IFMSA
International Federation of Medical Students' Associations

Training Manual

CLIMATE &HEALTH

Enabling students and young professionals to understand and act upon climate change using a health narrative

www.ifmsa.org

medical students worldwide

Developed by :
International Federation
of Medical Students' Associations
(**IFMSA**)

with the support of :
World Health Organization
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ABBREVIATIONS

ADP	:	Ad Hoc Working Group for Enhanced Action on the Durban Platform
COP	:	Conference of Parties
COY	:	Conference of the Youth
GHG	:	Greenhouse Gas
IFMSA	:	International Federation of Medical Students' Associations
INDC	:	Intended Nationally Determined Contributions
IPC	:	Intergovernmental Preparatory Committee
IPCC	:	Intergovernmental Panel on Climate Change
RCP	:	Representative Concentration Pathway (different climate change scenarios)
REDD+	:	Reducing emissions from deforestation and forest degradation in developing countries and role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries
SBI	:	Subsidiary Body for Implementation
SBSTA	:	Subsidiary Body for Scientific and Technological Advice (SBSTA)
SDGs	:	Sustainable Development Goals
UNFCCC	:	United Nations Framework Convention on Climate Change
WHO	:	World Health Organization

PART A
INTRODUCTION

GENERAL INTRODUCTION

1.FOREWORD

Dear Readers,

On our way to Paris and beyond, there is nothing more important than to remind ourselves why we are taking this road together. Climate change is posing an unprecedented threat to our health. Its effects will continue to be numerous and disastrous unless we seize the opportunity today, and engage in a meaningful dialogue for a sustainable future. And that dialogue starts with education.

We believe health professionals, medical students, and the youth must come together to address the challenge posed by climate change on our health, and must be given opportunities and resources to train themselves in understanding and acting upon climate change.

We realized that there was a lack of resources for young professionals who were interested in leading educational activities. Climate change and health are too often looked at independently, in silos. Reports are often too complex and too long for someone who is just getting started, and information is hidden in multiple publications on various platforms. We wanted to change that and provide young professionals with a positive narrative to raise public awareness on what climate change represents to us: the biggest health challenge of the century.

This is why we created this manual. We have gathered academic knowledge, field experience and a youth dynamism in one single resource, made easily available for whomever is interested in learning about and leading capacity building activities on climate change and health - climate activists, political sciences students, health professionals. We have selected the most relevant topics and subtopics to explore, and have made sure to include concrete tips on organisational management and advocacy.

This manual was developed by the International Federation of Medical Students' Associations (IFMSA), together with the great support of the World Health Organization (WHO) and its joint collaboration with the United Nations Alliance on Climate Change Education, Training and Public Awareness.

It is our hope that it will provide you with insightful content, innovative training methods and useful tools, and will inspire you to ignite discussions, trainings, activities in your home communities.

Claudel P-Desrosiers, Skander Essafi
& Alice Mc Gushin
Training Manual Project Co-leads

International Federation of Medical Students Associations

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Providing medical care is an important job, but it is also important that we have a vision: the awareness that if we change something in the area of public health that we can have an incredible impact on people's lives.

We must all be involved in politics around public health and indeed around all sectors. Looking at a whole range of policies from various sectors, I don't see any that don't affect health. We need to understand these linkages in a health in all policies approach. If young leaders understand these links then we have the promise of a better future.

Doctors and health professionals should be working with policymakers on issues such as access to sustainably energy, urban planning, transport and migration. Our role is to make sure we influence politics in other sectors to ensure the health of our society. As a dedicated healthcare provider, you must also have a public health perspective and see where better health can be obtained.

Health students often feel strange when they are told as doctors they must also be politicians. But you have a very important role in influencing how our society develops over the next fifty years. You will be influencing how we use energy, commute, consume, produce, provide nutrition, recycle and generate waste.

My advice to you is to keep yourself well informed. Be part of debates and community groups. Leonardo da Vinci among many roles was a physician and he had an important role in the development of humanist thinking.

Health students can feel consumed by their studies and the need to prepare for their next exam. It is important that you prepare for your medical career but it is equally important that you maintain your public health perspective as who else will have the humanist debates on our quality of life, the water we drink, the food we eat and the air we breathe?

As part of this effort to keep connected, I encourage you to use this manual created by the IFMSA and go for this training to achieve a greater understanding of climate change and the root causes of diseases.

You will become more aware of your role as a leader and where you can put in effort for maximum impact. I recommend this training as a pleasant exercise to complement your regular studies and as an eye opener to the way we see public health.

Be aware that you have an important role in this discussion and we count on you to have a positive role in moving society forward.

Dr. Maria Neira, WHO Director,
Department of Public Health,
Environmental and Social
Determinants of Health (PHE).

Education and an educated public are one of the keys to unlocking climate ambition.

In June this year the UN Framework Convention supported World Wide Views on Climate and Energy. The initiative organized demographically balanced debates simultaneously in around 80 different countries that gave citizens the chance to get to grips with the complexity of climate issues before being polled.

Atop finding of these meetings, both in developed and developing countries, is that the most powerful way of addressing climate change is through mass education of the public.

This cannot be a one-time exercise or limited to just a small discreet section of society—everyone needs to be equipped with an understanding of the evolving risks but also the opportunities for improved lives and livelihoods from acting on climate change and realizing sustainable development.

Complex topics need to be communicated and taught in a way that people from all areas of society can understand. Climate change should be an integral part of national curricula and there are also many ways to learn and engage beyond the classroom—an issue which is a key part of the UNFCCC's work through its Action for Climate Empowerment (ACE) initiative and its many partners.

For example, in September this year Rovio and Earth Day Network partnered with many leading celebrities to use the popularity of the game to deliver climate messages and education via a unique tournament called Champions of the Earth. The Global Challenges Youth Music Contest provided an avenue to establish an exciting and innovative communication channel for young people to highlight climate action and contribute to the positive momentum towards achieving a new universal climate agreement in Paris.

There are many ways that people can be motivated to act on climate change—some are empowered by the science, others the economics or the moral imperative to act. Health is also topic that really interests people personally and everywhere and can often motivate them to demand change from policymakers.

One reason why China is ramping up investments in renewable energies is because of air pollution—people in big cities like Beijing and Shanghai simply no longer want to breathe air they can see and that has translated into action by the authorities to bring in measures that also have benefits for the climate. People must be made aware that environmental issues affecting human health are more than just air pollution.

Being fresh from their studies, health students can also bring to the attention of older peers and colleagues the latest insights into how environmental change may be affecting public health making them essential agents of positive change.

Through negotiations in Paris and beyond, we must move forward to ensure that climate change and the risks and opportunities it poses are not peripheral to people's lives, but part of normal awareness and understanding of every person on the planet that sees a sustainable century as the best bet for harmony, eradicating poverty and a healthy world.

Mr. Nick Nuttall, UNFCCC Coordinator,
Communications and Outreach

2. OBJECTIVES AND GOALS

The project was developed by the International Federation of Medical Students' Associations (IFMSA), in line with the Federation's statement "a world in which students are equipped with knowledge, skills and value to take on health leadership roles locally and globally so to shape a sustainable future". This was supported by an ongoing and vital engagement from the World Health Organization (WHO) and their work the United Nations Alliance on Climate Change Education, Training and Public Awareness. The overall objective was to create a "all in one" type of resource to bring together climate change, health and youth advocacy.

More specifically, the manual aims to :

- Bring together the next generation of health professionals to provide training and education opportunities for students on the health consequences of climate change, the co-benefits of mitigation, and the role of health sector in adaptation and mitigation efforts;
- Discuss climate change and the societal challenge that it poses, with a specific perspective on the health implications, impacts and opportunities;
- Showcase good practices and climate change policies that protect and promote our health;
- Provide resources to create, organize and lead workshops in communities around the world through non formal education;
- Promote leadership skills among young health professionals and the necessity of having a politically engaged youth;
- Contribute to the Global Communications and Outreach campaign for COP21 and beyond with the Global Climate and Health Alliance (GCHA).

3. TRAINING MANUAL OVERVIEW

The Training and Education Manual is divided into four main sections, including a general introduction and a resourceful conclusion. In between, the readers will find the two core parts, which are axed on knowledge and capacity building.

The *Knowledge Section* addresses a broad perspective on what is health, and how it fits within an environmental perspective. It is complemented by a rough summary of the climate science, including the driving causes and consequences on climate change. It is followed by an in-depth section on climate health and the positive argument of health co-benefits. Additionally, as climate change can't be taken out of global policy, we have included a section on international negotiations, stakeholders and the key historic moments, including the Road to Paris and beyond.

The *Capacity Building Section* has been developed to transform knowledge into action by discussing non formal education and peer education methods. It is supported by key management tools and various agenda samples of climate change workshops with list of suggested modules to touch on with trainees. Moreover, advocacy and policy-making are approached as a way to ignite social change on the local and global levels.

Finally, additional resources: reports, articles, news, organizations and on-going campaigns are shared with the reader.

PART B
KNOWLEDGE

What do you know about health, climate science, and global climate politics? Health itself is a very broad and complex topic, and so is climate change. Put together, they bring even more aspects to consider, concepts to grasp and knowledge to master. Thousands of reports, articles and books have been published on those topics, and it is normal to feel a bit lost. Where do we start? What resources should we be looking to? What are the best reports to read?

In the following pages, you will briefly cover the core climate change and health knowledge that is important for health students to know about.. The most important concepts are summarized and references have been added. So you are definitely able to continue your learning if you are interested in knowing more!

HEALTH

What is health, and what does it mean to you? How do you define it holistically? How is it influenced for the better or the worst? And how is health shaped by the different environments we live in?

1. DEFINITIONS: HEALTH AND PUBLIC HEALTH

The most widely accepted definition of health is given by the World Health Organization as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." This definition gave us insights that diseases alone don't define our health status, and that several other factors are to be considered. To add to this, the WHO defines public health as "all organized measures (whether public or private) to prevent disease, promote health, and prolong life among the population as a whole. Its activities aim to provide conditions in which people can be healthy and focus on entire populations, not on individual patients or diseases." As such, to adopt a public health perspective is to aim to define and implement the best policies for populations to attain the highest health status possible - including physical, mental and social well-being.

2. SOCIAL DETERMINANTS OF HEALTH

The social determinants of health reflect the social factors and physical conditions of the environment in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels. This social setting that molds our health includes the resources and support available for a community, education, housing, transport, working conditions, childhood development, and the nature of our social interactions and relationships. They define health beyond our hospital walls and are at the core of public health prevention policies. Improving life and working conditions - including poverty eradication, gender equality, social welfare, access to education, food security - have proven themselves to be some of the biggest drivers of health successes of the past decades.

Social determinants of health are also tightly linked with equity and social inequalities gaps. As stated by the WHO Commission on Social Determinants of Health, "this unequal distribution of health-damaging experiences is not in any sense a 'natural' phenomenon but is the result of a toxic combination of poor social policies, unfair economic arrangements and bad politics."

3. ENVIRONMENTAL HEALTH

Our health is inextricably linked to the environment we live in, from rural areas to dense cities, the water we drink to the food we eat, the places we live and the places we work. Damage to our natural environment also results in damage to human

health. Anchored into the social determinants of health, environmental factors such as lack of access to safe drinking water and sanitation, air pollution and climate change contribute to 23% of all deaths worldwide and 36% of all deaths among children 0-14 years old. The environmental determinants of health are outlined to include noise, light and UVR exposure, water pollution, disaster events and accessibility to green spaces.. Environmental health addresses all the physical, chemical, and biological factors external to a person, and all the related factors impacting behaviours. It encompasses the assessment and control of those environmental factors that can potentially affect health. It is targeted towards preventing disease and creating health-supportive environments. Considering environmental health appears at the core of the discussion on climate and health, and how the modifying environments influence the health status of people around the globe [1].

REFERENCE

[1] WHO Definition http://www.who.int/topics/environmental_health/en/

"Responding to climate change could be the biggest global health opportunity of the 21st century,"

Nick Watts,
Head of the 2015 Report for
the Lancet Commission on Climate Change

CLIMATE CHANGE

1. SCIENCE

a. Climate

The weather is what we experience on a day-to-day basis: a momentary atmospheric state characterized by the temperature, precipitation, wind, humidity, cloudiness, visibility and atmospheric pressure. It seems to vary from day to day in an irregular way, not following any particular pattern. On the other hand, climate is described with average values based on annual and seasonal conditions and is calculated typically on a 30 year time scale.

The climate system consists of:

- Hydrosphere: oceans and atmospheric and terrestrial water;
- Cryosphere: ice and snow;
- Biosphere: animals and plants;
- Pedosphere: soil;
- Lithosphere: Earth's crust and upper mantle;
- Atmosphere: above the Earth's surface.

The atmosphere is the most unstable and rapidly changing part of the climate system. It consists of five distinct layers separated by atmospheric pauses [1].

- **Exosphere**: the top of thermosphere to 10,000 km above Earth, where atoms and molecules escape into space and satellites orbit the Earth.
- **Thermosphere**: between 85 km and 600 km above the Earth. It is also known as the upper atmosphere. Gases become increasingly dense the closer to Earth and high energy ultraviolet and x-ray radiation are beginning to be absorbed by molecules in this layer.
- **Mesosphere**: between 50 km to 85 km above the Earth. Gases are more dense the closer to Earth, and it is thick enough to burn up meteors as they hurtle into the atmosphere.
- **Stratosphere**: 50 km to 6-20 km above Earth. It holds 19% of the atmosphere's gases, but very little water vapor. Heat is produced in the formation of ozone and heat increases with height in this layer.
- **Troposphere**: Earth's surface to 6-20 km (highest at the equator and lowest at the poles). It is responsible for almost all weather patterns we experience.

The Earth's climate is influenced by all forces, known as net radiative forcing (RF). Effective radiative forcing (ERF) is a new concept that allows for physical variables to respond to perturbations [2]. What forces have influenced the Earth's climate over time? The greatest influences have been the sun, variations in the Earth's orbital eccentricity, obliquity and precession (orientation of the axis), land use changes, volcanic activity and the composition of the atmosphere.

Life on Earth is dependent on the greenhouse effect. To think of the greenhouse effect we must think of the amount of heat we let out from the Earth, rather than what we get from the Sun. For example, in a closed car under the sun, tempera-

ture will rise, mostly because glass windows will not let out the heat from the short-wavelength sunlight that comes in. A similar process occurs within our atmosphere: heat reaches the Earth's surface and reflects back into the atmosphere, where greenhouse gases (GHGs) re-emit it back to us. Greenhouse gases , including water, carbon dioxide (CO2), methane, nitrous oxides and ozone. Around 23% of solar radiation is absorbed by the atmosphere before it reaches the Earth, 48% is absorbed by the Earth's surface and 29% is reflected back into the atmosphere. The GHGs then absorb some of this reflected radiation and reflect it back onto the Earth's surface. These GHGs act to maintain homeostasis of the planet by maintaining surface temperatures on Earth that are compatible with life [3]. This keeps the Earth's climate at about 32 degrees warmer than it would otherwise be. These greenhouse gases are all influenced by human activity.

Feedback processes connect atmospheric GHGs, water vapour, cloudiness, polar ice caps and global temperature. Global average concentration of water vapour increases quickly to an increase in global temperature. As water vapour is a GHG, this in turn amplifies the warming, doubling the amount of warming that would otherwise be produced. The interaction between polar ice caps and global temperature provide a second, slower feedback loop: as ice melts, the surface darkens, leading to more absorption of radiation, leading to more warming. The natural cycles of GHGs respond to temperature and moisture also amplify warming, creating a third feedback mechanism. These feedback mechanisms threaten to accelerate the effects of GHGs on climate change.

