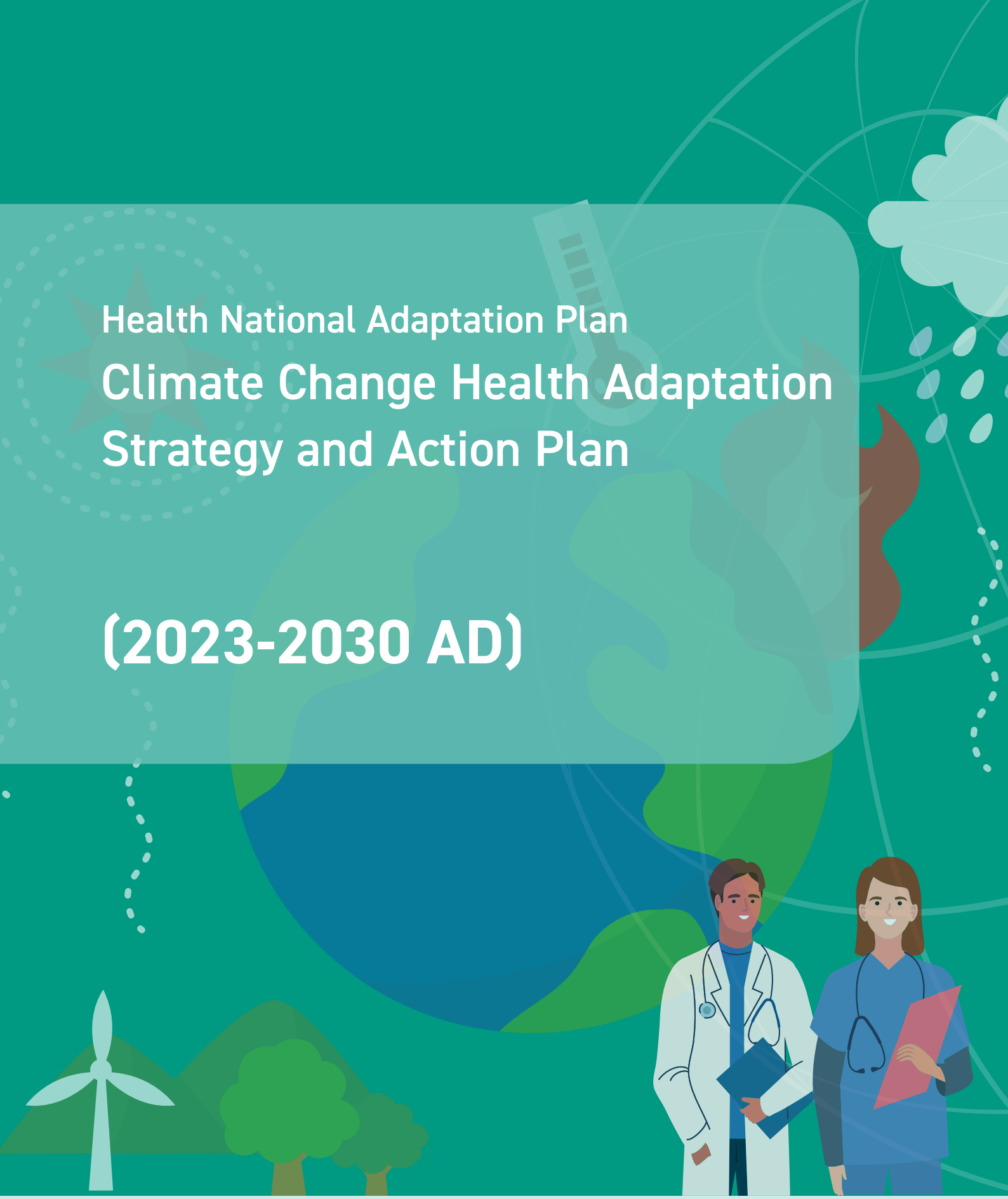
Health National Adaptation Plan

Climate Change Health Adaptation Strategy and Action Plan

(2023-2030 AD)



Government of Nepal
Ministry of Health and Population
Ramshahpath, Kathmandu
2023

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Foreword

Nepal is one of the most affected countries in terms of climate change, and the impact of climate change on human health has become a matter of serious concern for all of us. In this context, the publication of the second phase of Health National Adaptation Plan: Climate Change Health Adaptation Strategy and Action Plan (2080-2087) is a matter of great joy. This adaptation plan has been prepared based on various commitments and policy decisions made by the Government of Nepal at both national and international levels. The main objective of this adaptation plan is to minimize the adverse impacts of climate change on human health. Additionally, this plan will serve as a useful reference document for policymakers, decision-makers, planners, managers, academicians, researchers, and other relevant stakeholders to strengthen the health adaptation mechanism in the country.

The impacts of climate change have started to be experienced in most parts of Nepal, posing a risk to public health. Nepal's National Climate Change Policy has identified public health as one of the most vulnerable sectors to the negative effects of climate change. In the health sector, the issues of infectious diseases, injuries and mental illness have been increasing due to contaminated water and food, air pollution, drought and lack of nutrition. The increase in temperature has directly and indirectly increased the incidence of communicable diseases such as various vector, food and waterborne diseases. The Dengue and other vector borne diseases become prevalent in all 77 districts in Nepal in recent years. Disasters like flood and landslide caused by heavy rainfall are causing public health emergencies. The temperature is rising in Nepal and it is impossible to deny that it will rise rapidly in the coming years due to population growth, excessive consumption of fossil fuels, an increase in number of vehicles, development activities and changes in the agricultural pattern and various other factors. As a result, the impact of climate change will also increase, and it will have more direct impact on human health.

I express my gratitude to all the members of the Technical Working Group under this ministry, stakeholders and experts who provided constructive suggestions during the preparation of this Health National Adaptation Plan. The chief of the Health Coordination Division, Dr. Chuman Lal Das is appreciated for his tireless efforts in the publication of this adaptation plan. I would like to give special thanks to Dr. Samir Kumar Adhikari, Senior Health Administrator of the Ministry of Health and Population and Health Education Officer, Hema Raj Neupane for their coordination at various levels. I am thankful to the World Health Organization Nepal for providing necessary financial and technical support. In addition, Er. Raja Ram Pote Shrestha, National Professional Officer of WHO Country Office for Nepal deserves thanks for his continuous technical support and overall facilitation. I would also like to thank Dr. Manish Baidhya and Mr. Upendra K.C. of WHO Nepal for technical inputs and necessary coordination. I would like to acknowledge the contribution of Dr. Meghnath Dhimal and the entire team of Nepal Health Research Council for providing technical inputs. Last but not the least, I would like to express my gratitude to the entire team for good collaboration in preparing this adaptation plan successfully.

Dr. Roshan Pokhrel
Secretary

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Acronyms

°C	Degree Celsius
AR6	Sixth Assessment Report
AWPB	Annual Work Plan and Budget
CDC	Curriculum Development Centre
COP	Conference of Parties
DHM	Department of Hydrology and Meteorology
DoHS	Department of Health Services
DWSSM	Department of Water Supply and Sewerage Management
EDCD	Epidemiology and Diseases Control Division
e.g.	Example
etc.	et cetera
FBDs	Food-Borne Diseases
FCDO	Foreign, Commonwealth and Development Office
GCF	Green Climate Fund
GEF	Global Environment Facility
GESI	Gender Equality and Social Inclusion
GIZ	Germany Agency for International Cooperation
GoN	Government of Nepal
H-NAP	Health National Adaptation Plan
IPCC	Inter- governmental Panel on Climate Change
LDCs	Least Developed Countries
MoCIT	Ministry of Communication and Information Technology
MoEST	Ministry of Education Science and Technology
MoF	Ministry of Finance
MoFAGA	Ministry of Federal Affairs and General Administration
MoFE	Ministry of Forests and Environment
MoHA	Ministry of Home Affairs
MoHP	Ministry of Health and Population
MoWCSW	Ministry of Women, Children and Social Welfare
MoWS	Ministry of Water Supply
MToT	Master Training of Trainers
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NDC	Nationally Determined Contribution
NDRRMA	National Disaster Risk Reduction and Management Authority

NHEICC	National Health Education Information and Communication Centre
NHRC	Nepal Health Research Council
NHTC	National Health Training Centre
no.	Number
NPC	National Planning Commission
NPHL	National Public Health Laboratory
PHTC	Provincial Health Training Centre
RCP	Representative Concentration Pathway
SOP	Standard Operating Procedure
TWG	Technical Working Group
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USD	United States Dollar
VAA	Vulnerability and Adaptation Assessment
VBDRTC	Vector Borne Disease Research and Training Centre
VBDs	Vector-Borne Diseases
WASH	Water Sanitation and Hygiene
WBDs	Water-Borne Diseases
WHO	World Health Organization

Executive Summary

Earth's climate is changing rapidly. The greenhouse gases such as carbon dioxide, methane, nitrous oxide, ozone etc., is increasing in the earth's atmosphere especially due to human activities and resulting in increasing earth's temperature. The events of heat waves, droughts, fires, floods, cold waves, famines and epidemics have been affecting human health as the average temperature of the atmosphere is increasing globally. According to the internationally renowned Lancet Journal Report 2021, worldwide 5 million deaths are linked with extreme heat and cold temperatures.

