Intergovernmental Eleventh Regional Environmentally Sustainable Transport (EST) Forum in Asia

2-5 October 2-18

Shangri-La Hotel, Ulaanbaatar Mongolia

Sustainable Urban Design and Development ~ Role of EST

State of air quality and monitoring network in Mongolia

(Implementing activities)

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National Agency for Meteorology and Environmental Monitoring

Mongolia Sustainable Development Vision 2030

Sustainable Development objectives of Mongolia

- **Sustainable economic development**
- **Sustainable social development**
- **Environmental sustainability**

The objective of environmental sustainability is to ascertain inclusive economic growth and sustainable social development, and provide the fundamentals of improving the quality of people's lives by efficiently using natural resources, preserving the sustainability of the ecosystem, and creating opportunities to benefit from natural resources in the long-run.

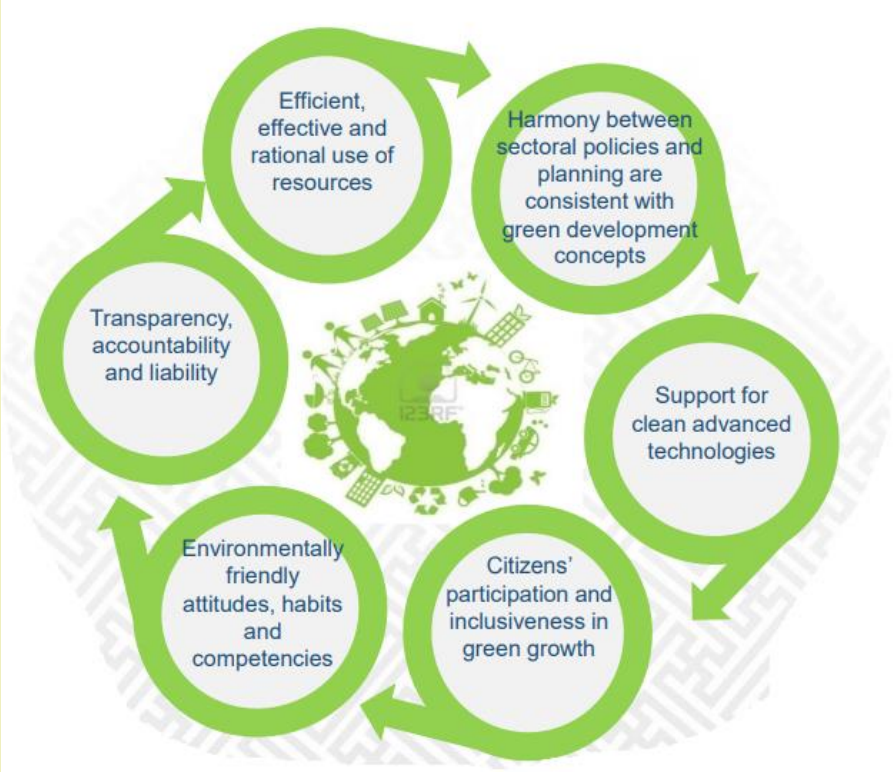
Green Development Policy of Mongolia

The long-term development goals of Mongolia are linked to the world's sustainable development goals for global development and green development.

Goal

The goal of the Green Development Policy is to advance Mongolia’s national development in an environmentally sustainable manner, building the conditions for future generations to benefit and gain in the long term and to ensure environmental sustainability through creation of growth based on green development concepts and through citizens’ participation and inclusiveness.

