ADAPTATION IN HEALTH SECTOR IN THE REPUBLIC OF MACEDONIA DUE TO CLIMATE CHANGE

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ABSTRACT

The equivalent to the national adaptation strategy is formulated inside the Second national communication to the UNFCCC (2008). Also the National Health Strategy for adaptation in health sector has been endorsement by the Government in February, 2011. Key areas for the Strategy in adapting to climate change include: adapting the health care infrastructure (hospitals, nursing homes) to be more resilient to the climate change effects. A 'Heat-Health Watch' system operates in Macedonia during the summer months, with four levels of response and appropriate advice. The health care system in the R. Macedonia has an important role in establishing adaptation, health promotion, prevention and response measures against the health risks related to climate change such as: strengthening existing public health capacities for early detection and adequate response to; anticipating the consequences of emerging diseases possibly related to climate change; and raising awareness among the general population about the possible links between climate change and health.

Key words: Climate change, Health impact, Health vulnerability, Adaptation, Republic of Macedonia

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1. INTRODUCTION

The 100-year linear trend (1906–2005) in global average surface temperature is 0.74 °C (0.56 °C to 0.92 °C). An increase of 2.3-6°C may reasonably be expected within the next 100 years, depending on the scenario in place (Bates, et al, 2008). Due to industrialization and population growth, emissions of greenhouse gases as a result of combustion of fossil fuels, deforestation and clearing land for agricultural use are increasing. During the past 150 years, greenhouse gases have been released into the atmosphere faster than the natural processes' capacity to remove them. In addition, new synthetic gases have begun emerging in the atmosphere, which it has been found also support the greenhouse effect. The concentration of such gases has been constantly increasing over recent times and it is assumed that such growth will persist in parallel to the growth of the global economy. These emissions have begun to disturb the delicate natural balance, significantly increasing the quantity of greenhouse gases in the atmosphere and their isolating effect. The global atmospheric CO_2 concentration has increased from a pre-industrial value in 1750 of about 280 parts per million (ppm) to 386.3 ppm in 2009 (Tans, 2010). Climate change is perhaps the most significant environmental problem which mankind will face in the coming century. Efforts to reduce the extent of climate change at global and local levels are of course important, but it is likely that we will have also to deal with at least some impacts on health.

Climate change associated diseases are estimated already to comprise 4.6% of all environmental risks related diseases. It has been estimated that climate change in the year 2000 contributed to about 2.4% of all diarrhoea outbreaks in the world, 6% of malaria outbreaks in certain developing countries and 7% of the episodes of dengue fever in some industrial countries. In total, the estimates show that mortality due to climate change has been 0.3%, whereas the related burden of disease has been 0.4% (WHO, 2002).

There are several mechanisms by which climate can affect health. Extremes of temperature and rainfall, e.g., heat waves, floods, and drought—have direct immediate effects on mortality as well as longer-term effects. For example, populations that have experienced flooding may suffer from sustained increases in common mental disorders (Ahern, et al, 2005).

In meteorological terms, a heat wave is defined as a prolonged period of unusually hot weather. To date, a standard definition of heat wave has not been agreed upon and different definitions have been used to evaluate its impact on health (Michelozzi, et al, 2004). Climate change projections for Europe show that over the next century, heat waves will become more frequent, intense and will last longer and these changes could contribute much more to the burden of disease and premature deaths, particularly in vulnerable populations with limited adaptation resources (IPCC, 2007). Considering this latest IPCC Assessment Report, climate change predictions for Europe show an increase in the frequency and the intensity of heat waves, especially in central, southern and eastern areas and as consequence heat-related mortality will become a relevant threat even in cities usually not exposed to extreme hot temperatures.

Nowadays, a wide range of events shape the behaviour and social interactions of the human host. The spread of childhood communicable diseases mirrors school calendars and congregate activities. Holidays spur travel and novel social "mixing patterns," increasing the spatial distribution of disease transmission, even more efficiently vectored through packed planes and other modes of mass transportation.

Seasonal shifts in immunity and host susceptibility, exacerbated by increased exposure through crowds during the colder months, will also increase patterns of infectious disease spread (Altizer, et al, 2008). Research on the health impacts of climate change addresses three main topics: current associations between climate and disease, the effect of recent changes in climate, and the evidence base for projecting the future impacts of climate change on health. Temperatures have been increasing globally for the past two to three decades. The detection and attribution of health effects to these changes has become a key research challenge (Kovats, et al, 2001). Climate warming is projected to continue and accelerate, so that by the end of this century global mean temperature will have increased and the effects on health at the upper end of the range are more difficult to predict and likely to be more seriously adverse.

