

# **Activities and results: Climate Change and Sustainable livelihood of Rural People in Mongolia**

NCAP International Partner Meeting  
Netherlands, 25-30 May 2008

Project Team



Climate Change and Sustainable livelihood of Rural People in Mongolia



# Introduction

- ETC International, Netherlands and Minister of Nature and Environment (MNE), Mongolia agreed to implement project on **“Climate change and sustainable livelihood of rural people in Mongolia”** accordance with contract, which was established on 15 of August, 2005.

# Introduction

## **Project team has formulated workplan and strategy of implementation as following:**

- To collect and compile climate change research study results, which has been outlined before
- To reanalyze legislation documents and laws on adaptation to climate change
- To define negative and positive impact to the agriculture, especially, livestock sector in the country
- How country would define response regarding those challenging issues?

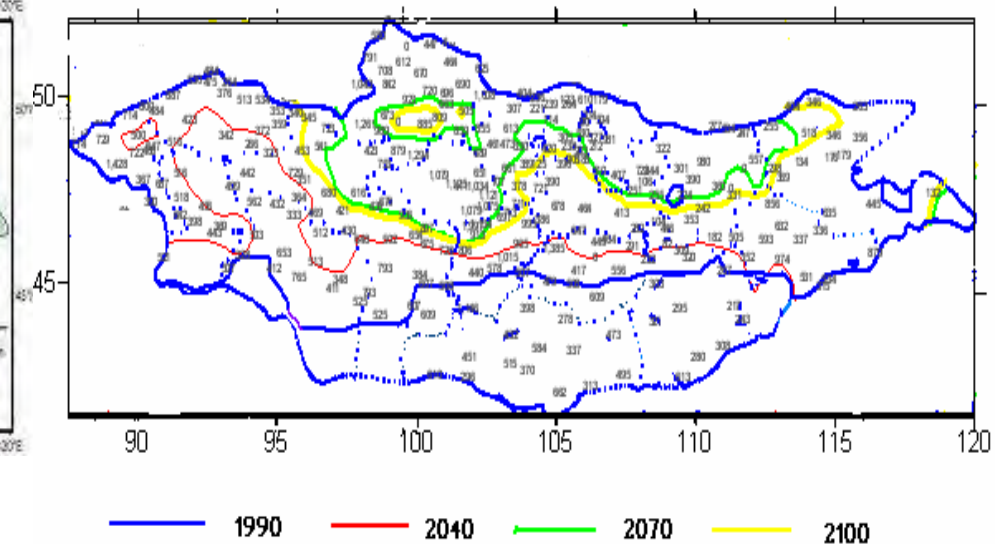
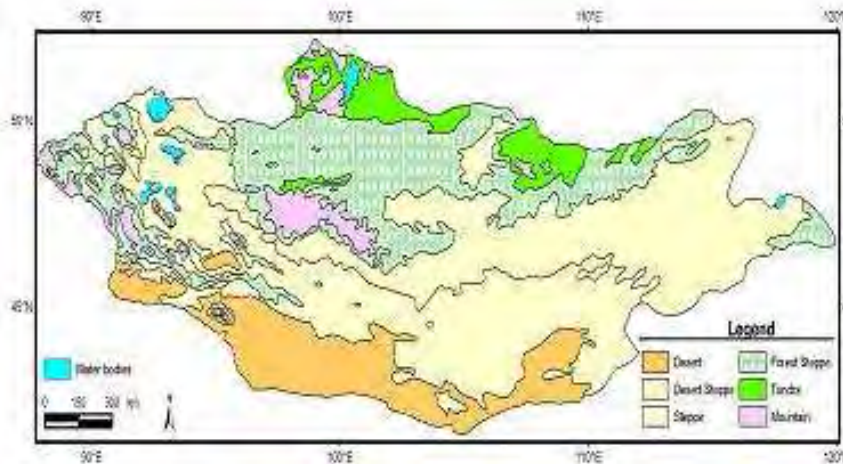
# Introduction

## **Therefore, 5 research objectives of the project are defined based on those strategy:**

- Assessment of Climate Change Impacts on Natural Pastureland and Evaluation of Adaptation Measures
- Vulnerability and Adaptation Analyses of Water Resources in Rural Areas of Mongolia
- Vulnerability of Rural People to Extreme Climate Events (Droughts and Dzud)
- Comprehensive Analyses of Climate Change Impacts on Food Security and Sustainable Livelihood of Rural people
- In addition Public Awareness Raising Activities will be organized in the course of the project implementation period

