

REGIONAL SCOPING STUDY ON CLIMATE CHANGE ISSUES  
IN CAREC MEMBER COUNTRIES  
WEBINAR organized on 19 July 2022

Slides for remarks about MONGOLIA

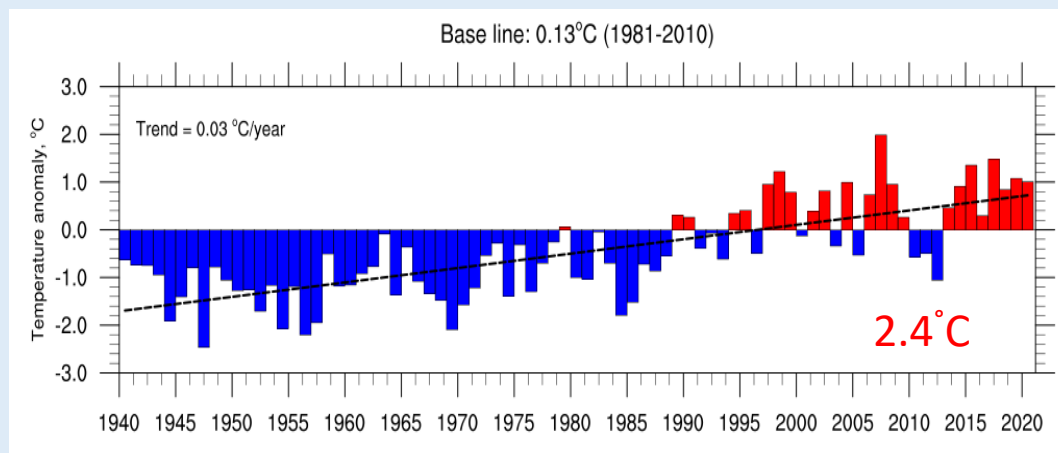
Dr. BATJARGAL Zamba, Science Adviser,  
Climate Change Research and Cooperation  
Centre, Ministry of Environment and Tourism

## COVERAGE OF REMARKS

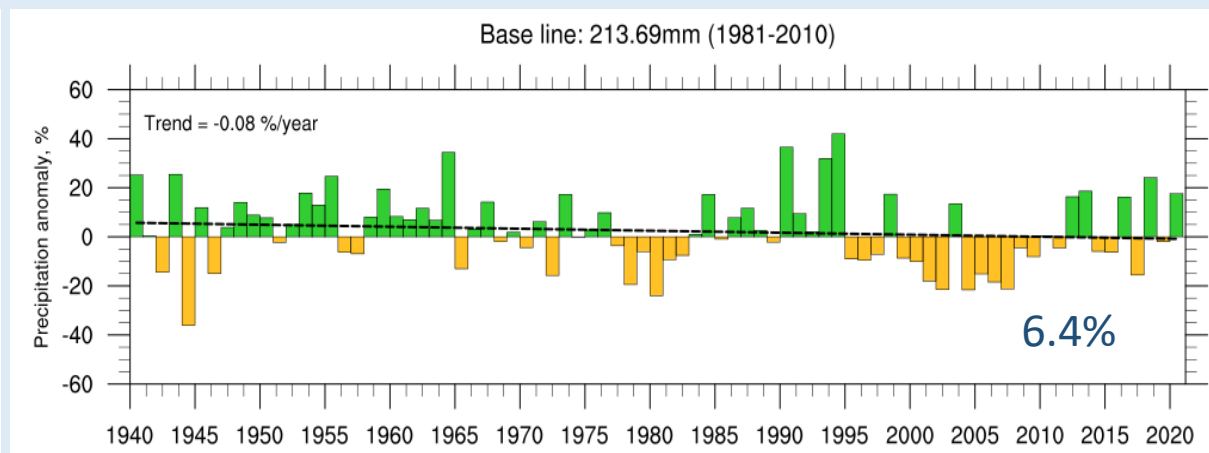
- Climate change induced challenges for Mongolia, including vulnerability issues.
- Main sectorial focus areas and response strategies
- Climate finance, including external support and private sector engagement

# CLIMATE OVER THE TERRITORY OF MONGOLIA

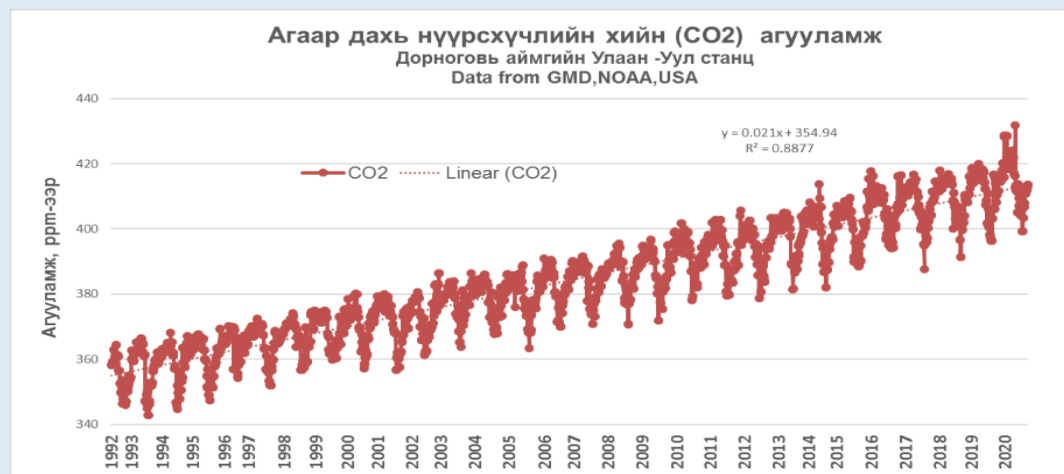
## Annual mean temperature and total precipitation trend in Mongolia , 1940-2020



a) temperature, °C



b) total precipitation, %



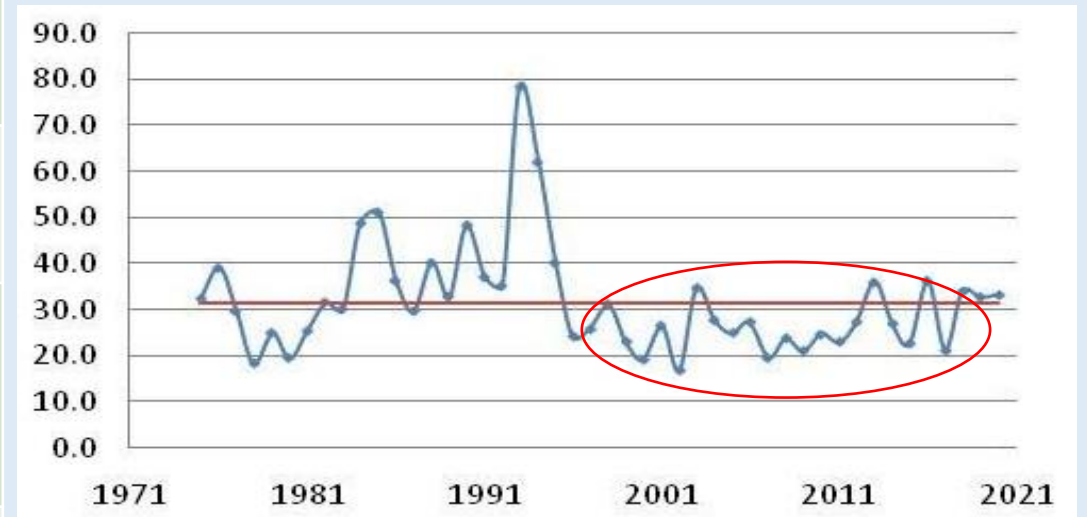
- Atmospheric concentration of CO<sub>2</sub> has increased by 16.5% (354.6-413.3 ppm) over the period 1992-2020.
- Concentration of CH<sub>4</sub> increased by 8.8%.

# WATER RESOURCES IN MONGOLIA

## Mongolia's natural water resource

LAKE WATER:	500 km <sup>3</sup>	J. Tserensodnom 1970, 2000
SNOW COVER AND GLACIER:	19.4 km <sup>3</sup>	G. Davaa et al., 2012
<b>RIVERS:</b>	<b>34.6 km<sup>3</sup></b>	B. Myagmarjav, 1975, 1996
GROUNDWATER:	10.8 km <sup>3</sup>	N. Jadambaa, 2003

Fluctuations of river water volume in Mongolia (km<sup>3</sup>/ year)



