WORLD BANK GROUP

KOREA GREEN GROWTH TRUST FUND

Ministry of Finance and Economy

SEJONG CITY

KGID 2026 SEJONG

[Establishment of ICT-Based Integrated AQMS in Mongolia]

[Cho Byung-Hyun]

[Manager, K-eco, Republic of Korea]

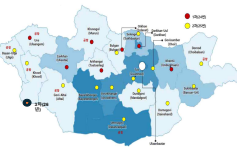
Overview ('23~'26, 4 Years)

1. Project Name
- Establishment of ICT-Based Integrated Air Quality Management System in Mongolia

2. Objectives
- Establishment of a Systematic and Scientific Air Quality Management System

3. Period and Budget
- 2023 ~ 2026(4 Years)
- 11.5 Billion KRW

4. Location
- Ulaanbaatar and 21 aimags



5. Details
- 24 Air quality monitoring stations
- 1 Mobile monitoring vehicle
- 1 Establishment of an integrated air quality management system
- Capacity Building etc.

SUSTAINABLE DEVELOPMENT GOALS

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Key Progress

Aug, 2021
- Received PCP, LoI

Jan, 2023
- Approval by the Office for Government Policy Coordination

2023 ~ 2024
- Signing the RoD
- Completion a Design

2025
- Completion 22 sites
- Completion ICT System

2026
- 3 additional sites under construction
- Capacity building

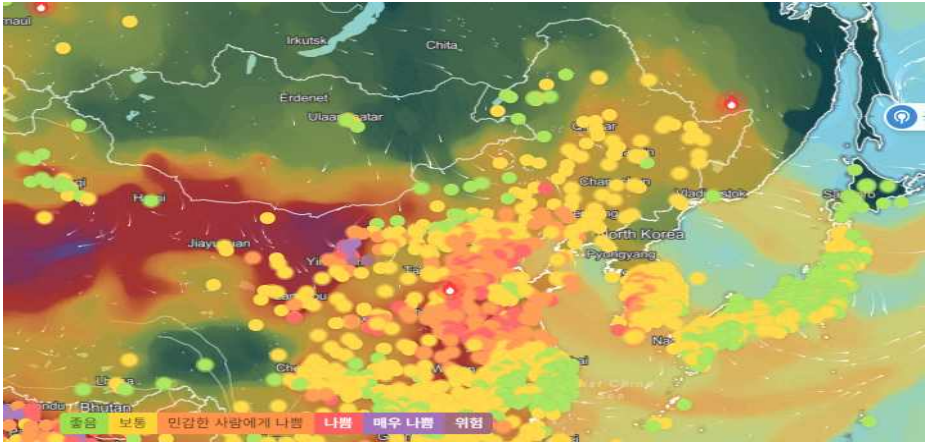
◆ Details of Major Tasks by Year

2023	2024	2025	2026
- Planning and Survey - Detailed Design - Invited Training	- Initiation of Air Monitoring Station Construction(22 Unit) - Initiation of ICT system	- Completion of AQMS Construction - Completion of ICT System - Revision of RoD	-Initiation of Air Monitoring Station Construction(3 Unit) - Capacity building

Geographical and Natural Characteristics in Mongolia

What image do we have of Mongolia?

But what is the reality in Mongolia today?


Irkutsk
Chita
Ulaanbaatar
Pyongyang
중용
보통
민감한 사람에게 나쁨
나쁨
매우 나쁨
위험

1. Develop a Master Plan for Improving Air Quality in Mongolia ('20~'21)

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1. Receipt of PCP, Preliminary Feasibility Study (’21~’22)

МОНГОЛ УЛСЫН САНГИЙН ЯАМ

БҮГД НАЙРАМДАХ СОЛОНГОС УЛСААС МОНГОЛ УЛСАД СУУГАА ЭРЧИЙН САЙДЫН ЯАМАНД

Төслийн санал хүргүүлэх тухай

Бүгд Найрамдах Солонгос Улсаас Монгол Улсад суугаа Элчин сайдын яаманд гүн хүндэтгэлээ илэрхийлэхийн ялдамд "Улаанбаатар хотын агаарын чанарын хяналтын системийг өргөтгөх, сайжруулах төсөл"-ийг Байгаль орчин, аялал жуулчлалын яамнаас дэмжин ирүүлснийг уламжлах завшаан тохиолдов.