2. CLIMATE CHANGE IN THE R. MACEDONIA: THE EVIDENCE

R. Macedonia is a Party to the United Nations Framework Convention on Climate Change and non-Anex I country, and which in absolute terms is not major emitter of greenhouse gases, respects the principle of the Convention for common but differentiated responsibilities in stabilization of atmosphere concentrations of greenhouse gases in the atmosphere. This commitment of the Republic of Macedonia is expressed on more levels: strategic, legislative, institutional, technical and of course under cooperation on bilateral, regional and global levels. The issue of climate change is addressed in the National Strategy for Sustainable Development of the country, as an issue which has influences on many sectors (energy, agriculture, water recourses, human health, bio-diversity…). Also, the second National Environmental Action Plan deals with climate change. The second National Communication on Climate Change presents the condition in the country In aspect of emissions of greenhouse gases (Inventory of greenhouse gases), but at the same time represents a framework in which the state measures for reducing (mitigation) and adaptation to climate change are defined (MoEPP, 2008). The development of the components of the National Communication on Climate Change is also a law obligation pursuant to the Law of Environment. The Republic of Macedonia, as a country which has ratified the Kyoto Protocol to United Nations Framework Convention on Climate Change, recognizes the posibilities of achieving the goals of sustainable development by taking advantages for carbon funding through availing one of the mechanisms of the Protocol, so called mechanism for clean development. Pursuant to the first analyses, the potential for reduction is calculated on 4Mt CO2eq/year, which translated in potential for carbon funding (with averaged price from 6-9 Euro/ton reduced CO2eq reveals between 24 and 36 million euro per year. As described in the Second National Communication to the UNFCCC the mean annual air temperature has increased over the last 30 years. A decrease of precipitation has been recorded over the last twenty years. Changes of the main climate elements (temperature and precipitation) have been projected up to the year 2100. The largest increase of air temperature in the R. Macedonia is expected in the summer season, associated with a strong decrease in precipitation. The period 1971-2000 at the annual level was warmer than the period 1961-1990. Differences of average mean annual air temperatures for the mentioned thirty-year periods are in the range of -0.1 ^{0}C to 0.2 ^{0}C. The highest values of mean annual deviations of the air temperature are recorded in the sub-Mediterranean zone (Valandovo 0.7 ^{0}C, Gevgelija 0.5 ^{0}C, and Nov Dojran 0.2 ^{0}C). The warmest year

recorded within the territory of Macedonia was 1994, which was warmer than the general average by 2.0 ^{0}C (in Skopje), 1.8 ^{0}C (in Demir Kapija), and 1.6 ^{0}C (in Bitola). Significantly higher mean annual temperatures were also recorded for 1999, 2002, and 2003, with most dramatic variations of the temperature recorded during the summer period. The absolute maximum air temperature was recorded in July 2007, with a recorded 45.7^{0}C in Demir Kapija and 45.3^{0}C in Gevgelija. The absolute minimum air temperature of -30.4 ^{0}C was measured in January 1993 in Bitola. Precipitation is generally characterized by uneven spatial and temporal distribution over the country, because of the complex orography which affects the pluviometric regime during the months, seasons, and years. Such a distribution is accompanied by the alternating periods of long droughts and of high-intensity rainfalls. These dramatic alterations contribute to soil erosion and land degradation. The most precipitating area is the area of mountain massifs in the western Macedonia, the area of mountains Sar Planina, Bistra, and Stogovo as well as mountain massifs Jakupica with its peak Solunska Glava and Baba with its peak Pelister, where the annual precipitation sum is about 1000 mm. The most arid areas are Ovce Pole, Tikves, and surroundings of Gradsko with an annual precipitation sum of about 400 mm. At the annual level, in the last twenty years compared to the period 1961-90, a decrease of precipitation has been recorded, especially in 1988-1990, 1992-1994, 2000, and 2001. The greatest annual sum of sunny hours appears in the central and southern part of Povardarie with about 2,400 hours, while on the mountain massifs this sum is about 2,200 hours (MoEPP, 2008). To describe the relationship between large-scale climate variability across south-east Europe and local-climate variability in Macedonia were used as the simulations of future climate with Global Circulation Models which are based on a limited number of emission scenarios, usually SRES A2 and B2, the local climate change projection, developed for the first time, was additionally scaled to other marker SRES emission scenarios (A1T, A1b, A1Fl, B1) using the pattern scaling method (Tab. 1) (Bargant, 2006).