Health is one of the major and important sectors affected by climate change. In the health sector, the problems of diseases, injuries and mental illness are increasing due to contaminated water and food, air pollution, drought and malnutrition. The increased temperature has been directly and indirectly causing increased cases of communicable diseases such as vector, food and waterborne diseases. Disasters like flood and landslide due to heavy rainfall have been causing public health emergencies. So, it is inevitable to develop a climate-resilient health system through development of appropriate strategies in the health sector in order to mitigate the adverse impacts of climate change.

The different commitments made by Nepal at national and international level, Constitution of Nepal 2015, National Health Policy 2019, National Climate Change Policy 2019, Environment Protection Act 2019, Public Health Service Act 2018, Fifteen plan 2019-2024, National Adaptation Plan 2021-2050 and various policy and programs have guided to prepare and implement the national climate change health adaptation strategies and action plan.

The main principle of National Climate Change Health Strategy is to protect the health sector from the impacts of climate change through appropriate collaboration in the health sector. Similarly, the strategy helps in effective implementation of National Adaptation Plan (NAP) prepared by the Government of Nepal for the period of 2021-2050.

The vision, mission and goal of this strategy are as follows:

Vision: Climate Resilient Health System.

Mission: Minimize the impacts of climate change on health through coordination and collaboration between federal, provincial and local levels and other stakeholders.

Goal: Adopt appropriate adaptation measures to minimize adverse impacts of climate change on Health.

National strategic objectives of climate change health adaptation strategies:

1. Raise awareness, advocacy and build capacity on climate change.
2. Manage the identification, prevention, control and treatment system of climate sensitive health risks including development of disease surveillance, preparedness and response system.
3. Develop and promote environment friendly and climate-resilient physical infrastructure and technologies.
4. Mainstream climate change adaptation in health policies, strategies, and plans at federal, provincial, and local levels.
5. Collaborate and coordinate with multi-stakeholders to minimize health risks through study, research and knowledge promotion on climate change and health.

Background

Climate is the average weather conditions observed in a place over a long period of time. Climate change and associated health risks have now become a major issue globally. The climate has been continuously changing since the formation of the earth. In recent centuries, due to the human activities, the pace and process of climate change has become unnatural, as a result, the greenhouse gases like carbon dioxide, methane and nitrous oxide are increasing in the earth's atmosphere and the temperature of the earth has been increasing due to these greenhouse gases. The United Nations Framework Convention on Climate Change (UNFCCC) defines the "climate change" as a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

Climate change is exerting both direct and indirect impacts on human health and different sectors all over the world. The sixth assessment report (AR6) of the Intergovernmental panel on climate change (IPCC) reported that more than 40% of the population globally are at high risk of climate change. Globally, the temperature of the earth's surface has been increasing at an average rate of 0.08 degrees Celsius per decade since 1880. The Paris Agreement of the Conference of Parties (COP) 21 committed to limit the temperature increase up to 1.5 degrees by the year 2100. But according to various study reports, it is estimated that the temperature of the earth's surface will increase by 1.5 to 2.7 degrees by that period. The report clearly states that the changes in the ecological system led to the extinction of different species and impacts on human health and livelihood. Around 3.6 billion people in the world are at high risk of climate change. Along with climate change, infectious diseases continue to spread around the world. Due to the increase in temperature, the most vulnerable people are the elderly and children, the disabled and the chronic patient. Asian, South American and African countries have been facing an epidemic due to delay in the diagnosis of the disease, lack of proper treatment and lack of knowledge to protect from the disease related with spread of other vector borne diseases along with covid.

The effects and events of climate change have been seen in all sectors in Nepal. If the temperature continues to rise in this way, it is estimated that the additional risk of climate and disasters will increase, which will directly affect people, economy, environment and development. Despite low greenhouse gas emission of Nepal, Nepal is at high risk of adverse effects of climate change due to its weak geology, topography and diverse ecological system. The high risks in the country are associated with impacts such as flood, landslide, cold wave, depletion of water sources, long droughts, extreme rain, low rainfall, forest fires and increased epidemics of new diseases. The annual average temperature has increased by 0.02 °C/year during 1980-2020 with a significant decrease in annual rainfall in Nepal at a rate of 4.8mm/year. Similarly, the annual maximum temperature has increased by 0.03 °C/year during the same period. The negative effects of climate change, the threat of disasters, including accidents, violence and injuries add three times the burden on Nepal's health sector. In the past 41 years, the effects of climate-induced hazards such as floods, landslides, and fire events have increased in the hills and lowland regions. The disease, injuries and mental illness related problems associated with contaminated water and food, air pollution, droughts and malnutrition have been increasing in the health sector due to climate change. The increase in temperature has, directly and indirectly, increased the epidemic of various vector and water related communicable diseases. The National Climate Change Impact Survey, 2016 carried out by Central Bureau of Statistics mentioned that 89 percent, 99 percent and 40 percent of household reported increase in temperature, drought and human health-related diseases respectively. Climate Change created a favorable environment for carriers of disease transmission, which led to continuous increment in infection resulting in emerging new diseases and reemerging previously eliminated diseases and appearance of diseases in places where there was no disease prevalence causing impact on human health. It is confirmed with the increase in prevalence, occurrence and severity of diseases such as malaria, kala-azar and Japanese encephalitis. According to the Vulnerability and Adaptation Assessment of Climate Sensitive Diseases and Health Risks report 2022, 17 districts of the Terai and Hills: Banke, Bara, Dhading, Dhanusha, Jhapa, Kailali, Kaski, Kathmandu, Mahottari, Makwanpur, Morang, Rautahat, Rupandehi, Saptari, Sarlahi, Sunsari

and Taplejung are at high level of climate induced risks. Similarly, according to the same report 15 districts of Terai, Mountain and Hill: Dang, Dhanusha, Kailali, Kanchanpur, Kapilvastu, Mahottari, Saptari, Sarlahi, Siraha, Salyan, Bajhang, Bajura, Humla, Kalikot and Mugu are at high risk of climate-induced diseases such as vector, water/food-borne, respiratory, mental illness and malnutrition.

Therefore, it is necessary to analyze the current and future health risks and identify climate adaptation options to prepare sector specific adaptation plans at the national and international levels. The Government of Nepal, with support from development partners, has been implementing various climate change adaptation projects in Nepal. The Ministry of Health and Population made a commitment at COP26 to update the National Health Adaptation Plan. In this context, the Ministry of Health and Population in collaboration with and support from the World Health Organization has updated Vulnerability and Adaptation Assessment of Climate Sensitive Diseases and prepared Health National Adaptation Plan (H-NAP).

Need for National Climate Change Health Adaptation Plan

Nepal is a party to United Nations Framework Convention on Climate Change (UNFCCC), which was institutionalized nearly three decades ago i. e. in 1992, to address the climate change issues. The article 1 of the convention has considered health sector as one of the adversely affected sectors by climate change whereas the article 4 requires the commitment of member countries for the effective implementation of adaptation measures and Greenhouse gas (GHG) mitigation policies. UNFCCC and Kyoto Protocol adopted in 1997 have provided legal frameworks for climate change related international process and agenda. In response to this, the UNFCCC secretariat organizes annual Conference of Parties (COP) and discusses on implementation of both legal provision and commitments made by the member countries.

