SUMMARY

This work is conducted within the WHO - BMU Project “Protecting Health from Climate Change” in 7 countries of the European region. It is coordinated by the WHO Regional Office for Europe, and funded by the Federal Ministry of Environment, Nature Conservation and Nuclear Safety (Germany). The duration of the pilot BMU project is 24 months.

The overall goal of the project is, to strengthen the capacity of the country in understanding the health risks of climate change and acting upon, by:

- Assessing the health risks;
- Developing a national adaptation plan of health system to climate change;
- Carrying out the communication activities according the Health promotion Action Plan;
- Training of public health and environmental health specialists;
- Equipping five medical facilities with solar equipment to pilot energy efficiency and self-sustainability in areas vulnerable to interruption in the continuous energy supply;

We report here on the risk assessment component.

The assessment of the climate change health impact to the population of the Kyrgyz Republic

Kyrgyz Republic is situated within the system of Tien-Shan and Pamir-Alay Ranges. The average altitude of the territory of the Kyrgyz Republic is 2630 m above the sea level. About 93% of the territory is at an altitude of over 1000 m, 85% - over 1500 m and about 42% - over 3000 m above the sea level (SNC of Kyrgyz Republic, 2009).

The population of the Kyrgyz Republic as of 1 January 2010 was 5,418,300.

The main climate change risks for Kyrgyz Republic according to the Second National Communication are four sections: water resources, agriculture, population health and climate-related emergencies. The vulnerability indicators were identified for water resources (glaciers parameters, volume of superficial runoff, lakes parameters); agriculture (heat availability, productivity of various types of crops and pastures); health (morbidity and mortality rate); emergency climate situations (frequency of mudflows, landslides, outbreak of high mountain lakes, avalanches occurrence).

Within the GEF/UNDP (project PIMS 3209 CC EA SNC Kyrgyzstan) preparation of the National Communication, a broad health impact and vulnerability assessment had been carried out in 2008. Projected health effects highlighted deaths and injuries from heat, floods and wildfires, changes in infectious and vector-borne disease patterns, potential nutritional changes from decreasing food yields and loss of livelihoods.

By the end of this century, higher temperatures and more frequent heat-waves are expected to increase the incidence of acute intestinal infectious diseases by 10–15%, and diseases of the circulatory system by 30-50%, compared to 2005.

Assessment methods.

The work within the BMU project identified major knowledge and additional assessment needs. The aim of the study became the assessment of the climate change related impact on the health of the Bishkek city’s population on the basis of medico-demographical and meteorological data.

The objectives of the study were:

- to carry out the analysis and assessment of population mortality data in relation to meteorological data;
- to carry out the analysis and assessment of population morbidity data in relation to cold/ heat waves;
- to carry out collection and analysis of meteorological data.

Epidemiologic methods and approaches were used taking into consideration WHO recommendations:

Global Workshop to Evaluate Guides to Assess Health Vulnerability and Adaptation to Climate Change
20-23 July 2010, San José, Costa Rica

For the analysis of climate change health impact we used climatic scenarios which are described in the sources:


Approach to organization/process/stakeholders.

For the implementation of the study on the assessment of climate change impact to health the Ministry of Health of the Kyrgyz Republic created the working group on development of the Adaptation strategy to Climate Change by MoH order No. 271 as of 25.05.2009. The program of the assessment was adopted by the by MoH order 643 of 10 September 2009 (Annex 2). Ministry of Health has several working groups on: climate change adaptation strategy in the health sector; climate change health impact assessment; climate change awareness of the population; the use of alternative energy sources in hospitals. Representatives of the Ministry of Health participate in the inter-sectoral working group and in the National Committee on Climate Change Consequences. The Ministry of Health works with different associations, NGOs, mass media and collaborates with international organizations on the problems of health protection and environment including climate change.

Specific working groups include

- Research groups: Scientific and Production Centre for Preventive Medicine (SPCPM) of the Ministry of Health of the Kyrgyz Republic (KR); Academician M. Mirrakhimov National Centre of Cardiology and Therapy (NICT).
- Stakeholders: City Bishkek Emergency Care Station; Republican Medical Information Centre; National Statistical Committee; Kyrgyzhydromet under the Ministry of Emergency Situations of KR; Republican and city archives of the Civilian Registry Office; Institute of Physiology & High Altitude Pathology of the National Academy of Sciences of the Kyrgyz Republic.
- Co-ordinators of the BMU project: Dr. Bettina Menne (WHO Regional Office for Europe); Dr. Oskon Moldokulov and Dr. Arthur Buyuklyanov (WHO Country Office in Kyrgyzstan).
- The leader of the Working Group for the assessment of climate change health impact is Dr. Ainash A. Sharshenova, head of the Dept. of Environmental Health of the SPCPM of the MoH of the Kyrgyz Republic.