Table 1. Projected changes in average daily air temperature (°C) and precipitation (%) for the Republic of Macedonia, based on direct GCM output interpolated to geographic location 21.5 o E and 41.4 o N (base period 1990)

	Average temperature change [°C]				Precipitation change [%]			
	annual				annual			
Year	2025	2050	2075	2100	2025	2050	2075	2100
Low	0.9	1.6	2.2	2.7	-1	-2	-4	-5
Mean	1.0	1.9	2.9	3.8	-3	-5	-8	-13
High	1.1	2.1	3.6	5.4	-6	-7	-12	-21

Source: Ministry of Environment and Physical Planning (2008)

According to the results, the average increase of temperature in the Republic of Macedonia is between 1.0°C in 2025, 1.9°C in 2050, 2.9°C in 2075, and 3.8°C in 2100. The average sum of precipitation is expected to decrease from -3% in 2025, -5% in 2050, -8% in 2075 to -13% in 2100 in comparison with the reference period. The highest increase in air temperature by the end of the century at the country level is projected for the summer season, together with the most intensive decrease in

precipitation. In the case of precipitation, practically no change is expected in winter, but a decrease in all other seasons is. However, scientists agree that beyond a threshold of 2°C the risks of large-scale human development setbacks and irreversible ecological catastrophes will increase sharply. The region of central Macedonia, which is under a combination of continental and sub-Mediterranean climate impacts (represented by the stations at Veles, Skopje-Petrovec, Strumica, and Štip), shows a more intensive temperature change in winter and less intensive in summer and autumn compared to the region of south-east Macedonia. The highest increase of air temperature by 5.4°C for the year 2100 is expected in summer. Practically no change in precipitation is expected in the winter season and a decrease in precipitation in all other seasons, reaching the maximum value in summer (-23% compared with reference year 2000), (Alcinova, et al, 2011).

3. VULNERABILITY HEALTH ASSESSMENT IN R.MACEDONIA

Climate change is linked to human health in a complex manner. There are direct impacts, such as diseases and conditions that may result in morbidity or mortality related to extreme temperatures, and other, more indirect health effects such as diseases related to consumption of contaminated drinking water, foodborne or vector-borne diseases and zoonoses, or health conditions related to lack of food and water. Cimate change will have consequences for the health of Macedonian citizens. In 2006 the MoEPP and UNDP published a report on the Vulnerability and Adaptation of Climate Change in Health Sector (Kendrovski, 2006). This report was the first of its kind in country that it sought to provide quantitative estimates of the possible impacts of climate change on health. Climate impact assessments have pointed to higher summer-season temperatures, with increasing frequency and duration of heat waves. According to predicted scenarios for trends of mortality in the country for the period after 2035, there is estimation of increase of the monthly mortality rate for the months of April, May, June, and in average 10% compared to the period April, May, June 1995-2004. A significant difference considering the distribution by sex is not expected, i.e. the trend of four to five years of difference between men and women's life expectancy, which started in the 1960s, is expected to continue in following decades with no significant impact from climate change. Factors defining this difference are complex and determine the population's health. Drinking water and food-translated diseases could be affected by climate change. Seasonal appearance is most often noticed with peaks in summer in the cases of food poisoning. Floods, droughts, and storms bring in their wake, increased health risks, such as diarrhoea among children. Recent studies on following the food-translated diseases show that in the cases caused by salmonella there is an increase of 5-10% for every raising of the temperature by 1^0C of the weekly average outside temperature under 5^0C. For trends of salmonella as a function of monthly distribution and the influence of ambient temperature, there is a seasonal index constructed for the period 1989-2005, for registered patients having salmonella. The seasonal index by month for the period 1980-2005 in the country and the projection of the seasonal index for the year 2030 in relation to an increase of average monthly temperatures with scenarios for climate change, show that besides the two peaks in summer months which were not that significant, there is a possible peak during the colder months as a result of an increase in average monthly temperatures in the period to come.