Principles of Green Development Policy

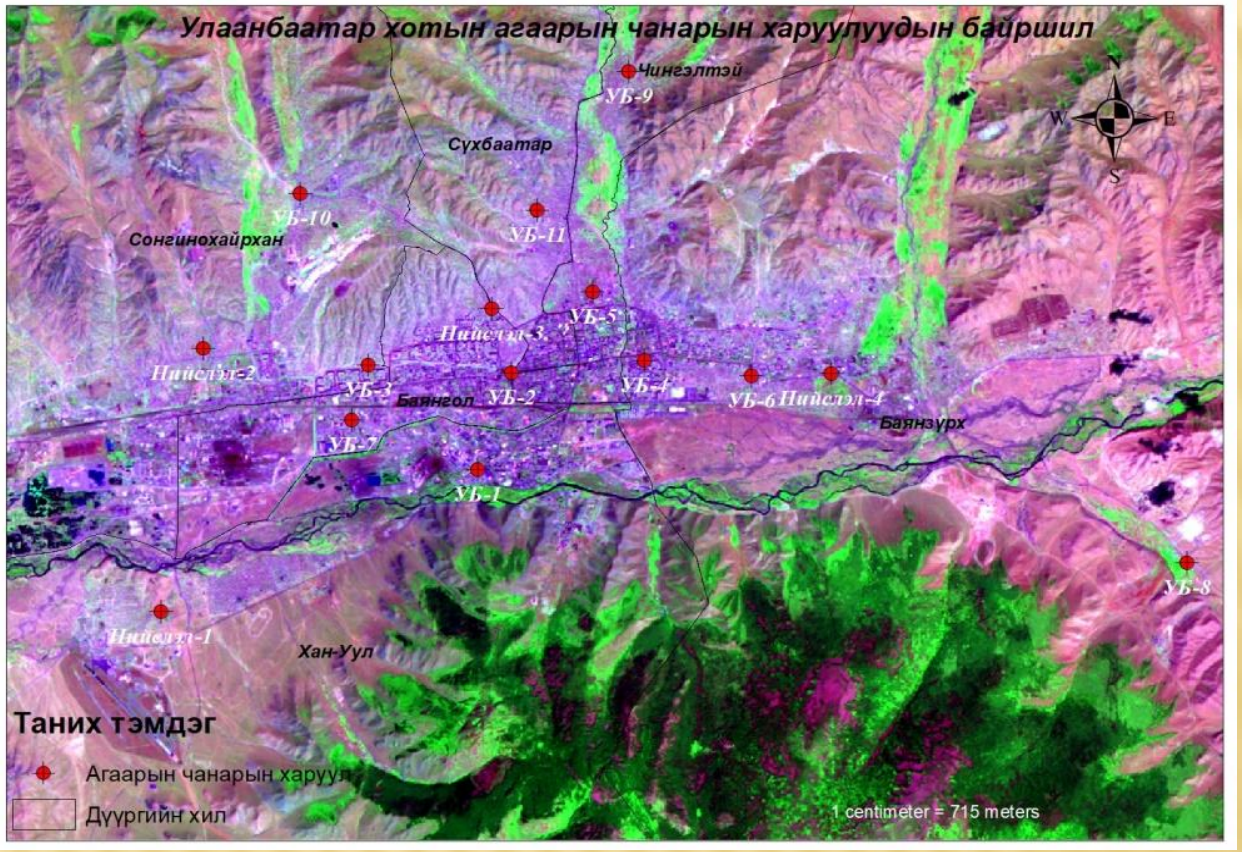


Air quality monitoring network

Air quality network in Mongolia

- SO2, NO2

Location of Air quality monitoring stations in Ulaanbaatar



- PM2.5, PM10, CO, SO2, NO2, O3
  - Нийт 15 харуул
  - 11 – Автомат , 4 – Автомат бус харуул

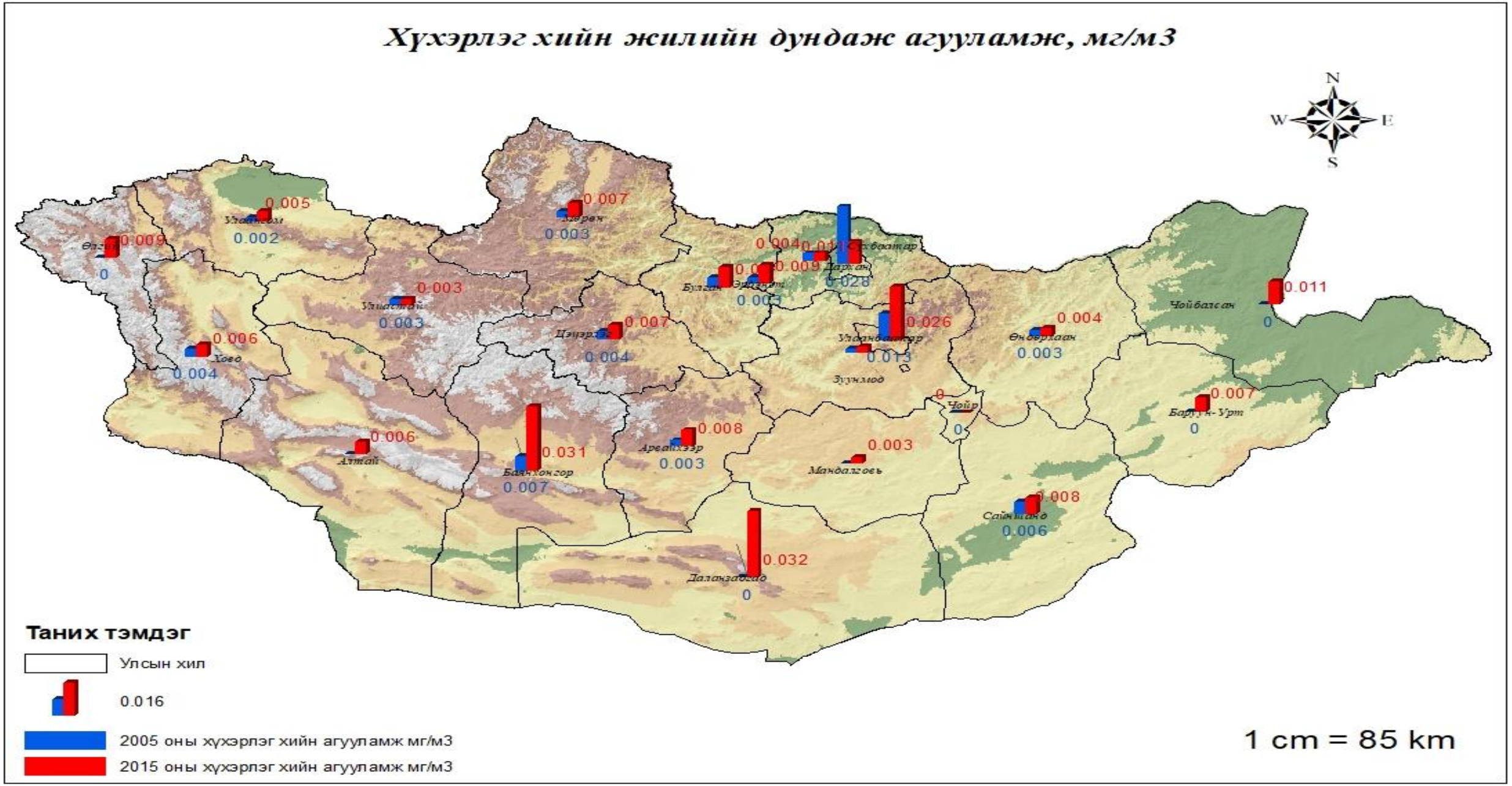
Automatic air quality monitoring station

Parameter	Avg. time	Methodology
Ambient PM concentration	15-min	β-gauge
SO2 concentration	15-min	UV-flourescence
NO2 concentration	15-min	Chemiluminescence
CO concentration	15-min	NDIR
O3 concentration	15 min	UV Absorption