Parties to the UNFCCC have committed to provide financial support to the developing countries to develop and implement the National Adaptation Plan (NAP). Such adaptation fund provided by the developed countries to the developing ones should be accessible to everyone. The Developing Countries can receive grant through Green Climate Fund (GCF) for the implementation of adaptation and resilient programs. The UNFCCC conference held in 2010 in Cancun has decided to develop and effectively implement National Adaptation Plan. Considering the importance of public health, the National Adaptation Programme of Action to Climate Change (NAPA) prepared in 2010 identified public health as one of most vulnerable sectors to climate change.

The meeting of the Southeast Asian member countries of the World Health Organization made a commitment to build a Climate Resilient Health System through the "Male Declaration 2017". Accordingly, Nepal has prepared and implemented the Climate Change Health Adaptation Strategy and Action Plan 2072-2077 under the National Health Adaptation Plan to effectively address the issue of climate change in the health sector. National Adaptation Plan should consider health sector as an important part to achieve the goals related to health sector. The exclusion of the health sector in adaptation plan may miss the important opportunity in protecting human health. So, there is a need of Health National Adaptation Plan (H-NAP) to effectively address the health sector and to achieve the objective of health adaptation. The planning of National Health Adaptation Plan has followed guiding principles prepared by Least Developed Country Expert Group (LEG). The principles are as follows:

- The National Adaptation Plan is prepared by the state, and it takes full ownership.
- Health Adaptation Plan should be prepared on the basis of best appropriate and available evidence.
- The preparation and implementation of climate change health adaptation programs should be incorporated in existing local and national initiatives.
- The climate change health adaptation should be integrated in national health planning strategy, process and monitoring systems.

- Climate change health adaptation should be flexible and relevant to the subject. The National Health Adaptation Policy should be implemented effectively considering national condition, available information and experience on climate change through institutional arrangement and necessary resource mobilization.
- Ensuring that the health adaption plan is coordinated with the overall NAP process.

The World Health Organization has stated that the Health National Adaptation Plan (HNAP) should be considered as part of the National Adaptation Plan process when developed by the Ministry of Health of any country. HNAP development is required for: promoting and facilitating coordinated and inclusive climate change and health planning among health stakeholders at different levels of government and across health determining sectors ensuring prioritization of actions to address the health impacts of climate change; enhancing health sector access to the climate funds; linking the health sector to national and international climate change agendas, including an increased emphasis on health co-benefits of mitigation and adaptation actions in other sectors. This HNAP has been prepared by adopting "Quality Criteria for Health National Adaptation Plan" prepared by World Health Organization. The quality criteria outline the actions to build climate-resilient health and climate-resilient health systems. The quality criteria cover the following six areas.

1. Leadership and enabling environment
2. Cross-sectoral coordination and policy coherence
3. Comprehensive coverage of climate-sensitive health risks
4. Comprehensive coverage of adaptation options and actions
5. Resourcing
6. Monitoring, evaluation and reporting

Current climate-sensitive health risks in Nepal

All sectors started experiencing the impacts of climate change. The National Adaptation Program of Action identified public health as one of the most vulnerable sectors to climate change. The various study reports have suggested that due to the changes in weather pattern, the effects like current health problems, morbidity and mortality have been increasing day by day. Indicators related to Hydrology and Meteorology include temperature rise, flood, landslide, glacier lake outburst, desertification, drying up of water sources, drought, etc., and the risk in the health sector has been increasing due to these reasons. The health of vulnerable communities (women, children, disabled, senior citizens) are at risk due to limited access to health services, lack of awareness about healthy lifestyle and behavior, household and professional workload, lack of financial resources and similar factors. The climate change affected agriculture, energy, water resources, forestry etc. which has resulted direct and indirect adverse impact to the vulnerable communities.

In developing country like Nepal with a wide coverage of mountainous region, there are many challenges relating to research activities regarding climate change and its impact on health. The inadequate trained human resources, poor economic condition, lack of data and appropriate research methodology etc. are some of the current challenges.

Vector borne diseases (Malaria, Kala-azar, Dengue, Japanese Encephalitis, Scrub Typhus, Zika and Chikanguinya), food and water borne diseases (Cholera and Diarrhea), respiratory and other climate sensitive diseases (Malnutrition and mental illness) are considered as climate sensitive health outcomes. The risk of climate change on health varies based on demographic characteristics, geographical location and occupational group, social, cultural and political aspects. The health sector of Nepal has been practicing measures to address the prevalence of various types of diseases through preventive and curative promotion programme.

The health risks associated with climate change in Nepal are as follows:

- There is an increasing risk of vector-borne, water-borne and food-borne diseases especially in Hilly and mountain region and dengue infection has been seen recently in all 77 districts of Nepal as a proof of this.
- There has been a significant rise in non-communicable and respiratory diseases associated with air pollution, smoke especially in urban areas.
- Most districts of Terai region are affected by heat waves which may lead to problems such as cardiovascular disease, dizziness, blood pressure, heat stroke and skin diseases, difficulty in working in the outdoor environment.
- Due to the cold waves, many people are suffering from respiratory disorders such as common cold and pneumonia and most people died due to cold in the past years.
- Eye and skin related problems are increasing as well as mental illness are also increasing day by day due to increasing climate change.
- There has been a significant rise in mental illness due to extreme climate events such as drought, flood and landslides.
- Risk of malnutrition is increasing due to decreased food production.
- There is a decline in the working abilities of people who are vulnerable to climate change.
- Due to the climate change, there has been a rise in the rate of illness among women, children and people with disabilities and elderly citizens.

Due to climate change, especially poor, developing landlocked and mountainous countries have been affected. As Nepal is affected by climate change, it is necessary to formulate policies and programs to minimize its effects. Managing the impacts of climate change requires concerted efforts, collaboration and cooperation among all levels of government, non-government organizations, educational institutions, health institutions, communities, etc.

Vulnerability and adaptation assessment of health impacts of climate change

Climate change has affected the social and environmental condition that human need, such as drinking water, clean air, adequate food etc. Human health and climate change are closely inter-related. Along with climate change, the natural disaster such as flood, landslide, irregular rainfall, heat waves, cold waves and the rise in earth's surface temperatures has led to an increased occurrence of vector and water-borne diseases and other physical and mental health illness.

A sound vulnerability analysis is necessary in terms of the risks arising from climate change in order to formulate policies and implement activities related to adaptation. The Ministry of Health and Population has prepared Vulnerability and Adaptation Assessment (VAA) report in 2023 and the report has classified the health impacts of climate change into four categories in terms of risk and adaptation assessment in Nepal:

1) Vector-borne diseases (malaria, kaalazar, Japanese encephalitis, scrub typhus, dengue, Zika and chikungunya)
2) Food-borne and water-borne diseases such as cholera and diarrhea (acute gastroenteritis)
3) Respiratory diseases and
4) Other climate sensitive diseases (malnutrition, mental illness).

The key findings obtained from the above-mentioned study are as follows:

- Vulnerability has become more complicated due to climate sensitive geographical conditions and inherent poverty.
- Changes in the rainfall pattern for longer period of times leading to drought has increased the risk of malnutrition and diarrhea.
- Among total population 52%, 87%, 54% and 30% are more sensitive towards vector borne diseases such as Malaria, Lymphatic Filariasis, Japanese Encephalitis and kala-azar respectively.
- According to the Malaria Micro-Stratification Report published by the Epidemiology and Diseases Control Division in 2019, out of total 6,743 wards in 77 districts, 2,686 wards were identified as being at risk of malaria infection.
- Malaria is increasing in Hill (Dailekh, Gulmi, Lamjung, Nuwakot, Pyuthan, Salyan) and Mountain (Bajura, Dolakha, Humla and Mugu) districts.
- The cases of Kala-azar reported from Dolpa district in 2017 were above the national elimination level. Similarly, 53% of total Kala-azar cases reported in 2018 was from those districts which are considered as non-endemic to Kala-azar.
- The geographical spread of kala-azar disease in the hilly and mountain districts is becoming terrifying. With the confirmation of kala-azar infection at the local level, the new 6 affected districts were from hilly and mountainous districts.
- The rise in cases of cutaneous leishmaniasis and mucocutaneous leishmaniasis has been creating a crisis in its eradication efforts in Nepal.
- Nepal is at high-risk zone for Cholera and each year it has been emerged as epidemic due to contaminated water. The Cholera has been more frequent in hill and mountain district and also increasing in Terai as well and recently, Kathmandu, Bhaktapur, Lalitpur, Nuwakot and Dhading has become hotspot for cholera.
- In Nepal, Dengue epidemic has been reported in every 2-3 years as a seasonal cycle. In 2022, 54,784 cases of dengue have been reported along with 59 deaths. Dengue has been emerged as a biggest problem in Nepal. Four serotypes of dengue virus have been found in Nepal.
- Research have proved that with 1-degree Celsius rise in average temperature, diarrhea among under 5 children will increase by 4.39%.
- Many people are suffering from health-related issues such as breathing problem, the common cold and pneumonia which have been attributed due to cold waves and in the last three years, many people have died due to the cold. The data shows that from 1974 to 2014, 822 people died due to cold waves.
- Water sources are drying up and due to the lack of water, especially women and children have to invest more time in fetching water. This situation has also led to increased economic fragility and a water crisis.
- According to the projection of climate health risk category 2030 in RCP 4.5, the most vulnerable districts are Sunsari, Rautahat, Siraha, Morang, Jhapa, Mahottari and Saptari.
- All individuals and communities are impacted by climate change. But not all are equally or equally affected as it depends on factors such as geographical conditions, health system preparedness, health conditions, age, social class and supportive initiatives etc.