# Glaciers in Tavanbogd Mountain Area, Western Mongolia



*Photo made in 1905  
by V.V. Sapojnikov*



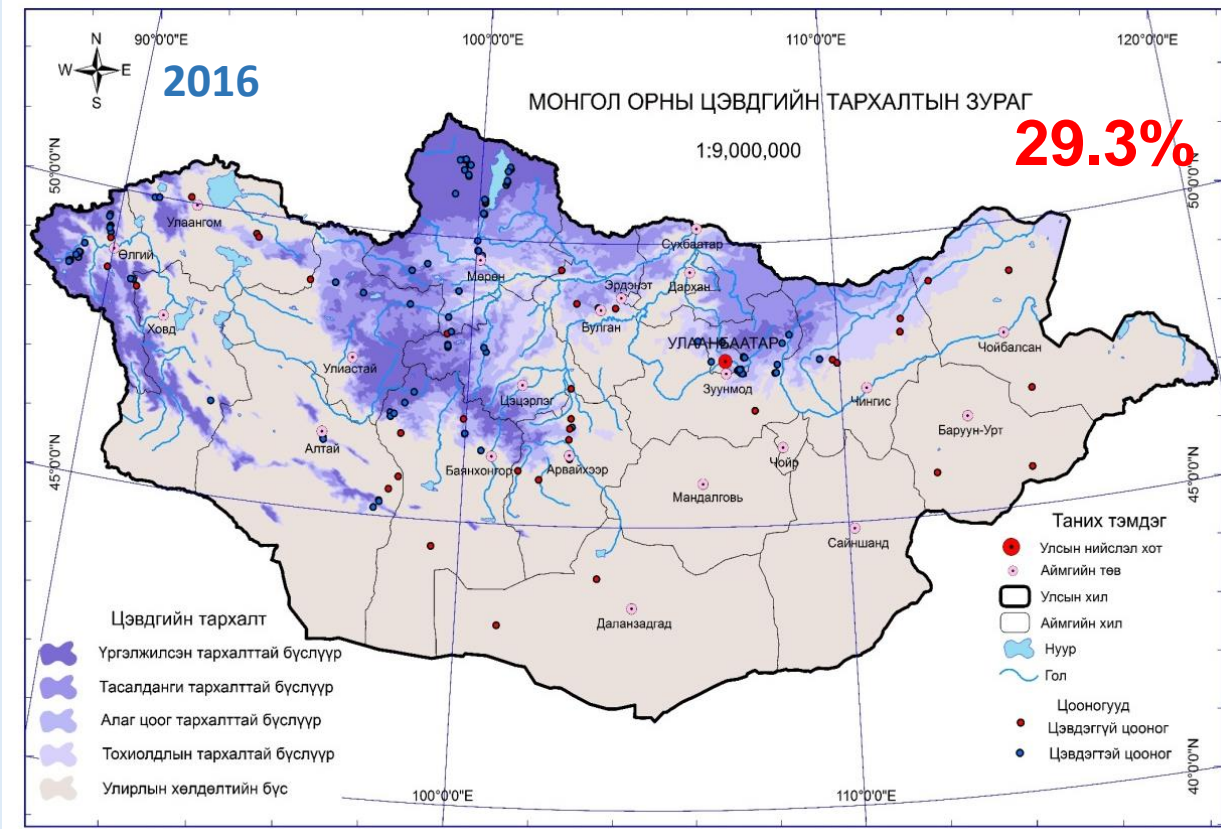
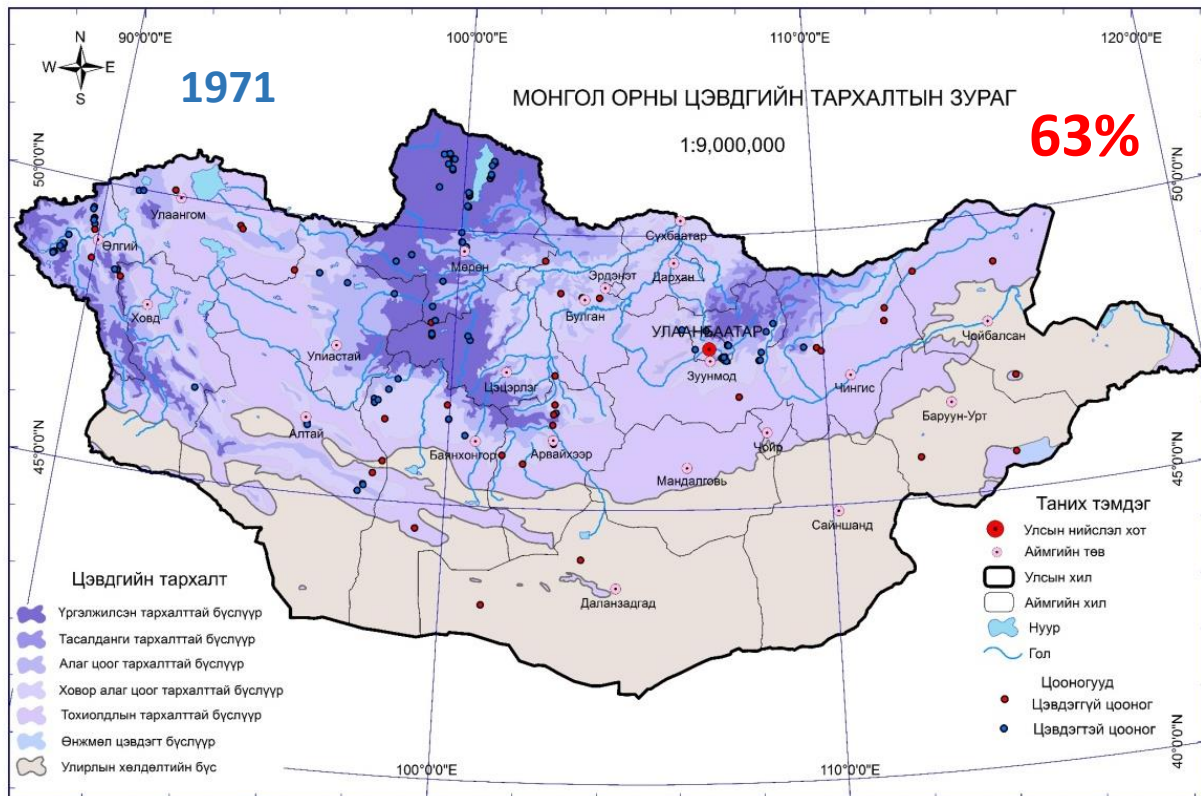
*Photo made in 2018  
by Z.Batjargal*



# PERMAFROST IS DIMINISHING

63% of the territory of Mongolia was covered by permafrost.

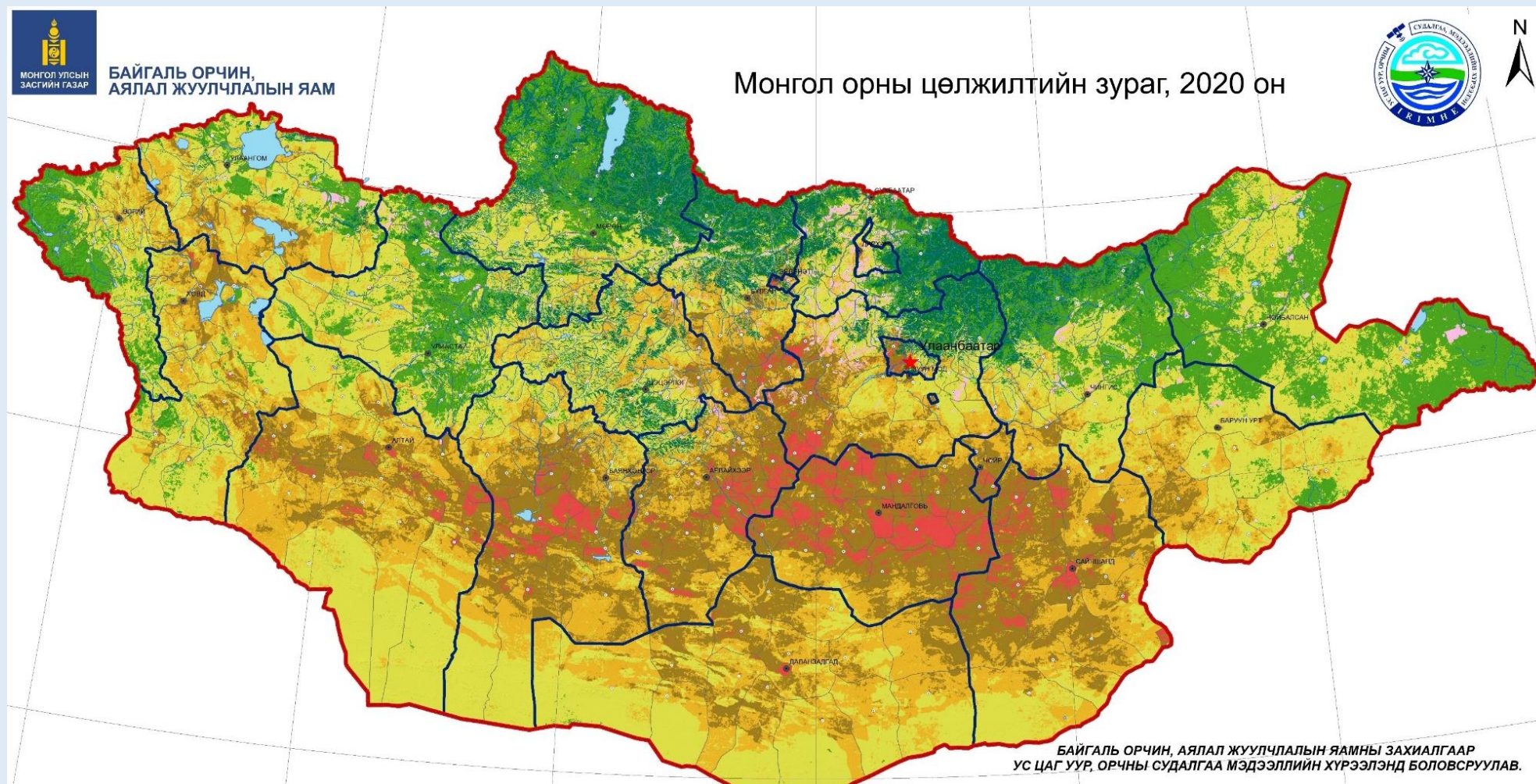
Over the past 40 years, the permafrost has been melting significantly.