## Objective 1. Assessment of Climate Change Impacts on Natural Pastureland and Evaluation of Adaptation Measures

- Mongolian ecosystem zone will be shifted to northward due to climate change in the 21st century. According to research study, the northern borders of **desert areas** would be expanded by 150 km every 20 years
- This change are causing economic and social challenges for huge number of herders family and pasture carrying capacity



## Objective 2. Vulnerability and Adaptation Analyses of Water Resources in Rural Areas of Mongolia

- According to inventory of water in 2007, Mongolia has 5138 rivers and among those 884 (17.2 %) rivers was dried-out. As for lakes, there are 3747 lakes and 1189 (31.6%) of them was dried. Thus on average surface water bodies in Mongolia has reduced in recent years by 25%. It is showing increasing intensity of impacts of warming on water resource
- Glacier area in Mongolia already has reduced by 30 % since 1940, 50 m is expected to disappear by 2040, 100m deep glacier will melt by 2050-2060 and 200m deep glacier could be melt down by 2070-2080 and 300 m deep glacier will be disappearing by 2090 and this studies done within the project as additional studies (G.Davaa et al.,2005).
- Therefore, herders and livestock sector will be faced with water supply problem, especially in Western Mongolia, many rivers and lake will be dried up



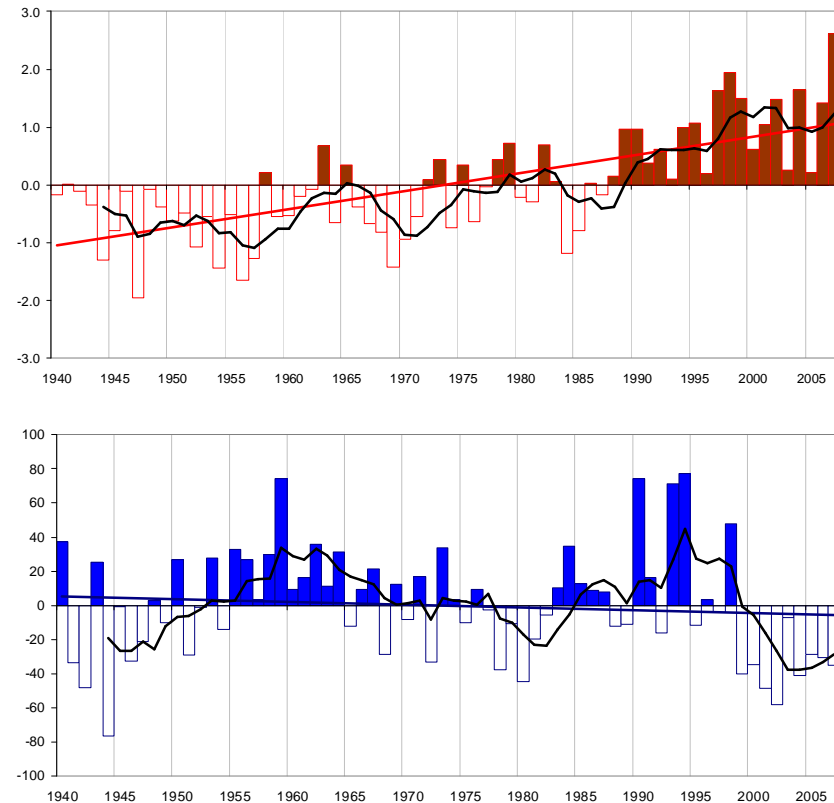
## Objective 3. Vulnerability of Rural People to Extreme Climate Events

### Current climate change

Annual temperature is increased by 2.1°C since 1940, especially there was happened continuously warm years after 1990 and intensity of warming in this period is very high compare to other periods.

Annual precipitation is decreased by 7% compare to climate normal since 1940. Since 2000, consecutive dry years are still occurring in the country

Extreme temperatures indices are shown increasing of both daily maximum and minimum temperature. Their warm and cold tails of the distribution has been warmed



**Climate change trend over Mongolia since 1940-2007**

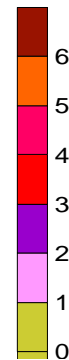
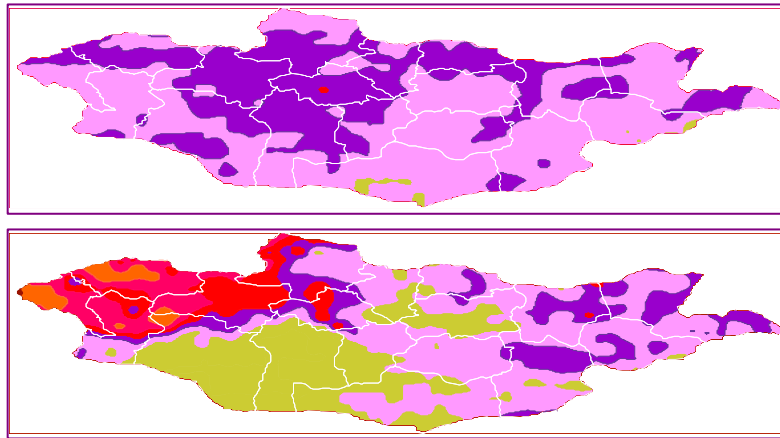
a. Annual mean temperature, degree C