National Policies, Plans and Strategies to address Climate Sensitive Health Vulnerabilities in Nepal

1. Constitution of Nepal, 2015

The Constitution of Nepal 2015, article 30 defines that it is the fundamental right of every citizen to live in a clean and healthy environment (GON, 2015). Similarly, in article 35 there is a provision of ensuring the right to free basic health services and access to clean drinking water sanitation and hygiene for every citizen.

2. National climate change policy, 2019

Reducing the risk of climate change impacts and providing policy guidance for developing resilient society at various levels and thematic areas is the objective of National Climate Change Policy 2019. Agriculture and food security, forest biodiversity and watershed conservation, water resources and energy, rural and urban habitats, industry transport and physical infrastructure, tourism and natural and cultural heritage, health, drinking water and sanitation, disaster risk reduction and management are the eight thematic areas and four cross cutting areas in this policy. In this context, to encourage health, drinking water and sanitation and climate change related studies, research, technology development and dissemination following topics have been addressed in detail:

- Limit the transmission of climate induced vector-borne and communicable diseases epidemics by developing preparedness, forecasting and control mechanism
- Enhance access and easy availability of clean drinking water by protecting water sources, collecting and storing rainwater and developing and expanding water efficient technologies
- Segregate the households, hotel business and hospitals waste at source for properly managing harmful and hazardous waste and encouraging the use of biodegradable waste for energy production
- Conduct regular research and studies on the effects of climate change in various thematic areas and consider their results in decision-making process
- Develop technology to minimize carbon mixed pollutants (black carbon) and other greenhouse gases emission from water, land and air pollution.
- River, avalanche, wetland and sensitive ecosystems will be regularly monitored for risk with scientific analysis
- Alongside pinpointing domestic resources for enacting these policies, enhance equitable access to international financial resources and mobilize in a fair manner
- Upon mobilizing climate finance, 80 percent of the funds will be allocated towards implementing programs at the local level

3. Environment Protection Act, 2019

The need of a clean environment for healthy life of all living beings has been comprehensively emphasized in the Environment Protection Act, 2019. Chapter 4 of this Act, specifically includes provisions related to climate change. In order to provide information about the adverse effects and risks to biological diversity, periodic studies should be carried out and the findings should be made public. Similarly, in order to avoid the adverse effects and risks of climate change, the ministry at national level, provincial ministry at provincial level and local authorities at local level can develop and execute an adaptation plan. The Government of Nepal will be able to identify areas that emit green-house gases and determine their national baseline level. The ministry can measure or arrange provisions

for the measurement of green house gases emission. In relation to sectoral policies, strategies or action plans for the management of effects and risks caused by climate change and measures to be adopted for mitigation, the government of Nepal may publish notices in gazette and issue necessary orders. In order to determine priority of issues to be implemented in urban and rural areas regarding the adverse effects and risk reduction of climate change, the government of Nepal will determine the necessary criteria and implement them. Similarly, for reduction of carbon emission and storage, this act clearly states that the government of Nepal can engage in carbon trading with foreign governments, organizations, commercial bodies or private sector as established by international treaties.

4. National Environment Policy, 2019

The national environment policy aims to attain sustainable development by maintaining balance between development and environment conservation, ensuring compliance with environmental laws, regulations and commitments, and fostering coordination and collaboration in environmental management efforts. The aim of this policy is to safeguard citizen's right to inhabit a clean environment by pollution control, waste management and the promotion of green initiatives. Its objectives encompass preventing, controlling, and reducing various forms of pollution such as water, air, soil, sound, electromagnetic waves, chemical and radioactive contaminants, while also effectively managing waste generated across all sectors, including domestic, industrial and service -related activities. Furthermore, there exists a provision for the establishment of parks and expansion of green spaces in both urban and suburban areas, as well as ensuring environmental justice for those affected by pollution. There are arrangements for research and capacity building for environmental protection and management. It is the responsibility of the nation to ensure the utilization of natural and man-made resources in a way that is fair to the environment and future generations. To address this requirement, the formulation of National Environment Policy has been grounded in the necessity for collaborative coordination among the three tiers of government, civil society, community, private sector and individual public. Within the scope of this policy, the federal, provincial and local levels can implement programs.

5. Environment Protection Regulations, 2020

In paragraph 4 of this regulation, climate change related regulations are mentioned. The Ministry should publish a national report every five years on the status of climate change, its impacts and risks. In Section 26, the Ministry has to prepare and implement a National Adaptation Plan every ten years. Similarly, in section 27, there is a need to take mitigation actions. The Ministry, in collaboration with relevant ministries is responsible for preparing and updating every decade the national baseline levels for greenhouse gas emissions from sectors such as energy, industry, agriculture, forestry and land use and waste management. Furthermore, it is mentioned in article 28 of paragraph 5 that they can participate in carbon trading.

6. National Health Policy, 2019

In a federal structure, developing and expanding a health system that ensures access and utilization of quality health care services for all categories of citizens is the goal of this policy. This is anchored in principles of social justice and good governance. This policy has 6 objectives, one of which is to create an opportunities for all citizens to enjoy their rights related to health provided by the constitution. In 6.11 of the National Health Policy, it is mentioned that integrated preparedness and response measures will be adopted to combat communicable diseases, insect-borne and animal-borne diseases, climate change and other diseases, epidemics control and disasters management. For this, following major strategies have been adopted.

a. Programs to reduce adverse effects on health due to climate change will be revised and developed in collaboration and coordination with stakeholders.

b. A notification system of classified/listed diseases will be developed and implemented.

c. To promptly address disasters and epidemics, mechanisms will be established at all levels, encompassing capacity development, formulation and implementation of preparedness and response plans. Additionally, mobile hospital services will also be organized.

7. The Public Health Service Act, 2018

Chapter-5 of the Public Health Service Act mentions, social, cultural and environmental determinants for the protection, promotion and improvement of public health. In order to control and minimize the adverse effects on public health in relation to noise, air, water and visual pollution, including sanitation and waste management, it is mentioned that the government of Nepal will determine the relevant standards in accordance with the federal law.

8. National Adaptation Programme of Action to Climate Change (NAPA), 2010

National Adaptation Programme of Action to Climate Change (NAPA) has identified public health as high risk area of negative effects from climate change. NAPA has analyzed public health as a distinct area emphasizing its significance and has prioritized the following activities for addressing the challenges related to climate change.

- Utilize evidence-based research to guide public health programs aimed at mitigating adverse impacts of climate change on public health in Nepal
- Sensitize the public about the negative effects of climate change on public health through education or awareness raising.
- Increase investments for disease outbreaks and emergencies
- Promote programs related to vector, water and food-borne diseases and disaster management
- Strengthening surveillance, forecasting, early warning and preparedness and research systems related to climate change and health

9. Fifteenth Five-Year Plan (2019-2024)

The Fifteenth Plan has included climate change as an interconnected thematic area. Its goal is to contribute to building a sustainable society by increasing climate change adaptation capacity and reducing adverse effects. This plan has identified three objectives for addressing climate change and they are: enhance adaptive capacity while mitigating adverse effects of climate change in line with the Paris agreement; Implementation of environment-friendly, clean energy and green development concepts to reduce climate change; Claim international finance and technologies available through the Paris agreement for climate change mitigation and adaptation and equitable distribution of benefits.