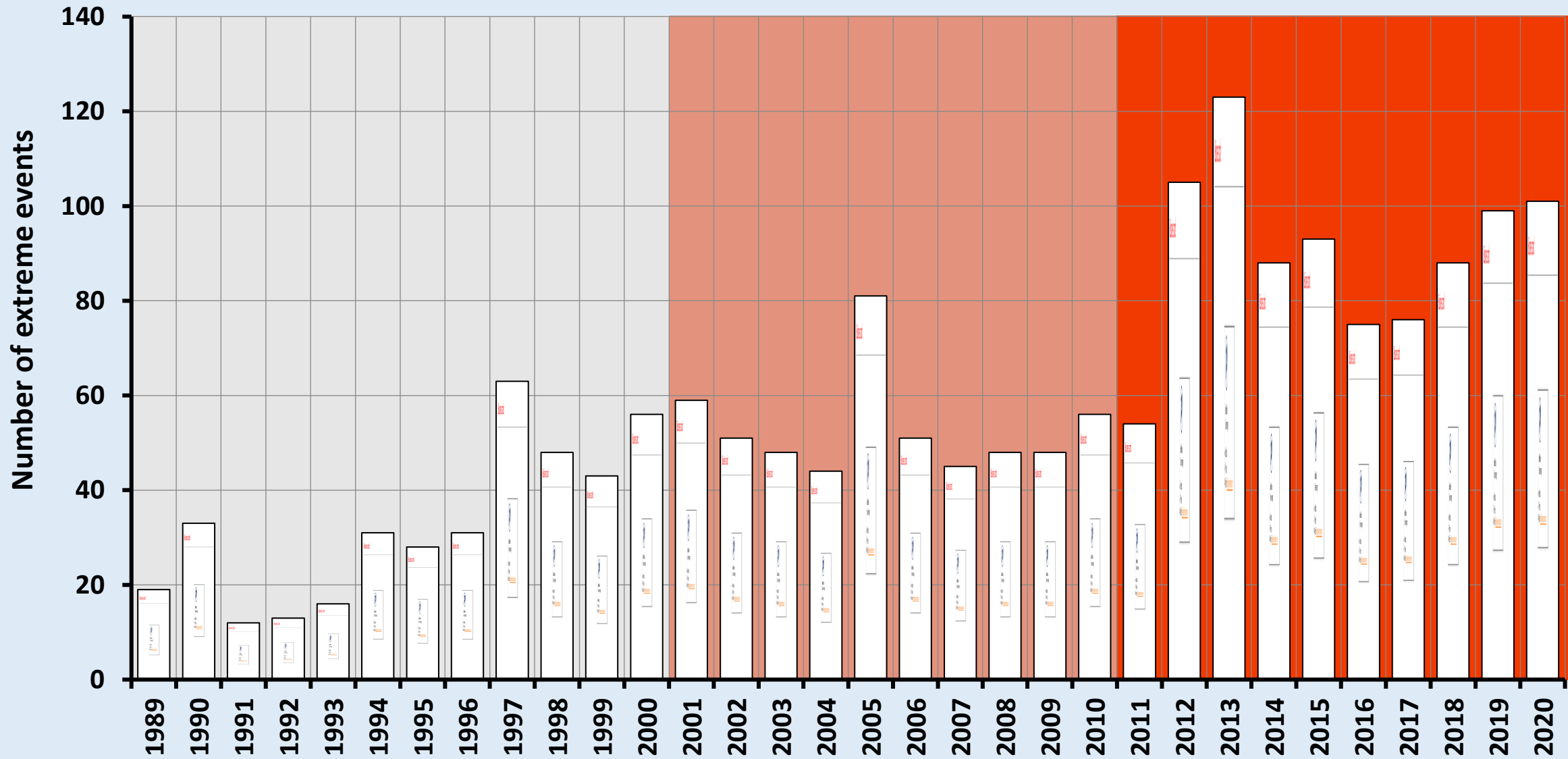


# DESERTIFICATION AND LAND DEGRADATION

**76.9%** of the total area is affected by desertification, the majority of which is in the **steppe and Gobi desert areas**, where surface water is scarce.



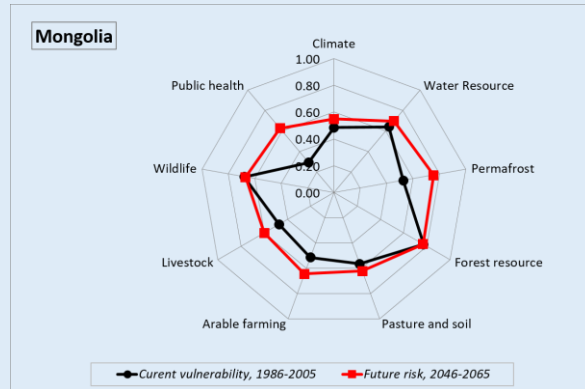
# TRENDS IN THE EXTREME EVENTS IN MONGOLIA





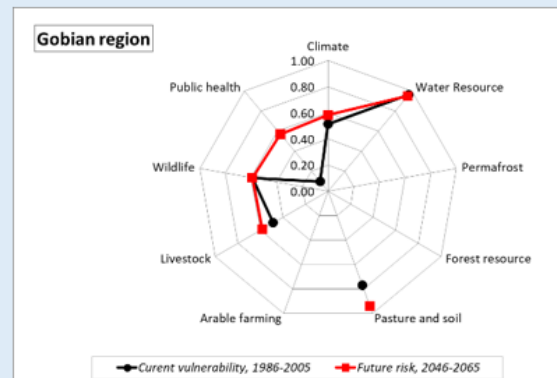
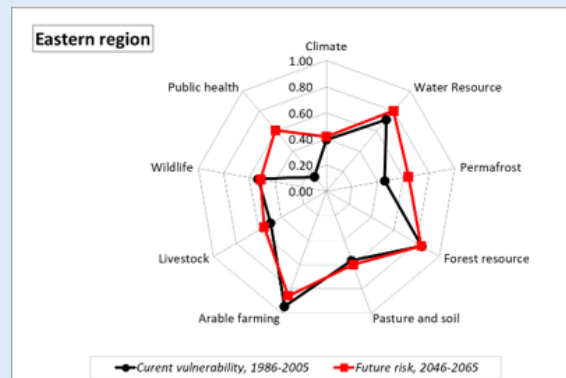
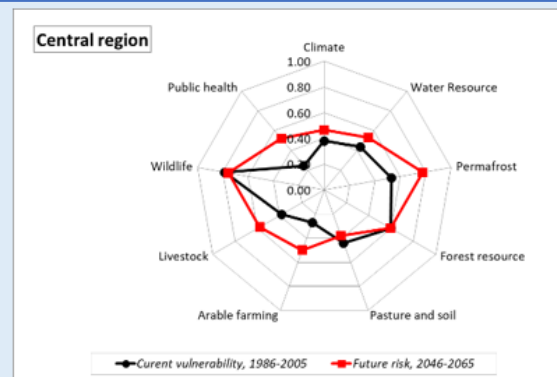
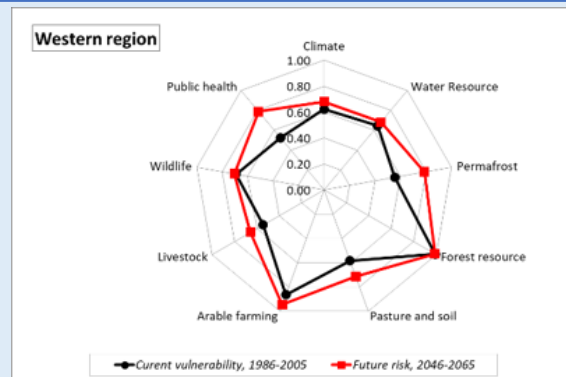
# CLIMATE CHANGE IMPACT AND RISK, 2046-2065

## Climate change vulnerability and risk index for environmental and socio-economic sectors in Mongolia



## Threshold values used in the assessment of vulnerability and risk classification

No	Lower threshold values	Classification Current/Future	Upper threshold values
1	0.81<	Very much vulnerable/risky	<1.00
2	0.61<	Much vulnerable/ risky	<0.80
3	0.41<	Vulnerable/ risky	<0.60
4	0.21<	Less vulnerable/ risky	<0.40
5	0.00<	Not vulnerable/not risky	<0.20



## Assessments:

### 1. Climate

- The annual mean air temperature, °C
- The annual sum of precipitation, mm
- Drought frequency, %
- Dzud frequency, %
- Their future changes

### 2. Water resource and permafrost

- Index of dryness,
- Permafrost distribution area, thou.km<sup>2</sup>
- Their future changes

### 3. Forest resource

- Current forest area (larch, cedar, birch, pine), thou. ha
- Future changes in forest area, thou. ha

