people are able to exactly say how much of land has been gone within the past years.

The edge of the island, which is main tourist attraction, half of it is gone. We had beach, but we lost 10 meters (of it – note form the author). It is a problem for me, I used to go there. Due to beach erosion, I don't go there anymore [12 year old girl].

30-40% of our beaches we have lost in past 15 years [30 year old mom]

Lack or lesser possibility to go to the beach and enjoy natural beauty of the island is one worry resulting from beach erosion. Another one is fear of rapid decrease of the already limited living space.

I am worrying that island is getting smaller and smaller from erosion [12 year old girl]

People see reasons for beach erosion as partly natural (seasonal monsoon activity, 'big waves'), but some also clearly recognize human contribution to it. Many of them, both children and parents, indicated non-declining precedent of sand mining. Removing sand from the beach is an old and persistent practice in Maldives. In the past the sand has been used for filling walls in the concrete frameworks of buildings (Naseer, n.d., pp. 158–59), and preparations for the purification of home space before celebrating holidays (Mohamed, 2012, p. 97). Nowadays, it continues to be exploited for extensive construction investments in the islands. Collecting sand from the beach, along with coral mining, has been banned by the government (Naseer, n.d.). The regulation states that it is only allowed to take sand 100 feet away from the shoreline. However, interviewees report that sand collection form the beach continues anyway.

People take sand early in the morning, so nobody knows. [12 year old girl]

Soil erosion stared about 10 years ago, when fishermen blew it up. [35 year old mom]

Interviewees in one of the researched islands indicated that there are guards on the beach and that it partly helps to protect the beach from theft. There has been also found that there is a confusion about the role of developing harbour construction projects in the islands and its influence on the morphology of the island. People who did not have the jetty yet being built in their islands, believed that it may solve problem of the beach erosion. On the other hand, in the islands, where the harbour existed, some interviewees linked construction work (jetty project and land reclamation) to increasing damage of the shoreline. It is in fact observed in Maldives that the hydrodynamics of the islands change due to harbour construction and may exacerbate soil erosion. One of the reasons may

be violations of the guidance of Environmental Protection Agency provided prior to such construction projects is not being followed.

Photo 4: Harbour project in S. Hithadhoo

Credit: Aminath Shooza

3.2.2. **Social and psychological effects of climate change**

Climate induced migration

During the research, children and parents has been interviewed on six islands in different part of Maldives. Most of them have been born on the island, where interview took place or have been living there for significant amount of time. Some people have moved to the island of interview due to various reasons. Usually an ultimate trigger for migration was marrying a person from that island, finding a job, or other personal reasons. In two cases decision of moving was based on conviction of 'better environment' in the target island, or 'being more peaceful'. Depending on specific history of the island, it might host islanders from nearby regions of Maldives, who were relocated. In Rasdhoo, there are some middle-aged people born in the nearby Kuramathi. Because the island is beautiful and large it has been leased for creation of a luxury resort four decades ago. In H.Dh. Hanimaadhoo, on the other hand, apart from the original community, there are from three different islands who had moved to the island. One of the migrant populations has been moved there after the tsunami in 2004, similar to several other islands that were damaged at that time. More detailed context and aftermath of this relocation is described in section 'Inter-community conflicts'.

Apart from investigation provenance of the interviewed children and parents, potential plans for migration has been investigated. 24% of the interviewed children declared that they are thinking of migrating to another island (rarely abroad), temporarily or permanently. For majority of them, the main reason for moving would be possibility to continue education or seeking job opportunities. Two young girls mentioned possible need of abandoning their island, in case of tsunami.

> *Maybe if island was getting too small or due to natural disaster we would have to move [12 year old girl]*

38% (43 people) of the parents allow for the possibility, if moving from their island. Most of them consider moving to a larger island with better education options for their children. Some mentioned better health facilities would be the reason triggering migration. Few parents mentioned moving abroad (Sri Lanka). To summarize, climate change (especially the exacerbated weather patterns experienced including severe flooding) is rarely a reason for interviewed Maldivians to migrate from their island, unless forced to do so.

Fear of natural hazards

One of the psychological impacts of climate change on children in Maldives can be fear from natural hazards. The most powerful natural event that had happened in the past decades and significantly affected the country was the 2004 Indian Ocean earthquake and tsunami. In most of cases, interviewed children and adolescents would either not go through it or do not remember it. Also, children under 10 years of age are less likely to develop post-traumatic stress disorder. Some children, however, come from the families, which had been affected, so they may be familiar with the hardships associated with the tsunami, because of what their parents went through. Most of the children, however must have experienced heavy rains caused by severe storms, which ultimately have the same effect in Maldives: flooding. Only 3 of the interviewed children openly admitted that they are afraid of a natural hazards that lead to disasters. An account of the youngest shows fear resulting from unpredictability of the potential hazardous events.