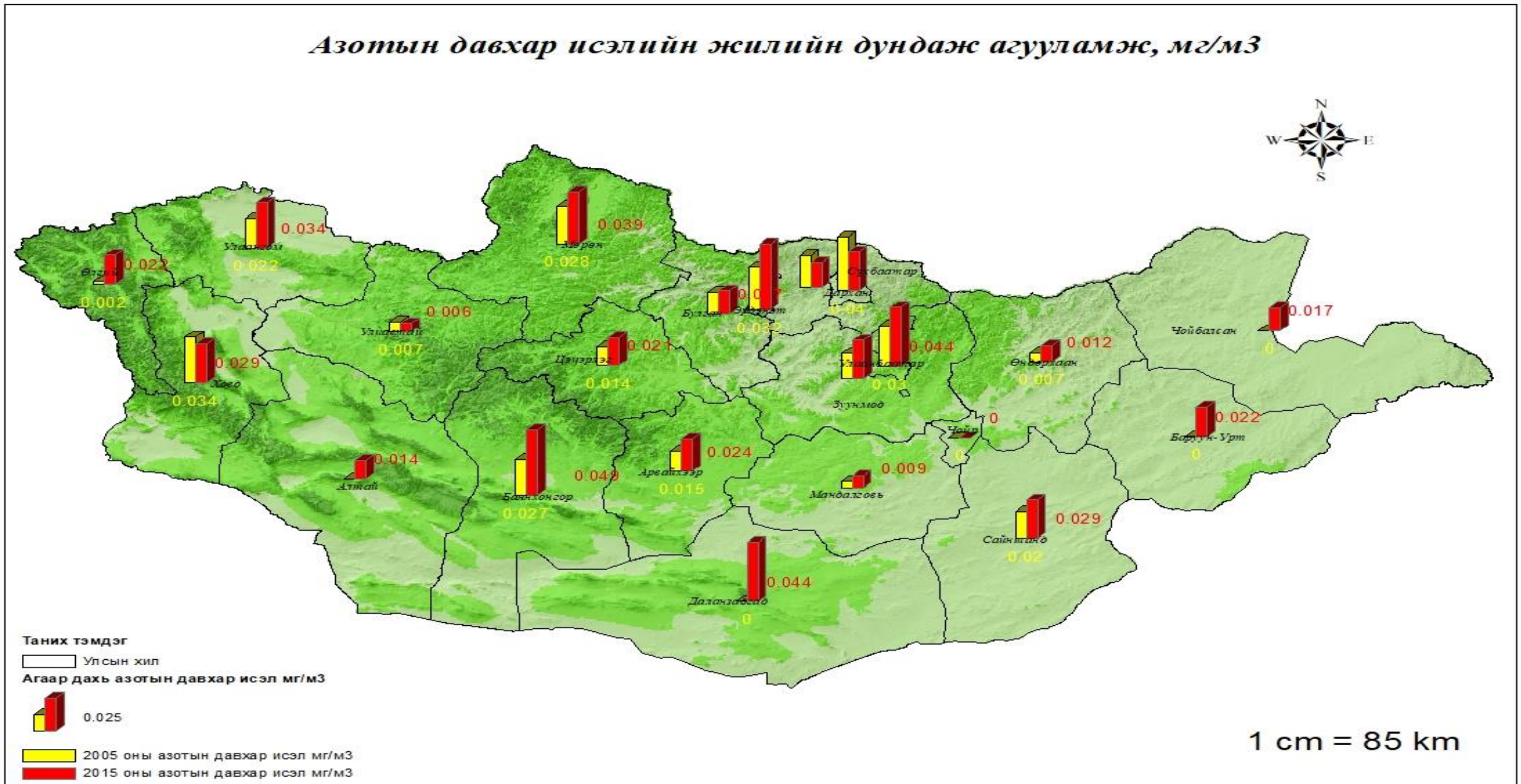
Manual air quality monitoring station

Pollutants	Averaging time	Methodology
PM_{10} concentration	24-цаг	Low volume sampler
SO2 concentration	24-цаг	Tetrachlormercurate /pararosaniline photometric method
NO2 concentration	24-цаг	1-naphtylamine photometric method