Иймд хавсралтаар хүргүүлж буй төслийн санаатыг хүлээн авч холбогдох байгууллагад уламжлан, нааштайгаар шийдвэрлэхэд дэмжлэг үзүүлэхийг хүсье.

Хавсралт: 3 хуудастай.

ТӨРИЙН НАРИЙН БИЧГИЙН ДАРГА С.НАРАНЦОГТ

RECEIVED

9761009223

울란바토르시 ICT 기반
통합대기관리 시스템 사업
(2023~2025/11,700백만원)

예비 타당성 조사 보고서

2022. 1.

환경부 KEITI

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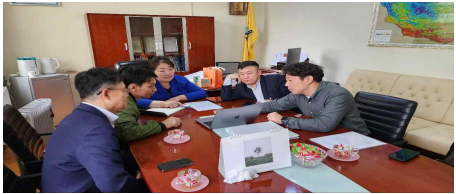
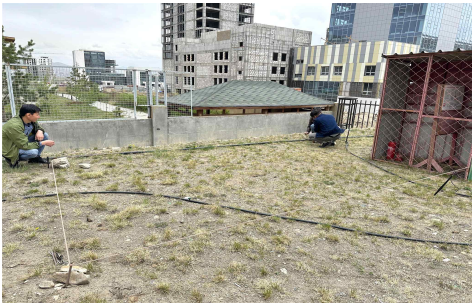
2. Implementation of the MECC's Green ODA Pilot Project('22~'23)





2. Implementation of the MECC's Green ODA Pilot Project('22~'23)

Promoting excellent air environmental policies & technologies in Korea

Meeting with Monogilan policymakers & practitioners

3. Signing of the Record of Discussion between RoK and Mongolia

RECORD OF DISCUSSION
BETWEEN
THE MINISTRY OF ENVIRONMENT, THE KOREA ENVIRONMENT CORPORATION OF THE REPUBLIC OF KOREA
AND
THE MINISTRY OF ENVIRONMENT AND TOURISM, MINISTRY OF FINANCE OF MONGOLIA
FOR IMPLEMENTING A PROJECT ON ESTABLISHMENT OF ICT-BASED INTEGRATED AIR QUALITY MONITORING SYSTEM IN ULAANBAATAR AND 21 PROVINCES OF MONGOLIA

The Ministry of Environment, and the Korea Environment Corporation (hereinafter referred to as "K-eco") of the Republic of Korea, and the Ministry of Environment and Tourism of Mongolia (hereinafter referred to as "MET") and the Ministry of Finance of Mongolia (hereinafter referred to as "MoF") have conducted a series of consultations and discussions on implementing a project on Establishment of ICT-based Integrated Air Quality Monitoring System in Ulaanbaatar and 21 provinces of Mongolia (hereafter referred to as the "Project").

As a result of the discussions, the Parties have agreed to present their respective Governments the matters described in the Terms of Reference as set forth in the Annex to the Record of Discussion, with an understanding that the Project will be implemented after this Record of Discussion (hereinafter referred to as "RoD") is signed by the Parties.

Signed in duplicate in English and Mongolian on the [illegible] by the representatives of the sides.

Bat-Erdene Bat-Ulzii
Minister
Ministry of Environment and Tourism
Mongolia

Wha Jin Han
Minister
Ministry of Environment
Republic of Korea

Javkhlan Bold
Minister
Ministry of Finance
Mongolia

Byungok Ahn
Chairperson
Korea Environment Corporation
Republic of Korea

AMENDMENT TO THE RECORD OF DISCUSSION BETWEEN
THE MINISTRY OF ENVIRONMENT, THE KOREA ENVIRONMENT CORPORATION OF THE REPUBLIC OF KOREA
AND
THE MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE, THE MINISTRY OF FINANCE OF MONGOLIA
FOR IMPLEMENTING A PROJECT ON ESTABLISHMENT OF ICT-BASED INTEGRATED AIR QUALITY MONITORING SYSTEM IN ULAANBAATAR AND 21 PROVINCES OF MONGOLIA