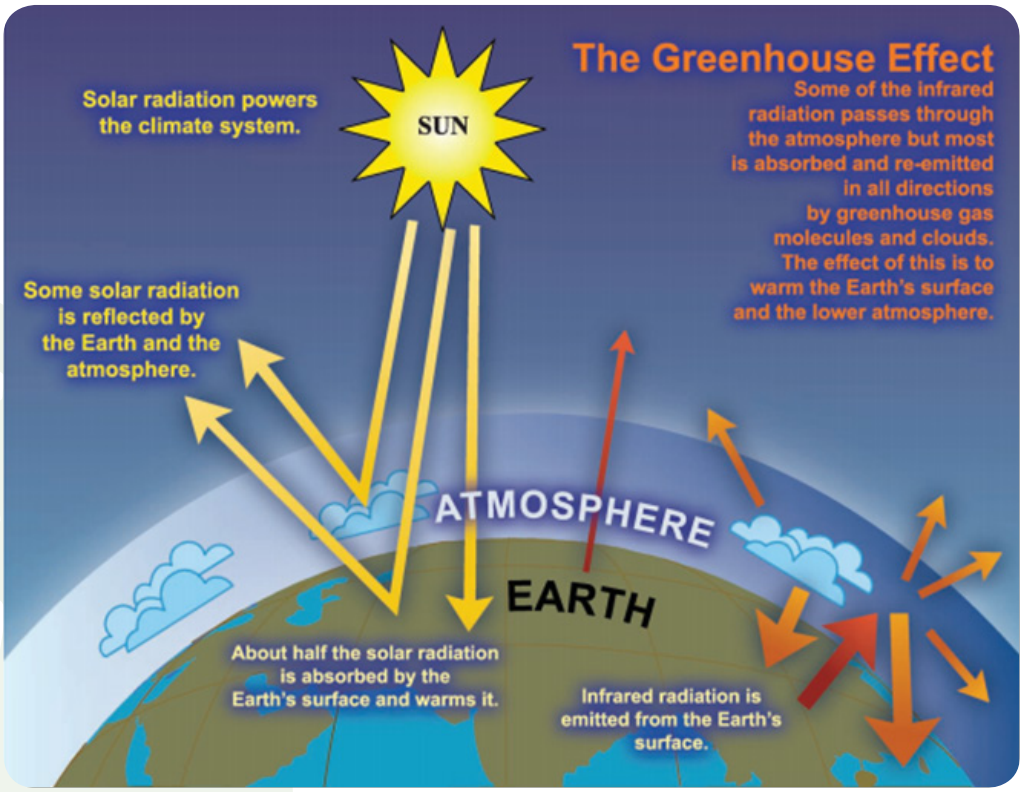

Figure 1. The Greenhouse effect. Because the Earth is much colder than the Sun, it radiates at much longer wavelengths, primarily in the infrared part of the spectrum (see Figure 1). Much of this thermal radiation emitted by the land and ocean is absorbed by the atmosphere, including clouds, and reradiated back to Earth. This is called the greenhouse effect. Figure taken from [4]

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[3] http://www.livescience.com/37743-greenhouse-effect.html

[4 IPCC Assessment Report Article 4, Frequently asked question: what is the greenhouse gas effect? FAQ 1.3, Figure 1. An idealised model of the natural greenhouse effect Page 98 http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/

«The evidence is overwhelming: climate change endangers human health. Solutions exist and we need to act decisively to change this trajectory.»

Dr Chan
WHO Director General

b. Causes of Climate Change and observations

Over millennia, daily weather averages have changed as the Earth has gone through glacial and interglacial cycles. This is due mostly to variations in the Earth's orbit, which in turn change the amount of heat we get from the Sun [1].

However, recently, we have seen that the atmospheric concentrations of these greenhouse gases have increased to levels unprecedented in at least 800,000 years. In the second half of the 20th century, mean temperatures were warmer than in any other 50-year period in the last 1300 years [2]. In 2015, global average temperature is set to rise 1 degree above the pre-industrial average (1859-1900) [3], a number that seems small, but that cannot be easily explained by the natural determinants of climate change.

Since the industrial revolution, the concentration of Greenhouse gases (GHGs) has risen steeply in our atmosphere. We release them through the use of fossil fuels (oil, coal, natural gas, among others) for transportation, agricultural practice, and other mass production means. The causes of global emissions are from [4]:

- ✔ **Energy supply** : burning of coal, natural gas and oil for electricity and heat.
- ✔ **Industry** : fossil fuels burned on-site for energy and also chemical, metallurgical and mineral transformation processes.
- ✔ **Agriculture** : livestock, management of agricultural soils, biomass burning.

Forestry and other land use: emissions from deforestation, land clearing, forest fires, peat fires and peat decay.

- ✔ **Transportation** : burning of fossil fuels for road, rail, air and marine transportation.
- ✔ **Buildings** : emissions generated from on-site energy generation and burning of fuels for heat and cooking.

Forests are called the lungs of the earth because they absorb CO2, a main greenhouse gas, and transform it into carbohydrates. Diminishing the forest areas of the surface of the planet while pumping greenhouse effects into the atmosphere has proven an effective recipe to raise the global temperature. Once the atmosphere has become warmer, it can hold more water vapor in it; which in turn is a greenhouse effect gases, and a positive reinforcing loop is started.

What changes in our climate system have we been observing in the past decades?

Most of this trapped heat is absorbed by our oceans and the Arctic sea ice (up to 90% of it). But the land surface and other atmospheric elements are also accumulating more energy than ever before. The result is a drastic change in environmental patterns: ocean acidification, altered rainfall, sea-level rise, extreme weather events, among others. Here are the changes to our climate that have occurred so far :

Atmosphere: Atmospheric carbon dioxide concentrations have increased by 40% since pre-industrial times [5].

Surface: Global mean surface temperature has increased 0.85 degrees between 1880 and 2012. The troposphere has warmed and the stratosphere has cooled since the mid-20th century [4].

Number of cold days and nights have decreased and warm days and nights have increased since 1950.

Heavy precipitation events has increased in most regions.

There has been an increase in frequency and intensity of tropical cyclones since the 1970s, up to threefold.

Ocean [6]

Ocean warming accounts for 93% of the increase in the Earth's energy uptake.

The upper 700 m has warmed from 1870s to 2010, between 700 and 2000 m has warmed from 1957-2009.

Global mean sea level has risen 0.19 m over 1901-2010. The rate of sea level rise has been increasing. The magnitude of extreme high sea level events has increased since 1970.

The ocean uptake of anthropogenic carbon has increased from 1994-2010, which is resulting in a gradual acidification of the ocean. The pH has decreased by 0.1 (26% increase in H+ concentration) since the beginning of the industrial era.

Cryosphere [7]

Arctic sea ice is decreasing 3.5-4.1 % per decade and the extent of perennial and multi-year sea ice decreased between 1979 – 2012.

Almost all glaciers worldwide have shrunk with a total mass loss of 226 Gt per year.

Greenland and Antarctic ice sheets have been losing ice over the last two decades.

Snow cover extent has decreased in the Northern Hemisphere.

There has been significant degradation of permafrost.

HOW CAN WE KEEP TRACK OF ALL OF THIS?

Throught climate modelling, we can simulate the climate system and its variables. Climate models predict mean global surface temperature based on atmospheric CO2 concentration and other variables and the consequential changes in regional climates. These models can also be used to guide emissions reductions for policy makers based on stabilising global warming to 1.5 degrees or 2 degrees Celsius [8].

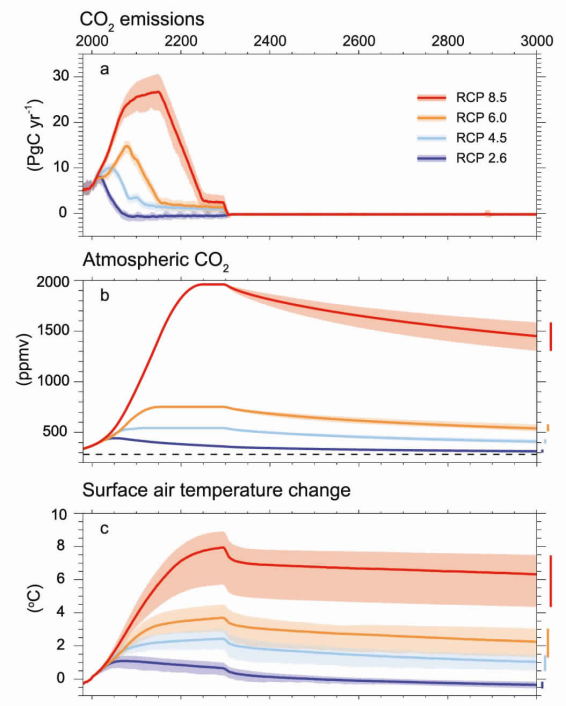

Figure 2. Climate change scenarios. (a) CO2 emissions up to 2300, followed by zero emissions after 2300, (b) prescribed atmospheric CO2 concentration after 2300, (c) global mean surface temperature change. Figure taken from [8]

In the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), the leading scientific body conducting research and analyzing evidence related to climate change, four different representative concentration pathways (RCPs) are described, based on mean total radiative forcing for 2100 [8]. The best scenario, RCP2.6, assumes small constant net negative emissions after 2100 and the worst scenario, RCP8.5, assumes stabilization with high emissions between 2100 and 2150, then a linear decrease until 2250 - with CO2 concentrations at 2000 ppm. As RCP2.6 implies net negative CO2 emissions after around 2070 and throughout the extension, CO2 concentrations slowly reduce towards 360 ppm by 2300. Global mean surface temperatures for 2081–2100 for scenarios RCP6.0 and 8.5 are likely to exceed 2 degrees. Only RCP2.6 is likely to stay below 1.5. Under RCP8.5, global warming would exceed 4 degrees by the end of the 21st century. The next section will discuss the main impacts of these changes for human life and for ecosystems that we depend on.

If you want to read more on the science behind climate change, we recommend: Climate Change 2013: The Physical Science Basis, by the IPPC, which you can download for free here: https://www.ipcc.ch/report/ar5/wg1/

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c. Consequences of Climate Change

Climate change affect the most fundamental prerequisites for good health: clean air and water, food security, adequate shelter and freedom from disease [1]. Here we will discuss the impact of climate change on our natural and human systems before going deeper into the health impacts in the next chapter of this manual.

i. Natural systems

Climate change impacts on our natural systems. This includes our freshwater resources, which we require to drink and for hygiene and sanitation, as well as for agriculture and aquaculture, energy production and many other industries. Renewable surface water and groundwater resources are projected to reduce in most dry subtropical regions and the frequency of droughts are also likely to increase [2].

Glaciers, that currently feed rivers, are melting at a faster rate, meaning that these rivers may have more water for the next few decades, but will decrease after that. The IPCC projects that for each degree of warming, 7% of the world's population will face a 20% decrease in water resources [2]. The quality of freshwater is also projected to become worse. Climate change also affects the makeup of ocean ecosystems and their function. It affects salinity, circulation , temperature, CO2, O2, nutrients and light. Much of oceanic life is at risk, and this will also impact on fisheries [5].

ii. Food security and food production systems

These impacts on our natural systems lead to impacts on the resources we depend on, such as food systems. Climate change is impacting on crop and food production in many areas of the world [6]. The world's major crops, wheat, rice and maize, will all be negatively affected in both tropical and temperate regions of the world.

Climate change is also affecting fish and other freshwater and marine species through changes in climate patterns, extreme events, sea level rise, glacier melting, ocean acidification and changes in precipitation.

These impacts on food production threaten food security. WHO defines food security as a time "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life" [7]. The aspects of food security include food access, utilization and price stability. All of these elements are impacted by climate change. With poorer global food yields, food prices are expected to rise internationally, resulting in more people will be food-insecure, meaning they don't have access to sufficient nutrition.

Adaptation will helps us prevent some of the consequences of climate change on food production and food security, but more importantly we must first prevent the worst of climate change [6].

iii. Migration

In 1990, the Intergovernmental Panel on Climate Change (IPCC), the leading scientific body conducting evidence related to climate change, noted that the greatest single impact of climate change could be on human migration [8]. The current estimates of people who will be forced to move as a result of climate change and environmental degradation by 2050 range from 25 million to one billion [9]. Two distinct climate change drivers of migration are described [10]:

- Climate processes such as sea-level rise, salinization of agricultural land, desertification and growing water scarcity, droughts and famines. For instance, the Egypt's Nile Delta is extremely vulnerable to sea level rise, a rise of just 1 metre would displace at least 6 million people [11].

- Climate events such as flooding, storms and glacial lake outburst floods. One example is Cyclone Aila that hit Bangladesh in 2009 killing over 200 and over 500,000 people were displaced [12].

Environmental migration can take many forms: sometimes forced, sometimes voluntary, often somewhere in a grey zone in between. It can be permanent or temporary, local or international. It is predicted that most environmentally induced migration is likely to take place internally. Developing countries will be the most affected, as they often have the combined impacts of high exposure to climate change impacts with a low capacity to adapt. Temporary migration as an adaptive response to climate stress is already apparent in many areas. However the ability to migrate is determined by mobility and financial and social resources and so often the most vulnerable do not have the ability to move, resulting in trapped populations [13]. A large amount of environmental migration will be internal and in many cases will be from rural to urban destinations and also to richer countries [13]. After a disaster, people often migrate to local areas - to the nearest safe destination [14].

iv. Economy

Climate change is as much an economic problem as an environmental one. It is already depleting stocks of social, environmental, institutional and economic capital through extreme weather events, such as floods, famine and cyclones, which impact on a country's health, infrastructure and productivity [15]. The IPCC suggests that the likely costs of just 2°C of global warming would be of the order of 0.2–2% of global annual gross domestic product (GDP - one of the main indicators we use to look at the health of the economy) by the middle of the century, even if strong adaptation measures are taken [16]. Sectors climate change can affect include electricity, water, transport, tourism, insurance and health. There are also many other factors, such as changes in population, age, income, technology, relative price, regulation and governance, that affect the economy.

Low and middle income countries are likely to be worst affected. They will be hit not only by increased variability (for example, suffering a greater incidence of both drought and flood) but also by a more adverse overall environment as temperatures rise. They will have to deal with this despite low incomes and often slim margins for adjustment. This combination presents a very serious challenge [10].

v. Poverty

The strong growth of the global economy before the financial crisis was accompanied by a marked surge in GHG emissions. Most of this came from the growing use of fossil fuels, as well as other sources such as agriculture, deforestation and industry.

Climate change impacts on people's livelihoods through a number of mechanisms that we have already discussed: losses in crop yields, destroyed homes and food insecurity [17]. The world's poor are already the most vulnerable to these impacts and climate change worsens existing poverty, exacerbates inequalities and triggers new vulnerabilities [17]. The poor face sliding into a poverty trap as a result of extreme events and/or chain events such as rising food prices, restricted mobility and discrimination [17]. While observations are already picking up huge impacts, such as short periods of extreme temperature, minor changes in rainfall and strong wind events are not recognised by standard climate observations [17]. Between now and 2100 climate change will create new poor and increase

inequalities in both developing and developed countries. The most severely affected are urban areas and some rural regions in sub-Saharan Africa and Southeast Asia [17].

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2. RESPONSE TO CLIMATE CHANGE

To adequately address climate change, one must act on two wide areas of focus: mitigation, which consists of taking measures that decrease greenhouse gas emissions; and adaptation, which consists of actions taken to minimize the impacts of climate change when they do occur. More recently, a third area of action on climate change has been discussed: loss and damage. Loss and damage seeks to the consequences of climate change that we are unable to mitigate or adequately adapt to. They include consequences from both extreme weather events and slow onset impacts. Loss and damage has been adopted in the Paris Agreement as primarily based on the Warsaw International Mechanism for Loss and Damage.