> *I am worried when I am on the beach and it is really windy; I am scared, because it may happen today, or tomorrow even. [9 year old girl]*

In addition, five of the parents voluntarily mentioned fear from natural hazards as part of their living in the island: three of them said that their children are scared during heavy rains and two were scared themselves. Understandably, most scared are the families living close to the sea or in the old houses, which don't provide trustworthy shelter in case of any type of weather anomalies.

> *The biggest problems I have in this island is that our house feels like it's going to fall on our heads whenever it rains. The roofs leak and the house has puddles everywhere. These days it gets so windy that we're all under the fear that the tin of our roofs will all blow away. People in the houses around us are living in fear as well. None of us really sleep during the nights it gets rainy; some people because they are scared that the roofs will be blows away or the houses may get damaged but others because they're too busy mopping up leaks and stopping the houses from getting water in them. Even our rooms have spot where water leaks in. There were times during Ramadan when we needed to cook to break our fast but we couldn't because the entire kitchen was ruined- there was water everywhere and we had to go to a sister's house. We can't even get materials to rebuild our roofs easily. [40 years old mom]*

One of the reasons that only few interviewees admitted to being scared of the natural hazard may be them being used to living in the very fragile, unstable environment. Morphological structure of the coral islands, especially extremely low-elevation and small size make them vulnerable to any extreme weather changes. The hidden, unarticulated fear may be immanent part of life of the Maldivians, which can be seen when studying local folk stories (Orłowska 2015, p. 159). Another reason may be

that none of the researched islands experienced the tsunami in 2004 neither were severely affected during severe storms.

Photo 5: Coffee shop named after the 2004 tsunami in H.Dh. Hanimaadhoo
Credit: Aminath Shooza

Children do not have proper tools developed to manage all their fears and emotions. One of the ways to release hidden stress may be play. One of the researchers when joining a family event in Maldives, overheard children in the adjacent room playing 'a tsunami party'. They were not able to explain what was the game about, but surely, not children all around the world are playing that game. The question is how bad is the fear from natural hazards affecting life of children in Maldives. Being scared is a common emotion, which is actually helping to keep an individual safe. In case of Maldives, it is absolutely rational to experience this feeling from time to time, unless it becomes overwhelming. Going through stressful situations, like natural hazards make people more likely to engage in unhealthy behaviours. Study conducted in Maldives after tsunami showed increased use of tobacco and drugs in relocated communities. There is no data available specifically on children (information provided by Mohamed Hassan from HPA).

Inter-community conflicts

A lot of effort have been put in improving disaster response in Maldives to never again be taken by surprise. It is understandable as events of such scale may become more often due to climate change.

As an effect of the 2004 tsunami, several thousands of people in the Maldives has been permanently relocated to other islands (Naseer, n.d.). Interestingly, there hasn't been much of an evaluation done of how these worked. There is little known about the social dynamics of the islands receiving post-tsunami migrants. Today's children and adolescents living in these islands are second generation of migrants. They have either been already born in the new, hosting-island or barely remember the tsunami and relocation.

One of the researched islands, H.Dh. Hanimaadhoo, has a migrant population, partly moved as consequence of the tsunami, and showed alarming mechanisms happening between the communities. Even years after relocation, exists a hostility towards migrants, which significantly affects well-being of migrant children. H.Dh. Hanimaadhoo hosts three migrant populations, from Hathifushi, Honadaidhoo and Maafilaafushi. All of these moved in different times and for various reasons. Residents of Hathifushi moved to Hanimaadhoo in July 2007, and islanders from Hondaidhoo were moved in 1999, prior to tsunami. Currently there is no data available of the context of relocation of Maafilaafushi people, but the island itself has been inhabited in August 1989 within the 'Selected Islands Development Program' (Maps of Maldives 2008).

There seems to be a conflict between original inhabitants of Hanimaadho and islanders from Hathifushi. Members of the migrant population claim that they are being discriminated by both, council and other islanders. They report that ward of the island, in which they have been located, has the poorest conditions of living. People especially mentioned the lack of proper lighting on the streets, which make their life more difficult after sunset (around 6-7 pm on this latitude). Hathifushi people also believe that their houses are of worse quality and can be flooded easily.

> *There are no street lights in the ward which leaves it in complete darkness during the night. The street conditions in the southern ward is the worst in the island. Heavy rains will completely flood the ward, which makes it impossible to leave the house for any reason. The streets will be often flooded up until the knee. [30 year old mom]*

Most disturbing element of discrimination is targeting kids. According to interviewees, they are being disfavoured and insulted by teachers, only due to their background.