The Ministry of Environment (hereinafter referred to as "ME"), and the Korea Environment Corporation (hereinafter referred to as "K-eco") of the Republic of Korea, and the Ministry of Environment and Climate Change of Mongolia (hereinafter referred to as "MECC") and the Ministry of Finance of Mongolia (hereinafter referred to as "MoF") have conducted a series of consultations and discussions on implementing a project on Establishment of ICT-based Integrated Air Quality Monitoring System in Ulaanbaatar and 21 provinces of Mongolia (hereafter referred to as the "Project").

As a result of the discussions, the Parties have agreed to present their respective Governments the matters described in the amendment to the Terms of Reference to the Record of Discussion on the amendment, with an understanding that the Project will be implemented after this Record of Discussion on the amendment (hereinafter referred to as "RoD") is signed by the Parties.

Signed in duplicate in English and Mongolian on the September 30, 2021 by the representatives of the sides.

Batbaatar Bat
Minister
Ministry of Environment and Climate Change of Mongolia

Sung-Whan Kim
Minister
Ministry of Environment
Republic of Korea

Javkhlan Bold
Minister
Ministry of Finance
of Mongolia

Sang-Jun Lim
Chairperson
Korea Environment Corporation
Republic of Korea

1. Detailed Design
2. Establishment of Air Quality Monitoring Stations(24)
3. Monitoring vehicle (1 unit)
4. ICT System
5. Capacity Building(For Staff)

1. Establishment of Air Quality Monitoring Stations (3, Ulaanbaatar City)
2. Installation of Additional Air Quality Monitoring Equipment(21 aimags)
3. Capacity Building(For Senior Officials)
4. Production of promotional Videos

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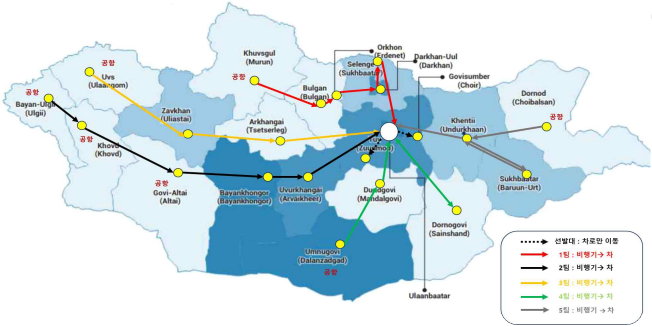
4. Detailed Design('23 ~ '24)



No	Aimags	Vehicle Mileage
Advance Team	**Choir, Zuunmod**	630 km
Team 1	**Murun, Bulgan, Sukhbaatar, Erdenet, Darkhan**	1,100 km
Team 2	**Ulgii, Khovd, Altai, Bayankhongor, Arvaikheer**	1,765 km
Team 3	**Ulaangom, Uliastai, Tsetserleg**	1,760 km
Team 4	**Dalanzadgad, Mandalgovi, Sainshand**	1,590 km
Team 5	**Choibalsan, Undurkhaan, Baruun Urt**	1,480 km
TOTAL		**8,325 km**

- Survey on the Status of Operation of Air Monitoring Stations and Information Systems in 21 Aimag
- Survey of Potential Sites for Monitoring Stations
- Requirements for Station Construction Design and Cost Estimation
- Development of Training and Operational Management Plans

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4. Detailed Design('23 ~ '24)

Equipment

- ✓ Equipment for which Type Approval for Environmental Measurement Instruments was Obtained from the MCEE
- ✓ Function to display measurement values in the Mongolian air quality standard unit system (μg/m³) (data logger conversion and transmission)
- ✓ Ensuring Precision and Accuracy Under Mongolian Extreme Winter Conditions