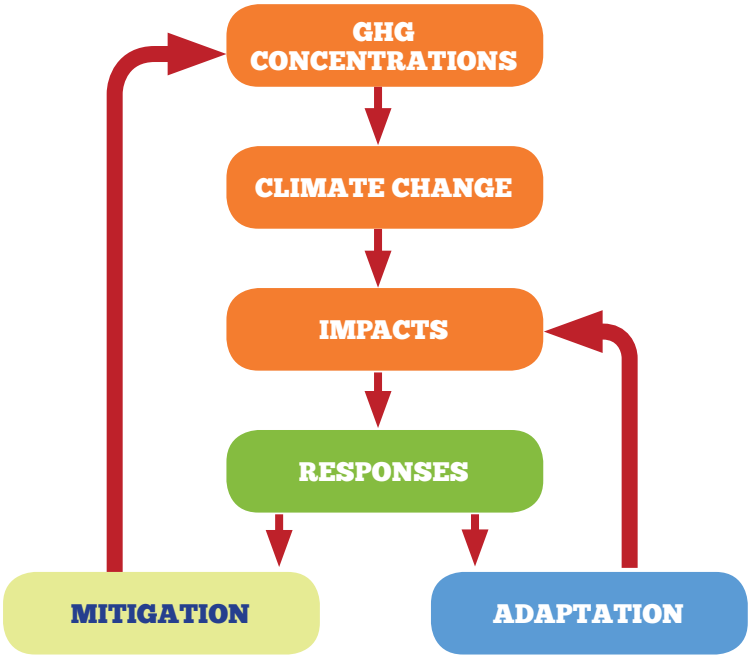

Figure 3: Strategies for climate change. Mitigation: to reduce emissions or enhance sinks. Adaptation: to moderate harm or exploit beneficial opportunities adapted from [1].

a. Mitigation

The ultimate aims of mitigation strategies are to stabilize the GHG concentrations in the atmosphere at a level that prevents catastrophic climate change and to work towards a world with net zero emissions. This cannot be achieved without international cooperation [1]. Mitigation requires a wide range of policy approaches and the design of specific policies will vary with various country-specific settings.

In this context, policy-makers have an important role to play in creating the institutional, policy, legal and regulatory frameworks necessary to enable and incentivize significant emission reductions. These adequate and well-designed policies can overcome economic, technological, informational and behavioural barriers in the marketplace.

i. Policy Instruments

Reducing Emission for Deforestation and Degradation (REDD+) refers to policy approaches and positive incentives on issues relating to reducing GHG emissions from deforestation and forest degradation, as well as the role of conservation, sustainable management of forests and enhancement of forest carbon stocks.

Voluntary agreements between industry and government are a means to engage industry partners to take action on environmental and other issues and are often a precursor to regulations.
Theoretically, industries should be compelled to undertake steps to reduce GHG emissions if they fear more costly regulatory controls. Voluntary actions (corporations, governments, non-profits and civil groups) can stimulate further action and innovation.

ii. Economic Instruments

Taxes and fees impose a charge or cost to emitters for each unit of pollutant discharged.
For example, a carbon tax is an environmental tax levied on the carbon content of fuels. It can be implemented by taxing the burning of fossil fuels – coal, petroleum products such as gasoline and aviation fuel, and natural gas – in proportion to their carbon content, thus making them more expensive to use. Accordingly, a carbon tax increases the competitiveness of non-carbon technologies (i.e. wind, sunlight, hydropower and nuclear) which helps protect the environment while raising revenues. Important here is that the tax and fee levels are set high enough to provoke a change in consumption behaviour, and not merely raise revenue.
Financial incentives such as rebates and tax breaks can be used to stimulate new markets for innovative technologies. For example, a sales tax refund on the purchase and installation of solar panels can spur households and businesses to make the investment to install this technology.

A strong example is on solar water heating installation:
An average household with an electric water heater is responsible for about eight tonnes
of CO2 emissions annually, almost double that generated by a typical modern car.
Enter Prosol— a joint initiative between UNEP, the Italian Ministry for Environment, Land and Sea and the National Agency for Energy Conservation — which has helped 105,000 Tunisian families get their hot water from the sun based on loans of over $60 million — a substantial leverage on Prosol's initial $2.5 million initial cost. The solar water-heater market in Tunisia showed a dramatic increase
when low-interest loans were made available to householders, with repayments collected through regular utility bills.

Many of these policies place real or implicit prices on carbon, which creates significant incentives
for producers and consumers to invest in lower carbon products, technologies and processes.
As fossil fuel prices increase, more low- and no carbon alternatives will become competitive.
Last but not least, addressing climate change protects human health by reducing its consequences, many of which have negative health impacts. Additionally, many mitigation policies also have direct positive health impacts which are not mediated by the climate system: i.e. they are directly beneficial for human health: this is what we call co-benefits and will be discussed in detail in our health chapter.

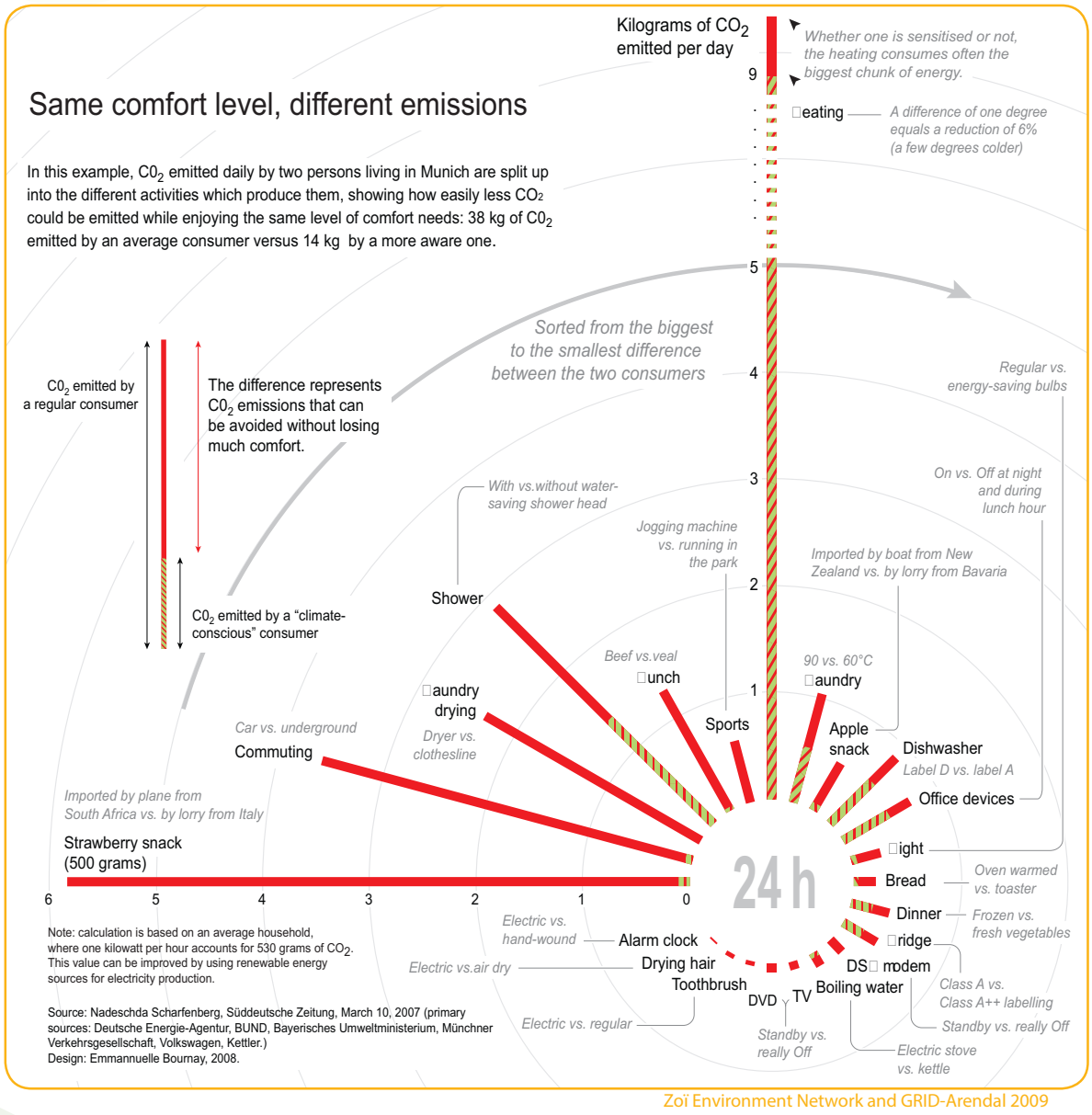

Figure 4: Comparison of GHG Emissions for different lifestyle choices. Figure taken from [8].

b. Adaptation

While reducing future climate change risk is important, addressing the impacts that we are already seeing today and cannot avoid in the future, even with the most ambitious mitigation targets, is essential. Adaptation to climate change addresses this [3-6]. In order to avoid negative consequences of climate change, the healthcare sector must first identify the risks to health associated with particular meteorological events and then make use of early warning systems which are developed for the use of all sectors in order to act when needed. We are already observing an increase in intensity and duration of heatwaves, whose effects are further intensified by the urban heat island effect. This problem can be addressed through urban infrastructure and simple public health measures that reduced the exposure of the most vulnerable groups to the intense heat. Other meteorological events of intense consequence for health are storms and floods which can overcome water treatments and evacuation facilities which then increases individual's exposure to waterborne pathogens. Therefore, strategies such as strengthening existing infrastructure, educating the population on safe drinking water and emergency relief planning

can all alleviate the consequences of those events. Other examples of adaptation measures include strengthening the healthcare system in order for it to be able to answer to new threats signaled by the early warning systems and preparing for emerging disease patterns and disease migration to areas where doctors are not thoroughly trained to address previously non endemic diseases. Finally, there are also extreme weather events for which adaptation is technically or practically not feasible, those will be addressed under the next heading on loss and damages.

c. Loss and damages

When faced by the threat of climate change, a community must choose which measures most suit its risk profile. There are however a number of unpredictable high impact events, often classified as natural disasters, whose low probability will not warrant full adaptation or for which the adaptation measures in place will be insufficient. In those situations, the severity of the event will require an external intervention to alleviate loss and damages, including negative health impacts such as injury, infections, death, mental health, and suffering.

When high impact events strike it is not always possible for one country to address its loss and damage using its own resources, and international cooperation is required. Damages may include important economical sources for a country, or the livelihoods of a specific population. International negotiations currently discuss how to address past, present and future loss and damage according to the responsibility and capability of each region.

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CLIMATE CHANGE AND HEALTH

1. CAUSES AND CONSEQUENCES

In 2009, a Lancet/University College London Commission was published stating that "climate change is the biggest global health threat of the 21st Century", and that "climate change effects on health will exacerbate inequities between rich and poor" [1]. These statements have been confirmed by many research entities including the WHO and the IPCC.

Human health is sensitive to climate change, and the effects of climate change on human health are both direct and indirect. Health impacts that have a level of confidence assessed by the IPCC Fifth Assessment Report are summarised in Table 1. Direct health impacts occur due to changes in temperature and increased precipitation with the occurrence of heatwaves, floods, droughts, fires, and other extreme events. These events have a direct impact on health through physical injuries, or other immediate mechanisms. Heatwaves, for instance, lead to an increased incidence of heat strokes and heat related deaths, which have been observed over the last decade on all continents excluding the Antarctic.

Indirect impacts result from changes in ecological systems and human systems caused by climate change. These include sea level rise and acidification, biodiversity loss, change in distribution, replication and transmission of vector-borne, water-borne and food-borne infectious diseases, pests, particulate pollution, ozone increase, ecosystem collapse, loss of habitation, poverty and mass migration. In turn, both these changes and direct impacts may lead to crop failure, and changing patterns of diseases both vector-borne (infections carried by for instance a mosquito e.g. Malaria), but also non communicable diseases such as asthma, allergies, COPD and cardiovascular disease.

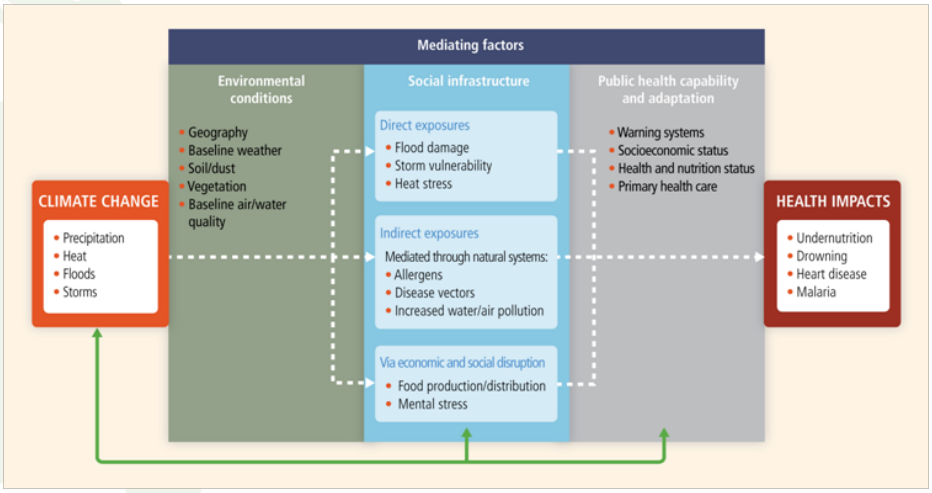

Figure 5: The links between climate change and health. Figure taken from [4].

Table 1:Summary of the main expected health impacts of climate variability and climate change globally by the middle of the current century. The final column refers to the level of confidence in the evidence for expected health impacts, as assessed in the 5th Assessment report of the IPCC [IPCC health chapter]. Table taken from [2]

	Exposures affected by climate change	Health risks	Health impacts	Confidence rating
Direct effects	Increased numbers of warm days and nights; increase in frequency and intensity of heat waves; increased fire risk in low rainfall conditions	Excess heat-related mortality; increased incidence of heat exhaustion and heat stroke, particularly for outdoor labourers, athletes, elderly; exacerbated circulatory, cardio-vascular, respiratory, and kidney diseases; increased premature mortality related to ozone, and air pollution produced by fires, particularly during heat waves	Greater risk of injury, disease, and death due to more intense heat waves and fires	Very high
	Decreased numbers of cold days and nights	Lower cold-related mortality, reduced cardiovascular, and respiratory disease, particularly for the elderly in cold and temperate climates	Modest improvements in cold-related mortality and morbidity	Low
Effects mediated through natural systems	Higher temperatures and humidity, changing and increasingly variable precipitation, higher sea surface and freshwater temperatures	Accelerated microbial growth, survival, persistence, transmission, virulence of pathogens; shifting geographic and seasonal distributions of e.g. cholera, schistosomiasis, and harmful algal blooms; lack of water for hygiene; flood damage to water and sanitation infrastructure, and contamination of water sources through overflow	Increased risks of food- and water-borne diseases	Very high
	Higher temperatures and humidity, changing and increasingly variable precipitation	Accelerated parasite replication and increased biting rates; prolonged transmission seasons; re-emergence of formerly prevalent diseases; changing distribution and abundance of disease vectors; reduced effectiveness of vector control interventions	Increased risks of vector-borne diseases	Medium
Effects heavily mediated by human systems	Higher temperatures and changes in precipitation	Lower food production in tropics; lower access to food due to reduced supply and higher prices; combined effects of undernutrition and infectious diseases; chronic effects of stunting and wasting in children	Increased risk of under-nutrition resulting from diminished food production in poor regions	High
	Higher temperatures and humidity	Outdoor and unprotected workers obliged to work in physiologically unsafe conditions, or to lose income or livelihood opportunities	Consequences for health of lost work capacity and reduced labour productivity in vulnerable populations	High
Combined effect	Overall climate change	Combination and interactions of risks above	Negative health effects will outweigh positive effects worldwide	High

As discussed in the previous chapter, climate change affects our natural systems, food systems, migration, economy and poverty. All of these impact on social and economic determinants on health. Climate change is an exacerbating factor and a heavy mediator on weak social and economic systems, which will exacerbate poverty, occupational health issues and cause mental stress. As such, consequences of climate change on health can be seen in almost every aspect of it: mental illness, undernutrition, allergies, respiratory disease, cardiovascular disease, direct injuries, and infectious diseases, among others.