### 4. Pasture and soil cover

- Recovery capacity of pasture, the degree of classification
- Organic content of soil (carbon, nitrogen), g/m<sup>2</sup>
- Future changes of the organic content of the soil, g/m<sup>2</sup>
- Above and below ground biomass, g/m<sup>2</sup>
- Future changes of the organic content of the soil and biomass

### 5. Wildlife

- Relic and distribution area
- Future changes of areas, thou. ha

### 6. Agriculture/Arable farming

- Wheat yield per unit hectare, kg
- Future change of wheat yield per unit hectare, kg

### 7. Animal husbandry

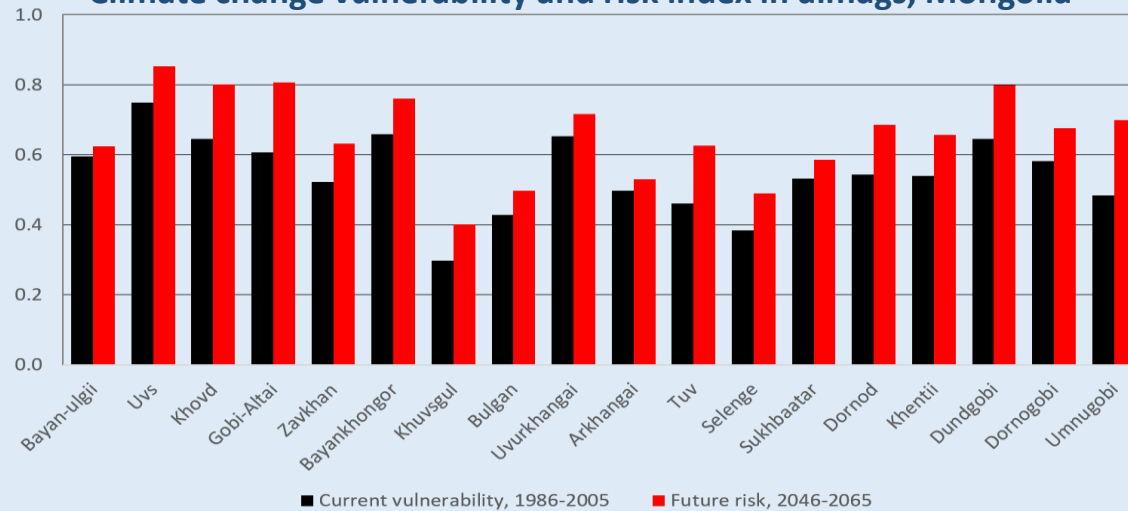
- Livestock heads, in sheep unit
- Percentage of livestock loss, %
- Dzud frequency, %
- Future trend of Dzud frequency, %

### 8. Public health

- Occurrences of hot days, days
- Future change of occurrences of hot days, days

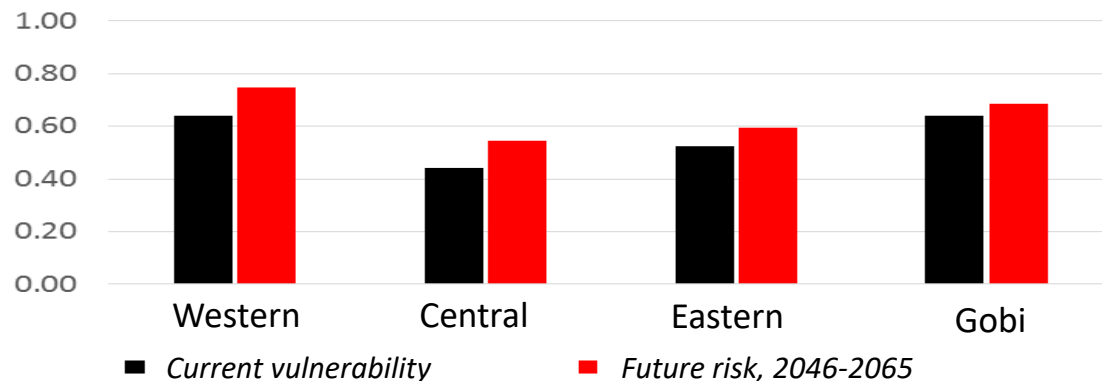
# CLIMATE CHANGE IMPACT AND RISK, 2046-2065

## Climate change vulnerability and risk index in aimags, Mongolia

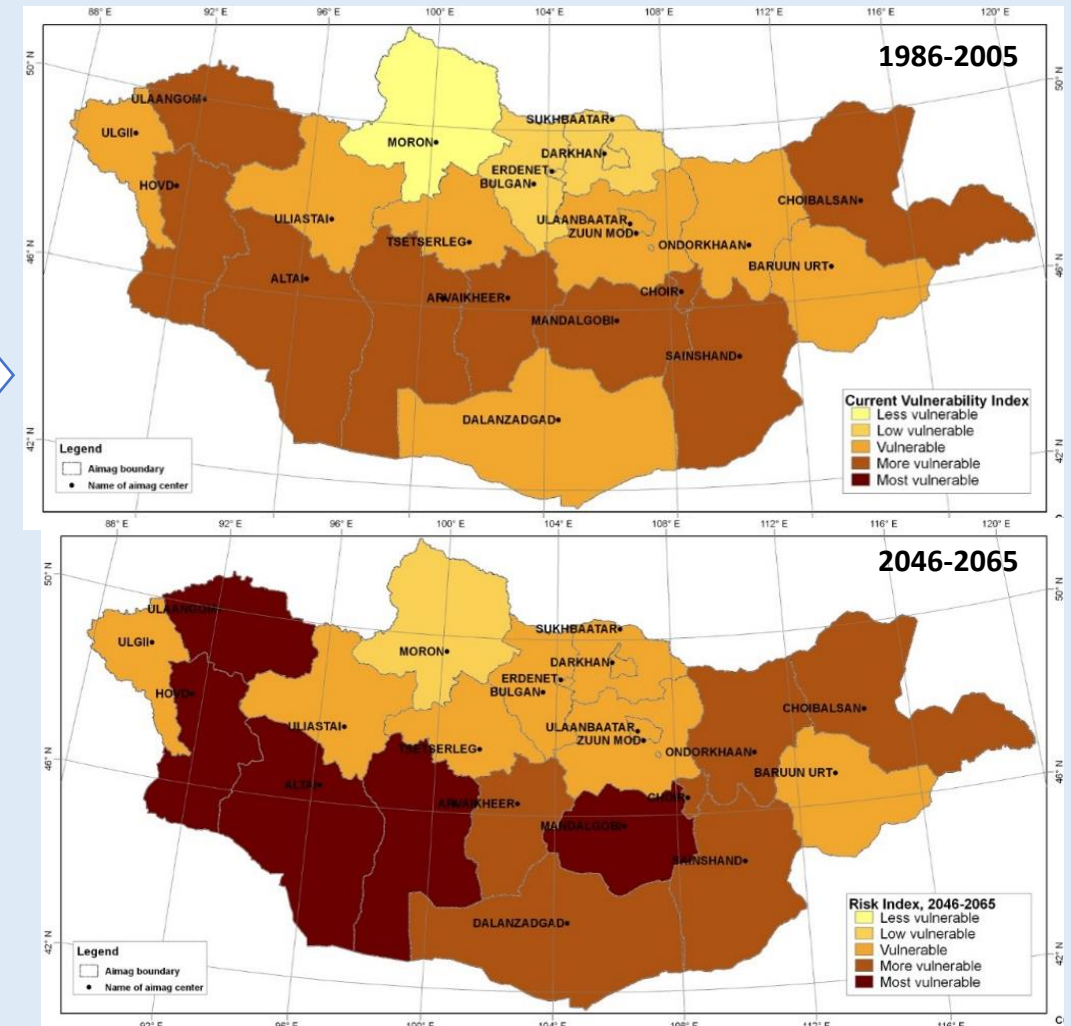


Khuvsgul, Zavkhan, Uvs, Bulgan, Selenge, Tuv, Khovd, Gobi-Altai, Khentii aimags have the highest change in the climate change vulnerability and risk index, ranging between 0.1 – 0.2.

## Climate change vulnerability and risk index in regions, Mongolia



Generally, all regions have the tendency to shift from vulnerable and risky category to most vulnerable and risky category.