Requirements of Key Design

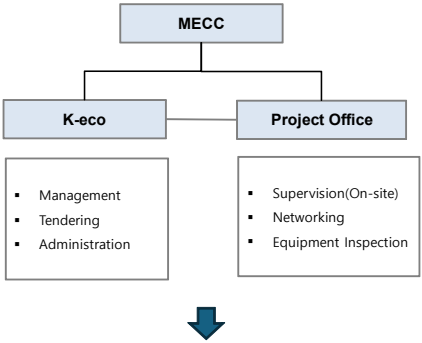
Others

- ✓ Establishing a meteorological measurement system
- ✓ The maximum wind speed of the anemometer
- ✓ Maintenance method, Decive manual

Consumables

- ✓ Common feedback from each aimag: Request for provision of spare consumables
- ✓ Calibration standard gases, various filters (DFU, PM roll tape, 47mm sample filter), O-rings, silica gel, pumps and fittings, Teflon tubing

5. Establishing an Organizational Structure for Strategic



- Promoting tailored overseas projects through close cooperation and communication

6. Installation of Air Quality Monitoring Equipment(Plan)

Production
- Measuring Device
- Accuracy Check

Transport
- Air, Sea & Land

Customs clearance
- Customs Inspection (Tax-free)

Storage
- Warehousing
- Primary Inspection

Local Transport
- Transportation & Installation to each Aimag

	Category	Equipment Photos	Model Name (Manufacturer)	Unit	Quantity	Required Performance	Performance Verification	Satisfaction
1	SO2 Monitor		MEZUS 110 (Korea/Korea)	SET	15	Measurement range, minimum detection limit, Zero drift, linearity	Certified Test Report, Type Approval Certificate, EPA Test Report, K-Mark Quality Certification, K-Mark Performance Inspection Comparison with Specifications	Equivalent to or better than specifications.
2	NO/NO2/NOx Analyzer		MEZUS 210 (EU/EU/Korea)	SET	15			
3	CO Analyzer		MEZUS 310 (Korea/Korea)	SET	1			
4	O3 Meter		MEZUS 410 (Korea/Korea)	SET	1			
5	PM10 Monitor		MEZUS 610 (Korea/Korea)	SET	1			
6	PM2.5 Monitor		MEZUS 610 (Korea/Korea)	SET	15			
7	Fine Dust (PM10, PM2.5) Continuous Sampler		FDS-200 (Doil Tech)	SET	1		Used by the Korea Environment Corporation	
8	Calibrator		MEZUS 510 (Korea/Korea)	SET	15	Repeatability: 0.5% or less	Repeatability: ≤ 0.2%	
9	Zero Air Generator		MEZUS 520 (Korea/Korea)	SET	15			
10	Air Intake and Distribution Unit		6 ports or more (Korea/Korea)	SET	15			
11	Standard 19-inch rack cabinet for equipment installation		1800 x 900 (DO/Korea)	SET	15			
12	Tool Box		-	SET	15			
13	Standard Flow Meter		FC-100 (Doil Tech/Korea)	SET	15	Accuracy: 0.75% or less	Accuracy: 0.75% or less	
14	Data Logger (Data Collector, General Equipment)		KN 710 (Korea/Korea)	SET	15			
15	Functional Requirements		Application	SET	15			
16	Weather Measurement System		WXT536 (Vaisala/Finland)	SET	15	-52°C or lower	Mongolian environmental verification completed	
17	Data Logger for Meteorological Measurement Systems		-	SET	15			
18	2-year worth of consumables and parts		-	SET				
19	Fixed measuring station		Manufacturing Specifications (Korea/Mongolia)	SET	14			
20	Mobile Monitoring Station		Manufacturing Specifications (Korea)	SET	1			
21	Mobile Measurement Vehicle Hangar (Garage Site)		Manufacturing Specifications (Korea/Mongolia)	SET	1			
22	Support Equipment		-	SET	15			