A key aspect of these impacts is that they are not evenly distributed throughout the world. Some population groups are particularly vulnerable, including the poor, women, young children, the elderly, individuals living with disabilities or other health problems, and marginalized groups. Climate change is also more likely to affect less developed countries more significantly. These countries and populations are at greater risk for different reasons, relating to physiological factors, existing socioeconomic inequalities and cultural norms.

These consequences have been reported and studied already, and we have managed to gather plenty of evidence over the past decades. But because of demographic changes and interaction among all aforementioned factors themselves, health effects will become amplified over time [1].

You could compare the interrelation of health consequences of climate change to a ball of yarn, made of many different colored strands, being played with by a cat whose will is hard to foretell. That goes to say that the phenomenon is not easily described: given the complexity and number of variables determining health impacts, the specific consequences are hard to predict, but affecting us already.

Heat related mortality is on the rise as the frequency and size of areas affected by heat waves is increasing. The most vulnerable in this case, are the extremes of age (under five, and over 65 years old) and individuals with pre-existing conditions, who cannot easily adapt to temperature changes and are prone to dehydration. Heat waves are especially lethal when temperature rises quickly and for longer periods, particularly at the beginning of summer, when we are less acclimatized to high temperatures. Mortality mechanisms during extreme temperature events include cardiovascular disease in those with a reduced cardiovascular reserve, respiratory disease, infectious intestinal and vector-borne diseases, and hyperthermia. The number of individuals exposed to hot extreme temperatures will increase due to population growth, urbanization trends and migration patterns. Hot, dry conditions also increase the risk of fires. During summer of 2010, Russia witnessed 25,000 fires on 1.1 million hectares. Fires increased air pollution causing 11,000 additional deaths [3]. The situation in Russia described above could become the summer norm.

Tolerance to any given temperature is influenced by humidity. When humidity changes, the capacity of thermoregulation through the evaporation of sweat changes. This is a sensitive parameter in tropical and subtropical countries, where outdoor labor productivity will diminish according to temperatures.

As discussed in the previous chapter, a changing climate can affect crop yields. For every degree over 30 Celsius, Africa's maize production will decrease by 1% in optimal conditions and 1.7% in drought. An estimated 1.4 billion additional people may be exposed to droughts per year. This effect could be amplified by

policies on food stock and reactions to food prices by producer countries [3].

Mental health impacts of climate change are strongly related to displaced populations, and social and violent conflict arising from climate migration displacement. Populations who have lost their livelihoods and are forced to migrate, are often exposed to threatening labor conditions including physical and sexual abuse, lack of access to health and legal services, and other violations of human rights. Moreover, migration has consequences complex for human security, contributing to high density coastal mega-cities and reduction of air quality.
Mental health impacts are also caused by extreme events, including the trauma of experiencing the event itself, the loss of property, the loss of family members or living with a disability after direct injuries. Exposure to extreme weather events can also result in depression, generalized anxiety disorder and post-traumatic stress disorder.

Climate change affects the distribution and timing of pollens and fungal spores, which contribute to allergies and respiratory diseases. Climate change is also closely linked with air quality; of most concern are particulate matter and ozone. Through changing meteorology, climate change can affect the formation of air pollutants as well as their transportation, dispersion and deposition. Air pollutants include: Particulate Matter (PM, particles as small as a red blood cell), SO2, NO2 and CO. Their sources include forest fires, volcanos, Saharan dust and man-made pollution coming from combustion of fossil fuels for electricity and transport, industries, agriculture and household cooking stoves. Fine particles and other air pollutants contribute to development and exacerbation of asthma and chronic obstructive pulmonary disease, stroke, heart disease, cancer and acute tract respiratory infections. They may also alter pregnancies and have central nervous system effects [5].

Infectious diseases, including water-borne and vector-borne diseases are susceptible to climate change. Bacterial, viral, protozoa and parasite causes of diarrhea such as cholera and amoebiasis, are related to safe water availability and hygiene conditions. Cholera is often associated with seasonal algal blooms experienced after extreme weather events such as hurricanes that mix waste with drinking water, and El Niño events. Both the lifecycles of the parasites and the behavior and reproductive rates of the vectors will vary according to ambient temperature, water temperature, rainfall, season patterns and the species evolution in response to these changes. Tropical species of mosquitoes such as Anopheles require temperatures above 16 °C to complete their life cycles, and malaria parasites are able to develop more rapidly within mosquitoes at higher temperatures (>20 °C) [6]. Climate change is also affecting the distribution of mosquito-borne viruses, such as dengue and chikungunya, which are both rapidly increasing the geographical populations at risk.
A particular challenge in addressing these outbreaks, is the capacity of medical teams to diagnose and treat diseases that have previously been extremely uncommon within their region and population.

Climate change limits development aspirations through impacts on national economies and infrastructure. It affects poverty and the ability of governments to fulfill their obligations to protect settlements and people from weather extremes. We may not be able to maintain the health benefits of antibiotics and vaccines in an extremely affected society. All social and environmental determinants of health are vulnerable to climate change. Regardless of the complexity of the problem, measures of adaptation and mitigation can be taken. A key understanding for such measures is the win-win situation that health

co-benefits represent.

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«Climate Change is leading to an increase in extreme events such as heat-waves and heavy rains, which have a major impact on human health»

Michel Jarraud

WMO Secretary General

2. CO-BENEFITS

While in 2009 climate change was described as «the biggest global health threat», the 2015 Lancet Commission on Health and Climate Change concluded that "tackling climate change could be the greatest global health opportunity of the 21st century". So what are the potential health «co-benefits» of addressing climate change? That's what we'll explore now.

a. Increased Active Transport

Shifting more journeys to active transport (such as walking or cycling) yield immediate health "benefits". Increasing physical activity improves cardiovascular health, improves mental health, reduces the risk of type 2 diabetes, reduces road traffic injuries and of course - reduces carbon emissions [1-4]. There are many other co-benefits to increasing active transport and transitioning to greater use of public transport. These include promoting gender equity, empowering socially disadvantaged groups, long-term economic benefits, cost-efficiency for public finances and increasing health equity.

b. Reduction in Air Pollution

The World Health Organization (WHO) estimates that 7 million premature deaths per year are caused by indoor and outdoor air pollution, much of which is caused by burning fossil fuels. Air pollutants include: Particulate Matter (PM, particles as small as a red blood cell), SO2, NO2 and CO and CO. Their sources include be forest fires, volcanoes, Saharan dust and man-made pollution coming from combustion of fossil fuels for electricity and transport, industries, agriculture and household cooking stoves. Fine particles and other air pollutants contribute to development and exacerbation of asthma and chronic obstructive pulmonary disease, stroke, heart disease, cancer and acute tract respiratory infections. They may also alter pregnancies and have central nervous system effects [5].

Transitioning to clean electricity production (such as wind, hydroelectric, solar, geothermal) and low-carbon, low-pollution sustainable forms of transport will all have significant effect in reducing deaths and diseases related to outdoor air pollution. In addition, energy-efficient biomass and gas cookstoves which reduce carbon emissions relative to traditional cookstoves used in many low-income countries, can reduce the burden of COPD and cancer-related deaths due to indoor air pollution[7].

c. Improved Diets

Food production and agriculture are major sources of carbon emissions. Measures to reduce the carbon impact of making the food we eat will also improve our diets. Reducing red meat consumption in countries where this is in excess will also reduce the risk of cardiovascular disease, obesity and colorectal cancer [8]. Sourcing locally grown foods creates far less carbon emissions than air-freighting imported of foods as well as being more nutritious and requiring less pesticide use.

d. Better Housing

Improving the sustainability of housing can provide major health co-benefits alongside reducing carbon emissions. These benefits include reducing exposure to extreme heat and cold, reducing mould and dampness, improving natural ventilation and energy-efficiency can reduce respiratory and other non-communicable diseases [9-11].

Figures 6 and 7: What can you to address Climate Change, from the WHO SEARO Training Modules.

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3. THE HEALTH RESPONSE

So climate change is the biggest global health threat of the 21st century and if acted upon, we can turn it into the biggest opportunity. But what are the health impacts on different countries? How are national governments responding to these health burdens? The WHO and UNFCCC are making an effort to address this through the initiation of country profiles; the most up-to-date information on projected health consequences of different climate change scenarios and the basis for support for countries to include health in mitigation and adaptation policies and maintain tracking of this progress [1]. These profiles include a number of indicators to measure national progress in protecting health from climate change, looking at the areas of governance and policy, health adaptation implementation, financing and costing mechanisms and health benefits from climate change mitigation. Country profiles can be viewed here: http://www.who.int/globalchange/resources/country-profiles/en/.

Take Morocco for example. Under a high emissions scenario (RCP8.5), mean annual temperature is projected to rise by about Change to 5.5oC by 2100, with the number of days of warm spell increasing from 10 days in 1990 to 210 in 2100 - that's almost two thirds of the year! Under RCP8.5 between 2070 and 2100, 187,400 people per year are expected to be affected by flooding due to sea level rise, however that can drop to 100 with effective adaptation. Heat related mortality in people over 65 could rise from less than 5 deaths per 100,000 of the population to almost 50 deaths per 100,000. The risk of hunger and malnutrition could increase by 20% by 2050 if we follow the RCP8.5 pathway. People of Morocco could experience co-benefits of mitigation policies addressing transport, household heating, cooking and lighting, electricity generation and healthcare systems [3].

The 2015 Lancet Commission on Health and Climate Change also made ten recommendations based on the evidence on health, climate change and policy responses [4]. These recommendations include rapidly phasing out coal and expanding renewable energy, financing climate resilient systems, transitioning to less carbon-intensive, more healthy cities, investing in climate change and public health research, facilitating the collaboration of Ministries of Health and other government departments (hello health in all policies!) and implementing an international agreement that supports all of these changes. *The Lancet* has also to tracking this progress, by developing "Countdown to 2030: Global Health and Climate Action" which will report in *The Lancet* every two years.

The area of health and climate change is gaining recognition and expansion in the world of public health, which is of course necessary, but it also makes it a very exciting space to be working in.

Figure 8. The ten components composing the WHO operational framework for building climate resilient health systems and the main connections to the building blocks of health systems. Figure taken from [1]

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POLITICAL CONTEXT

1. UNFCCC AND ITS MEETINGS

The United Nations Framework Convention on Climate Change (UNFCCC) was adopted at the United Nations Conference on Environment and Development (UNCED), also called the Rio Earth Summit, in 1992. Its goal was to avoid "dangerous anthropogenic interference with the climate system", and it was meant to be realized through the stabilization of atmospheric concentrations of greenhouse gases (GHGs). The Convention later entered into force on 21 March 1994 [1, 2] and started to meet yearly.

In December 1997, delegates to the third session of the COP agreed to the Kyoto Protocol (KP) that committed industrialized countries and countries in transition to achieve emission reduction targets for six GHGs (carbon-dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). These so called Annex I parties under the UNFCCC (Developed Countries in the Convention) agreed to reduce their emissions by an average of 5% below 1990 levels in 2008-2012 (first commitment period), with specific targets varying from country to country; countries outside this group did not have reduction objectives and targets.

Countries in Annex I included Australia, Canada, USA, UK, EU and France. [3]. Although non-Annex I countries did not have the obligation to reduce emissions, they could be solicited and Annex I countries could implement emissions reduction on their territory through some of the flexibility mechanisms in the Kyoto Protocol - namely the Clean Development Mechanism (CDM). The CDM allows for emission reduction projects to be implemented in non-Annex I parties. Nevertheless, the Kyoto Protocol was strongly criticized for not having had binding commitments from all parties, which is namely the reason why it was not ratified by the United States. Furthermore, much of the reductions of GHG emissions implemented by Annex I parties were offset by the non-Annex I emerging economies. Other failures of the Kyoto protocol include: Canada's withdrawal from the protocol to avoid paying the penalties when it failed to meet its commitments and Russia's 'hot-air' i.e. passive emissions reductions due to a shrunken economy when compared with the baseline year.

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2. INTERNATIONAL NEGOTIATIONS

International climate change negotiations are multidisciplinary and complex in that they touch aspects to a great number of scientific fields. The negotiators are generally not experts in a single field but work on many issues, most come from the environment ministry, only few have a significant health background and training. During the High Level meetings, namely the Conference of the Parties (COP), member states are often represented by their environment minister and on occasion by the Head of State (such as at COP15 in Copenhagen, and COP21 in Paris).

A COP usually lasts two weeks. Traditionally, the first week is technical, while the second week is more political. But all depends on your point of negotiation and the difficulty level to achieve a consensus. Trading days are usually very long, usually starting at 10 am and ending late at night. The last days of negotiations are more intense. Often delegations choose to negotiate an extra day to reach agreement. The schedule is very busy, the negotiating teams trying to cover a maximum of themes. However, it happens that some delegations are too small. That is why Coalitions exist; they represent the interests of a group of countries.

Civil society is also represented at the COP. Grouped into Constituencies, they are primarily lobbying (speech in the opening and closing sessions, side events), and try to influence the position of groups of actors. Their status is limited to that of observers. The different major groups are:

- ✔ Business and industry
- ✔ Researchers
- ✔ Environmental NGOs
- ✔ Farmers
- ✔ Local Governments
- ✔ Unions
- ✔ Women
- ✔ Youth
- ✔ Organizations of indigenous peoples

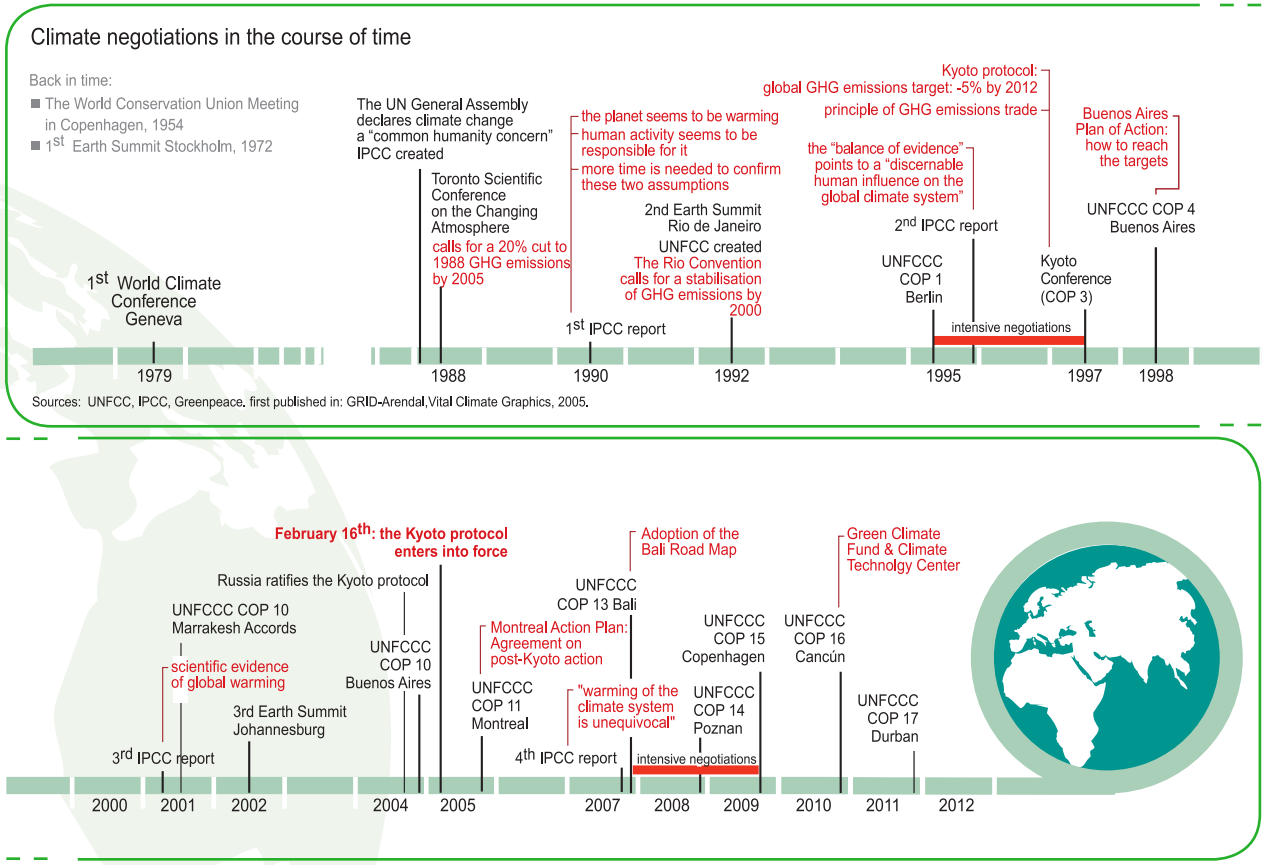

Figure 9: Historical development of international agreements on climate change, Reference: UNEP Climate Change Starter's Guidebook

3. NATIONAL AGENDAS (INDCS)

Each country is to outline its contribution to a global mitigation, decarbonisation and adaptation strategy. This is in the form of the Intended Nationally Determined Contributions (INDCs). These targets are based on the post-2020 period and are determined by individual countries, specific to their own national context. These targets must be consistent with the agreed limit of global warming (1.5 or 2 degrees) an easily understood and analysed by other countries. Submitted INDCs are available here: http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx

4. LOCAL COMMUNITIES

Local governments also responsible for climate change mitigation and adaptation. Residents of cities are responsible for as much as 80% of GHGEs. Cities are particularly vulnerable to climate change as more than 70% of the world's population are projected to live in urban areas in 2050, Urban systems are particularly vulnerable to extreme weather events and much of the world's urban populations live in low-lying coastal areas. Urban mitigation responses include low carbon urban development and design, energy efficient buildings, energy efficient technologies, energy supply and pedestrian and public transport. Adaptation strategies include measures to reduce risks from rising sea levels and extreme weather events.