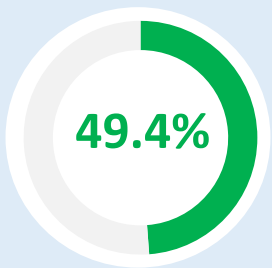
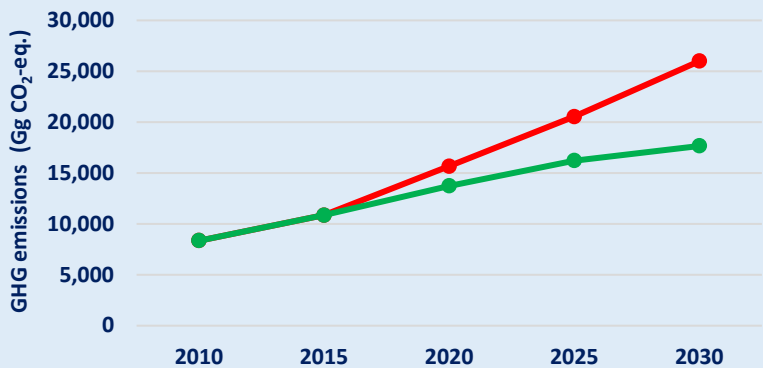


## Changes of vulnerability and risk index in aimags

No	Lower threshold values	Classification Current/Future	Upper threshold values	Vulnerability	Risk
1	0.81<	Very much vulnerable/risky	<1.00	1	5
2	0.61<	Much vulnerable/ risky	<0.80	6	5
3	0.41<	Vulnerable/ risky	<0.60	8	7
4	0.21<	Less vulnerable/ risky	<0.40	2	1
5	0.00<	Not vulnerable/not risky	<0.20	1	-

# MITIGATION CONTRIBUTION BY SECTORS

## Energy



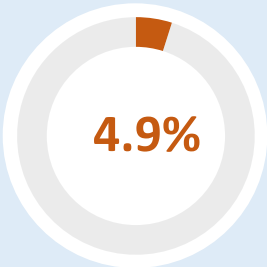
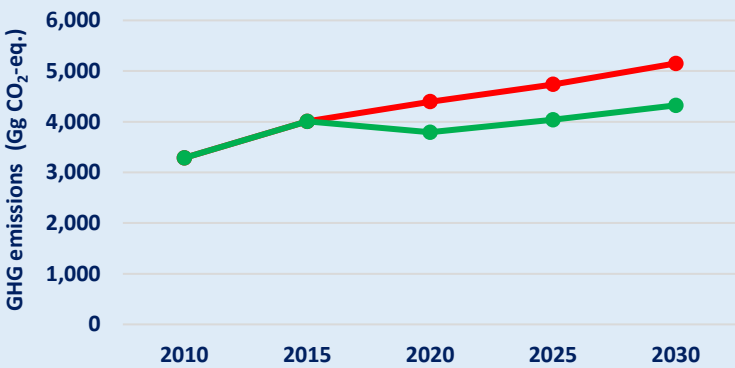
Utilization of renewable energy source

35.6%

Improving the efficiency of energy production

64.4%

## Construction



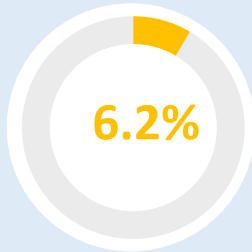
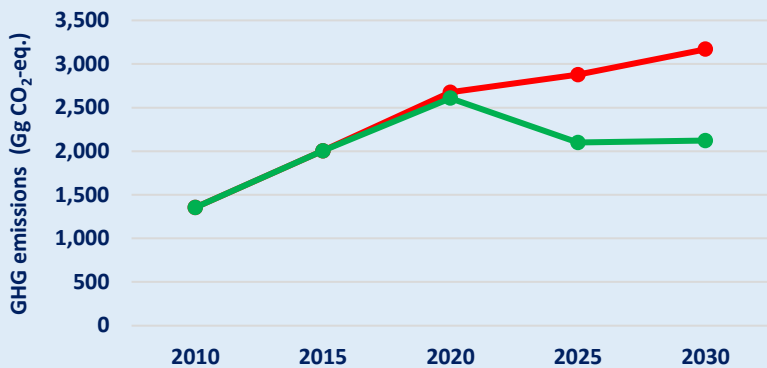
Utilizing improved fuel for the ger district in Ulaanbaatar

72.1%

Insulation of pre-cast panel apartments in Ulaanbaatar

27.9%

## Transportation



Transition to Euro-5 standard fuel

43.6%

Switch from automobile to railway in transportation of coal export

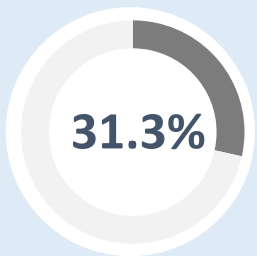
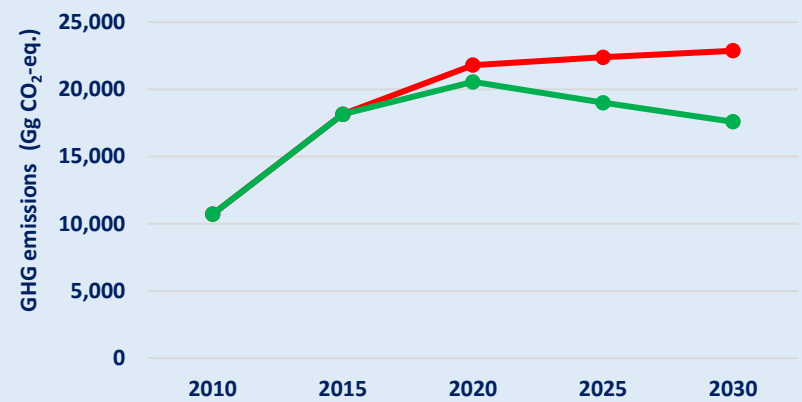
54.9%

Installation of electric heating in trains

-1.5%

# MITIGATION CONTRIBUTION BY SECTORS

Agriculture



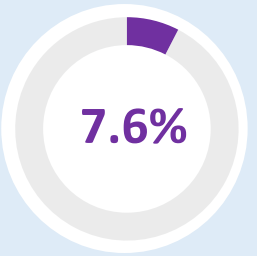
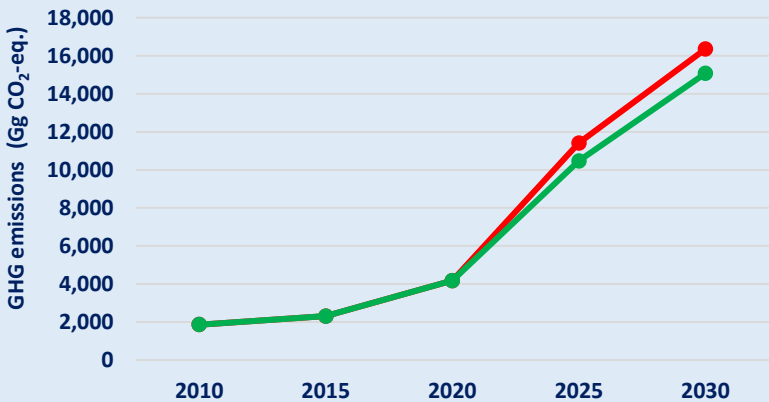
Regulating and reducing the number of livestock

89.1%

Upgrading the manure management

10.9%

Industry



Energy saving of manufactures

81.7%

Utilizing the excess heat from cement productions

1%

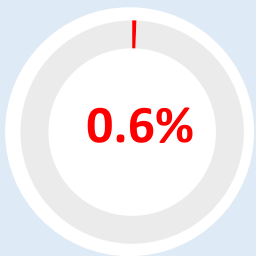
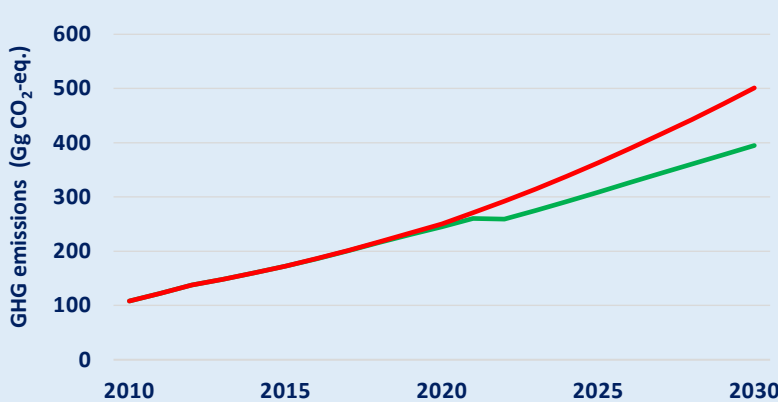
Using fly ash in cement productions