> *(There is – note form the author) a lot of favouritism among the teachers; the migrant population kids are very much targeted, even when they ask questions they are silenced by the teachers saying 'go to your own island and ask questions, not here', they sometimes refer them as crows [31 year old mom].*

> *The education system also needs to be improved too, there is lot of favouring among the kids. If you were not from this island your kid would be discriminated. [46 year old mom]*

The island council mentioned that after relocation, at first people from the island destroyed by tsunami, were housed in the local houses along with the families. According to him, this created bonds between families, therefore these communities get along until today. He claims that migrants have been assimilated to the original population and there is no practice of referring to the island of origin as everyone is considered 'people from Hanimaadhoo'. However, interviews proved differently. Members of the original Hanimaadho population would refer to the area of island where migrants lived as 'Hathifushi ward', despite trying not to do so by using expression 'the Southern ward'. Some people also mentioned that community and the council doesn't get along very well, which can partly explain differences in how the relation between island communities is seen.

Additionally, data collectors for the study has also experienced unfriendly atmosphere and felt there has been some unresolved issues on the community level. There have been also cases of jinni possession of young girls observed in Hanimaadhoo. Sometimes, collective fainting and spirit

possession in Maldives might be indicators of hidden harm, such as abuse (Orłowska 2015), hence there are grounds to link possession cases with conflicts in the community. As per other migrant communities, it has been indicated by the island council that some of the families who migrated from Maafilaafushi introduced drugs into the island and since then there has been some reported cases of theft with links to these families. Overall, migrant residents of the island are serving as expiatory victims in the community, being blamed for all evil.

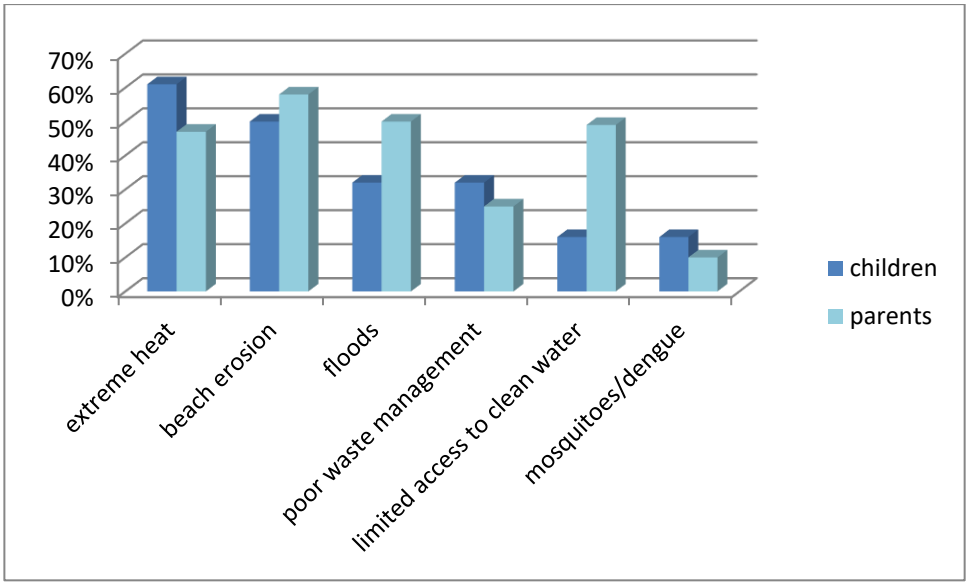
There are two key factors, which can help to understand conflict dynamics among communities living in Hanimaadhoo. First one is tangible and conspicuous: migrant population has been physically separated, creating sort of migrant ghetto. At the time of relocation, this might have been seen as best solution due to land scarcity. However, as a consequence, migrants became marginalized, which is further escalated by worse living conditions in their ward: it is very dark, unpleasant and houses are of poor quality, many of them leaking during rain.

Another important aspect of the migrant situation in Hanimaadhoo refers to culture and Maldivian mind-set. According to Hassan Mohamed from Mental Health Department of HPA, in Maldives there is a very strong inclination to protect community, which can result in hostility towards strangers and migrants. He explained that such attitude may result from the experience, especially of inhabitants of the Northern atolls, of being attacked by various tribes from India. Due to fear of invasions, Maldivians would tend to populate less beautiful islands with un accessible beaches.