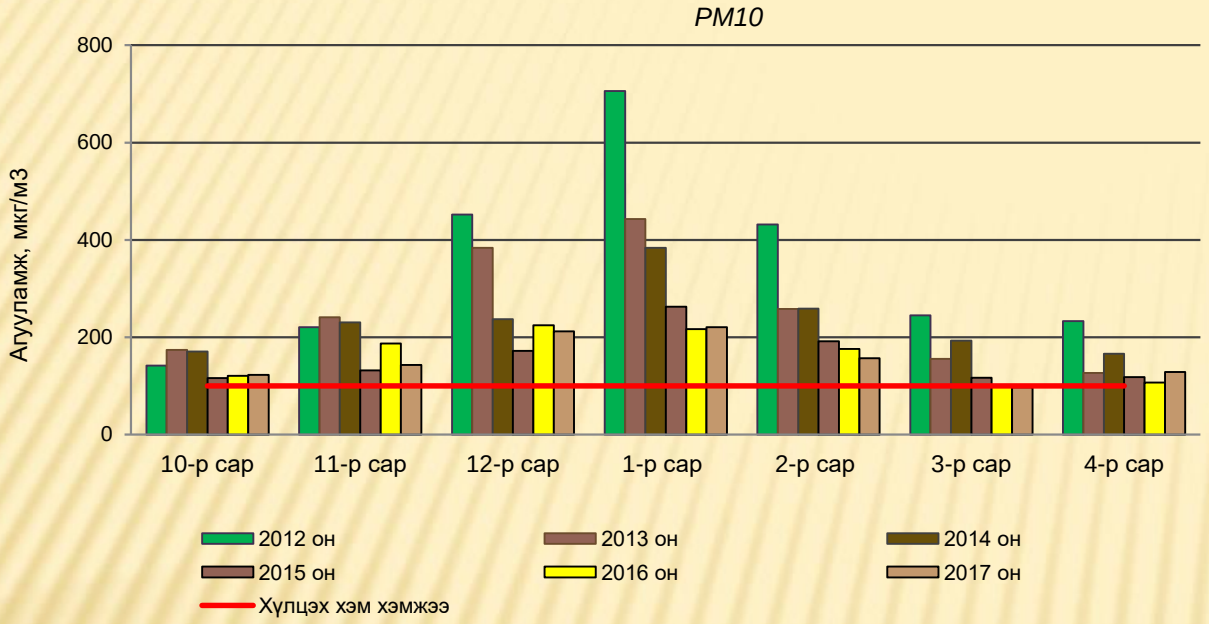
SO2 DISTRIBUTION MAP OF MONGOLIA

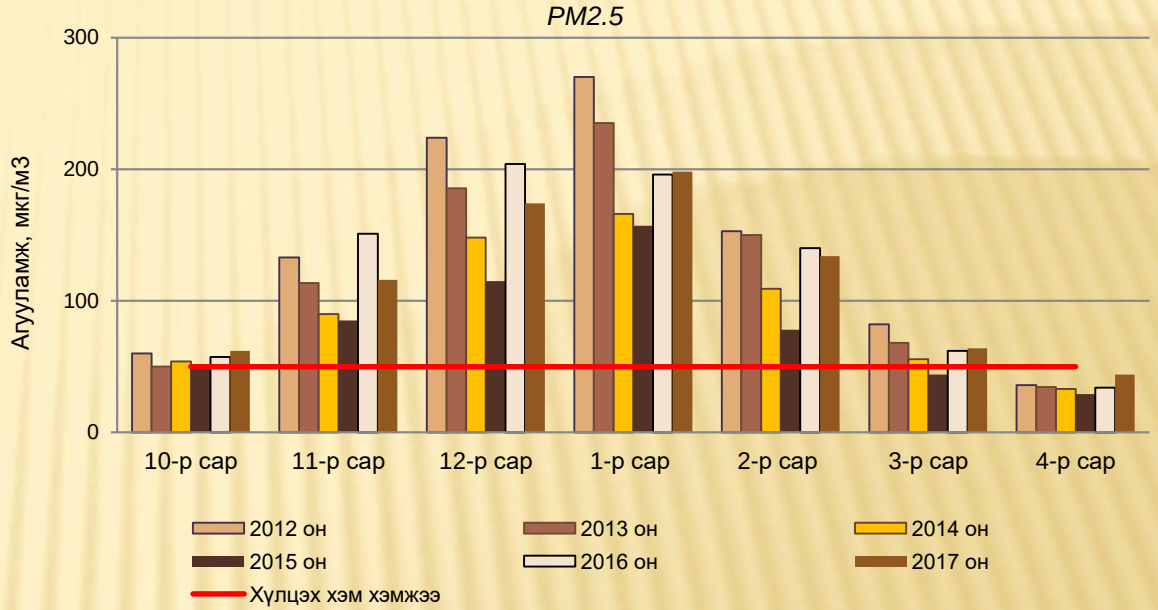


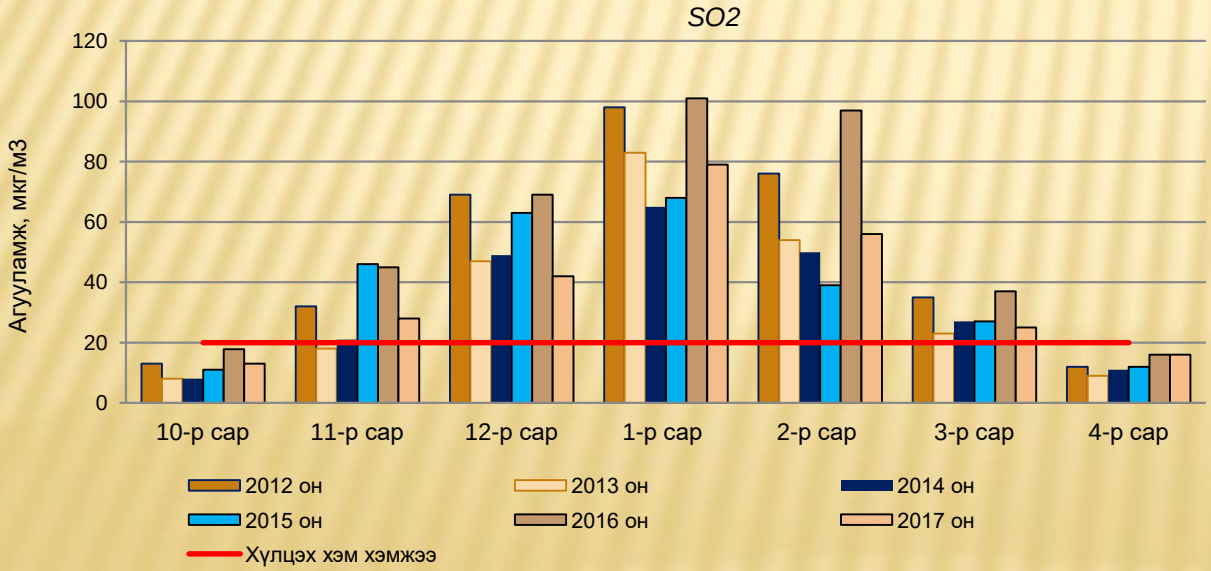
NO2 DISTRIBUTION MAP OF MONGOLIA

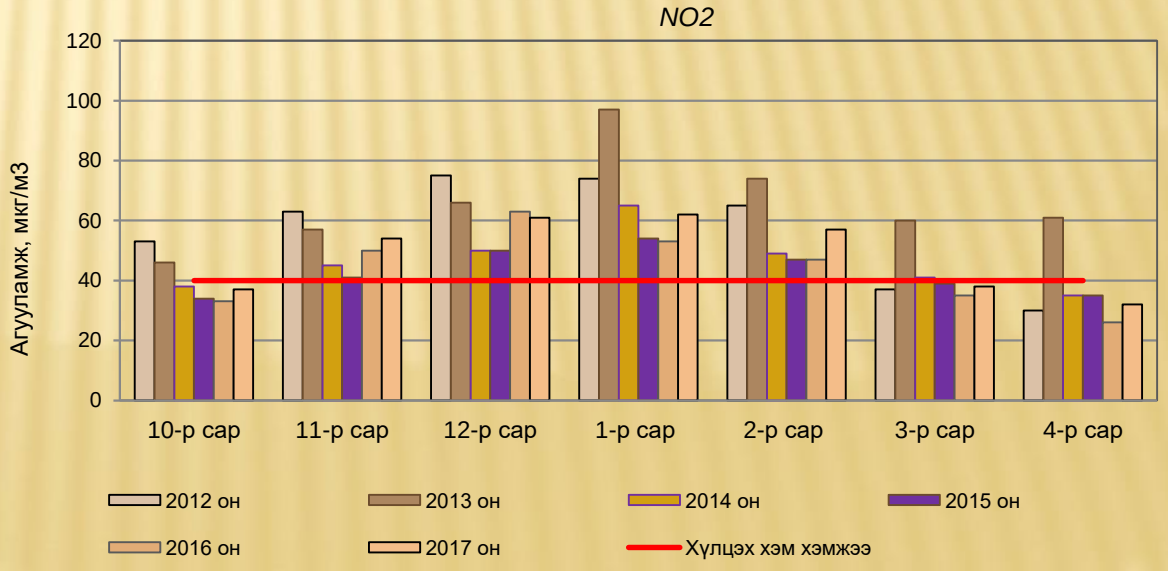


Air pollution trends in Ulaanbaatar 2012-2017



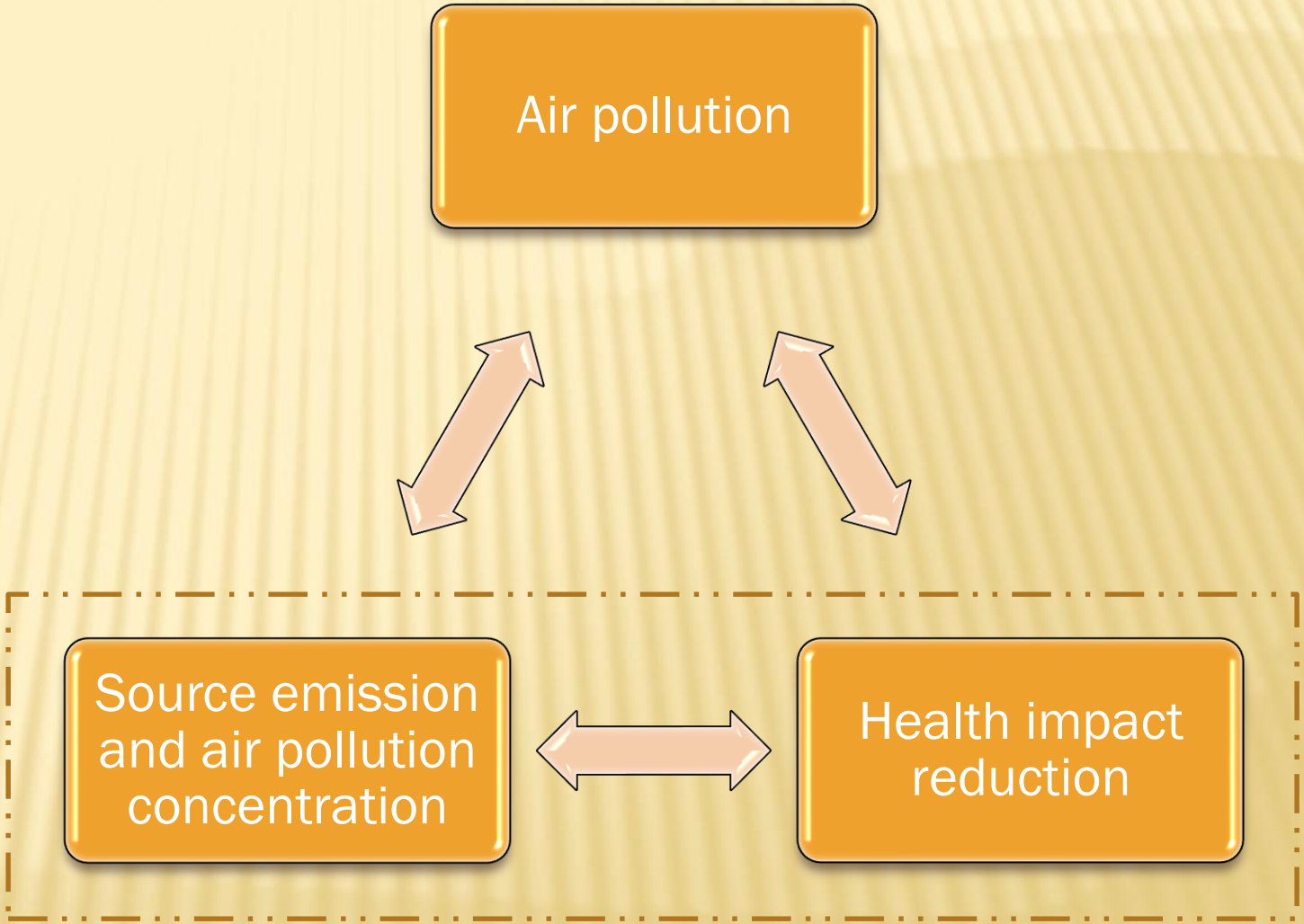






Air quality monitoring

What is it air pollution reduction?



How to improve air quality monitoring?

- Network
- Program
- Methodology
- Legal environment

Air quality monitoring

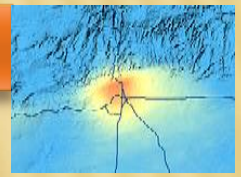
- Source inventory
- Emission inventory
- Measurement and Assessment
- Health assessment

How to improve and capacity building for air quality monitoring?