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THE ROAD TO PARIS

1. KEY MOMENTS 1992-2015

The history of the global climate change negotiations has been written for more than two decades now. Between the very first Earth Summit, back in 1992, and the end of 2015, 21 Conferences of the Parties (COPs) will have taken place. Many successes and failures in this period have built what we today call the 'Road to Paris'. To better understand the different circumstances behind today's political discussions, we invite you to navigate through some important milestones:

1992 | United Nations Conference on Environment and Development (UNCED) or "Earth Summit 1992", Rio de Janeiro (Brazil)

Country representatives from all over the world travelled to Rio de Janeiro for a defining United Nations meeting, the Earth Summit 1992. In order to advance rights and responsibilities of countries in the field of the environment, the Summit adopted a non-legally binding statement called the Rio Declaration on Environment and Development [1] . Through the 27 principles, the complexity between poverty and over-consumption of rich countries prevailed. An important achievement of this Conference was the birth to three international conventions, including the United Nations Framework Convention on Climate Change (UNFCCC). This Convention entered into legal force later in 1994 with 196 ratifiers. Since 1995, the parties have met in Conferences of the Parties (COP) every year to assess progress in dealing with climate change and the objectives of the Convention.

1997 | Third Conference of the Parties (COP3), Kyoto (Japan)

The Kyoto Protocol (KP) was adopted at COP3 in 1997 and entered into force in 2005. It provided reduction targets for greenhouse gas (GHG) emissions in the order of 5% between 2008 and 2012 (first period) compared to 1990 emissions for the countries included in Annex I. 192 states have signed and ratified the Kyoto Protocol and the US remains one of the last states not wishing to ratify, despite the fact of having signed it in 1998 [2]. For the period 2013-2020, some of these countries continue their GHG emission reduction targets.

2002 | World Summit on Sustainable Development (WSSD) or"Rio+10", Johannesburg (South Africa)

Ten years after the first Earth Summit, governments, business and NGOs have come together to recognize sustainable development as an overarching goal for institutions at the national, regional and international levels. Major outcomes of that conference include the Johannesburg Declaration [3] and almost 300 international partnership initiatives meant to help achieve the Millennium Development Goals (MDG).

2009 | Fifteenth Conference of the Parties (COP15), Copenhagen (Denmark)

A framework for climate change mitigation beyond 2012 was to be agreed in Copenhagen. However, only a very weak political statement resulted from this COP, the Copenhagen Accord, leading to a general sense of disappointment. One of the main reasons was that the text wasn't mature enough at the time. There was indifference between parties whether to build on the exciting Kyoto Protocol, or whether to create a new text from scratch. The latter was the case, and at the last moment many of the key elements such as the reference to 1.5 degrees and a cut by 80% in 2050 was taken out, which had led to the very unambitious Copenhagen Accord [4]. After COP15 Barack Obama, President of the United States of America stated: "We have come a long way, but we have much further to go".

2010 | Sixteenth Conference of the Parties (COP16), Cancun (Mexico)

The "Cancun Agreements" include many features adopted by governments to help developing countries fight against climate change [5]:

- **Mitigation:** In Cancun the objective of aiming to limit global warming to a maximum of only + 2C compared to pre-industrial temperatures. Cancun Agreements encourage each country to reduce its GHG emissions according to their responsibilities and capabilities to do so.
- **Technology**: Mobilizing the development and transfer of clean technologies to improve efforts to address climate change, to make a positive impact in terms of mitigation and adaptation.
- **Finance**: Provide funding in the short and long term to ensure that developing countries are able to develop better and implement more effective action, and establish the Green Climate Fund (GCF) to provide assistance to developing countries in their mitigation plans to climate change and adapt to its impacts. It should provide $ 100 billion every year from 2020 for these projects.
- **Adaptation**: Assisting vulnerable populations in the world to adapt to the impacts of climate change.
- **Capacity building**: Establishing effective institutions and systems to ensure that the objectives are achieved.
- **Forests**: Protecting forests, which store about 25% of anthropogenic CO2 emissions. Governments have agreed to launch concrete actions concerning forests in developing countries. The financial part of this action would be considered the following year.

2011 | Seventeenth Conference of the Parties (COP17), Durban (South Africa)

On this occasion, governments have already recognized the need to establish an agreement beyond 2020 with the objective of stabilizing greenhouse gas concentrations in the atmosphere at a level that prevents dangerous interference with the climate system and also to preserve the right to sustainable development. At this COP, they have defined together the path to take in 2015 for the COP21 in order to meet these objectives through a new climate agreement, which would be negotiated through the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) [6]. This became an extension of the of the Kyoto Protocol, under which only developed countries committed to GHG emission reductions by 2012, was also discussed.

2012 | United Nations Conference on Sustainable Development (UNCSD) or "Rio+20", Rio de Janeiro (Brazil)

The primary result of this 20-year follow-up meeting of the Earth Summit 1992 was the nonbinding work paper, The Future We Want [7], where heads of state of the 192 governments renewed their political commitment to sustainable development and declared their commitment to the promotion of a sustainable future. It supports the development of

Sustainable Development Goals (SDG) that amplify the Millennium Development Goals (MDG) to be expired in 2015, by enhancing the role of environment in development.

2014 | Twentieth Conference of the Parties (COP20), Lima (Peru)

The Lima Call for Action was adopted where parties laid the foundation stones of the future Paris agreement and defined how they would like to see the ADP working in order to achieve the goal of reaching a Climate Agreement in 2015 [8].

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2. HEALTH IN THE NEGOTIATIONS

Health was at the center of the UNFCCC creation back in 1992, appearing in the Article 1 of the Convention:

1. "Adverse effects of climate change" means changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare.

Recent advancements for health in the negotiations have been the inclusion of health in the Lima Call for Action at COP20 where parties committed to continuing the technical examination of opportunities for health:

"19. Decides to continue the technical examination of opportunities with high mitigation potential, including those with adaptation, health and sustainable development co-benefits, in the period 2015–2020" [1].

Furthermore, at the ADP 2.8 in Geneva in February 2015, specific language relating to the overarching importance of health in climate negotiations was added to what would later become the Paris Agreement:

"*Recognizing that actions to address climate change simultaneously contribute to the attainment of the highest possible level of health and that climate change policies and health policies should be mutually supportive*" [2].

Parties have been expressing support for health, and have today a much greater understanding of the links between climate change and health. However, only a very few have been able to prioritize health in their respective national strategies and negotiation points, which is reflected by a weaker health performance in the most recent treaties and drafts. A current analysis of the submitted INCDs show minimal mentions to health in only a fraction of INCDs. The WHO has recently launched the Climate and Health Country Profiles in an effort to engage countries and their Ministries of Health in climate change negotiations, INDCs and policy and to keep track of their progress [3].

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3. DEFINING THE MOMENTUM

Why was 2015 different from Kyoto or 2009 in Copenhagen? With the temperature increase of almost 1C above the pre-industrial era by the end of 2015, the disruptive consequences of climate change in our civilization are now clearer than ever. The short amount of time to stabilize and, possibly, invert the current climate patterns surrounds this topic with great urgency that concerns us all.

Negotiations within the United Nations Framework Convention on Climate Change (UNFCCC) were extremely complex and, in 2015, represented an unparalleled momentum for the international community, described as "the world's greatest diplomatic success" [1] with 196 countries signing on and 151 heads of state attending.

However, the momentum surrounding Paris involved far more than the Paris Agreement. Over 785,000 people in 175 countries took to the streets to support action on climate change before the negotiations in Paris had even begun and the commitments went far beyond what country parties negotiated in the text. One thousand mayors and local leaders from cities including Paris, Las Vegas, Vancouver, Sydney and Stockholm announced that they would become 100% renewable. Divestment commitments made by over 500 institutions represent $3.4 trillion to be removed from fossil fuels. Bill Gates announced the Breakthrough Energy Coalition, the biggest clean energy investment fund ever. African nations formed the African Renewable Energy Initiative, which plans to double the total existing energy capacity of Africa using solely renewable energy by 2030, with 300 GW of additional renewable energy generated. Indian Prime Minister Modi and French President Hollande together launched an international Solar Alliance between over 100 developed and developing countries, as well as industries, laboratories and institutions. Finally, the Governments of the United States of America and Canada, Denmark, Finland, France, Germany, Ireland, Italy, Sweden, Switzerland and the United Kingdom announce contributions totaling $248 million addressing urgent and immediate adaptation needs of least developed countries.

All these actions and commitments demonstrate that the world is definitely shifting towards action. The momentum has been created in the lead up towards Paris and now must be built upon and maintained in the years that follow.

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4. BEYOND PARIS 2015

The Paris Agreement is not a finished product but the end of a very long beginning. With all the commitments from national governments and many other sectors of society, it is now that the real action shall begin. As discussed, each country has submitted an INDC, but these are far from adequate in their current form and will far overshoot our ambition of 1.5°C. Countries have been requested to review their INDCs before 2020 to make them stronger before they go into force.

The action of individuals extends far beyond switching off lights and recycling. Civil society, private sector and industry must hold governments accountable to their commitments, to develop and implement monitoring and reporting mechanisms, to increase levels of domestic and global ambitions in the years to come. In addition, ambitious emissions reductions targets are meaningless without the policies to achieve them. Engagement and momentum from both civil society and stakeholders

will be crucial in ensuring that the INDCs are translated into policies and effective decisions in a rapid manner. The health community must have a role in holding policy makers to account, helping design and implement policies, reducing the emissions from the health sector and seeking to inform colleagues and the wider community of the links between climate change and health.

This agreement is increadibly important to ease the health burden, ultimately saving lives»

Dr. Hugh Montgomery
Co-Chair Lancet Commission on Climate Change and health

PART C

CAPACITY BUILDING

IFMSA Climate Change and Health Workshop August Meeting 2014, Taipei

IFMSA Climate Change and Health Workshop March Meeting 2015, Istanbul

IFMSA Climate Change and Health Workshop August Meeting 2015, Ohrid

Capacity building is an approach to development that focuses on enhancing people's abilities for them to achieve their goals and objectives. Through capacity building, we can strengthen the skills, competencies and abilities of people and communities so they can overcome the various challenges they face.

In this section of the manual, you will learn the basics of peer education methods, you will be given tips on how to prepare a workshop and what sort of activities you can do with a group to enhance their learnings. You will also be provided with templates of agenda for activities of various lengths - from a few hours to a full week. As a final touch, a section on advocacy has been included to translate knowledge and skills into actions and social change.

PEER EDUCATION METHODS

A peer is a person who is of equal standing or "rank" with another person. A peer educator is a member of a group of people sharing the same background, experience and values. Education refers to the development of a person's knowledge, attitudes, beliefs or behaviour resulting from the learning process, which is what we want to achieve through these training programmes in Climate Change and Health [1].

Peer-assisted learning (PAL) has been defined as "People from similar social groupings who are not professional teachers helping each other to learn and learning themselves by teaching" [2]. Various reasons for moving towards PAL have been identified, varying from alleviating faculty teaching burden, to increasing the number of students included in certain activities, to meeting the expectations of graduates to have experience in teaching and assessment, or to address specific gaps in the curriculum [3]. Peer education is also sometimes preferred when the credibility of peer educators in the eyes of the target group is important, for example when the educator's and the audience's shared interest or role demands might be more suiting, the process of peer education is sometimes perceived more like receiving advice in know how.

The types of PAL programmes to prepare peer tutors vary widely, however the majority of the literature describes the practical training that was provided addressed:

- The rationale for peer education, including benefits and barriers;
- The role the tutor would be performing;
- The Qualities expected of a teacher;
- How to give feedback;
- Confidentiality;
- Marking criteria;
- Administrative process;
- Specific subject knowledge and skills required, building background knowledge of skills based health education and behaviour change interventions;
- Exploring personal values;
- Training methodologies for skills building;
- Communication and group-work skills;
- Discussion around what topics may arise;
- Guidelines for planning, implementing, monitoring and evaluating peer education programmes;
- Referral to peer education resources.

When undertaking a peer education programme, the overall goal is to develop recommended behaviour or to inspire action in the field of Climate Change and Health. Trainers in a peer education workshop play several roles:

- Expert : the trainer transmits knowledge and skills, answers questions and clears up misconceptions;
- Socializing agent : the trainer strives to share values and ideals with trainees.
- Facilitator: basing methods on participants' experience, trainers help to acquire new knowledge and skills.

The success or failure of a peer education programme can depend for a large part on the peer educator. Main characteristics that would be desirable in a peer educator include:

- Being available and accessible to the target group at all times;
- Be motivated by the concern of the target group;
- Have effective interpersonal skills;
- Be able to listen to others without bias or assumptions;
- Be confident about his/her ability to work;
- Is able to speak the language of the target group;
- Can be a role model.