Further reasons for this unfavourable situation between communities in Hanimaadhoo may be connected to the way, in which relocation has been conducted. Since there was no previous experience of moving people on such scale due to natural disaster, perhaps some mistakes has been made, which triggered community conflicts. The lack of community-level consultations, when both, migrant and hosting community could be involved in decision making process might have caused clash of expectations. Island resources in Maldives are usually very limited, hence relocations may inspire fight over them. Maldives however is not an isolated case of such problem. According to Harald Welzer, population movement due to environmental change will become the biggest challenge of modernity as in the disappearing living spaces, pressures on the resources can escalate violence (Welzer, 2012, pp. 29, 50). Relocated communities usually carry psychological baggage resulting from losing their home and necessity of building their lives from scratch. Many post-tsunami migrants received financial help from the government, which became another reason for hostility among hosting communities by inspiring jealousy. Additionally, despite relocation being internal within one country, some cultural differences between original and migrant population can also trigger difficulties.

To summarize, described case of situation in Hanimaadho calls attention to the potential alarming implications for Maldives: relocating more communities due to extreme weather events related to climate change can inspire conflicts in the host islands. Therefore, it requires further investigation and examining various adaptive measures.

Diagram 2: Climate change effects as seen by children and parents



3.3. Evaluation of existing adaptive measures

In general, the study showed little recognition of the adaptive measures already existing in the country. Definitely, more people (both parents and children) was aware of the local initiatives, rather than have heard about these being carried out on the national level.

Heat

For the time-being, no adaptive measures exist in order to protect children and adolescents of Maldives from an extensive heat, which is recognised as the most severe impact of climate change. This is probably due to the fact that high temperatures are typical for tropical climate of Maldives and their rapid increase to the level unbearable for children in the past years was not yet recognised by the authorities. There are some *ad hoc* efforts utilized on the community level to reduce burdensome dust appearing on the roads during droughts. People try spreading water on it, however, this is only a temporary solution.

Communicable diseases

Admittedly, actions undertaken to reduce communicable diseases, especially dengue, has been widely recognised and appreciated. As dengue is identified as one of the key challenges in terms of public health by the Health Protection Agency, a lot has been done to prevent it. There are efforts made to thoroughly report and document cases of infection. Vector control and Surveillance Unit of the Health Protection Agency works closely with the island health centres.[5] Local stakeholders and community members admit that conducted awareness programs about vector-borne diseases bring expected results. Ahmed Shifaz from UNDP claimed that during and after 2011 dengue outbreak in Maldives, preventive measures became a common knowledge. This has been confirmed by accounts of children and parents during this study. In general, people seem to be aware of the problem, know the reasons for increased number of dengue cases and ways to prevent getting ill. Several campaigns, including distribution of educational leaflets and display of posters, has been carried out. Some interviewees reported that before rainy season, officers from the local health centres would walk around the houses in search of unkept waste, which can create breeding site for mosquitoes. Another preventive activity against dengue conducted on the local level is spraying the roads with repellents. Few interviewed Maldivians complained that authorities are not doing it, so they had to spray roads themselves. Some people also felt that such actions, as cleaning potential reservoirs of the stagnant water or spraying are only temporary solutions.

Waste management

In the past years, authorities and NGO's has been trying to improve the situation by creating separate areas in the islands where all waste should be collected, segregated and properly utilise. Unfortunately, most of island communities didn't use these places and waste continued to be thrown to the forest, road or sea. In order to solve this issue, many islands introduced systems of collecting garbage from the households by private companies.

Depending on the island, it was found on the different stage of development. Seenu Hithadhoo completely lacks waste management system and there is a lot of complains about it from the local community. There have been some steps undertaken to improve the situation, e.g. households are registered for the collection of garbage, but change in the company responsible for carrying the project led to its suspension. In addition, actions have been paused due to rumours of creation of the waste management project in Hulhumeedhoo where garbage would be converted to energy. Island community is very much bothered by the mosquitoes, especially during rainy season.

[5] However, even on the level of analysis, experts meet difficulties due to climate change. One of its effects is increased unpredictability of the annul season changes in weather. Responsible institutions find it difficult to monitor these changes and to take appropriate preventing measures on time (Aminath Shaufa from Environment Department of the Health Protection Agency).

HDh. Hanimaadhoo, on the other hand, seems to approach the problem of waste management in a different way. Local authorities invested in creation of the system, in which large piece of land is being leased by a private foreign company to organise a proper facility. Every household has been given one dustbin and two bags. Biodegradables are picked every day and other type of waste every other day from every household. There has been also established 24 points on the island to discard biodegradable waste. The local council reported that island still requires more equipment in order to ensure sustainability of their model. In Thuraakunu, waste management project was not established at the time of the research, so it was impossible to evaluate it.