1. Improving and capacity building on air quality monitoring and network

2. Air pollotion sources and emission inventory

3. Air pollution forecasting



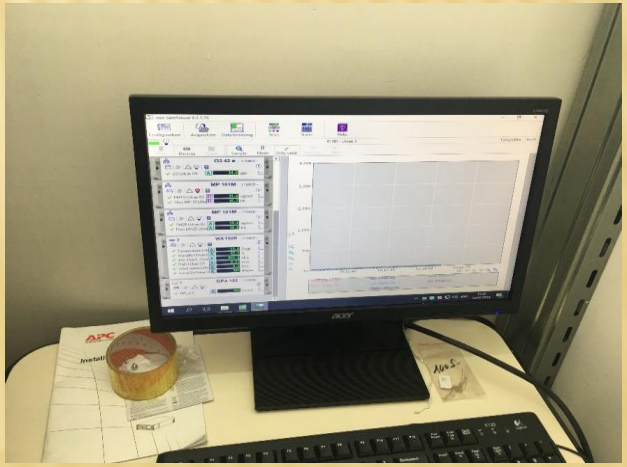
4. Air quality impact assessment for health

1 Improving and capacity building on air quality monitoring and network

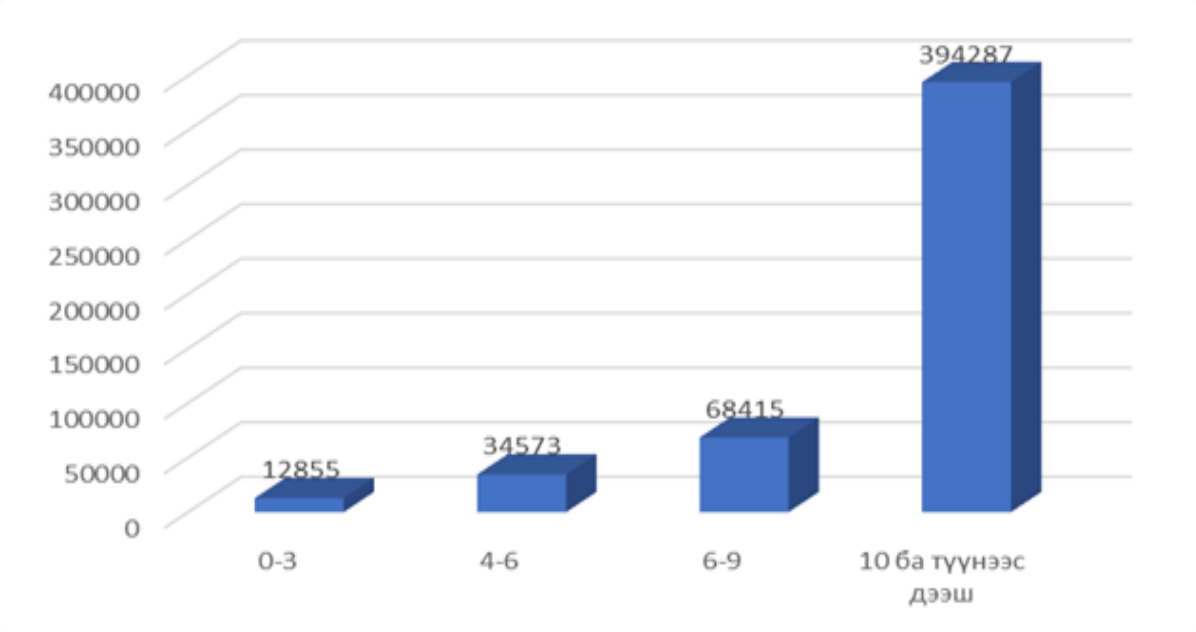
“IMPROVING AND CAPACITY BUILDING ON AIR QUALITY MONITORING” PROJECT

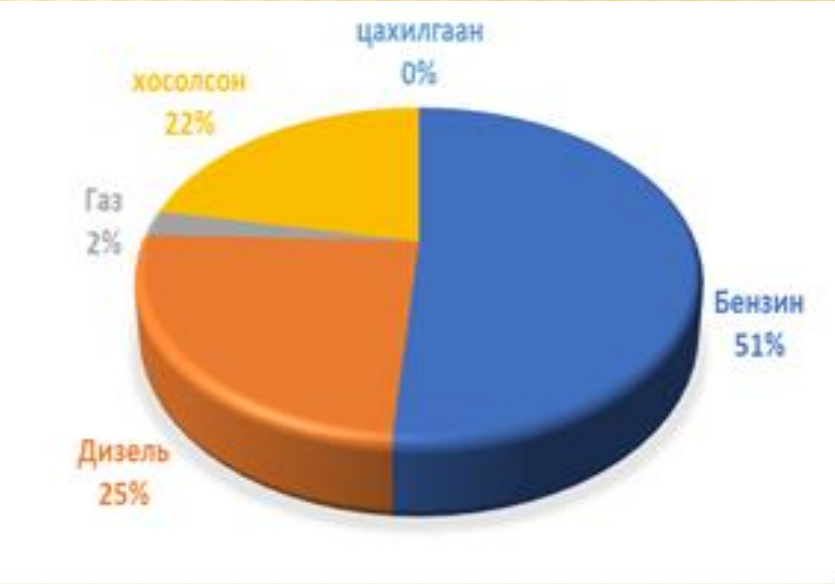
WORLD BANK

ULAANBAATAR
CLEAN AIR PROJECT



Source inventory, Ulaanbaatar, 2017





2 Development of emission inventory

Better Air Quality, Livable Cities.

CLEAN AIR ASIA

JAPAN ENVIRONMENTAL SANITATION CENTER
Asia Center for Air Pollution Research (ACAP)