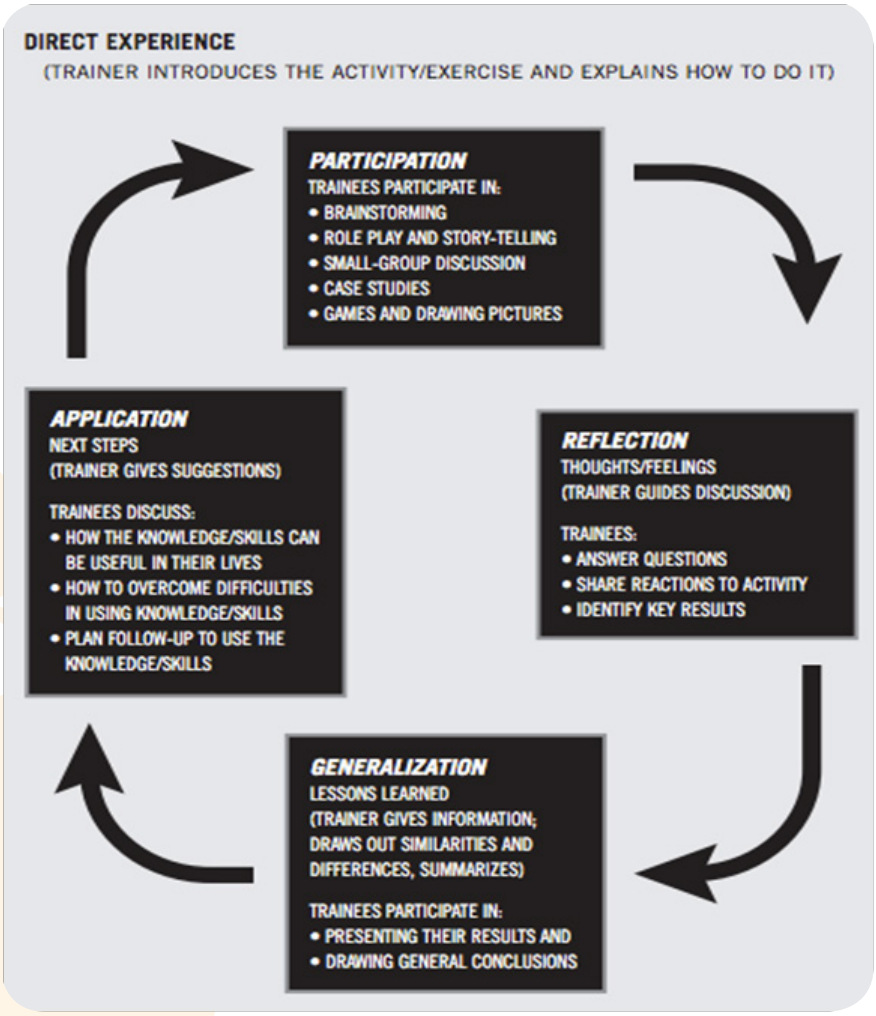

Figure 10: Peer Education Training of Trainers manual - UN interagency Group on Young Peoples Health Sub-Committee on Peer Education, p.17 (2003)

Building on the topic of role modeling, we can link this skill towards social cognitive theory (based on the work of psychologist Albert Bandura). It states that people learn indirectly by observing and modelling on others with whom the person identifies (for example, how young people see their peers behaving) and through training in skills that lead to confidence in being able to carry out behaviour (self-efficacy). In the context of peer education, this would mean that the inclusion of interactive learning activities are extremely important, as well as the fact that you as peer educator will be an important role model for your participants. There is an ancient proverb that says: Tell me...I forget, show me...I remember, involve me...I understand.

Experiential learning model using highly interactive techniques include four elements:

- Direct experience (an activity in which learners create an experience);
- Reflection on the experience;
- Generalization (lessons learned);
- Applying lessons learned.

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HOW TO ORGANIZE A WORKSHOP

A workshop is a meeting at which a group of people engage in intensive discussion and activity on a particular subject or project. In our specific case we will be working on building capacity in the field of climate change and its interlinkage with health.

Firstly, we should take the time to answer the following questions:

- Why do we want to run the workshop? What are its goals and objectives?
- Who's our target audience? How will we get them there? What is our ideal number of participants, and how many people will attend the workshop?
- What skills and sessions are most important to the participants?
- How long of a workshop do we want to/can we organize?
- What is our budget for the workshop?

Once you have put them done on a document you are ready to cover the basics!

1. LOGISTICS

The key to this first step is coordination. Know in advance what the needs are and work on tackle them one by one. Some of the logistics challenges you have to manage are:

- Venue: The venue should be well located and easily accessible to the participants, it should have suitable rooms to hold the sessions and trainings. The number of rooms depends on how many participants you will be hosting and the amount of simultaneous trainings you will have. Make sure that is possible to hang up the flipcharts on the walls and that the chairs can be moved. During trainings, people have to move around different smaller groups or activities, so it is important that the rooms provide enough space to do this. Do not forget there should also be a dining hall big enough to hold all the participants.
- Food: Providing food on site will enable participants to focus, and keep them from getting hungry and distracted. Providing tea and coffee to keep people awake, and for breaks is very helpful as well. Don't forget how important water is, and if you want your participants to be with their full mental capacities, provide them with H_2O and some Glucose.
- Travel: Where are you planning to host the event? Do people need to travel from different cities or countries to get here? If so, make sure you know when people are arriving and communicate to them about what support you or the organizing committee can provide, and where to go when they arrive. Being in a different country or city that your own is very scary, especially if you don't know anyone there or don't speak the language. Be sure to provide comfort to your participants by taking care of this small step.
- Lodging: Depending on what kind of

workshop/ event you are hosting and how big it is, the lodging necessities may vary. Is this something that will be provided by the organizing committee? Or the participants need to find a place on their own? Either way, communication is key so if you are providing the lodging don't forget to let the participants know what type of lodging they'll be staying in, the address, if there will be showers, WiFi, and so on.

- Logistics considerations for the sessions: Discuss early with the facilitators of the workshop about what they will need to deliver their sessions. It is really important and it will be a great part of the workshop quality providing all the necessary materials or if it's not possible to do so, at least keep the facilitators posted so they can restructure their session in some way.

2.ORGANIZING TEAM

The organizing committee (OC) is the one of the major keys for the success of such event, There is no best way in how to compose an OC; there can be different possibilities depending on the size of your OC. The most important part is that all the tasks, duties and responsibilities of the OC are divided amongst its members. The two most essential functions in the OC are the Chair and Treasurer. The Chair is mainly responsible for the training and then coordinating, overseeing and assisting the OC wherever necessary and will make sure that everything is done in time. The treasurer is responsible and accountable for the budget and finances of the whole event, declarations and for checking the payments.

Other tasks that can need to be divided amongst the OC members are:

- Public Relations: Contact with externals and promotion.
- Fundraising: Approaching sponsors and apply for grants.
- Marketing & Publications: Creating corporate identity and needed marketing materials and designs. Also responsible for online marketing and presence on social media.
- Social program: Offering participants social program on some nights of the event boost team dynamics.
- Logistics:
  - Venue: finding a suitable venue, having contact with the venue and dividing the sleeping rooms amongst the participants.
  - Visa applications: Invitation Letters and possible contact with relevant ministry.
  - Transportation: Arranging transport from and to the venue and during the event.
  - Registration: Coordinating the registration progress, keeping track of the payments in cooperation with treasurer, sending out the information package and arranging the certificates.
  - Meals: Ensuring meals are available during the whole event.
  - Materials: Ensuring that all the needed material (welcome package for participants, training materials, etc.) is available on time.

Now comes the next important question: Who will be delivering the workshop? Is this a one person job or you will need a whole team? How and which topics the workshop covers? Who have the capacity to deliver them? Having effective, energizing facilitators are key for running a successful workshop.

Delivering a workshop can be really exhausting for a single facilitator. It is suggested to have more than one facilitator. A good indicator is to have one facilitator per 7-10 participants. For instance, having a team of 2-3 trainers for a group of 15-20 participants is ideal. As such, trainers can rotate, rest and support their teammates to deliver the best sessions.

Experience, especially when trying to build capacity is really important. Make sure the facilitators are not only aware of the topic they will be talking about but also have plenty of experience on the field. Ideally they have done this kind of events before. Always keep track of each one of the members of you team, as teamwork makes the dream work.

3. PROMOTION AND MARKETING

Now, promote! What is not advertised, does not sell. You need to be practical when promoting this kind of events and have always in your mind your target audience. Nowadays, social media is your best friend when promoting events. Make sure your publication is clear and also the message is getting out there in the same way it was intended to. Don't be shy, use all the tools the 21st century has provide you with: Facebook, Twitter, Instagram, YouTube, Listservs, personal contacts, traditional press, and many others. If you want to, you can even do a short media campaign in order to generate expectative among your target audience, you can start building momentum in different ways, it is all about creativity at this point.

Make sure you adapt your marketing and promotion strategies to the public you are targeting - where are they most active? Where are they most likely to see your advertising? Moreover, be creative, be original and be to the point. A clear messaging will enable the public to truly understand what you workshop is about, and why they must participate!

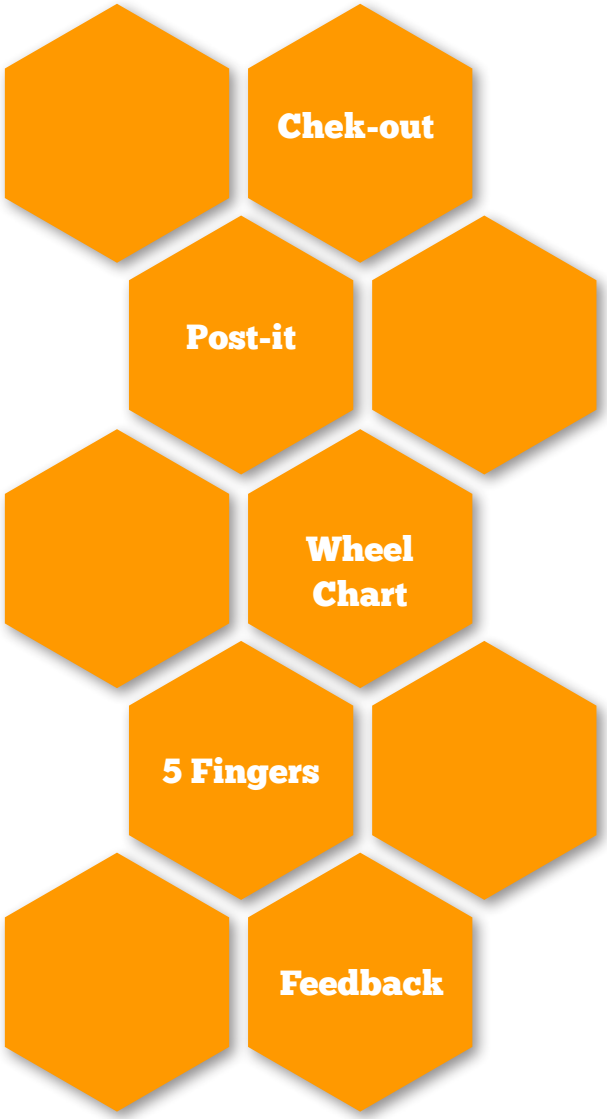
4. EVALUATION GRIDS AND FOLLOW UP

Evaluation is key, not only to the present of your workshop but to its future too. It will enable you to know if you have achieved your predefined goals, what worked best and what would be to improve in for the next time. Remember that there's always room for improvement, and that measuring the outcomes of your workshop will allow you to understand what was well delivered to the participants, and what was less grasp by them. You will also be able to define wether or not you achieved your previously defined goals and aims. Therefore, it is truly important that you set your evaluation grids related to your goals and objectives for the workshop.

Something equally important, is the follow up to the participants. Build off the positive energy and momentum created in the workshop experience to continue engaging everyone, and ideally transitioning into real action. Establish clear and efficient communications channels, make groups commitment, encourage participants to organize workshops of their own, and try to meet again in a near future!

Here is an short example of a pre and post-test survey that can assess the level of impact you have had on your target group. By providing this survey prior to as well as after the workshop, you will be able to evaluate the progress that your participants had made throughout the training itself in their increase in skills knowledge and motivation. Students fill in the same form twice, the impact of your workshop is the difference between the prior and post score. This is a more objective way than only evaluating the level of knowledge after conducting the training as you are evaluating two moments in time.

Questions/Answers	1	2	3	4	5
How do you rate your knowledge about climate science?					
How do you rate your knowledge about climate change and its impact to health?					
Do you feel motivated to start activities in that area?					
Do you feel you can create an impact and raise your voice to your policymakers?					



EVALUATION

An evaluation can be formal or informal, public or anonymous. Here are some examples of ways to perform an evaluation:

Check-out

Everybody is asked to say what they liked, what could be improved or just to talk in general; it can be free talk or structured. An example of a structured evaluation is the 5 fingers method.

Post-it evaluation

Ask everyone to write on 2 post-its good things and things that can be improved. Get a flipchart paper, draw a line in the middle and put "-" on one side and "+" on the other and ask the participants to stick on it.

Wheel chart

Draw a circle and split it in slices and write on each slice an aspect of the meeting (facilitation, content, if it met expectations, and so on, but preferably not more than 4). Ask the participants to take a marker and put a dot somewhere in each slice and make a spider web.

5 fingers

- **Thumb**: What was OK.
- **Index**: What I learned.
- **Middle finger**: What was not OK or can be improved.
- **Ring finger**: What friendships I made.
- **Little finger**: What was too short.

Survery/From

This can be on paper or online. You design it easily by putting the topics in the agenda and making a 1 to 5 scale for each of them and a clear question.

Feedback

This is a personal way of evaluating the meeting. Connect with the participants and do not hesitate to ask for their opinions. The best feedback is given when it is face to face and in private.

5. STRATEGY

When talking about Strategy for your event, it is important to highlight the following steps:

✔ Set Goals

Setting goals is key to the success of your workshop, and will also be helpful when doing the overall evaluation. Always try to create your goals in a SMART way: Specific, Measurable, Achievable, Realistic and Time – related.

✔ Identify your budget

Money might not be everything but definitely will help when putting a workshop together. Make sure you do this right from the start, and establish the fundraising necessities (if any) along with the plan to keep up a proper accountability of the expenses and incomes. If possible, design one specific member of your team to deal with this.

✔ Gather your Team

People will always be the one thing that keeps the world spinning. Surround yourself with committed and passionate people, who believe in the cause and will be able to carry out their job along with working as a team. Develop your team according to your main event necessities and overall goals. Here is an idea of some of the indispensable members of your team: Leader or general coordinator, logistics manager, finances manager and publicity manager. They all can have their own teams, but remember that you must take care of your core team.

✔ Be Organized

Establish right from the start a strong communication between your team and you. Establish a work plan, setting a realistic timeline along with the tasks and make it understandable to everyone.

✔ Create your strategy

Develop a strategy together with your team that clearly states your goals and objectives. Don't be scared about the word strategy since it is something with which you are more familiar than you believe. A strategy is a well elaborated plan set in order to achieve goals and objectives. Ask input from more experienced people in your entourage. Ask feedback on your ideas.

✔ Revisit your Team Needs

Try to always been aware of what is happening with and within your team. Be there ready to help and solve problems. Using the proper communication channels, asses your team needs and constantly review the progress of the work getting done comparing it with the timeline you designed before. Remember that in order to improve something, we always need to assess it.

6. FUNDRAISING

✔ Create a case for support

A powerful, engaging argument as to why a donor or an organization should support your work. Explain what the problem is, what is your solution to the problem, the difference you will make if you succeed, the difference you will make if you fail and why you are the one tackling this problem. It's of great importance that when explaining all this, you do it in a simple and donor focused way that is memorable and emotionally engaging.

✔ Analyse and plan

Decide which sources or which funds your will focus on. Each source has their own characteristics and requires different levels of work and time in order to deliver a result. Some of the options you have are: trusts and foundations, companies, individuals and local organizations.

✔ Structure

Once you decided which sources to approach, it is time to structure the fundraising. According to your

needs, you can even develop a fundraising team or even employ a fundraiser consultant. Don't forget to build capacity among your team in terms of fundraising as early as possible.

✔ Research

They might be even more possible supporters out there than the ones you already know. Find new possible supporters and establish how to reach each supporter. Ask for help within your team, we all know someone that knows someone.

✔ Create a proposition

Shape your needs and match the donor interests.

✔ Ask for money

You will probably have to write down a written proposal in the case of charities and big organizations. There are many ways in which one can ask for support; writing to then, asking them face to face, the important thing here is to do it in a more tailored and personal way.

✔ Build relationships for the long term

Don't forget to thank the donor. Or even those who didn't ended up supporting you financially, they can always be a potential donor in the future. Always try continuously involving the donor in your organization and always report back on the difference their contribution made.

ADVOCACY & CAMPAIGNING

Advocacy is speaking up, drawing a community's attention to an important issue, and directing decision-makers toward a solution. It consists of different strategies aimed at influencing decision-making at the organizational, local, provincial, national and international levels. These strategies can include lobbying, social marketing, information, education and communication (IEC), community organizing, or many other "tactics."