In some islands, garbage is not being taken regularly, hence waste is staying in the houses decomposing, creating bad smell and site for bacteria to reproduce. Some people complained they can never reach waste management company staff to purchase their payment and have the waste taken from the house.

Waste management projects being at different stages of development on different islands naturally influenced various people opinions on the subject. Most of them, recognised that there are actions undertaken and they already see improvements. They still believe though, that much more has to be done, before the issue is being solved.

Water security

The problem of water security drew a lot of attention, especially after crisis in Malé in December 2014 after fire at a desalination plant happened. Several initiatives are now aimed to ensure diversification of water resources, one of which is Integrated Water Resource Management Programme. It is currently being tested in three islands in Maldives (HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo). Among other things, the project aims to revise existing harvesting models, improve ground water protection, revise management of wastewater to make sure supplies for dry periods and amend administration of septic tank maintenance. One of the promising initiatives also includes desalination of water from the ocean. Close cooperation with the resorts could allow testing and copying some of the solutions used there. Many resorts adapted model of water circulation, including processing water from the ocean for various purposes. These are costly practices, but worth examining and considering as long-term investments, which will pay-off eventually. It is designed to ensure proper response to risks related to climate change in the context of local development. Simultaneously to Integrated Water Resource Management Programme other actions can be undertaken to improve access to fresh water for children and adolescents in Maldives. It is important to note here, that people in the islands selected in the study are not those involved in

the study, hence most of interviewees are not aware of these actions. However, they mostly appreciate a possibility of water requests from the government, when rainwater shortages occur.

Floods

Putting sandbags near properties to secure them during flooding is one of the most common solutions used in the researched islands. Some children and adolescents suggested it would be good to elevate foundations of the buildings and high walls around them as more permanent adaptive measure. It is worth mentioning, that elevation of buildings in flood prone areas is also a suggestion of the Maldives National Building Code (Ministry of Housing and Infrastructure 2008). These are not always implemented in the construction of the local buildings.

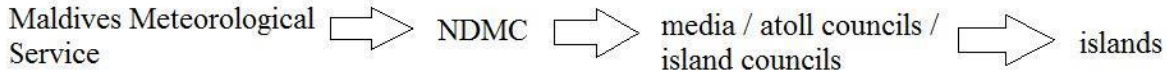
Beach erosion

The main solution, which has been implemented in order to decrease coastal protection was prohibition of sand mining and using sand from the beach for construction purposes. The study showed that these regulations are not being obeyed and many people continue to exploit beaches, feeling unpunished.

Fear of natural hazards

There has been a lot of efforts of the local NGO's to prepare people for possible emergencies. Red Crescent, UNDP, as well as National Disaster Management Centre (NDMC) closely work together to organise emergency drills and raising awareness in order to improve preparedness and response to natural and man-made hazards that may occur in the region. Study shows that many more of such actions are needed. Experts from the National Disaster Management Centre confirm this concern. There is a warning system established at the national level with the three types of alerts introduced in order to inform about the possibility of a natural hazard occurring: white, yellow and red; red being used in case of most severe phenomenon.

Diagram 3: Warning system in Maldives



This system, however, will not be effective unless all islands have an internal system to communicate threats to the community. Interviewed people know about the drills, but lack internalised action plan, in case of occurrence of the natural hazards.

Inter-community conflicts

Study didn't show any adaptive measures, which have been undertaken to reduce hostility towards post-tsunami migrants in the island.

4. Conclusions and recommendations

4.1. Conclusions of the study

The main intention of this study was to examine level of awareness of climate change, identify difficulties, which children and adolescents in Maldives are facing regarding this phenomenon and explore knowledge and evaluation of the on-going initiatives in the islands designed to answer these needs.

The research showed that climate change affects well-being of the Maldivian children and adolescents to the wide extent. Because of the extreme heat, flooding connected with extensive rainfall, or large-scale beach erosion, some of their basic needs are not met. Limited access to drinking water, lack of air conditioning/fans in schools, discrimination of the post-tsunami migrant populations are some of the most alarming findings.

On the other hand, the encouraging result of the study is that children and adolescents are very much aware of the need of protecting natural environment and they are willing to actively do this for the stake of the whole island communities. Therefore, despite many problems identified, a lot of potential for the positive change has also been found, which often requires minimal investments. Children and adolescents of Maldives proved they could play roles of advocates of this change, but they need strong guidance and support from adults. Parents, teachers and community leaders should share their knowledge about climate change, will to protect local environments, and provide practical solutions to be implemented.

The important, between-the-lines result of the study is that dream of many parents to raise their children as community-oriented people. However, the analysis of the problems appearing in the islands shows that prioritising community over individual needs seems to be only declarative. The possible reason for that is decrease of the solidarity in the past years in the island communities. It has been observed that it creates many problems, including psychological issues among children.