CAA, ACAP Project, Development of emission inventory (EI) guidelines

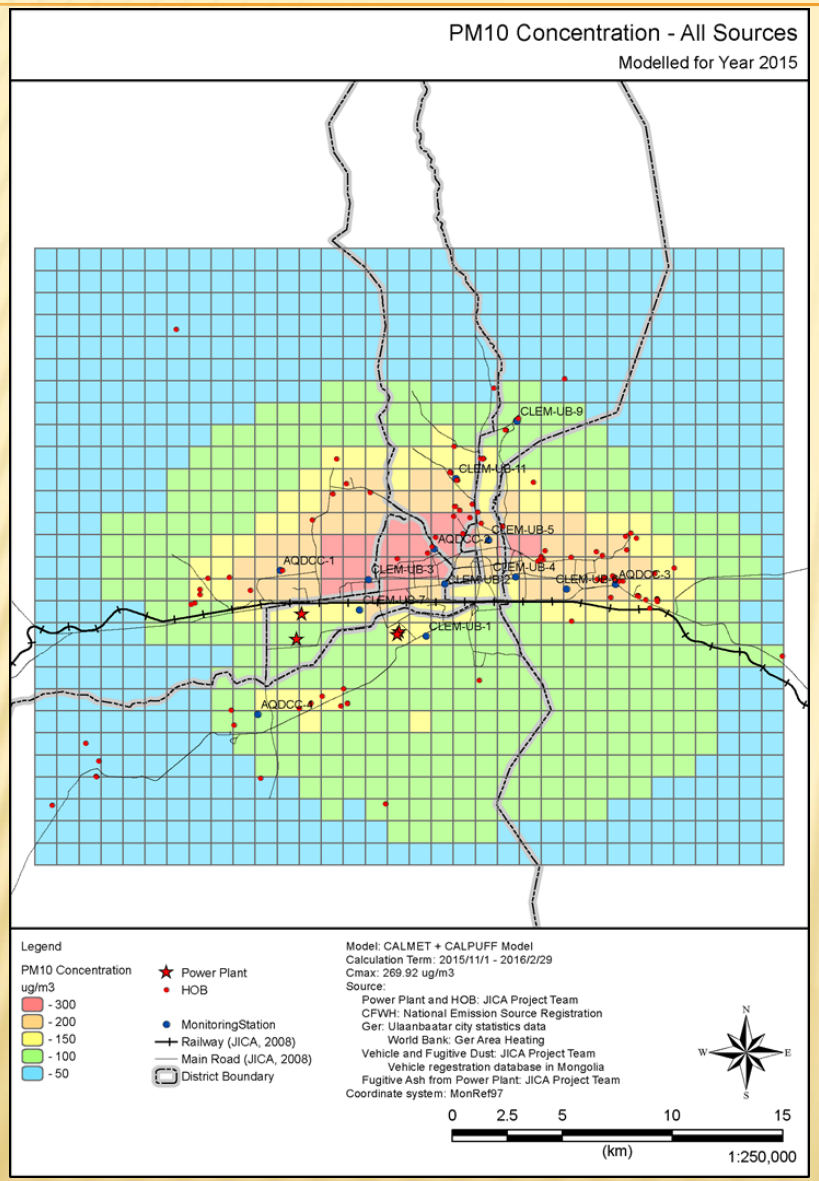
- Emission inventory manual
  - Emission estimation methodology:
    - Emission coefficient (E/C)
    - Activity data: On-Road, Air traffic, Railways
- Emission estimation
  - On-Road
  - Air traffic
  - Railways
- Modeling
- Capacity building training
  - National
  - Local.

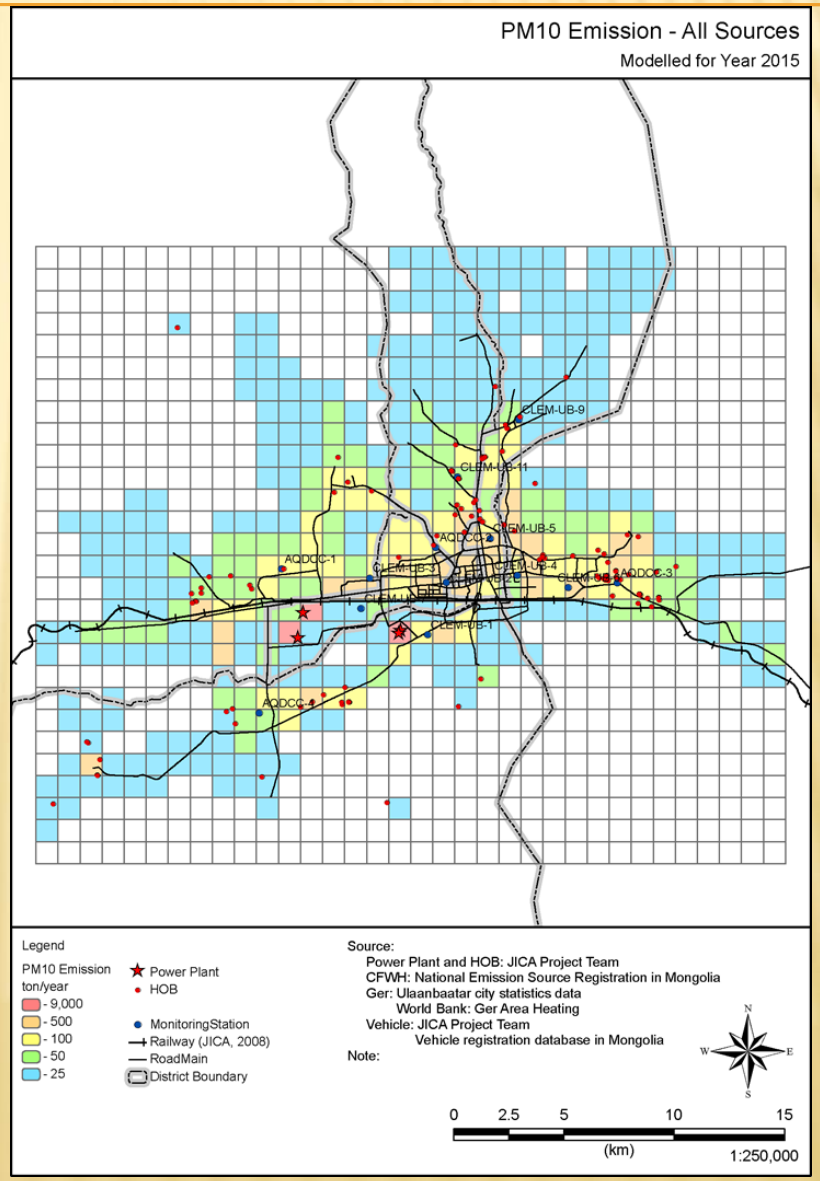
2 Development of emission inventory

- Air pollution sources:
  - Fuels
    - Stationary and mobile
  - Industry
  - Coal mining
  - Forest fire
  - Other sources