10. Second Nationally Determined Contribution (NDC), 2020

The Government of Nepal has prepared and submitted the Second Nationally Contribution (NDC) to address the impacts of climate change by adopting mitigation measures. Under this, various targets related to the health sector have been determined as follows: By the year2030, 1,400 health care facilities will use non-burn technologies to properly manage healthcare waste. By the year 2025, climate-sensitive diseases surveillance systems will be strengthened through the integration of climate and weather information in existing surveillance system.

11. Nepal Long Term Zero Carbon Emission Strategy, 2021

This strategy of Nepal aims to achieve net-zero emissions by 2045. In 2019, Nepal's total carbon dioxide emission was 2,30,00,000 metric tons and this figure is expected to reach 3,40,00,000 metric tons in 2030 and 7,90,00,000 metric tons in 2050. According to the statistics of 2019, the consumption of renewable energy in Nepal was only 3 percent, while it has been mentioned that renewable energy will be 15 percent of the total energy consumed by the year 2030.

12. NAP: National Adaptation Plan (2021-2050)

The aim of this plan is to by integrate mitigation and adaptation programs to reduce the risk of climate change and include government policies, programs and plans across sectors and at all three levels of government. The plan has been presented in the United Nations Framework Convention on Climate Change (UNFCCC). There are sixty-four priority programs in eight thematic areas and four interdisciplinary areas identified by Nepal's National Climate Change Policy 2019. The program includes short-term (up to 2025), mid-term (2035) and long term (2050) plans to address the climate crisis.

The total budget USD 47.4 billion is expected to be required by 2050 for the implementation of 64 programs prioritized by the National Adaptation Plan. The adaptation plan includes agriculture and food security, forestry, ecosystem and water resource promotion, conservation, energy, climate resilient urban health, drinking water and sanitation, disaster management, research, innovation and development etc. The specific adaptation plan under Health, Drinking Water and Sanitation are as follows:

a) Capacity building of health and hygiene sector's service providers and professionals through the adaptation measures and technologies to improve health outcome and healthcare system

b) Development of strategies and raising national level awareness to reform policies, formulate programs

c) Managing for sustainable water supply services, promoting healthy envrionment and livelihoods

d) Building public awareness, develop health promoting cities, healthy environment and livelihood etc.

e) Strengthening climate sensitive disease surveillance system and enhance emergency preparedness and response system

Climate Change Health Adaptation Strategy Vision, Mission, Goal and Strategic Objectives

Vision: Climate Resilient Health System.

Mission: Minimize the impacts of climate change on health through coordination and collaboration between federal, provincial and local level and other stakeholders.

Goal: Adopt Appropriate adaptation measures to minimize adverse impacts of climate change on Health.

National Strategic Objectives

The main objective of preparing the Health National Adaptation Plan is to minimize the negative effects of climate change on human health. The following specific objectives are envisioned to increase the adaptation measures:

1. Raise awareness, advocacy and build capacity on climate change.
2. Manage the identification, prevention, control and treatment system of climate-sensitive health risks including development of disease surveillance, preparedness and response system.
3. Develop and promote environment friendly and climate-resilient physical structures and technologies.
4. Mainstream climate change adaptation in health policies, strategies, and plans at federal, provincial, and local levels.
5. Collaborate and coordinate with multi-stakeholders to minimize health risks through study, research and knowledge promotion on climate change and health.

Implementation Strategy

The collaboration and coordination are necessary among federal, provincial and local governments, development partners, concerned agencies, civil society and other relevant sectors for the effective implementation of the National Health Adaptation Plan. The Ministry of Health and Population (MoHP) will play a leading role in both planning and implementing this adaptation plan. In addition, necessary coordination will be carried out with central, provincial and local governments. A 9-member steering committee, chaired by the Secretary of the Ministry of Health and Population, will provide guidance and policy instructions to implement the HNAP. Similarly, a 15-member technical working group, led by the Chief of the Health Coordination Division under the Ministry of Health Population, will implement the HNAP and coordinate with various stakeholders.

The Ministry of Health and Population, along with its Department of Health Services and Divisions under Department of Health Services (DoHS) such as the Epidemiology and Disease Control Division (EDCD), Management Division (MD), National Health Education, Information and Communication Center (NHEICC), National Health Training Center (NHTC), Vector Borne Disease Research and Training Center (VBDRTC), Nepal Health Research Council (NHRC) bears significant responsibility for implementation of this plan. Additionally, other government agencies, such as the Ministry of Forests and Environment (MoFE), Ministry of Water Supply (MoWS), Ministry of Education, Science and Technology (MoEST), Ministry of Communication and Information Technology (MoCIT), Ministry of Women, Children and Senior Citizens (MoWCSC), and related agencies such as Department of Environment (DoE), Department of Water Supply and Sewerage Management (DWSSM), Department of Hydrology and Meteorology (DHM) and National Disaster Risk Reduction and Management Authority (NDRRMA) etc. will conduct various programs with the support and coordination of government agencies. In addition, technical and financial support from

the World Health Organization and other development partners will play a crucial role in the successful implementation of this plan.

The provincial governments will allocate sufficient resources at the provincial level for the implementation of this adaptation plan, implement the plan and ensure necessary coordination with relevant agencies and stakeholders. Similarly, since the local-level plays a major role in the adaptation and mitigation, the HNAP will be implemented under the leadership of rural/municipality chief with the participation of multi-stakeholder agencies, community-based organizations, educational institutions, media, civil society organizations, and various organizations.

The major implementation strategies are described as below:

1. Conduct advocacy, awareness and capacity building programs as needed in coordination and collaboration with the concerned agencies for mitigation and resilient based on the impacts of climate change at the federal, provincial and local levels.
2. Include climate change-related topics in the curriculum and broadcast information on climate change and health through various media and social networks.
3. Conduct studies, research and mapping of health risks that may occur due to climate change in addition to surveillance and survey of the main environmental health risks.
4. Strengthen of rapid early warning and rescue system by developing and expanding climate-informed surveillance system through federal government coordination and provincial government initiation and local government involvement.
5. Enhance the capacity of service provider health institutions, laboratories, human resources by coordinating with other stakeholders to control climate sensitive diseases and health risks.
6. Produce skilled manpower and develop the modern technology and systems through regulatory agency for the construction of environment friendly physical infrastructure.
7. Implement climate change resilient health services, water supply systems and sanitation services with a focus on social inclusion (including children, youth, women).
8. Conduct programs and managing financial resources in coordination with multi-stakeholder agencies through a one-door system on climate change and health.
9. Include the climate adaptation topic in all health-related policies.
10. Provide basic information related to climate change and health through continuous study and research.

Integrate the innovative efforts related to climate change and health at the national and international levels and make policy arrangements in the three levels of government to mainstream them as needed.

Monitoring and Evaluation

It is necessary to monitor on regular basis and evaluate from time to time for the effective implementation of the HNAP activities. Therefore, the Ministry of Health and Population is responsible for the overall monitoring and evaluation of this plan. The steering committee under the coordination of the Ministry of Health and Population will conduct the necessary monitoring and evaluation for the effective implementation of the proposed activities in the climate adaptation plan of health sector and will also provide policy guidance. The Technical Working Group within the Health Coordination Division will coordinate and collaborate on technical works related to environmental health activities and programme. In addition, the TWG will regularly monitor and conduct the mid-term and the final evaluation on the basis of the indicators of this plan for the implementation of HNAP in accordance with the National Adaptation Plan (NAP). The MoHP will prepare and implement the indicators related to monitoring and evaluation. In this order, the agencies under the MoHP are responsible for work progress as well as modifying and resolving the implementation aspects.

In order to facilitate the monitoring and evaluation of this national plan, the following strategic indicators have been determined to achieve each objective.