Climate change is happening now and as we have seen before in this manual, climate change is leading to changed weather patterns, including increased floods, droughts and storms. This is affecting food security and water resources and leading to more disasters, especially in the developing world. Advocacy can be a great tool to start an action by both public and governments. Campaigns and education can help public to be aware of Climate change hazards and various effects and thus pushing their governments at every level to make good decisions concerning climate change and help communities face these changes and respond to it.

The next section will approach advocacy theories and will provide areas in which advocacy on climate change and health can be particularly effective. Advocacy and change need time and experience but with a proper framework, training and experience, youth can do a lot.

1. CAMPAIGN CIRCLE THEORY

The campaign circle theory gives us a framework on how to draft advocacy and public mobilisation campaigns. It gives us directions, things to think of and tools to get a clear overview on how to implement our aims and goals.

What is Campaign circle?

- **Know what you want to change**: Identify and analyze the problem that is climate change, define your policy position and agree about goals and objectives.
- **Identify best influencing strategy**: Understand the process of changing climate change policy through assessing capacity to influence change, analyze the social and political context and identify the stakeholders. Finally you define target audiences, strategy and messages.
- **Devise action plan**: Further research on each audience, plan activities, finalize budget, allocate tasks and develop timeline.
- **Implement action plan**: Launch your advocacy campaign, form networks and alliances, publish core documents, engage with target audience to finally influence decision makers.
- **Monitor & evaluate progress**: Report what you have done, monitor how your audience react and evaluate progress to learn.

2. CAMPAIGNING (SOMETIMES CALLED MOBILISING THE PUBLIC)

Campaigning is a type of advocacy about raising awareness of an issue by telling the public about a situation, the problem and the potential solution so that they are encouraged to take action. It involves discussing with groups of people how a situation may affect them, and encouraging them to send a message to the person who has the power to challenge the injustice. It can include:

- Educating people about the issue;
- Arranging public meetings;
- Asking people to sign petitions;
- Taking part in demonstrations or marches;
- Telling stories relating to the issue in a regular radio show;
- Writing an article or letter for a newspaper or magazine;
- Talking on the radio or TV;
- Telling a journalist about the situation.

Methods may vary depending on your geographical, political and social context. For example, public demonstrations may be appropriate in some countries but ineffective or even dangerous in others. In the case of climate change, educating people about the problem, the media, politicians, young people and others to understand the problem can be a crucial first step towards taking action.

Explaining climate change can be challenging, especially given that its causes may seem complex and slightly distant from ordinary people's lives. However, a few simple questions about changes in the weather, harvests or plants and animals quickly help show that people are already aware of the impacts of climate change.

2. TOPICS

This section provides topics for workshop and external presentations and discussions within your group. They also provide focuses for actions that your group could take.

a. The health impacts of climate change

The health impacts of climate have been discussed earlier. They can broadly be described as "direct and indirect" or "primary, secondary and tertiary". Primary consequences are the direct biologic consequences of heatwaves and extreme weather events. Secondary consequences are mediated by changes in biophysically and ecologically based processes and systems, including food yields, water flows and food-borne, water-borne and vector-borne infectious diseases. The tertiary consequences are the diffuse, societal impacts, including mental health problems in failing farm communities, disadvantaged indigenous and minority ethnic groups, displacement and conflict.

RESOURCES

[1] Lancet Commission on Health and Climate Change: http://www.thelancet.com/commissions/climate-change-2015

[2] WHO Protecting health from climate change: http://www.who.int/globalchange/publications/reports/9789241598880/en/

[3] Chapter 11 of Working Group II contribution to IPCC AR5: http://www.who.int/globalchange/publications/reports/9789241598880/en/

[4] WHO Country Profiles: http://www.who.int/globalchange/resources/countries/en/

b. Energy

The energy supply sector is the largest contributor to global greenhouse gas emissions, responsible for about 35% of total anthropogenic GHG emissions. Annual GHG emissions growth increased from 1.7% per year from 1990-2000 to 3.1% per year from 2000-2010, due to rapid economic growth and an increase use of coal in the energy mix. There are a number of strategies to reduce them. The energy system requires a fundamental transformation from fossil fuel technologies to low GHG alternatives such as

renewable energy as improving energy efficiency alone will not be sufficient with the continued use of fossil fuels. Renewable technologies require both direct support (in the form of feed-in tariffs, quota obligations, tendering/bidding) and indirect support (carbon pricing) to significantly increase their market share. Transition to renewable energy has health co-benefits including fewer industrial accidents and a reduction in air pollution.

RESOURCES

[1] Chapter 7 of the Working Group III contribution to the IPCC AR5: http://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter7.pdf

[2] Climate and Health Alliance health and energy policy: http://caha.org.au/projects/healthy-energy/

[3] Lancet Climate Change Series: Low-carbon electricity generation: http://www.sciencedirect.com/science/article/pii/S0140673609617153

c.Urban systems and transportation

The transport sector is responsible for around 23% of energy-related emissions. Without aggressive and sustained policies, transport emissions could increase at a faster rate than any other energy sector and transport demand is expected to increase at a rapid rate in developing countries in the next decades. Direct emissions can be reduced by avoiding journeys where possible, lowering energy intensity by enhancing vehicle and engine performance, reducing carbon intensity of fuels and shifting to lower-carbon transport systems such as public transport, walking and cycling. Shifting to active transport can reduce obesity, diabetes, cardiovascular disease, dementia and colon cancer.

RESOURCES

[1] Chapter 8 of the Working Group III contribution to the IPCC AR5: http://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter8.pdf

[2] Lancet Climate Change series: Urban land transport: http://www.sciencedirect.com/science/article/pii/S0140673609617141

[3] WHO health in the green economy: transport sector: http://www.who.int/hia/green_economy/transport_sector_health_co-benefits_climate_change_mitigation/en/

d. Air pollution

Air pollution is not caused by climate change, however it is related as combustion of fossil fuels is the major cause of outdoor air pollution and so air pollution can be discussed in terms of co-benefits of climate change. Ambient (outdoor) air pollution was estimated to cause 3.7 million deaths worldwide in 2012, with 88% of these deaths being in low- and middle- income countries and indoor air pollution due to solid fuel (eg wood, crop wastes, charcoal, coal and dung) combustion causes an additional 4 million deaths and is estimated to contribute to more than 50% of premature deaths under the age of 5. Policies addressing the energy and transport sectors can also act to reduce air pollution. Efforts to increase access to clean electricity and clean household cooking technologies can reduce indoor air pollution.

RESOURCES

[1] WHO topic on air pollution: http://www.who.int/topics/air_pollution/en/

[2] LancetClimate Change series: household energy: http://www.sciencedirect.com/science/article/pii/S014067360961713X

[3] Climate and Clean Air Coalition: http://www.ccacoalition.org/

e. The impacts of agriculture and food and water security

Agriculture is both a cause and victim of climate change. Agriculture contributes 30% of anthropogenic GHG emissions, with the main contributors being meat and dairy. Reducing intake of animal products in OECD countries can reduce rates of cardiovascular disease, stroke, diabetes and a number of cancers. Policies for improving diets and reducing emissions include reducing exposure to marketing, improved food labelling, reducing production and consumption of meat and dairy

products, supporting exclusive breastfeeding, increasing urban agriculture and food taxes and/or subsidies. Climate change is projected to reduce renewable surface water and groundwater significantly in most dry subtropical regions, which will intensify competition for water among agriculture, ecosystems, settlements, industry and energy production, affecting water, energy and food security.

RESOURCES

[1] Lancet Climate Change series: food and agriculture: http://www.sciencedirect.com/science/article/pii/S0140673609617530

[2] Chapter 11 of the Working Group III contribution to the IPCC AR5:http://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter11.pdf

[3] Chapter 3 of the Working Group II contribution to the IPCC AR5: http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap3_FINAL.pdf

[4] Chapter 7 of the Working Group II contribution to the IPCC AR5: http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap7_FINAL.pdf

[5] UK Government's Food 2030 strategy:https://www.london.gov.uk/sites/default/files/food2030strategy.pdf

f. Sustainable Development

Sustainable development is development that meets the needs of the present without compromising future generations. The newly adopted Sustainable Development Goals (SDGs) are very closely linked with climate change as the world cannot develop and end poverty without mitigation and adaptation to climate change. The SDGs aim to provide the world with a framework to tackle global developmental challenges, to reach a higher level of prosperity and to decrease inequalities. The SDGs that relate to climate change and environmental sustainability include numerous goals: 2, 6, 7, 9, 11, 13, 14 and 15.

RESOURCES

[1] Global Sustainable Development Report: https://sustainabledevelopment.un.org/globalsdreport/2015

[2] Sustainable Development Goals: https://sustainabledevelopment.un.org/topics

g. Global security and livelihoods

Climate change affects livelihoods by causing losses in crop yields, destroyed homes, food insecurity, solastalgia - loss of sense of place and increased food prices. Socially and geographically disadvantaged people exposed to persistent inequalities are particularly affected by climate change. Climate change is also a global security issue. Two major consequences of climate change are conflict and displacement mass migration. Conflict can be precipitated by declines in basic resources such as water, food, timber and living space due to relocation of rural populations to cities and migration of populations from other areas. Climate change refugees can come from areas impacted by rising sea levels, extreme weather events, famine and conflict. The number of annual climate change refugees by 2050 is estimated to be up to hundreds of millions.

RESOURCES

[1] Chapter 12 of the Working Group II contribution to the IPCC AR5: https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap12_FINAL.pdf

[2] Chapter 13 of the Working Group II contribution to the IPCC AR5: https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap13_FINAL.pdf

h. Medical education

Despite climate change being the biggest health threat of the 21st century, many universities do not have climate change as part of the medical curriculum. It has been suggested that an effective way to integrate climate change would be to build climate change teaching on existing models and competencies rather than developing new modules. Suggested competencies recommended by the Australian College of Rural and Remote Medicine are: demonstrates knowledge of the relevant professional, legal and ethical obligations to develop and share information about climate change effects on

health; demonstrates knowledge of how to access local, national and international information about climate change effects on health, relevant to adapting health services; and shows how to use information about climate change effects on health to improve decisions about health services delivery.

RESOURCES

[1] Bell, climate change: what competencies and which medical education and training approaches?: http://link.springer.com/article/10.1186%2F1472-6920-10-31

[2] Hamel Green, Preparing Australian medical students for climate change: http://www.racgp.org.au/afp/2009/september/climate-change/

[3] Australian College of Rural and Remote Medicine Primary Curriculum: http://www.acrrm.org.au/PrimaryCurriculum/Default.htm

i. Action in the health sector

Health professionals have the responsibility to advocate the need to act on climate change to protect health and to lead by example. The WHO has stated that the health sector will commit to raising awareness of the health effects of climate change and health co-benefits among health professionals and the general public, contributing to the development and implementation of measures to limit climate change and minimising the environmental impacts of health systems. The health sector also has an important role in adaptation and community resilience by preparing health care for the impacts of climate change. There is also further research to be undertaken regarding health and climate change including impacts and preparedness and effective communication, education and health promotion.

RESOURCES

[1] Operational Framework for Building Climate Resilient Health Systems: http://www.who.int/globalchange/publications/building-climate-resilient-health-systems/en/

[2] GCHA Our Climate, Our Health Campaign: http://www.ourclimateourhealth.org/

[3] Health in the green economy: health care facilities: http://www.who.int/hia/hgebrief_health.pdf

[4] Global Green and Healthy Hospitals: http://greenhospitals.net/en/

[5] Healthcare without Harm: https://noharm.org/.

j. Investing in health

Divestment has emerged as a powerful tool for individuals, institutions, organisations and governments to take their own action on climate change and erode the social licence of fossil fuels. Fossil fuel divestment is the action of selling of investments in fossil fuel companies on economic, ethical and health grounds. This also promotes positive re-investment in sustainable industries such as renewable energy. A number of notable health organisations have committed to divesting from fossil fuels, including the British Medical Association, the Canadian Medical Association and the Royal Australasian College of Physicians. Opportunities for medical students include promotion of individual divestment, divestment of medical student associations and societies, university divestment and encouragement of medical associations and other health organisations to divest.

RESOURCES

[1] Go Fossil Free: http://gofossilfree.org/

[2] Medact Fossil Free Health Campaign: http://www.medact.org/campaign/fossil-free-health/

[3] Medact Unhealthy Investments Report: http://www.medact.org/wp-content/uploads/2015/02/UnhealthyInvesments-Spreads-Final-Version.pdf

SETTING THE AGENDA

1. AGENDA TEMPLATES

The following agenda templates were developed as guiding ideas of what can be done, depending on how much time you have, on what are your resources, etc. They are made to be adapted to your local needs. You are invited to look at them, and select based on what you know best. It is important however that a specific flow of topics and ideas are respected in the final agenda. For instance, always start with basics, definitions and ice-breaking activities, and then move to more complex concepts. Additionally, if you runs a session on the science of climate change and its impacts, try to free some time for debates and "hands-on" activities so that participants can directly apply the knowledge they've just learnt via the lecture. Always remember that both soft skills and knowledge are needed to pursue change and energy that will last beyond your workshop. Diversify your teaching methods: working groups, lecture, videos, debates, guest speakers, participants leading, etc.

So have a go, look at our proposals below and choose what you like best!

A. 1-Day Event (7 hours)

- Introduction (30min)
- Climate change and health (including the science of climate change and their impacts on health) (1h30)
- Adaptation and Mitigation (1h)
- Health co-benefits (1h)
- The Road to Paris and Beyond (1h)
- Be involved at the local and international level (2h)

B. 2-Day and half Event (Weekend)

Friday Afternoon/Night

- Introduction and survey (1h)
- Basics of climate change science
  Part 1 - Science, myths, human impact (1h)
- Basics of climate change science
  Part 2 - Health impacts and co-benefits (1h)
- The role of the medical profession to combat climate change impacts (1h)

Saturday (7h30)

- Basics of climate change science Part 3 - Adaptation and mitigation (1h)
- Power structures and global actors (1h)
- Climate change politics and negotiations (2h)
- Political advocacy and campaigning training (2h)
- Social Determinants of Health and Health in All Policies (1h30)

Sunday (6h30)

- Media Training (1h)
- Climate change and mitigation at home (1h30)
- Advocacy hands-on activity - letter, video, project (2h30)
- Conclusion & wrap up: looking forward (1h30)

C. UNFCCC Conference of Parties Simulation

This can easily be added as an extension to a 2 day event. If you do, make sure to include at least one preparatory session! You will then have a full week event. You can also only host the COP Simulation with only a 2-day event. If you go for that option, you can always twist it a little bit, and add one or two keynotes speakers to come to inspire the participants and give them core knowledge on climate change and/or health.

✔ The rationale behind the simulation

Simulations allow participants to get a experience on the front line. They are meant to represent the "reality" of the negotiations - the slow pace, the frustrations, the actors, the successes, the "how-to", the behind the scene complexities, etc. It is an excellent opportunity to build capacity for youth delegations and advocates, and it gives a great experience to apply knowledge and skills recently developed: advocacy, communications, policy, lobby.

✔ How?

A UNFCCC COP Simulation consists in a role-playing event in which you will mimic the structure of an international negotiation conference following all its procedures. Participants are supposed to play the role of the actors represented "as in reality" (countries, civil society, institutions) and respect as accurately as possible the protocol of the UN. It can last for a few hours only to a full two-day event, depending on your resources and your objectives.

It is recommended to base your negotiations on an already existing text (a draft from the most recent UNFCCC session for instance) so that participants can debate the most important points, rather than spending too much time discussion the structure of their "declaration".

Put together a plenary team to lead the negotiation sessions. It should be composed of the following: a chair (supported if you can by a vice-chair and/or a secretary), members states (make sure to assign countries from different regions and of various economic status) and observers (civil society, youth).