Rising more awareness of how climate change can affect individual islands of Maldives, their residents, and first and foremost, children and adolescents, as well as introduction of the

community-based events, which help to implement positive changes and adaptive measures should upgrade children's well-being in Maldives. In addition, protection of environment, understood as common good, could help to restore harmony in the island communities.

4.2. Recommendations for specific actions

Heat

There is no single cause of rise of the temperature and since it is a global issue, there isn't much that inhabitants of one island can do to prevent it. However, even reduction of air pollution on the local level can make some difference to climate and improve quality of life. Definitely, what can be done regarding this issue in Maldives, is making sure that children and adolescent are properly protected from sun and heat. It would be helpful to organise awareness campaign aimed to putting stress on necessity of wearing appropriate clothing, using lotions and, first and foremost, proper hydration. Access to drinking water and proper air circulation in schools is an absolute must and teachers should monitor younger children if they drink enough. Special campaign's should be conducted by health centres with cooperation of schools to educate children, how much water they should consume daily and convince them to do so. In addition, all schools (all classes) and health centres should have fans or air conditioning to ensure proper circulation.

Many interviewed Maldivians, both kids and parents, indicated direct connection between the experienced heat and growing trend of cutting down trees for construction purposes. They blame decreased vegetation for making heat so difficult to stand. As a solution, planting more trees along the roads and in the school yards to provide more shade, could be found beneficial here. Simultaneous discouragement of removing trees should be another priority of the island council in order to protect children from effects of climate change.

Communicable diseases

Example of how the problem of communicable diseases, especially dengue, has been successfully taken care of in a long-term can be found in Rasdhoo. Both staff of the Health Center, and the interviewed people admitted significant drop in the reported dengue cases in the island after the island waste management system has been improved. Before, there was a dumping yard in the island, but island residents would resist in bringing waste from their houses to this place. Recently, however, there has been a company introduced to the island, to collect garbage directly from the households. Apparently, this has significantly decreased number of the potential breeding sites for the mosquitoes. People noticed that the rain season following introduction of the system, there has been much less mosquitoes and Health Centre reported almost no dengue cases, comparing to

analogical time in the previous year. Experience of Rasdhoo could be shared with other islands and examine if the same strategy would work for them.

Research showed that, apart from improvements in the waste management, it is important for the island health centres to provide blood tests for presence of dengue virus. Dengue is curable, if diagnosed early. Hence, it is advised to examine blood for presence of the virus after three days of fever. This is especially important for little kids, for which dengue may be especially dangerous. During rainy seasons, all parents show be aware that dengue may appear. In case, their children get fever, they should carefully monitor their behaviour and symptoms and visit a doctor, if needed. The problem is not all islands provide possibility of blood testing. For instance, on one of the researched islands, Thuraakunu, health centre doesn't provide any blood tests, forcing families to travel to the nearest hospital in Dhidhoo. This implies more suffering to the sick child and great expense for the parents. Ideally, all islands should be able to conduct dengue blood tests, especially these, where the problem is severe. In light of a changing climate, vector-borne diseases could be controlled, if above suggestions are implemented, with special focus on the islands experiencing heavy rains.

Poor waste management

Despite presence of waste management systems in most of the islands, their efficiency must be improved. First step for the successful waste management in all islands is definitely a common agreement in the community that garbage should be properly managed for the stake of everyone's well-being. Awareness should be raised among people, indicating clear connection between improper garbage disposal and devastation of environment. One example can be the practice of incineration in the landfills, which creates air pollution and contributes to global warming, which is considered main cause of the coral-bleaching, the biggest natural value of the country. Displaying such cases could convince Maldivians to change their behaviour for the stake of children and adolescents safety in regards to effects of climate change.

A successful story of change for more ecological behaviour is provided by Ukulhas. Residents if this island realised the economic value of their habitat and engaged in composting and recycling waste. Highlighting benefits of proper waste management and building ecological behaviours into culture of the given community should prove most effectiveness. For example, one of the islands occurred to be very fond of competitions. Cleaning or recycling events could give vent to rivalry nature of the islanders and bring benefit to environment, etc.[6]

[6] Another incentive could be to find a way for people to actually financially benefit from recycling garbage they produce, which proven to work in countries, such as Japan. This would require consultations with the local or foreign business and discussing possibilities in this area.