Europe has experienced warmer summers in the past two decades and there is a need to describe the determinants of heat-related mortality to better inform public health activities during hot weather, (Kovats, Ebi, 2006). The "heat cut-point" used in Skopje analysis was 30,8 °C (95th percentile daily mean temperature). Observed mean daily values for PM_{10} and ozone were 94,43 (90,06-98,8) μg/m^3 as well as 64,66 (59,77-69,55) for 8 hr Ozone concentration μg/m^3 95%CI, respectively. Odds ratio for the variable: maximum temperatures in terms of deaths of people during the heat wave in Skopje for the summer 2007 is 1.048 which means that under conditions of heat waves by increasing the temperature of 1^0C above "heat cut-point" (30,8 °C), the mortality increases by 4.8%. Wildfires can cause significant air pollution problems over long distances. Fire caused deforestation increases the vulnerability to flood damage risk, as the natural barrear disappears. While droughts and climate changes have increased the threat of fire, negligence and inadequate fire safety measures in rural and forest regions are primary factors for the increased fire risks. Forest fires pose a relatively limited threat to urban areas due to the incombustible building typology prevalent in the country. The country experienced heavy floods in 1916, 1935, 1962, 1979, 1995 and 2004 with serious damage to residential areas and infrastructure as well as to the water supply and sewage systems. A particular problem in Macedonia are quick (flash = torrential) floods in central and southeastern part. The analyses of effects of past large flooding in Macedonia (1962, 1979) indicate that in 100 years return period flooding about 4,050 households (temporary loss of 275,700 m^2 residential area) in Skopje Valley and about 1,750 households (temporary loss of 124,500 m^2 residential area) in Pelagonia Valley will seriously be affected. Estimated population at risk is about 18,250 people in Skopje valley and about 6,560 in Pelagonia. If both flooding coincide, there is a high probability that about 30,000 populations in both valleys will seriously be affected, demanding temporary evacuation, shelter and assistance for a period of 2 to 4 weeks. The drought phenomenon on the Balkan Peninsula is a specific feature for the geographical conditions and although without a strict cyclicity, shows repeatability at 15-25 year intervals with a persistency of about 12-15 years, with short term interruptions of about 1-3 years with rainfalls above the normal values. The total direct economical damage from yield decrease for winter wheat, grape, and alfalfa will amount to almost €30 million in 2025 and will increase up to €40 million in 2100. The most dramatic projections are for yield decrease in tomatoes in Gevgelija (78% in 2050). The national Institute for Public Health (IPHRM) in 2010 has been investigated the relationship between environmental temperature and reported Salmonella infections among the population in 5 Macedonian cities (Skopje, Kumanovo, Bitola, Strumica and Veles). Salmonella cases show a strong seasonal pattern with highest number of cases in summer time. For Skopje it was estimated that the increasing of the weekly temperature of 1 ^{0}C above detected threshold of 17,9^{0}C is associated with 2,8% increasing of the number of salmonellosis cases. The projection for 2030 of the seasonal index by months for food-borne diseases caused by salmonellosis, due to air temperature rise, shows two peaks in the summer months and one possible peak in winter months because of decreasing the average monthly temperature in the future period, The impacts of climate change on aeroallergens, and in particular pollen, include impacts on pollen production and atmospheric pollen concentration, pollen season, plant and pollen spatial distribution, pollen allergenicity, and similar impacts on mould spores. Since 1993, aeropallinologic research in the country has been performed at the Institute of Occupational Health – Skopje (IOHRM). The IPHRM and IOHRM has assessed the impact of current burden of the weather maximum

temperature of the 9 pollens distribution in Skopje (Betula, Cupressaceae, Quercus, Fraxinus, Platanus, Urticcaceae, Plantago, Chenopodiaceae, Poaceae) for the 1996, 2003, 2007 and 2009. It has been found statistically significant differentiates for the Cupressaceae pollens in this investigation and maximum temperature in Skopje during whole examined years with Beta Coefficient (b=-0,23) for p=0,02, but not for other types. The pollens distribution and risk increases in 3 main periods: early spring, spring and summer which are the main cause of allergies during those seasons. The impacts of climate change via increasing of the temperature in the next decades on aeroallergens, and in particular pollens, will include impacts on pollen production and pollen season as we detect the airborne pollen spectrum, the weekly dynamics of the most important taxa, the influence of one meteorological variable as maximum temperature is and the changing distribution (onset of flowering, maximum and end of the seasons). (Kendrovski V., Spasenovska M., in press).