Objectives	Strategic Indicators (Indicators)
Objective 1. Raise awareness, advocacy and build capacity on climate change.	• Number of climate change and health related advocacy package • Number of advocacy meeting • Annual plan and budget for climate change and health risks in the Annual Work Plan and Budget (AWPB) • Number of National level conference • Number of information, education and communication materials • Number of messages broadcasted through mass media • Community involvement in climate change adaptation / Number of operational programs conducted / Number of beneficiaries • Number of risk communication for prevention and mitigation of epidemics and pandemic caused by climate change • Number of participants who received MToT • Number of trained health service providers, policy makers and managers at federal, provincial and local levels • Number of training received on climate change. • Number of curricula covering topics related to climate change and health • Number of necessary communication related to climate sensitive disease surveillance system
Objective 2. Manage the identification, prevention, control and treatment system of climate sensitive health risks including development of disease surveillance, preparedness and response system.	• List of institutions, mapping and roster of experts • Number of researchers receiving funds to conduct research study on health risks of climate change • Updated data on climate sensitive diseases of federal and provincial hospitals and public health laboratories • Additional services for diagnosis of climate sensitive diseases in federal and provincial hospitals and laboratories • Number of hospitals and laboratories with necessary infrastructure for diagnosis and treatment of climate sensitive diseases • Development of climate informed climate sensitive disease surveillance and forecasting systems • Training provided to sentinel sites, laboratories, other health institutions or stakeholders

Objectives	Strategic Indicators (Indicators)
	• Potential epidemics and outbreaks are predicted by developing surveillance system • Integrated digital information system developed and updated • Climate-sensitive health emergency management teams at various levels have been expanded and practical drill conducted
Objective 3. Develop and promote environment friendly and climate-resilient physical structures and technologies.	• Implementation of programs related to climate resilient and low carbon solutions • Environment friendly and climate resilient physical structure construction guidelines prepared • Review if health infrastructures are environment friendly and climate resilient • Assessment and Evaluation of climate resilience of health institutions • Use of environment friendly and climate resilient physical structure construction guidelines for new health institutions • Make health institutions environmentally friendly • Number of health facilities with clean water and total sanitation • Number of Environment, Gender, Child and Disability (GESI) Friendly toilets • Number of health facilities with environment friendly, health care waste management • Number of health facilities with collection and use of rainwater
Objective 4. Mainstream climate change adaptation in health policies, strategies, and plans at federal, provincial, and local levels.	• Conducted integrated climate resilient health programs • Climate adaptation strategies are identified and prioritized • Climate change and health related issues included in policies at different levels • Partnership with various agencies to develop plan • Communication and technology friendly climate sensitive disease surveillance system • SoP and protocols prepared at various levels • Capacity building for climate sensitivity at various levels • Integrated programs related for emergency management teams at various levels • Number of policies, strategies incorporating climate adaptation • Number of climate adaptation programs • Status of inclusion of climate adaptation in review and revision • Number of innovative programs related to climate change and health
Objective 5.Collaborate and coordinate with multi-stakeholders to minimize health risks through study, research and knowledge promotion on climate change and health.	• Roster and mapping of institutions and experts and updated annually • Coordination and collaboration with multi-stakeholder agencies • Conducted multi sectoral collaborative study and research • Study and research funds allocation in the Annual Work Plan and Budget (AWPB). • Multilateral and bilateral fund creation and resources mobilized

Financial aspects

A total of 20 major programs and 62 activities have been proposed to achieve the 5 objectives mentioned in this plan. The estimated cost for these activities is Rs. 96,85,00,000/- (ninety-six crore eighty-five lakh), equivalent to 7.3 million US dollars in 2023 prices. The activities of this plan will be implemented as short-term (2023-2024) and long-term (2025-2030) and the corresponding estimated costs are presented in the table below.

Table 1: The estimated cost for the implementation of Health National Adaptation Plan

Objectives	Short term (2023-2024)	Long term (2025-2030)	Total Budget (in 1000)
1. Raise awareness, advocacy and build capacity on climate change.	23,600	51,800	75,400
2. Manage the identification, prevention, control and treatment system of climate-sensitive health risks including development of disease surveillance, preparedness and response system.	44,000	174,100	218,100
3. Develop and promote environment friendly and climate-resilient physical structures and technologies.	34,000	408,000	442,000
4. Mainstream climate change adaptation in health policies, strategies, and plans at federal, provincial, and local levels.	19,300	71,200	90,500
5. Collaborate and coordinate with multi-stakeholders to minimize health risks through study, research and knowledge promotion on climate change and health.	30,500	112,000	142,500
Total	**151,400**	**817,100**	**968,500**

In addition, domestic, international and multilateral financial resources will be mobilized for the successful implementation of this plan with the following provisions.

- The main source of the budget will be allocated from the funds received from the national sources of the Government of Nepal and regular budget of the sectoral ministries, provincial government, local governments and departments for the implementation this HNAP.
- The Government of Nepal will manage financial aid and other sources through UNFCCC mechanisms and international bilateral and multilateral organizations. Multilateral development partners such as World Bank Group, Asian Development Bank, FCDO, USAID, GIZ, World Health Organization etc. can be important funding sources for implementing this adaptation plan.
- The National Climate Change Policy 2076 states that the national resources will be identified for the implementation of climate change related policies and all resources will be mobilized in a just manner by increasing access to international financial resources. Therefore, the Ministry of Health and Population will secure the budget for this adaptation plan by submitting proposals to the Climate Fund such as the Global Environment Facility (GEF), Green Climate Fund (GCF), Adaptation Fund, the Least Developed Countries Fund (LCDF), the Special Climate Change Fund etc.
- For implementing this adaptation plan, other national and international organizations can be encouraged to mobilize financial support and coordinate with the National Adaptation Plan (NAP).

Action Plan for Climate Change Health Adaptation Strategy (2023-2030)

1. Raise awareness, advocacy and build capacity on climate change.

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
1.1. Advocacy on climate change and its impacts on health	1.1.1. Encourage to integrate climate change related issues in health programmes through development of advocacy materials and policy brief on climate change and health risks	Continue from 2023	• Ministry of Health and Population (MoHP) • National Health Education Information and Communication Centre (NHEICC)	• National Health Training Center (NHTC) • World Health Organization (WHO)	• An integrated advocacy package is developed by preparing separate materials at three levels (Federal, Provincial and Municipality) • Plan and budget for information and communication on climate change and health risks are included in annual work plan and budget (AWPB)	8000	2000	6000
	1.1.2. Advocacy with stakeholders on climate change and health at the federal, provincial and local levels	Regular	• NHEICC • MoHP	• Provincial and local level health section	• No. of …. meetings per year with different ministries and stakeholders at federal level • No. of …..… meetings per year with different ministries and stakeholders at the provincial level (in all 7 provinces) • No. of …… meetings with stakeholders at the local level	5000	2500	2500

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	1.1.3. Organize a national conference on climate change and health	2024 & 2030	• MoHP	• WHO • Ministry of Forests and Environment (MoFE)	• Two national conferences are organized by 2030	3000	1500	1500
1.2. Raise public awareness on climate change and its impacts on health	1.2.1. Develop Information, Education and Communication materials on the effects of climate change and potential protective measures and disseminate and broadcast through various media.	Regular	• NHEICC	• Ministry of Communication and Information Technology (MoCIT)	• Plan and budget for disseminating and broadcasting information and message on climate change and health risks are included in the Annual Work Plan and Budget (AWPB). • Websites, apps, social networks, other digital media, PSA and other media are used	2400	600	1800
	1.2.2. Disseminate information and messages related to climate change and health risks through mass media (Radio Nepal, Nepal TV and other TV, newspapers and FM radio), mobile etc.	Regular	• NHEICC	• Ministry of Communication and Information Technology	• … No. of information and message on climate change and health risks are broadcasted per year	800	200	600

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	1.2.3. Conduct awareness campaigns on climate change and health at the school level	Regular	• NHEICC	• Ministry of Education, Science and Technology	• 10 awareness campaigns are conducted per year	4000	1000	3000
	1.2.4. Conduct public awareness programs focusing on the health of women, elderly and children, differently abled groups and vulnerable communities	Regular	• NHEICC	• Ministry of Women, Children and Social Welfare	• ……No. of public awareness programmes are implemented per year in all 7 provinces	3500	500	3000
1.3. Enhance the capacity of the Ministry of Health and Population and related health service providers	1.3.1. Develop and update the various training materials related to climate induced health risks, and develop and update roaster of trainers through organization of MTOT/ TOT	2023-2024	• NHTC • Provincial Health Training Center	• WHO	• 5 training materials on climate induced health risks are developed and updated • Trainings are provided to 100 training providers and trainers per year • Roaster of training providers and trainers is developed and updated	3000	3000	0