Idea of collecting trash from the household, which is already being tested in the islands, proves to work well as it solves the problem of people not wanting to walk or drive to the dumping yard with their garbage on their own. Ideally, every household should segregate waste on their own, before it is being transported to the dumping yard. Some of it could be used in the houses, e.g. food leftovers could be composted in the backyards and used to fertilize soil for the home gardens. In order for this to happen, people should be shown advantages of such practices and instructed how to do it in a sustainable way. For reduction of toxic fumes from open burning practiced in many waste management centres, better training for their staff is inevitable.

Furthermore, as per suggestion of the interviewed children and adolescents, there should be dustbins around the island to prevent people from throwing waste to the road. In some islands there has been organised a cleaning events. They proved to be successful and children very much enjoyed it. Children suggested there should be more of such events organised by schools on a regular basis, or even engaging the whole community, including adults. Such approach should be successful in a long-term by creating more awareness of significance of keeping the island clean and bring sense of responsibility for it in the community.

Another way to improve situation with waste management in the islands is reduction of usage of non-degradable bags. Simple transfer to textile, re-usable shopping bags or following example of the resorts in limiting number of plastic bottles would make a difference. Youngsters complain on boredom and lack of activities. Creating an event aiming distribution of textile shopping bags to every household could be an engaging idea for local youth to conduct.

In some islands only a minimal financial support to the local councils could significantly improve efficiency of the waste management systems. Hanimaadhoo is one of the examples. Island waste management system is missing only few elements, such as glass and can crashers to start working. Such basic needs should be communicated to the state-level authorities, so they can consider them and proceed with a response.

Water security

Security of fresh water in the light of changing rainfall patterns, lay in diversification of water resources. There are already projects established on the national level aiming to address this demand. However, before its results can be fully implemented to improve health security of children and whole island communities, some actions are required on the local level. Since, the country is heavily depending on rainwater, system of harvesting should be improved. Rainy season has now shifted due to climate change, therefore households could prepare their roofs and tanks for possibility of rain already in April. When first rain comes, there should be organised a collective roof

cleaning. In case there are no man present in the family, neighbours could help to ensure that all households are prepared to collect rainwater to their tanks. This could be additionally investigated by the health centre staff. Community tanks should also be perfectly maintained to provide example of good practices to the islanders. Furthermore, rainwater should also be tested for drinkability. There is a possibility that due to air pollution, acid rains might occur, therefore it should not be consumed. The quality of rainwater should be monitored and information on its state should be clearly communicated to the community. All household should be supplied with water tanks.

In addition, ground water should be regularly examined to avoid skin conditions among children and adolescents, reported during the interviews. For now, some people apply various methods to reduce bad small or colour of ground water used for bathing, e.g. with help of oxygen pumps. Probably all households should have access to such water-testing kits, along with being advised how to use water from various resources in a safe and efficient way.

Floods

In order to secure properties in the times of floods, obeying Maldives National Building Code should be found helpful. However, the study showed that for some people it is difficult to adhere to recommendations of elevating their houses since it adds significant costs. It would be worth examining if subsidies could be provided for those in need. In addition, most of the interviewed people communicated necessity of improving quality of the roads, so it is possible to continue normal life, even after a heavy rain. Safe road to school is a basic right of every child and of key importance in terms of climate change resilience in Maldives. Therefore, there might be considered an introduction of school buses in bigger islands, such as Hithadhoo and finding sustainable way of removing water from the roads. Pumping it to the ocean, as practiced in some of the researched islands, doesn't allow the water lenses below to regenerate.

Furthermore, from the perspective of children, it is crucial that schools are being constructed and refurbished in compliance with the 'Comprehensive School Safety Framework' design by SAARC and UNICEF (2015). Guidance and regulations for safe school construction, regular reviews for DRR and organisational arrangements should be a priority for all islands in terms of climate change resilience. In addition, implementing School Emergency Operations Plan (SEOP), with focus to flooding scenario should be a priority.

Another reported issue is education process disrupted by flooding. It is important for the students that classes are not being dismissed, when school building got affected by rain. Alternative, safe building should be identified in such cases and immediately communicated to the parents and

students, so they can get there on time. Also, improved system of drainage in the roads could be considered to ensure easier and safer road to school.

Beach erosion

In Maldives beach is considered optimal place to play and socialize, it especially has great value for children and adolescents. Beach erosion intensified by climate change affects them directly. They are losing place for outdoor activity, so important in the young age and the highlight of country, which is part of national identity. Accordingly, respective actions should be undertaken, some of them suggested by children themselves.