b. Annual precipitation, mm

# Objective 3. Vulnerability of Rural People to Extreme Climate Events

## Future projection of extreme climate event using RCM

- Frequency of extreme event will be increased. Currently, 80 000 herders with 4 million livestock in 40 sub-provinces are migrating and they could not stay in their native land due to consecutive drought and dry condition. According to extreme climate scenarios, number of such kind of herders are increased
- Most provinces are high vulnerable, among them 4 are weak vulnerable and only 2 of them are low vulnerable in terms of expert given scores to exposure level



### Regional climate modeling simulation and projection

- Frequency of drought in 1961-1990, %
- Frequency of drought in 2071-2100, %

Province name	Current	Future	Exposure level
Arkhangai	High	High	High
Bayankhongor	High	Low	High
Bayanulgi		High	High
Bulgan	High	Low	High
Dornod	Weak	Low	Weak
Dorno-govi	Weak	Low	Weak
Dundgovi	High	Low	High
Govi-altai	Low	Low	Low
Khentii	Low	Low	Low
Khovd	Weak	High	High
Khuvsgul	Weak	Weak	Weak
Selenge	High	Low	High
Sukhbaatar	Weak	Low	Weak
Tuv	High	Low	High
Umnugobi	High	Low	High
Uvs	Low	High	High
Uvurkhangai	High	Low	High
Zavkhan	High	High	High

## Objective 4. Food Security and Sustainable Livelihood of Rural people

- Herders livelihood classified by concentration of indicators method. They is very vulnerable to free market and climate change
- Herders have not asset, money resource to overcome climate change extreme events to be reduce risk and also they do not have flexible environment for living

## Objective 5. Public awareness and raising activities

- Project result is published as progress report 2 times during implementation and are presented on seminars and meeting which were held in Darkhan city and Ministry of Nature and Environment
- Main outline and summary of the project are introduced to the polity and administrative organizations such as Parliament (Ikh Khural), President Office
- Special TV program related to climate change are prepared and broadcasted through 2 channels 2 times, which are continued for 20 minutes
- Involved issue of project result is published totally 14 times in the newspaper and magazine including conversation, talking and article

## Main Practical Recommendation of Objectives

It is time to fully reconstruct traditional mentalities of environmental protection issues when ecosystem is changing irreversible way and extremely fast in comparison with its historical ages. It is necessary to declare ideas of adaptation, environmental sustainability. Following gateways from the arising situation can be identified

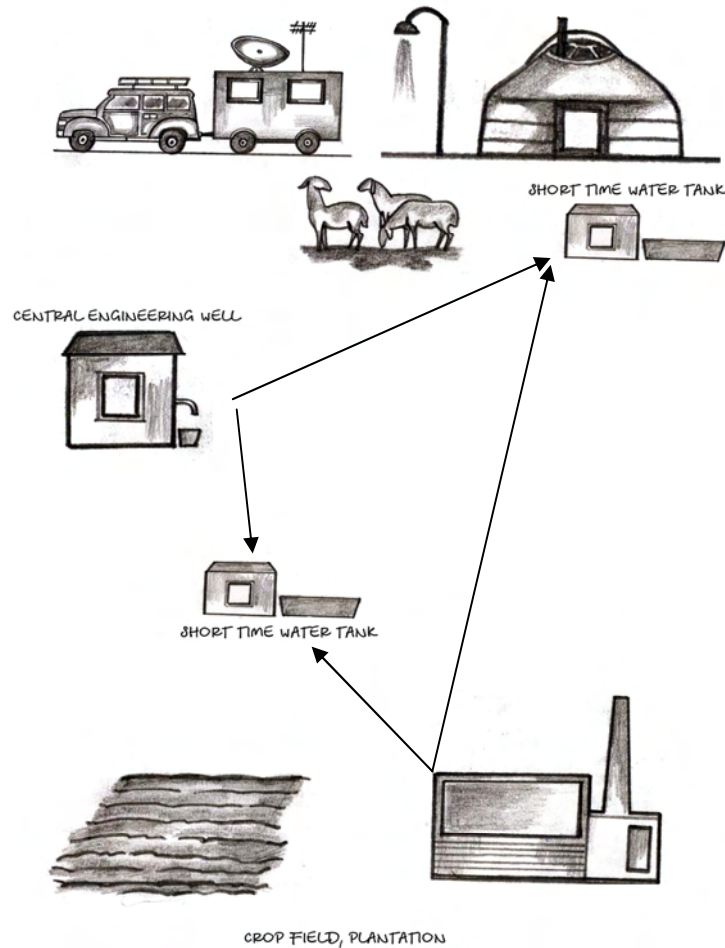
- To establish state institution with primary function of which is to provide integrated policy and concepts and to coordinate prompt and comprehensive measures of adaptation to the climate change and overcome sectoral approach: **(Institutional reorganization of environmental organizational structure)**
- To allocate obligatory necessary funds for adaptation measures and implementation activities in annual state budget: **(To solve budget to implement adaptation measure)**
- To develop mid term program of adaptation measures for the traditional nomadic livestock husbandry and agriculture **(Need mid term programme within 20-30 years)**
- **To list immediately, regions, areas and administration units with extreme drought, heavily degraded land cover, pasture, dried surface water bodies and where expect significant ecosystem change** within short period (coming for 10-20 years) and to develop plan of emergency measures involving scientific communities
- To undertake areas, regions with significant groundwater resources for state protection and to declare as conservation area **(groundwater resource should be protected as National Protected Area)**
- **To establish major framework responsibility in government structure**, which implements adaptation measures against climate change and degraded environment, fulfils security of ecology and defines application based on policy for assessment of water, pasture, other natural resource capacity and ecology-economy.