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	1.3.2. Provide training on climate and health risks to health service providers, policy makers, managers and other health professionals at federal, provincial and local level	Regular	• NHTC • PHTC	• WHO	• Training is provided to 500 health service providers, policy makers, managers and other health workers per year	40000	10000	30000
	1.3.3. Advocacy to include and update climate change and health related subjects in curriculum of different levels	2025	• MoHP	• Ministry of Education, Science and Technology • Curriculum Development Center of School and University	• Climate change and health related issues are included in the curriculum of 8, 9 and 10 classes and university	500	500	0
	1.3.4. Revise and update the curriculum of climate change and health related subjects for general administrative training and service entry, and in-service training	Regular	• NHTC	• Nepal Administrative Staff College • Ministry of Education, Science and Technology, Curriculum Development Centre (CDC)	• Climate change and health subjects are included in the curriculum of general administrative, service entry, and in-service training	800	200	600

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	1.3.5. Capacity building of hydrometeorology, drinking water and other stakeholders on the identification and management of climate-related health risks	Regular	• MoHP • DoHS • Epidemiology and Disease Control Division (EDCD)	• Federal and Provincial Health Ministry and local level • NHTC • National Disaster Risk Reduction and Management Authority (NDRRMA) • DHM • DWSSM	• Training are provided to 160 people	1600	400	1200
1.4. Strengthen the information and communication mechanism related to climate sensitive disease surveillance and Early Warning System	1.4.1. Include suggestion and recommendation related with weather-based health risks in the weekly EWARS bulletin	Regular from 2024	• EDCD	• Federal and Provincial Health Ministry and local level • DoHS • DHM • WHO	• Early warnings of climate sensitivity are included in weekly EWARS bulletin	800	200	600
	1.4.2. Communicate messages on climate sensitive diseases surveillance, forecasting and early warnings through bulletins, various websites, apps and social networks on regular basis	Regular from 2025	• MoHP • DoHS • EDCD • NHEICC	• DHM • WHO		2000	1000	1000
					Total	**75400**	**23600**	**51800**

2. Manage the identification, prevention, control and treatment system of climate sensitive health risks including development of disease surveillance, preparedness and response system.

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
2.1. Document and update climate sensitive health risks	2.1.1. Update the national Vulnerability and Adaptation Assessment Report on climate change and health	Update in 2028	• MoHP	• WHO	• Vulnerability and Adaptation Assessment report is updated.	2500	0	2500
	2.1.2. Prepare Provincial level Vulnerability and Adaptation Assessment Report on climate change and health	Prepared in 2028 and update in every 5 years	• Provincial level health related ministry	• MoHP	• Vulnerability and Adaptation Assessment report is prepared at provincial level	10500	0	10500
	2.1.3. Facilitate the preparation of local level Vulnerability and Adaptation Assessment Report based on the climate sensitive health risks and needs	Regular	• Municipality / Rural municipality	• MoHP • Provincial level health related ministry	• Vulnerability and Adaptation Assessment report is prepared at local level	10500	0	10500

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
2.2. Develop action plan and implement for minimizing potential climate sensitive health risks after their mapping	2.2.1. Identify and map the potential risks at the provincial health system	Regular from 2024	• Provincial level health related ministry	• MoHP • National Disaster Risk Reduction and Management Authority (NDRRMA)	• Mapping and listing of potential risks to the health system	3500	500	3000
	2.2.2. Implement risk reduction programs by formulating an action plan with confirmed financial resources	Regular from 2024	• Disaster and health related ministry/ offices at federal, province and local level	• Development partners	• …Nos of implemented risks reduction programs per year as per action plan	3500	500	3000
2.3. Strengthen the diagnosis and curative system of climate sensitive diseases at provincial level	2.3.1 Strengthen the diagnostic capacity of climate sensitive diseases in federal and provincial hospitals and public health laboratories	Regular from 2024	• MoHP • Provincial Health Ministries • Provincial and federal hospitals • National Public Health Laboratory (NPHL) • Provincial Public Health Laboratories	• Epidemiology and Disease Control Division (EDCD) • Rural Municipality/ Municipality	• Diagnostic capacity of climate sensitive diseases is strengthened in at least 1 laboratory in each province • Data on climate-sensitive diseases are updated in federal and provincial hospitals and public health laboratories • Number of hospitals and laboratories with necessary infrastructure for the diagnosis and cure of climate-sensitive diseases • Number of trained employees in the provincial laboratories	14000	0	14000

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	2.3.2. Enhance the curative and management capacity (data, human resource, physical infrastructure, curative service, budget) of climate sensitive diseases in the federal and provincial hospitals					7000	0	7000
	2.3.3. Increase the capacity of laboratories for the rapid sample collection, diagnosis/ data recording and reporting of climate sensitive diseases					5000	2000	3000
2.4. Strengthen the existing surveillance system as a climate sensitive disease surveillance, forecasting and rapid response system through the use of appropriate technology	2.4.1. Expand and upgrade the climate-informed climate-sensitive disease surveillance and forecasting system by incorporating weather information into the currently running health rapid surveillance system	Regular	• EDCD	• DoHS • DHM • Provincial Health Ministry • Provincial Health Directorate • Local level • WHO	• Climate informed climate sensitive disease surveillance and forecasting system is upgraded • Developed in existing 118 sentinel sites	23600	6000	17600

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	2.4.2. Strengthen the data collection, management and reporting capacity of health institutions (e.g. sentinel sites, laboratories) and stakeholders (e.g. DHM and DWSSM) on climate sensitive disease surveillance and forecasting systems.	Regular from 2023	• EDCD	• WHO	• Training are provided in ….. no. of sentinel sites per year • Training are provided in ….. no. of laboratories per year • Training are provided in ….. no. of other health institutions and stakeholders	8000	2000	6000
	2.4.3. Strengthen climate sensitive disease surveillance and forecasting system in an integrated manner by collecting, managing and analyzing the necessary data from health institutions operated by the government and other agencies	Regular from 2023	• EDCD	• MoHP • DHM • WHO	• Data-based climate sensitive disease surveillance and forecasting bulletin is prepared	4000	1000	3000

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	2.4.4. Establish necessary digital infrastructure (internet, computer, software etc.) in health institutions for information, communication and technology friendly climate sensitive disease surveillance system	Regular	• EDCD	• MoHP • WHO	• Necessary digital infrastructure is developed in health institutions for climate sensitive disease surveillance	16000	4000	12000
	2.4.5. Prepare SOPs, protocols related to climate sensitive diseases early warning and response systems	As per need from 2024	• EDCD	• MoHP • NDRRMA • WHO	• SOPs / protocols related to climate sensitive disease warning, response system is prepared and updated	1000	1000	0
	2.4.6. Forecast climate-sensitive diseases and potential health risk, outbreaks/epidemics through modeling of extreme climate events	Regular from 2026	• EDCD	• MoHP • NDRRMA • DHM • WHO	• Potential epidemic, disaster is predicted	5000	5000	0

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	2.4.7. Develop and strengthen the surveillance system of water, air, food and vector borne diseases	Regular from 2024	• EDCD	• MoHP • MoFE • DWSSM • Vector Borne Disease and Research Training Centre (VBDRTC) • Department of Environment • Department of Food Technology and Quality Control • WHO	• Surveillance system is developed	8000	2000	6000
	2.4.8. Integrate reporting from all surveillance systems into an integrated digital information system	Regular from 2026	• DoHS (IHIMS)	• Federal and provincial health and home ministry and local level (relevant organization and other government agencies)	• Information of all surveillance systems is incorporated in integrated system • Integrated digital information system is updated	4000	0	4000
2.5. Emergency management, identification of medical teams and their capacity enhancement	2.5.1. Enhance capacity for response at local level	Regular from 2024	• EDCD • Federal and provincial health and home ministry and local level (relevant organization and other government agencies)	• MoHP • Federal and provincial health and home ministry and local level (relevant organization and other government agencies) • District Administration Office	• Number of trained rapid response teams (RRT) • List of resource details	80000	20000	60000

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	2.5.2. Mobilize health service providers and Rapid Response Teams (RRTs) with needs-based modification for climate sensitive health emergency management	Regular from 2025	• Health Office • EDCD	• MoHP • Federal and provincial health and home ministry and local level (necessary organization, other government agencies) • Health Directorate • NDRRMA	• Climate sensitive health emergency management team is prepared in every province	6000	0	6000
	2.5.3. Conduct regular exercises and practical drill for reduction of potential climate induced health risks ensuring readiness of health service providers and Rapid Response Teams (RRTs)	Regular from 2025			• ..... no. of practical exercises conducted at every level per year	6000	0	6000
					Total	**218100**	**44000**	**174100**