Apart from introducing the prohibition of taking the sand from the beach, there seem not much to be done to prevent coastal erosion in the islands. Some interviewed people believed that building sea walls or bedrocks would protect the beach form erosion. Experts agree that such adaptive measure can slower the process and prevent waves from damaging the households, but these are considered rather a temporary solution. It can also have a reverse outcome by reflecting wave energy off the facing wall (Scientific American), which may partly explain confusion of the interviewed people weather jetty projects help or intensify coastal erosion. Many children and adolescents suggested growing more trees would help to keep the soil together. This might prove to be an effective solution as some plant species can consolidate soil and serve as natural barrier for waves.

In order to protect the beaches in the local islands of Maldives, it is essential to continue policy of banning sand mining. Introduction of the prohibition proves not to be sufficient, the beaches should be monitored and the regulations executed. Events aiming raise of awareness should be carried out to create strong conviction in the community that beach is the common good, which should be protected. Strong community watch, which exists in Maldives can be a good basis for this. In case of continuation of the precedent, fines for taking sand could be introduced.

Fear from natural hazards

Similar to dengue trainings, knowledge on how to behave in case of natural hazards should became a common knowledge (with people trained in all islands), especially in a place as vulnerable as Maldives. Familiarizing with problems and being aware of the adaptive measures could significantly reduce level of fear in the community and improve preparedness.

Preparedness for the possible storms and other extreme weather events resulting from climate change is currently the best adaptive strategy for Maldives. When flooding happens, it is crucial that

people are aware on how to react and where to search for support. It is also important that all key facilities in the islands are being regularly examined for being resilient to damage, so they can provide shelter for affected communities. Special attention should be drawn to schools in order to ensure security of children and adolescents during dangerous weather. Sense of being ready to response such events, should reduce level of stress connected with living in the vulnerable islands.

Inter-community conflicts

Despite the fact inter-community conflicts resulting from post-tsunami relocations continue for years now, it is still worth testing solutions, which could reduce it. Social psychology provides various experiments, such as The Robbers Cave experiment (Sherif 1961) which are designed to change attitude between antagonist groups. Some of them include organizing events, in which everyone could benefit. Making different communities cooperate for the common good, can change their approach towards each other. School provides perfect environment for conducting such endeavours, especially that hostile attitude usually comes from parents.

It is essential for Maldives to develop mechanisms of relocation island communities in the way, which supports assimilation. The long-term plan of the government is to consolidate entire population within a smaller number of regions. This requires displacement of less numerous island communities to the bigger ones. To reduce potential conflicts in the future, alternative way of relocation should be developed. Community based consultations, consolidating communities with matching cultures, and avoidance of creating ghettos of migrant population should probably be first steps in this matter.

4.3. Recommendations for further studies

Qualitative method, which was used in the study allowed, not only to answer main research questions, but also to identify other, striking issues of children and adolescents in Maldives. By discussing general living conditions and picking possibilities to seek answers for research questions, some other subjects and issues have been voluntarily communicated by the interviewees. As the main aim of the study was to examine what effects climate change have on children, additional subject has only been introduced. They require further studies and introduction of relevant policies.

One of the most striking issues recognised by the interviewees was lack of proper health facilities. All islands have health centers, but – as people see it – they only play provisional role. Almost none of the basic examination is being carried out in the island health centers. Interviewees complain that for any type of health issue they receive prescription for common pain killer. In addition, what was found especially alarming many people noticed constant unavailability of healthcare staff, as well as their

arrogance. From children's perspective, it was found disturbing that none of the researched islands provide pregnancy ultrasound, conditions for delivery nor have a pediatrician.

Analogically to the limited access to the quality health services, Maldivian children also face lack of education options close to their homes. Many of the interviewed children proved to dream big, planning to be engineers and doctors. The reality undercuts them by limited access to educational

resources. In order to develop their talents they have to migrate, either to the capital city of Male, or even abroad. Some children noticed during the interviews that they only have one stream to choose from and continue education in the field that doesn't interest them. In addition, some students indicated poor school facilities, lack of proper libraries and equipped labs.

School bullying is a phenomenon found in the educational settings all over the world. It includes imbalance of power and have significant impact on performance of a victim. School violence may have its origin in socio-cultural context, including social norms. Four interviewed children mentioned existence of bulling in their school, some are victims. What was found especially alarming many children and parents accused teachers of additionally discriminating some students. Interviewees noticed that teachers tend to show prejudice to students from underprivileged families, as well as these who require more attention. There has been several incidents reported to the researchers showing unacceptable behavior of the teachers overusing their power over students.

Sexual abuse and domestic violence are one of the most significant issues of children i and adolescents n Maldives. In addition, according to ARC, 92% of the abusers in Maldives know the victim. During the research, in one of the islands it was mentioned that there are five cases of sexual abuse of children weekly reported in the atoll. One interviewed youth also shared his/her story of being repeatedly abused, which caused depression and inspired repeated migrations from island to island.

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