## Main Practical Output of Objectives

- Project has given opportunity to compare adaptation measures between existing and possible one. There are 2 extreme point of view in the previous adaptation measures.
- Traditional nomadic livestock could not exist in future
- Certain attempts involved with pasture management, improvement of water supply and etc for livestock are possible adaptation measures
- However, according to our research study, above mentioned point of view is not correct. When we answer question such as when, where, who will be adapted under which phenomena, here, conclusion is that main participator herders are not considered.
- A way to adapt which we are proposing, is consistent and possible to implement in Mongolian case.

# Main Practical Output of Objectives

## PROPOSED NCAP MODEL OF CLIMATE CHANGE ADAPTATION FOR HERDERS



- From this, herder family has to have mobile house, which is equipped with modern information technology
- Water supply is solved as optimum such as less expensive and can be implemented. Here, we have to reject point that each herders family has own well. Instead of them water distribution network could be established within 20-40 km. It is not necessary to locate near well. This is very efficient way to distribute like petrol stations
- To strength hay and powder capacity, to plant pasture vegetation in the region, where has enough underground water recourse and thermal, store it and produce high quality powder, finally, distribute it like water supply network
- Integration of above 3 activities is called NCAP model of climate change adaptation for herders. Mongolian government has to outline next attempts to implement this model and solve financial resource as well

## NCAP team contribution to the legal and adaptation policy

- Project team has got great success based on long hard working on the project results at 3 levels of the policy decision makers. **(President Office, Member of Parliament and Government of Mongolia)**
- One main result is that Mongolian Parliament has been approved basic statement named as **“Millennium Development Goals-based Comprehensive National Development Strategy”** (57 pages) and below is given copy of the document.
- **Strategy goal 6. To adapt climate change and desertification and to compound capacity building for reduction of their negative consequences and to implement planned measures**
  - Climate change impact study is assessed on scientific basis and to implement policies according to the sustainable development concept **(Regular assessment of climate change)**
  - Define regions where drought and land degradation are going on due to natural and climate change impacts regions with high probability of exposure and to strength adaptation capacity in accordance with local specific feature of the region **(Most impacted region and vulnerability)**
  - Select high drought resistance wheat, potato and vegetable, forage which could be adapted under climate change and have high capacity, generate new species and sort and development and introduction new advanced method and technology in agriculture **(adaptation measure)**
  - Define and implement policies on optimum number of livestock and herd structure consistent with pasture capacity **(adaptation measure)**
  - Develop combined animal husbandry including pastoral livestock with high biological capacity, adapted to climate change and farming style of livestock husbandry with high productivity (adaptation measure)
  - Increase public participatory, stakeholder’s participation focused on climate change, desertification a way to adapt and overcome these and increase their awareness, knowledge and education and to extend public awareness **(public awareness)**

Finally, NCAP team has been formulated new adaptations measures (Adaptation memorable matrix) which are possible to implement for the herder's livelihood based on the analysis of the comparison matrix

## Acknowledgement

Project team has contributed on research study involved with adaptation mechanism which become more concrete and to be realized in the country. We are very glad that project is still possible to continue and implement in future. Team is congratulating for initializing this opportunity for us