- Air pollutants:
  - SO2
  - NO **X**
  - TSP
  - PM10
  - PM2.5
  - CO

2 Source and emission inventory





3 Air pollution forecasting

National Agency for Meteorology and Environmental Monitoring

NATIONAL AGENCY FOR METEOROLOGY AND ENVIRONMENTAL MONITORING

CLIMATE CHANGE AND NATURE CONSERVATION FUND, MONGOLIA

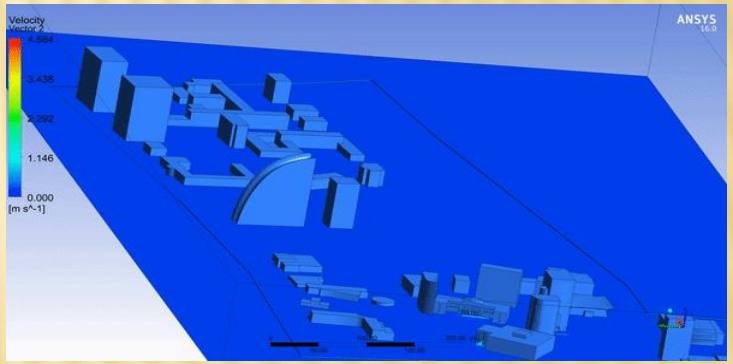
Project name: Development methodology for air pollution forecasting,

Модел: Цаг агаарын нөхцлөөс хамаарсан агаарын бохирдлыг загварчилна.

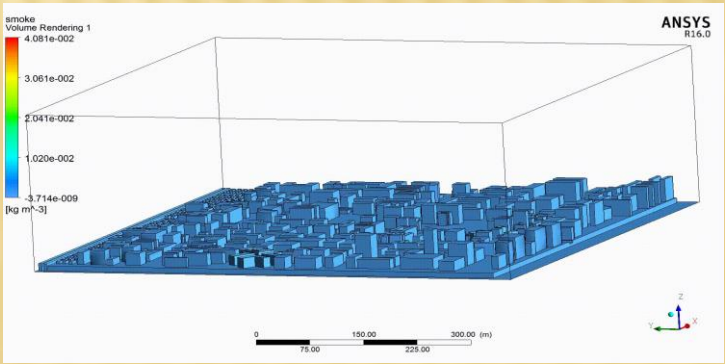
- CMAQ (Community Multiscale Air Quality Modeling System) загвар
- WRF (Weather and Research Forecasting model) загвар холбож

Үр дүн: Агаарын бохирдлоос урьдчилан сэрэмжлүүлэх технологи бий болно.

- УБ хотын агаарын бохирдлын орон зай, цаг хугацааны 4 хэмжээст загвар босно.
- Агаарын урсгал, агаар бохирдуулагчийн (PM2.5, PM10, CO, SO2, O3 гм) тархалтыг тоон загвар ашиглан загварчилж, орон зай, цаг хугацааны өндөр нарийвчлалтайгаар урьдчилан мэдээлнэ.



Төв талбайн орчмын агаарын урсгалыг загварчилсан жишээ



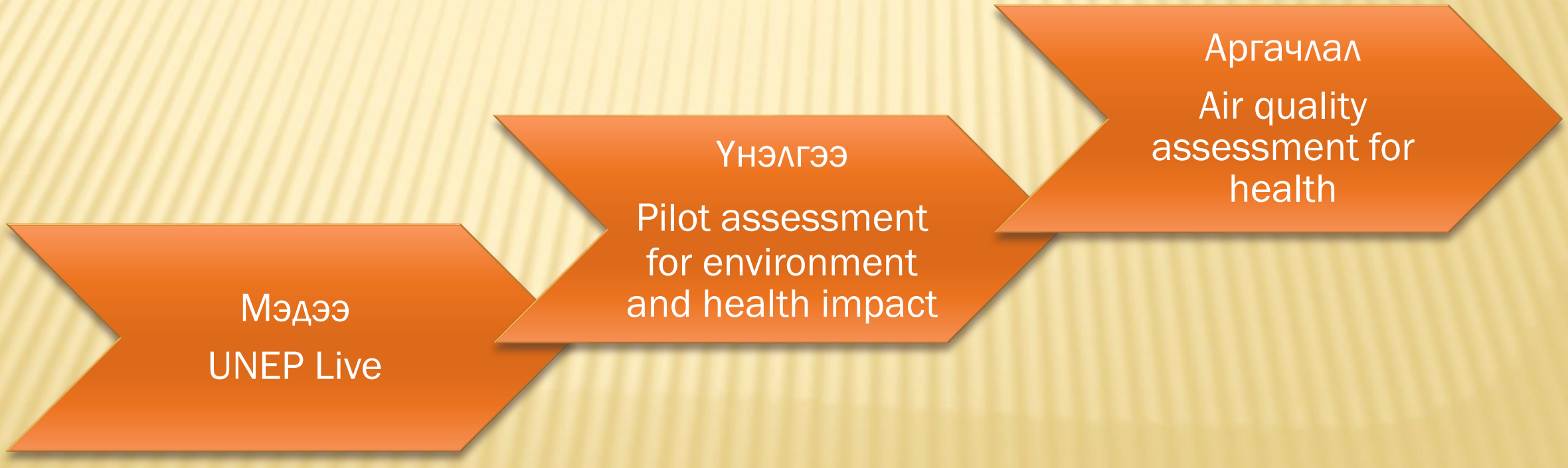
11-р хороолол, Sky дэлгүүрийн орчимд 100-айлаас бохирдуулагч зөөгдөж буй жишээ

Dr. Gantuya et all, Results of preliminary research.

4 Air quality impact assessment for health

UNEP, AP CAP Project, “Air quality assessments for Health and Development Policies in Africa and Asia pacific”, Mongolia.

- NAMEM
- Academy of Health Science



THANK YOU FOR YOUR ATTENTION