Your agenda should be composed of at least the following core sessions. After that, it is your choice to add soft-skills sessions, keynote speakers, lectures etc.

- Plenary Opening by the chair
- Introduction of the issue to be discussed (e.g implementation of adaptation framework of health facilities, long term goals for the climate change convention etc.)
- Speakers list of the members: Moderated Caucus
- Unmoderated Caucus
- Regional Sessions
- Votes on motion
- Plenary Closing

For more, check the resources from "COP in My City" Initiative at http://copinmycity.weebly.com/2014-resources.html.

2. LIST OF SUGGESTED MODULES

This section contains suggestion of sessions that can be integrated into an event. It presents you with the outline of it, and all are completed with some resources and dynamic group exercices. Lengths vary easily between one and three hours, depending on your capacities, experience and time availability of the agenda.

a. Introduction to weather, climate, climate change and variability

Introduction:

A difference between weather, climate, climate, variability & climate change.

Outline:

- Climate change is occurring and has a strong anthropogenic (human) influence.
- The resulting changing weather patterns can affect human health trends and projections in climate.
- Current and future consequences include sea-level rise, extreme weather events, droughts etc.
- The health sector has a role nationally and internationally in preparing for, preventing and coping with the health risks of climate change.

RESOURCES/ VIDEOS

i. TeddyTV for NRK. 2012. Walk the Dog. https://youtube.com/watch?v=e0vj-0imOLw.

ii. Climate Reality Project. 2011. Climate 101 with Bill Nye. https://www.youtube.com/watch?v=3v-w8Cyfoq8.

iii. Other resources: http://copinmycity.weebly.com/best-videos-about-climate-change.html

EXERCISE

In a group of 3-5, participants should discuss and list:

- Ways that climate change is affecting health in their cities/countries.
- Institutions that shall responsible for managing this effect.

b. Population health and climate change

Introduction:

What is health, what is climate change, and how are the two linked

Outline:

- Health impacts of climate change will be felt globally.
- Climate change will exacerbate current and underlying burden of disease.
- Populations will be exposed differently depending on regions and place their live (rural vs urban).
- Examples of Current impacts: a) sea-level rise, more frequent and intense extreme weather events, more hot days; b) without adaptation and mitigation climate change could result in a dramatically increased health burden in the regions.

EXERCISE:

- At the beginning of the session, participants in groups of 5-7 draw on a flipchart the links between climate change and health, and present the outcomes of their discussion to the group. The facilitator then summarizes them in a more formal presentation.

c. Policies & practice of mitigation & adaptation - Relevance to health

Introduction:

Mitigation and adaptation, from practice to policies for healthy and sustainable societies

Outline:

- Two climate change responses – mitigation and adaptation.
- Many mitigation & adaptation activities are relevant to the health sector.
- If emissions are reduced (mitigation), health of the population is improved (co-benefits/win-win).
- The health sector plays an important role in adaptation - requires multi-sectoral collaboration.
- Strong need for health sector to influence mitigation activities in other sectors.

VIDEO

- Overview of the IPCC Fifth Assessment Report: A focus on Adaptation.: https://player.vimeo.com/video/89725715.

EXERCISE :

• Participants write down individually one mitigation and adaptation policy that should be implemented as a top priority in their local communities, and present their ideas to the group.

d. Assessment and prediction of the health impacts of climate change

Introduction

Climate modelling, health impacts and what the future holds for us depending on the scale of political and societal action.

Outline

- Observational studies are based on the time- and space-specific relationship between health effect and climate factor.
- Time series studies and spatial studies are the principal methods of analyzing climate-relatedness of a specific health outcome.
- Disease burden estimates model health impacts.
- Weather-health relationship analysis is a basic step for predicting climate-related health effects, but it does not necessarily represent the climate effect on health.
- Modelling is based on the established relationship between climate factors and a specific health effect. It is a useful tool for predicting future, but not without limits.

For more ideas of modules, check out the WHO Training course for public health professionals on protecting our health from climate change: http://www.who.int/globalchange/training/health_professionals/en/.

PART D
CONCLUSION

As discussed in this manual, climate change is a broad and complex topic. It is a scientific, political, economic, societal and intergenerational issue. Considering climate change with a health perspective reinforces the argument that actions and policy implementation will provide communities with concrete and measurable benefits on the short and long term, especially in regards to our health.

We have explored the driving causes and consequences of climate change on natural systems, food systems, migration, economy and poverty. We have deepened our understanding of the considerations for health within this highly political and complex challenge. We have provided guiding tools on how to drive positive initiatives by training future health professionals in understanding and acting upon climate change, notably with advocacy and capacity building.

As we are shifting toward the implementation of the sustainable development goals targets, it is well known that health indicators are both a prerequisite and indicator for a prosperous economic growth and a sustainable global development. Using health arguments in the climate change debate allow ourselves to shift to a positive and hopeful message, that together we can do different, we can do better, we can do more.

More importantly, health professionals have this unique capacity to convey the voices of thousands of people, to be trusted by both the populations and politicians, and to advocate on behalf of all their patients that would benefit of living in a healthier environment. We must seize this change, and inspire others to do the same. As such, this manual shall serve as a first step into the interlinkages between advocacy, climate change, health and capacity building.

We would like to thank once more the World Health Organization for their continuous support and their work within the United Nations Alliance on Climate Change Education, Training and Public Awareness.

CONTACTS

1. IFMSA

The International Federation of Medical Students' Associations (IFMSA), founded in 1951, is one of the world's oldest and largest student-run organizations. It represents, connects and engages with more than one million medical students from more than 125 national members organizations in over 120 countries around the globe.

For over 60 years, IFMSA has been run for and by medical students on a voluntary basis. Officially recognized as a non-governmental and independent organization within the United Nations system, IFMSA is also recognized by the World Health Organization and by the World Medical Association as the leading and largest organization in representing medical students' worldwide. IFMSA is registered in the Netherlands as a public benefit organisation.

IFMSA envisions a world in which all medical students unite for global health and are equipped with the resources, skills and knowledge to take on health leadership roles locally and globally, so that we can shape the healthy and sustainable future we want. Numerous projects, campaigns, conferences and workshops are organized across member countries in the field of public health, sexual and reproductive health, medical education, and human rights and peace. The Federation also runs over 14,000 clinical and research exchanges annually for the students to explore innovations in medicine and healthcare systems and delivery in other settings.

The IFMSA experience shows students that they are not merely passive subjects in a rapidly globalizing world, but rather valuable individuals with a potentially powerful role to play in global health. IFMSA hence offers medical students a taste of the real and pressing health issues worldwide, and help them learn that their idealistic goals can be achieved with readily attainable knowledge and commitment. In IFMSA, the emphasis is placed on students returning to their local environments with new ideas and the skills to implement them.

As the doctors of tomorrow and future leaders of health, IFMSA is confident that students will carry this spirit with them throughout their professional lives so that they positively impact the communities they serve.

For more, visit www.ifmsa.org.

2. THE WORLD HEALTH ORGANIZATION

The World Health Organisation, founded in 1948, works today in 150 country offices, in 6 regional officers and at its headquarters in Geneva. The WHO

primary role is to direct and coordinate international health within the United Nations' system. The WHO works mainly in the following areas: health systems, promoting health through the life-course, noncommunicable diseases, communicable diseases, corporate services, and preparedness, surveillance and response.

Within the department of Public Health, Environmental and Social Determinants of Health (PHE), the World Health Organization holds a specific programme on Climate Change and Human Health. The role of the department is to promote a healthier environment, intensify primary prevention and influence public policies in all sectors so as to address the root causes of environmental and social threats to health. PHE develops and promotes preventive policies and interventions based on an understanding and an in-depth scientific analysis of the evidence base for environmental and social determinants of human health. The climate change and human health programme works to assess and manage risks posed by climate change causes and consequences on health, and formulate evidence-based norms and guidance on risks and benefits to health. Moreover, tools and initiatives are created to facilitate the development and implementation of policies that promote human health in priority sectors, such as climate change. 2009 was a crucial year for WHO in terms of Climate change and health that adopted the resolution and workplan to analyze and deal with the health sector's impact on the environment jointly with other health organizations. More recently, at the 68th World Health Assembly in May 2015, an historic resolution on air pollution was adopted by member states, highlighting the importance of clean air.

For more, visit www.who.int/globalchange.

3. COLLABORATORS OF THE MANUAL

This manual is a result of a collaborative work of health students around the world, experienced in climate change and/or non formal education, and working under the umbrella of the International Federation of Medical Students' Associations (IFMSA) and its national member organisations.

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It is to be noted that Mr. Skander Essafi and Miss Alice McGushin have performed extensive review of the manual. We would also like to thank the World Health Organization, and especially Marina Maiero for her trust, continuous support and review of this training and education manual.

RESOURCES

1. PUBLICATIONS

Selected and suggested list of readings

- Lancet Commission 2009 and 2015: http://www.thelancet.com/commissions/climate-change
- WHO Protecting Health from Climate Change: http://www.who.int/globalchange/publications/reports/9789241598880/en/
- WHO-WMO Atlas on Health and Climate: http://www.who.int/globalchange/publications/atlas/en/
- WHO Gender Climate Change and Health: http://www.who.int/globalchange/publications/reports/gender_climate_change/en/
- WHO Quantitative risk assessment of the effects of climate change on selected causes of death, 2030s and 2050s: http://www.who.int/globalchange/publications/quantitative-risk-assessment/en/
- HEAL The UnPaid Health Bill - How Coal Power Plants Make Us Sick: http://www.env-health.org/news/latest-news/article/the-unpaid-health-bill-how-coal
- WHO HCWH Healthy Hospitals, Healthy People, Healthy Planet: http://www.who.int/globalchange/publications/healthcare_settings/en/
- WHO UNFCCC Our Planet, Our Health, Our Future:http://www.who.int/globalchange/publications/reports/health_rioconventions.pdf
- WHO Health in the Green Economy:http://www.who.int/hia/green_economy/en/
- GCHA Climate Change: Health Impacts and Opportunities: http://www.climateandhealthalliance.org/ipcc
- World Bank Turn Down the Heat: http://www.worldbank.org/en/topic/climatechange/publication/turn-down-the-heat-climate-extremes-regional-impacts-resilience
- Medact Unhealthy Investments: Fossil fuel investment and the UK Health Community: http://www.unhealthyinvestments.uk/
- Better Growth, Better Climate and Seizing the Global Opportunity The New Climate Economy Reports: http://newclimateeconomy.report/
- PHI Climate Change, Health and Equity: Opportunities for Action: http://www.phi.org/resources/?resource=climate-change-health-and-equity-opportunities-for-action
- HCWH Health Effects from Coal Use in Energy Generation: https://noharm-uscanada.org/documents/scientific-evidence-health-effects-coal-use-energy-generation
- WHO Climate Change and Health Country Profiles: http://www.who.int/globalchange/resources/countries/en/
- GCHA/WHO Did You Know: by taking action on climate change you can strengthen public health: http://www.who.int/globalchange/publications/did-you-know/en/.

2. ORGANISATIONS

Global Climate and Health Alliance (GCHA)

The Global Climate and Health Alliance was formed in Durban in 2011 to tackle climate change and to protect and promote public health. The Alliance is

made up of health and development organisations from around the world united by a shared vision of an equitable, sustainable future. It envisions a world in which the health impacts of climate change are kept to a minimum, and the health co-benefits of climate change mitigation are maximised. Alliance members work together to ensure that health impacts are integrated into policy responses to climate change; to encourage and support the health sector to lead by example; and to raise awareness of the health threats posed by climate change and the potential health benefits of well-chosen climate mitigation policies. For more, www.climateandhealthalliance.org

Health and Environment Alliance (HEAL)

The Health and Environment Alliance (HEAL) is a leading European not-for-profit organisation addressing how the environment affects health in the European Union (EU). HEAL demonstrates how policy changes can help protect health and enhance people's quality of life. With the support of more than 70 member organisations, HEAL brings independent expertise and evidence from the health community to different decision-making processes. For more, www.env-health.org.

Healthcare Without Harm (HCWH)

Health Care Without Harm (HCWH) is an international coalition of more than 500 members in 53 countries that works to transform the health care sector worldwide, without compromising patient safety or care, so that it becomes ecologically sustainable and a leading advocate for environmental health and justice. For more, www.noharm.org

Climate and Clean Air Coalition (CCAC)

The Coalition serves as a forum for assessing progress in addressing the challenge of short-lived climate pollutants and for mobilizing resources to accelerate action. It works to catalyse new actions as well as to highlight and bolster existing efforts on near-term climate change and related public health, food and energy security, and environmental issues. The Coalition's initial focus is on methane, black carbon, and HFCs. At the same time, partners recognize that action on short-lived climate pollutants must complement and supplement, not replace, global action to reduce carbon dioxide, in particular efforts under the UNFCCC. For more, www.ccacoalition.org.

International Panel on Climate Change (IPCC)

The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. It was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988 to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts. It is a scientific body under the auspices of the United Nations (UN). It reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change. It does not conduct any research nor does it monitor climate related data or parameters. For more, www.ipcc.ch

Climate Reality

The Climate Reality Project is a non-profit organization focused on climate change education and countering climate change denial campaigns worldwide, founded in 2006 by former United States Vice President Al Gore. Its mission is to catalyze a global solution to the climate crisis by making urgent action a necessity across every level of society. Fore more, www.climaterealityproject.org.

The United Nations Framework Convention on Climate Change (UNFCCC)

The United Nations Framework Convention on Climate Change (UNFCCC) was established as an international treaty in 1992 as the main UN body responsible for climate change. Countries aimed to cooperatively consider what they could do to limit average global temperature increases and the resulting climate change, and to cope with whatever impacts were, by then, inevitable. The UNFCCC secretariat supports all institutions involved in the international climate change negotiations, particularly the Conference of the Parties (COP), the Conference of the Parties serving as the meeting of the Parties (CMP), the subsidiary bodies (which advise the COP/CMP), and the COP/CMP Bureau (which deals mainly with procedural and organizational issues arising from the COP/CMP and also has technical functions). For more, www.unfccc.int.

Youth NGOs (YOUNGO)

Non state actors at the UNFCCC are represented by the constituencies which were created in order to facilitate contact between the secretariat and the great many stakeholders involved in the process. Organizations such as IFMSA fall under the Youth NGOs (YOUNGO) constituency. YOUNGO has over the years coordinated work at the UNFCCC in certain areas in which IFMSA has chosen to contribute, most importantly on: the Article 6 of the Convention (now called Action for Climate Empowerment (ACE) for laypersons) which deals with education, training and empowerment on climate change; and intergenerational equity which deals with the respect of the right of youth, the unborn and future generations. The current contact information of the focal points for the constituencies can be found here: http://unfccc.int/files/documentation/submissions_from_observers/application/pdf/constituency_focal_point_contact_details_updated.pdf

3. WEBSITES

- Our Climate, Our Health: www.ourclimateourhealth.org
- Climate = Health Facebook Group: https://www.facebook.com/groups/100176553442861/?fref=ts.
- WHO Public Health and Environment Climate Change Page: http://www.who.int/globalchange/en/

2020 Healthcare Challenge: http://greenhospitals.net/en/about-challenge/

- UNCC Learn Platform: http://unccelearn.org/ClimateChangeandHealthResources/story.html
- Doctors for Climate Action: http://doctorsforclimateaction.org/
- Climate Council: https://www.climatecouncil.org.au/
- Healthy Planet: http://www.healthyplanetuk.org/
- 350.org: http://350.org/
- Tcktcktck: http://tcktcktck.org/.
- Breath life Campaign: http://www.unep.org/ccac/Initiatives/CCACHealth/tabid/133348/Default.aspx

IFMSA
International Federation of Medical Students' Associations

"If we work together, I am confident we can turn the climate challenge into an opportunity for a safer, more prosperous and more sustainable future for all."

Ban Ki Moon

www.ifmsa.org

medical students worldwide