Technical scope and major findings of the assessment

To calculate expected levels of health of the population using two scenarios of emissions A2-ASF and B2-MES by regions, prognostic estimations of temperature and average annual amount of precipitation based on data from the corresponding whether stations were used. The analysis showed that the probable increase in annual temperatures will be 4,5…8,4°C (scenario A2) и 3,5…6,1°C (scenario B2) and the probable change in annual precipitation totals will be -43,4%…59,9% (scenario A2) and -30,9%…40,9% (scenario B2).

In earlier studies within the GEF/UNDP project the most significant association between morbidity of circulatory diseases and meteorological parameters were found for 3 out of 6 regions of the Kyrgyz Republic: Chui; Issykkul and Jalalabat Regions.

- Acute intestinal infection morbidity is expected to increase by 15.9% under scenario A2-ASF and by 10.6% under B2-MESSAGE in 2100 in relation to base parameters of disease for year 2005.
- Morbidity from diseases of the circulatory system is expected to increase in 2100 in relation to the basal period (1996-2005) for 3 regions of the KR under climatic scenarios A2-ASF and B2-MESSAGE as follows:
  - Chui oblast – 69.6 % and 45.6% under scenarios A2-ASF and B2-MESSAGE respectively;
  - Issyk-Kul oblast – 13.5 % and 8.3 % under scenarios A2-ASF and B2-MESSAGE respectively;
  - Jalal-Abad oblast – 73.2 % and 37.6% under scenarios A2-ASF and B2-MESSAGE respectively.

In the framework of the BMU project health data are analyzed by gender and age groups: 0, 1-14, 15-44, 45-64, 65-74, 75 years and more.

- Morbidity indicators: Infectious (A00-B99) and non-infectious diseases (I00-I99) in Bishkek city
- Mortality indicators: all natural causes (A00-R99), non-infectious diseases (Cardiac diseases: I00-I52; Circulatory system diseases: I70-I79 and Respiratory diseases: J00-J99) in Bishkek city.
Data on morbidity of the population are collected from the registrations and calls to the Bishkek city Emergency Care Station (the years 2006-2009, more than 450000 emergency cases) and from patient records of the National Centre of Cardiology and Therapy (the years 2005-2009, more than 53000 cases). A database on more than 38000 deaths was created for the population of Bishkek city for 2003-2009 from the records of the Civilian Registry Office. Demographical data. Data of the National Statistical Committee on the average annual number of resident population by age groups and gender were prepared for use in the analysis of morbidity and mortality.

For the study of climate change health impacts meteorological parameters were used from the Kyrgyzhydromet. We analyzed meteorological data for Bishkek city (air temperature - average monthly, average daily °C; precipitation (mm); atmospheric pressure; relative air humidity) and data on atmospheric air pollutants: sulfur dioxide, nitrogen dioxide, nitrogen oxide, formaldehyde. Climate change related impact on the state of health of the population of Bishkek city was studied using two models of climatic scenarios of emissions A2-ASF and B2-MESSAGE. At the present the data obtained are in the process of analysis.

Development of the adaptation strategy and plan for climate change and health
The work on development of the Climate Change Adaptation Plan for the Health Sector is carried out by the Ministry of Health of Kyrgyz Republic and interested ministries. The Working Group on development of the CCAP for the health sector was established in May 2009 and includes different specialists (12-14 from the MoH and 10-11 from other agencies). Coordinators from the MoH - Dr. Sabirjan T. Abdikarimov (Minister); The leader of the Working Group for the CCAP for Health Sector is Prof. Omor T. Kasymov, Director of the SPCPM of the MoH of the Kyrgyz Republic.

MoH also work with the Inter-agency Group on development of the National Strategy and Climate Change Adaptation Plan in Kyrgyz Republic. The Inter-agency Group was created by the State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic in August 2009.

The key elements of the Climate Change Adaptation Plan for the Health Sector are:

- Prevention of infectious diseases
- Prevention of non-infectious diseases
- Providing safe drinking water for the population
- Implementation Food Safety measures
- Implementation of energy saving technologies in Health sector
- Capacity building of HS personnel on CC&H
- Increasing public awareness on the issues of climate change and health
- Carrying out of Scientific researches on CC&H
- Improving of monitoring and information systems with CC&H relation

Contacts:
Dr. A.A. Sharshenova (PhD)
Head of the Dept. of Environmental Health
Scientific and Production Centre for Preventive Medicine of the Ministry of Health of the Kyrgyz Republic
34 Baitik Baatyr Str.
Bishkek 720005
Kyrgyz Republic
Tel./fax: +996 312 544573
E-mail: spcpm@rambler.ru,
asharshenova@yahoo.com