4. ADAPTATION AND ACTIONS IN HEALTH SECTOR

Climate Change adaptation comprises all spontaneous responses and planned action taken to cope with the impacts of, or reduce vulnerability to, a changing climate. Such adaptation is needed to tackle current problems or anticipate possible future changes, with the aim of reducing risk and damage cost effectively, and perhaps even exploiting potential benefits. Moreover, in responding to other health pressures or as a result of precautionary policy, the adaptive capacity of health systems has often been increased implicitly. A combination of adaptation and mitigation measures can reduce the health risks associated with climate change (Adger, et al, 2007). Increasingly, therefore, society and policy-makers are making preparations to counter adverse impacts and initiating dedicated adaptation action. Such adaptation action, which may be anticipatory, autonomous or planned, includes both national and regional adaptation strategies as well as practical steps taken at community level or by individuals. Adaptation for health means that a number of current measures, policies and strategies need to be revised or strengthened under the current levels of risks from climate change. Current threats have already led to the introduction of new measures and policies, such as heat health action plans. As long as the increase in global warming is less than 2°C from pre-industrial levels (and not too rapid), many of the projected effects on health are likely to be controllable by strengthening well-known, well-tested public health interventions, such as public education, disease surveillance, disaster preparedness, food hygiene and inspection, nutritional supplementation, primary care, and training. Nevertheless, the effectiveness of these actions will need to be further evaluated and assessed over time. Existing actions, policies and measures might become insufficient at higher levels of risks or in the face of more frequent and intense events, or more rapid climate change. Where capacities are weak, health systems will need strengthening. The capacities of health systems to respond vary greatly in the European Region. Health systems will need to assess potential climate-related health impacts, review existing capacities for addressing them, strengthen their functions where needed and consider the need to review some legislation, in order rapidly to detect and take action against current and future climate-related risks. Strengthen health security includes the following activities:

- maximizing synergy with already existing instruments, such as the International Health Regulation (IHR), preparing the health workforce to respond to

health-related consequences of climate change and strengthening of health services to address climate-related events in a timely manner;

- Advocating health with other sectors;
- Building capacity in the health workforce;
- Providing intelligence;
- And setting the example by "greening" the health services.

Reducing Greenhouse gas (GHG) emissions, i.e., mitigation, can have direct and immediate health, environmental and economic benefits. Employing cleaner fuels and shifting to more active transport (walking and cycling), for example, will lower carbon emissions, increase physical activity, reduce traffic-related casualties and result in less air pollution and noise. For example, money saved from not having to cover the health-care costs of air pollution and lost productivity will often match or exceed the costs of climate mitigation measures (WHO, UNEP, WMO, 2003).

In 2009, the World Health Organization, Regional Office for Europe with support of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, started conducting activities on protecting health from the climate change in 7 countries in the WHO European region, including the Republic of Macedonia, that belong to four different geo-climatic areas, with different expected health impacts from climate change. The activities within the project "Protecting health from climate change" in Macedonia are being conducted by the World Health Organization, Country Office Skopje, in collaboration with the Ministry of Health, and they have an overall goal to strengthen the capacity of the health system to respond to climate change. The activities are aimed at:

1. Assessing the risks and developing national and local health adaptation strategies;
2. Building institutional capacity on climate change in relation to extreme weather events and heat waves preparedness and response;
3. Fostering innovation in energy efficiency and the use of renewable energy for health services;
4. Raising the awareness of the health workers and the population for possible, new infectious diseases and preventive protection measures;
5. Building capacities and exchange of knowledge and experience on effective adaptation and mitigation measures for climate change.