6.8%

Utilizing coal bed methane in coal mining

10.5%

Waste



Reduction of landfill disposed waste volume

85.3%

Wastewater plant capacity improvement

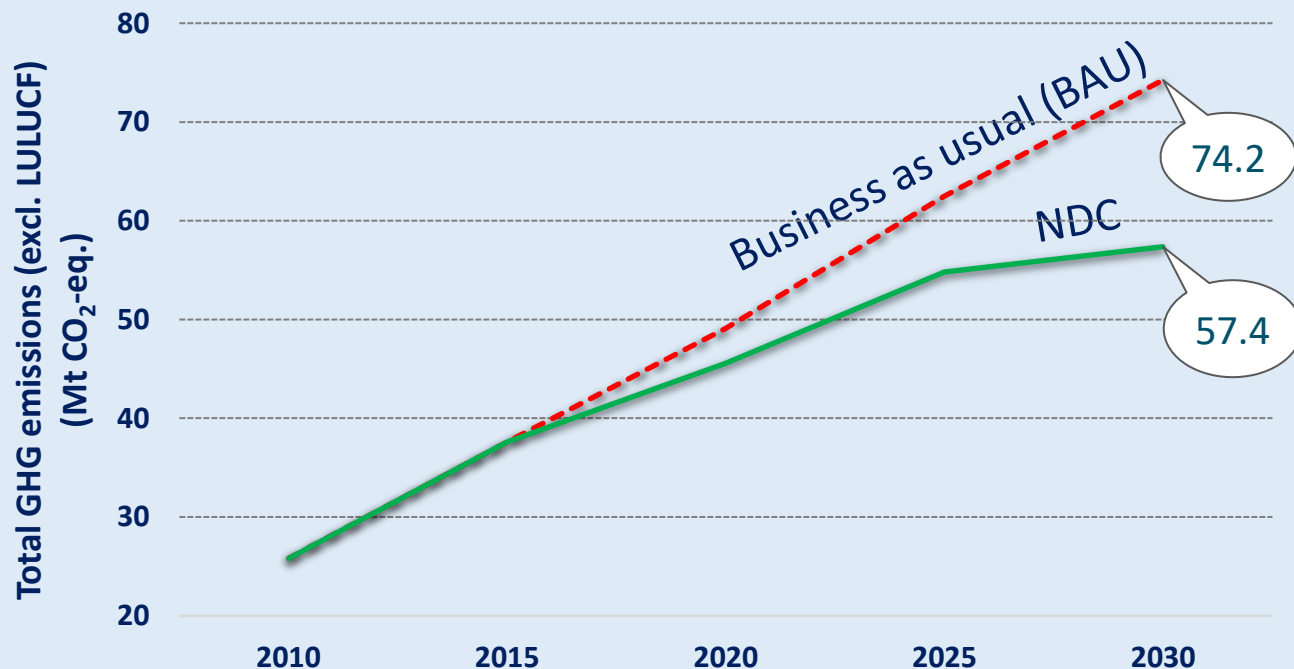
14.7%





## MONGOLIA'S NATIONALLY DETERMINED CONTRIBUTION

22.7%



*Mongolia's NDC was approved by the Government Decree No. 407 in 2019*

The mitigation target of Mongolia's NDC is a 22.7% reduction in total national greenhouse gas emissions by 2030, compared to the projected emissions under a business as usual scenario from 2010.



– 8.34



– 5.28



– 1.28



– 1.04



– 0.83

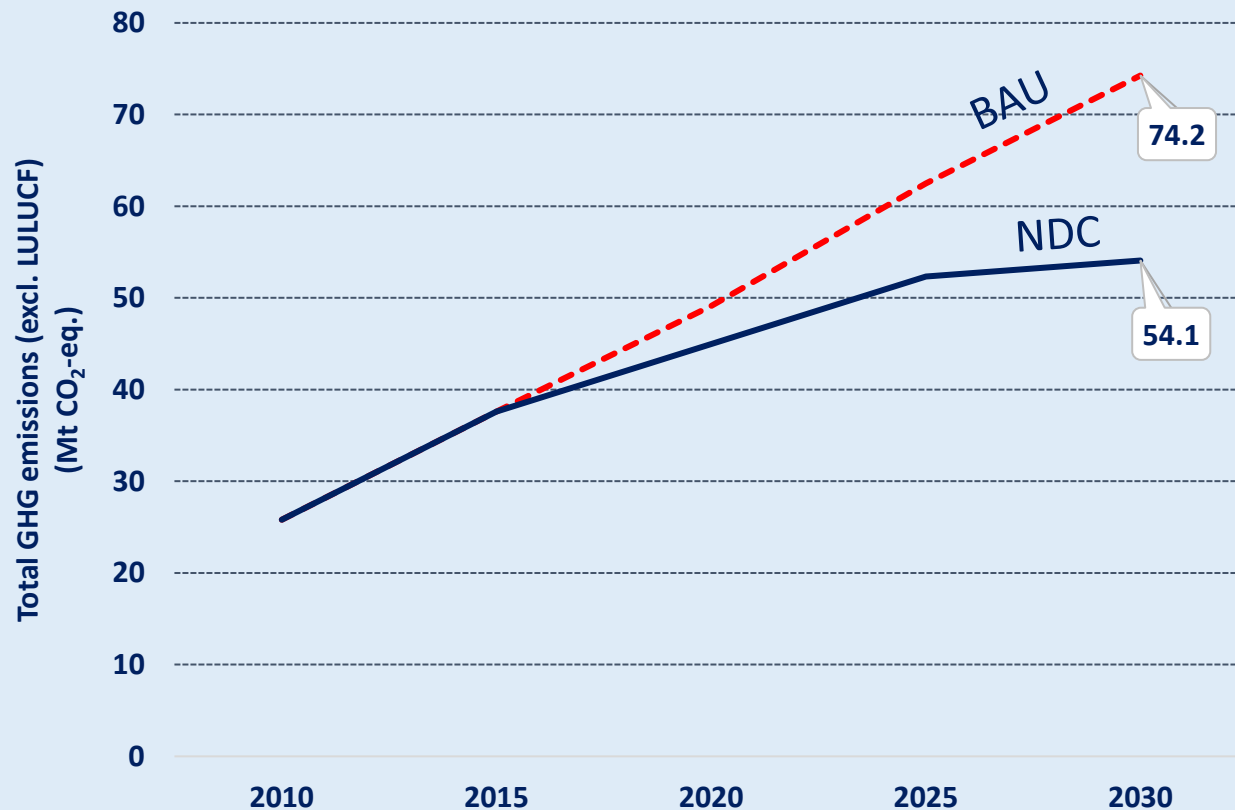
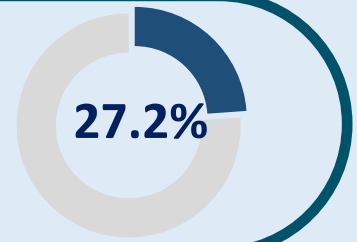


– 0.106

– 16.9 Mt CO<sub>2</sub>-eq.

## NDC TARGETS

(Unconditional + Conditional measures)



Total GHG mitigation potential  
(including conditional measures)

-20,188.1 Gg CO<sub>2</sub>-eq.

Total GHG mitigation potential from unconditional measures

-16,888.1 Gg CO<sub>2</sub>-eq.

Total GHG mitigation potential from conditional measures

-3,300.0 Gg CO<sub>2</sub>-eq.

— Deploy Carbon Capture and Storage (CCS) technology

-3,288.0 Gg CO<sub>2</sub>-eq.

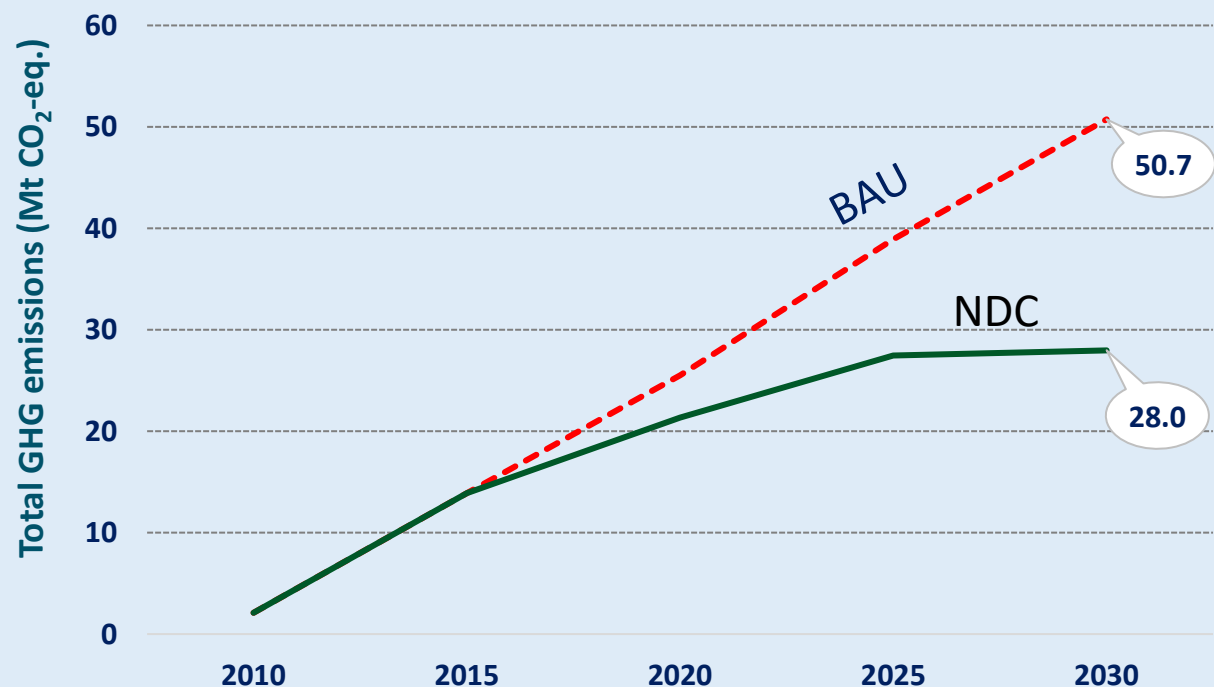
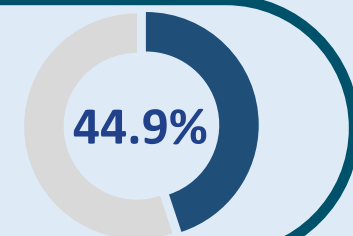
— Construct power plant to produce energy capturing and purifying landfill methane gas from the Narangiin enger waste disposal site in Ulaanbaatar city

-12.0 Gg CO<sub>2</sub>-eq.