3. Develop and promote environment friendly and climate-resilient physical infrastructure and technologies.

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
3.1. Promote concept of climate resilient and low carbon sustainable health systems and facilities	3.1.1. Develop and expand climate resilient and low-carbon solutions in health service centers	Regular from 2026	• DoHS (Management Division)	• MoFE • MoHP • WHO • Development partners	• …… nos. of health institutions with developed and expanded climate resilient and low carbon solutions	140000	0	140000
3.2. Prepare guidelines for the construction of environment-friendly and climate-resilient physical infrastructures	3.2.1. Review the existing infrastructure by preparing guidelines on building environment friendly and climate resilient physical infrastructures	2025	• DoHS (Management Division)	• WHO	• Environment friendly and climate resilient physical infrastructure construction guidelines is prepared • Reviewed existing physical health structure for environment friendly and climate resilient	2000	2000	0
3.3. Convert the buildings of health service providing institutions into environment friendly	3.3.1. Evaluate the climate resilience and environmental friendliness of existing health physical infrastructures based on the guidelines	From 2026 to 2028	• DoHS (Management Division)	• Ministry of Urban Development (MoUD) • Department of Urban Development and Building Construction (DUDBC) • WHO	• 1200 health institutions are evaluated	12000	0	12000

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	3.3.2. Apply management measures to reduce climate risks in healthcare facilities based on the guidelines	Regular from 2027	• DoHS (Management Division)	• WHO • Development partners	• ……. no. of existing health facilities are improved	50000	0	50000
3.4. Convert healthcare facilities environment friendly (pollution, drinking water and waste management)	3.4.1. Conduct testing of water quality on regular basis by ensuring adequate and safe drinking water in healthcare facilities	From 2024 to 2030	• Healthcare facilities and relevant agencies	• Ministry of Water Supply (MoWS) • MoFE • MoUD • Ministry of Energy, Water Resources and Irrigation • DoHS (Management Division) • Local level	• …… no. of environment friendly healthcare facilities	40000	10000	30000
	3.4.2. Construct adequate nos. of environment friendly, gender and disabled friendly toilets in healthcare facilities					40000	10000	30000
	3.4.3. Manage plantation around the healthcare facilities, green beautification and adequate open space					8000	2000	6000

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	3.4.4. Manage collection, use and harvesting of rainwater					30000	10000	20000
	3.4.5. Promote renewable energy in healthcare facilities together with adopting necessary measures to mitigate air pollution					60000	0	60000
	3.4.6. Manage chemical safety, wastewater and healthcare waste in healthcare facilities in a proper way					60000	0	60000
	3.4.7. Facilitate the promotion of environment friendly and healthy cities					8000	2000	6000
					Total	**442000**	**34000**	**408000**

4. Mainstream climate change adaptation in health policies, strategies, and plans at federal, provincial, and local levels.

Actions	Activities/ Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
4.1. Modify health policies, strategies, plans and related activities at federal, provincial, and local levels climate friendly	4.1.1. Integrate and develop climate resilient issues in health policies and programs	Regular from 2024	• MoHP	• Concerned ministries • WHO	• ……. no. of health policies and programs with consideration of climate resilient issues	5000	1500	3500
4.2. Initiate the inclusion of climate change issues in other sectoral policies, strategies and plans	4.2.1. Integrate climate change and health related issues in the federal, provincial and local level policies	Regular from 2024	• 3 tiers of government	• MoHP • Development partners	• ….. no. of policies at different levels with consideration of climate change and health issues	5000	1500	3500
	4.2.2. Develop climate resilient health system in partnership with civil society, private sector and donor agencies	Regular from 2024	• MoHP	• Policy Research Institute (PRI) • WHO • Development partners • Civil society and private sector	• ….. no. of agencies with partnership	2000	300	1700
4.3. Facilitate the formulation of a Health Adaptation Plan (HAP) at the provincial and local levels as per the requirement	4.3.1. Develop plan for high health- risk areas based on the assessment	From 2025 to 2030	• Provincial and local level	• MoHP (Health Coordination Division) • Ministry of Federal Affairs and General Administration (MoFAGA) • WHO	• ….. no. of developed plans	3000	0	3000
	4.3.2. Encourage participation of health workers and other stakeholders in developing climate resilient plan					2000	500	1500

Actions	Activities/ Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
4.4. Develop strategies for early warning and response systems for climate sensitive diseases	4.4.1. Develop climate sensitive disease surveillance system at federal, provincial and local level information, communication and technology friendly	Regular	• MoHP • Provincial and local level health agency	• Federal, provincial and local level (relevant organization, other government agency) • Health Directorate • NDRRMA	• Climate sensitive disease surveillance system is information, communication and technology friendly	40000	10000	30000
	4.4.2. Prepare SOP and protocols for the development of data management systems at federal, provincial and local level for climate sensitivity	Regular from 2024			• …. no. of SoP and protocols are developed at different levels	3500	500	3000
	4.4.3. Develop plans and programs on capacity building of climate sensitivity among health service providers at the federal, provincial and local level	Regular from 2025			• ….. no. of health service providers are capacitated at different levels	30000	5000	25000
					Total	**90500**	**19300**	**71200**

5. Collaborate and coordinate with multi-stakeholders to minimize health risks through study, research and knowledge promotion on climate change and health

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
5.1. Prepare list and map institutions, universities, experts and stakeholders working on climate change and health research	5.1.1. Prepare list of institutions, map and develop a roster of experts	Update regularly from 2025	• Nepal Health Research Council (NHRC)	• MoHP • NHTC • WHO	• Institutions and experts are mapped • A roster of institutions and experts prepared and updated	1500	500	1000
	5.1.2. Collaborate and coordinate with researchers, institutions and multi-stakeholder agencies for studies, research and knowledge promotion on climate and health	Regular	• MoHP (Health Coordination Division)	• MoFAGA • NHRC • WHO	• …. no. of multi-stakeholder agencies with collaboration and coordination	3000	1000	2000
5.2. Conduct study and research on climate change and health sector	5.2.1. Manage resources for researchers to conduct study and research on the health risks of climate change	Regular	• MoHP	• NHRC • Medical Education Council • WHO • Development partners	• Fund is allocated for study and research in AWPB • …no. of institutions that allocated fund for study and research	6000	1500	4500

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	5.2.2. Conduct study and research on the interrelationship of climate and disease sensitivity, trends, forecasting, early warning, preparedness, response and impact mitigation etc. by using climate sensitive disease surveillance system	Regular	• MoHP • EDCD • NHRC	• DHM • WHO	• …. no. of study and researches per year	10000	2000	8000
	5.2.3. Conduct study and research on the effects of climate induced extreme weather events such as heat waves, cold waves, droughts, floods, etc. on human health	Regular	• MoHP • EDCD • NHRC	• Ministry of Home Affairs (MoHA) • DHM • WHO		4500	1500	3000
	5.2.4. Update working areas and topics related to climate change related disease and research	Update regular from 2026	• NHRC	• MoHP • EDCD • DHM • WHO	• Once in two years	1500	0	1500

Actions	Activities/Measures	Time frame	Responsible agency	Collaborating agency	Indicator	Budget (in 1000)	Time frame of budget (AD)	
							Short term (2023-2024)	Long term (2025-2030)
	5.2.5. Conduct study and research on climate change and non-communicable diseases (NCD), mental health, sexual reproductive health, disability, malnutrition, gender equality, equity etc.	Regular from 2025	• MoHP • NHRC	• EDCD • WHO • Development partners	• …. study and research are conducted	6000	1000	5000
5.3. Manage national climate finance and expand access to international and bilateral finances	5.3.1. Develop and expand access to multilateral and bilateral climate finance	Regular from 2023	• MoHP (Health Coordination Division)	• MoF • MoFE • NPC • Development partners • WHO	• Rs ….. climate-finance mobilized	20000	2000	18000
	5.3.2. Mobilize financial resources in coordination with multi-stakeholders, e.g., agriculture, energy, education, water supply, forestry, partner organization etc.			• MoFE • Concerned line ministries • Development partners		10000	1000	9000
	5.3.3. Mobilize regular health budgets to minimize climate induced health risks	Regular from 2025	• MoHP	• MoF	• Rs…… health budget mobilized	80000	20000	60000
					Total	**142500**	**30500**	**112000**

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