The need for developing a Climate Change Health Adaptation Strategy for Macedonia arose from the relevance of this issue on a global, regional and national level, the necessity to prepare and respond to climate-change-associated health risks and the need for interdisciplinary cooperation and exchange of relevant data with other sectors that could contribute to improving the health status of the population in the Republic of Macedonia. The Strategy has been developed by the Climate Change and Health Commission of the Ministry of Health, comprising representatives from various sectors and endorsed by the Government in 2011 (MoH, 2011). The National Climate Change Health Adaptation Strategy of the Republic of Macedonia envisages objectives and activities that will be carried out by the health sector in cooperation with the other relevant sectors in the country. Its goal is to interlink with other strategies in this area developed by other sectors and to form part of the chain/scope of activities aimed at reducing the impact of climate change on people's health in the country. In particular, Macedonia has experienced warmer summers in the past two decades and there is a need to describe the determinants of heat-related mortality to

better inform public health activities during hot weather. One of the effects of climate change already encountered in this country is the increased frequency of heatwaves. There is evidence that it is possible to reduce morbidity and mortality through a variety of heat-wave preparedness and response activities: strengthening and conducting a heat-wave announcements and warnings system (heat-wave early warning system), strengthening preparedness and the health services response, informing the public about the possible effects of heat-waves and how to deal with them, as well as adequate civil engineering planning and housing (WHO, 2008). The Heat-health Action Plan of the Republic of Macedonia has been developed to implement adaptation measures and prevent health consequences of extreme heat caused by changing weather conditions as a result of climate change. The primary goal of the Plan is to reduce heat-related morbidity and deaths through issuing heat health warnings, with particular emphasis on the most vulnerable population groups, provide timely advice and announcements of upcoming heat-waves, raise awareness amongst the public and health workers, and coordinate and mobilize all available resources in a timely manner to prevent the health consequences of heat-waves (www.toplotnibranovi.mk). The Plan consists of activities that will be conducted by governmental representatives and institutions from the health sector as well as other relevant sectors. The aim of the Plan is to provide a multisectoral approach in the response to extreme heat, through prompt action by all institutions designated as responsible within this Plan. This document is in line with the National Platform for Disaster Risk Reduction of the country. The heat-health warning system of the Hydro-Meteorological Institute provides 48 hours advanced information to selected health authorities as part of the National Heat-Health Action Plan. This 'Heat-Health Watch' system operates in Macedonia during the summer months, with four levels of response and appropriate advices from the National Institute for Public Health and the Ministry of Health.

5. CONCLUSION

In the Republic of Macedonia over 60% of the population lives in cities. Direct hazards to human health as a consequence of global warming can represent a significant health problem in the context of further urbanization, primarly due to retention of the sun's heat by concrete and asphalt even after the sun has set ('heat island' effect). The National Climate Change Health Adaptation Strategy has been endorsement by the Government for it’s envisages objectives and activities that will be conducted by the health sector in cooperation with the other relevant sectors in the country. The general goal of the strategy is to foresee climate change adaptation measures for the health system in order to prevent and/or overcome the existing and new risks and to timely respond to the risks and problems that are expected to occur as a result of the climate change on the people’s health and wellbeing. It involves activities on building an integrated, efficient and effective approach for prevention, early warning, managing and overcoming the climate change consequences as a result of heat waves, floods, increased air – pollution, UV radiation, communicable diseases etc. Global climate change will have different consequences on health in Europe in the coming decades. Over the past few years, there has been a noticeable increase in the frequency of hot weather in many European countries. The Mediterranean and Balkan countries are especially vulnerable to heat-waves. There is evidence that it is possible to reduce morbidity and mortality through a variety of heat-wave preparedness and response activities. In order to prevent and combat

potential heat-wave health threats, the Ministry of Health, in cooperation with the World Health Organization, have prepared a national Heat-health Action Plan, including an early warning system implemented in cooperation with the Hydrometeorological Institute. The goal of this plan is:

- Early prediction of heat-waves and warning to all responsible public health and other institutions, which will contribute to timely information and taking of appropriate measures;
- Reduction of heat-wave-related morbidity and mortality through issuing heat health warnings, especially for those most vulnerable to the effects of heat-waves: the elderly, infants and children up to five years old, the chronically ill, people who are overweight, people in certain professions who work outdoors, people whose socioeconomic status makes them more vulnerable and those who are more vulnerable to the effects of heat-waves because of certain social factors (nationality, profession, education, social isolation, etc.);
- Timely coordination of currently available measures and resources for response to heat-waves;
- Raising awareness amongst the public and health workers of the effects of heat-waves on people's health.

The national Heat-health Action Plan encompasses existing and defined activities which will be conducted by Government representatives and institutions, from the health sector as well as from other sectors.

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