## NDC TARGETS

(Unconditional + Conditional measures + Forest removal)



### TOTAL GHG MITIGATION TARGET

(including conditional measures and forest removal)

**-22,768.7 Gg CO<sub>2</sub>-eq.**

*GHG emission reduction without conditional support measures*

**74.2%**

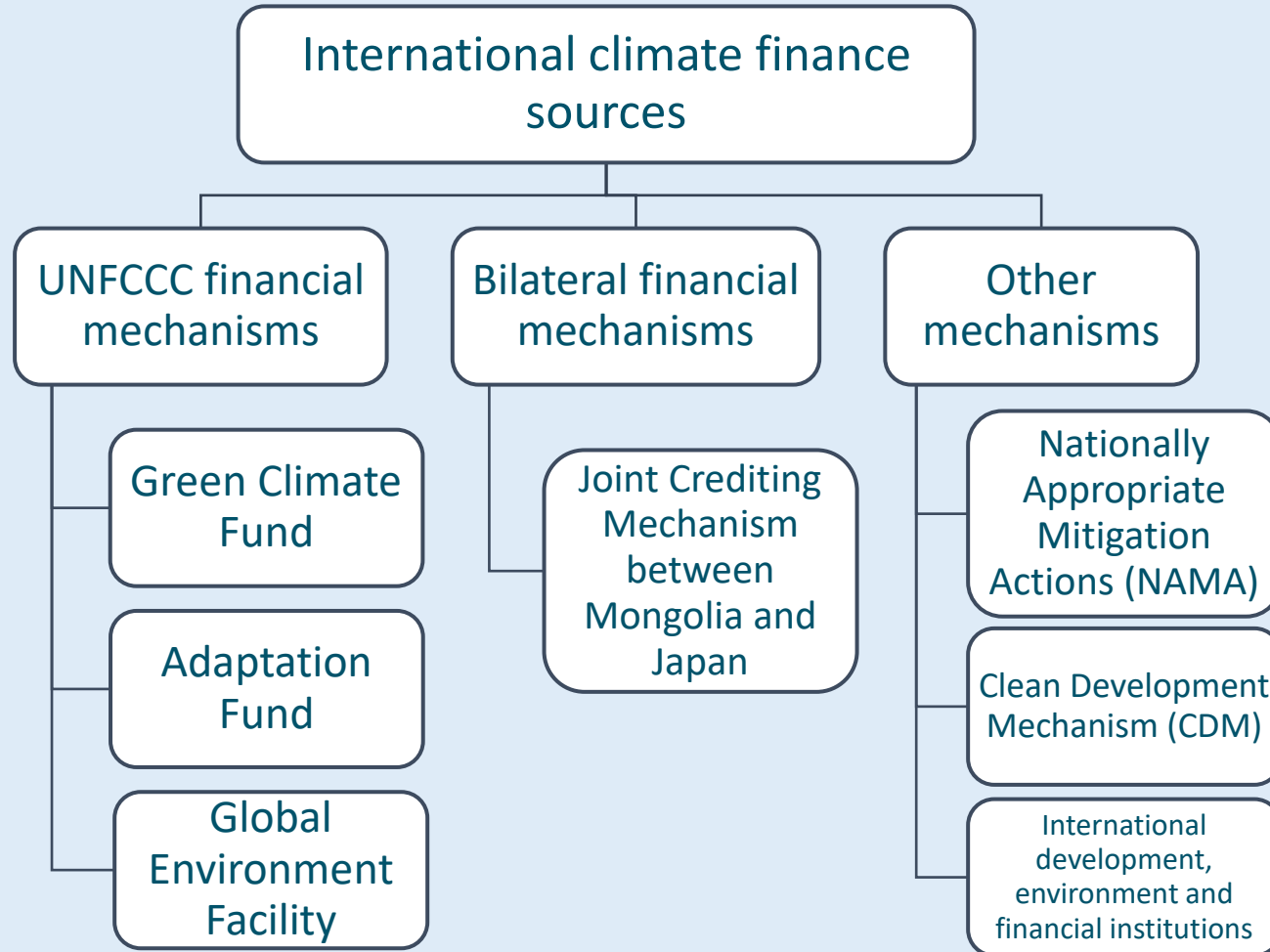
*GHG emission reduction with conditional support measures*

**14.5%**

*Total reduction due to forest removal*

**11.3%**

# CLIMATE FINANCE MECHANISMS



## GREEN CLIMATE FUND

### MONGOLIA

**NUMBER OF APPROVED PROJECTS  
AND PROGRAMMES: 20**

#### APPROVED FINANCING:

- GCF financing – 436 million USD
- Co-financing – 1.1 billion USD

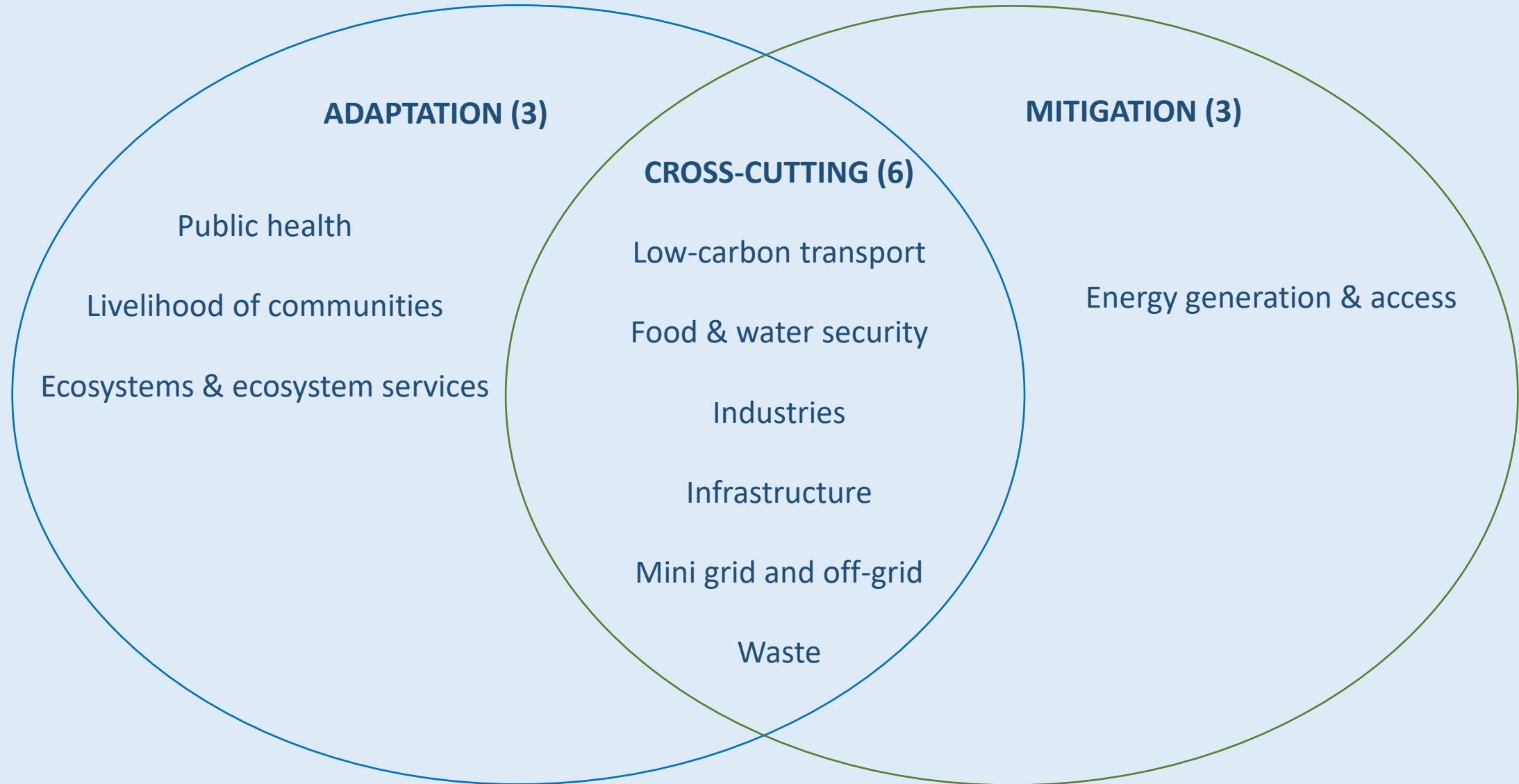
**TOTAL 1.5 BILLION USD**

This amount is only **13%** of the necessary finance for achieving the NDC target.



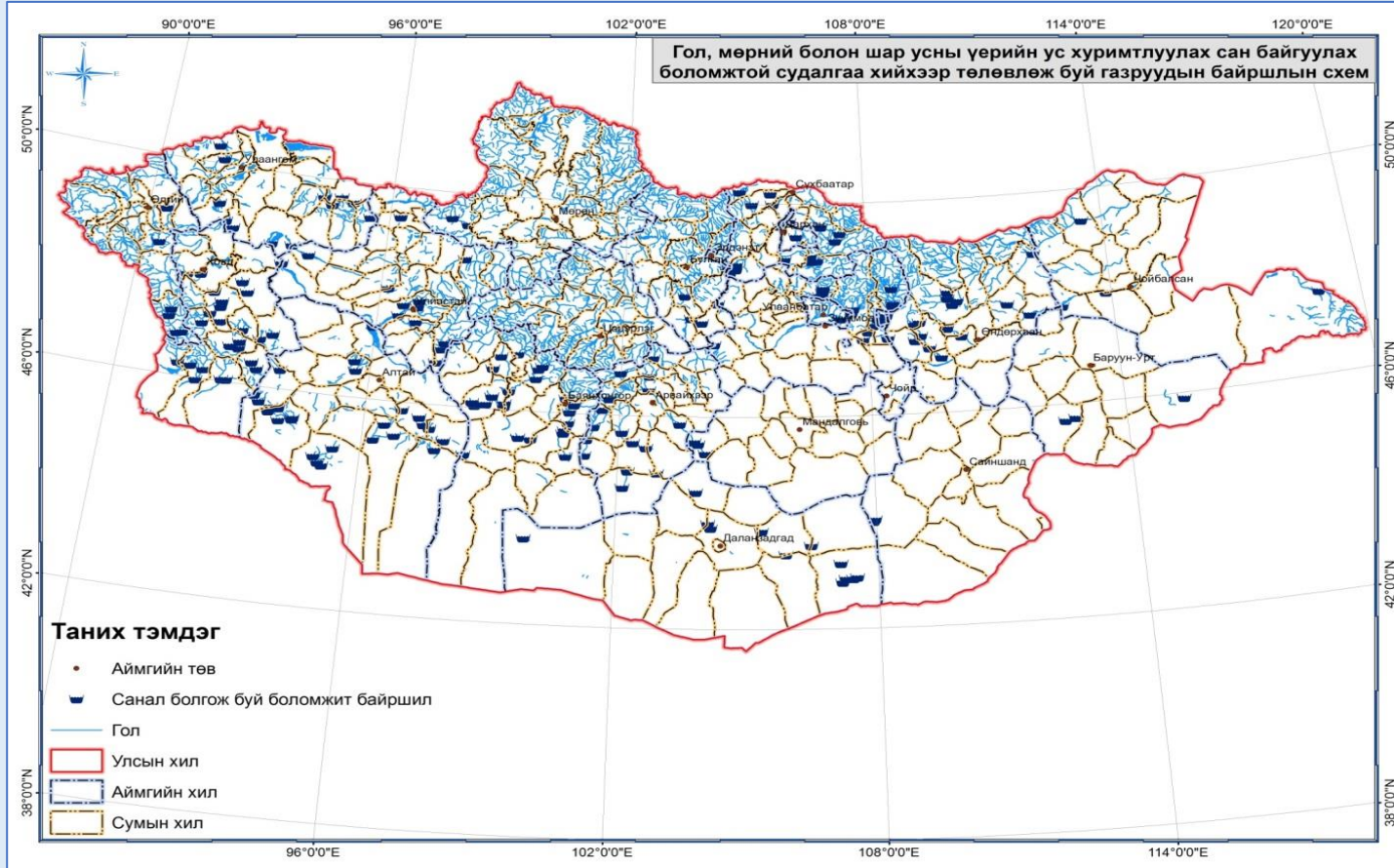


## COUNTRY PROGRAM (2022-2027)



# ADAPTATION PRIORITIES

## A2: Strengthen the adaptive capacity of local communities through the development of ecosystem-based water reservation system – SAP



The project will adapt the cost-effective and ecosystem-based solutions e.g., using the **natural settings** rather than construction of concrete dams.

### *Country need:*

- **Diminishing** of water resources due to intensified evapotranspiration, glacier melting and permafrost thawing;
- **Water scarcity** for drinking, environment, industries.

### *Country ownership:*

- Mongolia's NDC 2020
- Vision-2050
- New Revival Policy, 2021
- Mongolia's Integrated Land Management Plan

# GREENHOUSE GAS EMISSION REDUCTION THROUGH FORESTATION



**Boreal and saxaul forestation**  
*306,200 ha*

2022 – 2030  
**29.1 Mt CO<sub>2</sub>-eq.**



**Windbreaks and urban green infrastructure**  
*155,116 ha*

2022 – 2030  
**17.2 Mt CO<sub>2</sub>-eq..**



**Silvopasture**  
*130,000 ha*

2022 – 2030  
**10.7 Mt CO<sub>2</sub>-eq.**

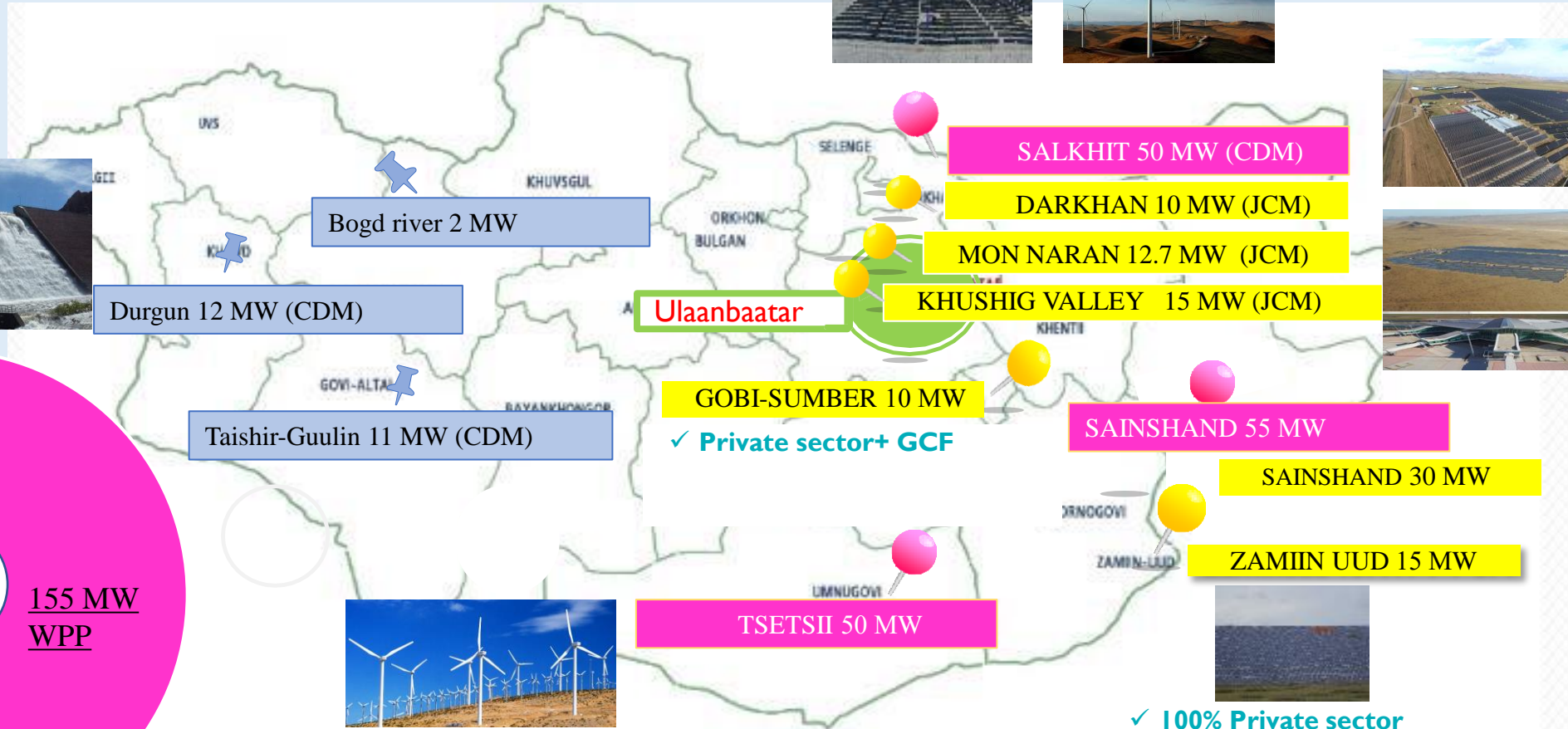
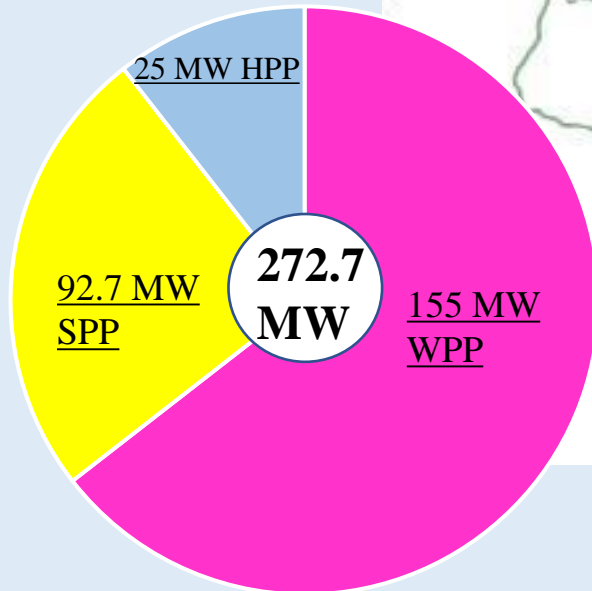
**2030**  
*591 thousand ha*  
**57 Mt CO<sub>2</sub>-eq.**

# CDM, JCM AND PRIVATE SECTOR ROLE IN RENEWABLE ENERGY DEVELOPMENT

Wind PP

Solar PP

Hydro PP



SOURCE : ERC



Thank you for your attention.