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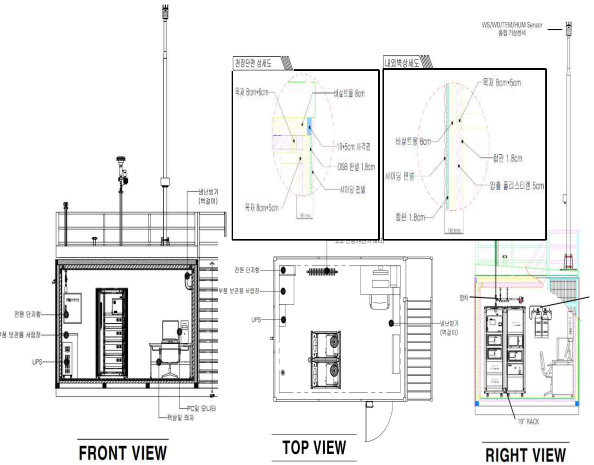
6. Installation of Air Quality Monitoring Equipment(Plan)



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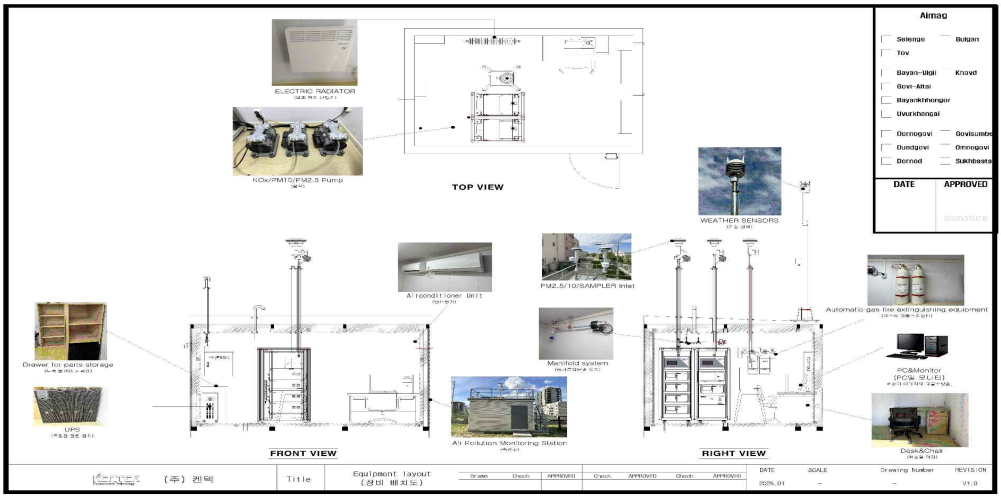

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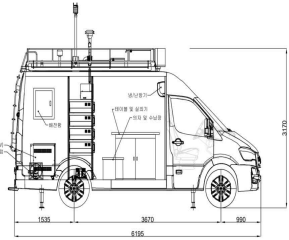

6. Installation of Air Quality Monitoring Equipment(Site Visting)

Bayankhongor아이막(Bayankhongor 바양홍고르)	Bayan-Ulgii 아이막 (Ulgii, 올기)
	
Bulgan 아이막 (Bulgan, 불강)	Govisumber 아이막 (Choir, 처이르)
	
Darnod 아이막 (Choibalsan, 처이발상)	Dornogovi 아이막 (Sainshand, 사인샨드)
	
Dundgovi 아이막 (Mandalgovi, 만달고비)	Govi-Altai 아이막 (Altai, 알타이)
	
Khovd 아이막 (Khovd, 홉드)	Omnogovi아이막(Dalanzadgad 달란자드가드)
	
Selenge 아이막 (Sukhbaatar, 수흐바타르)	Sukhbaatar아이막 (Baruunturt, 바룬우르트)
	
Tov 아이막 (Zuunmod, 준모드)	Uvurkhangai아이막(Arvaikheer 아르바이헤르)
	

구분	Dornogovi	Dundgovi	Govi-Altai	Khovd	Omnogovi
전압					
통전 및 상태					

- **Meeting with Mongolian officials and visting a final site**
  1) **Availability of Electrical service**
  2) **Final confirmation of instalation site**
  3) **Confirm a Construction schedule**

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6. Installation of Air Quality Monitoring Equipment (Domestic Inspection)

Alignment

PM2.5 Monitor

PM2.5 Monitor Inlet

Data logger

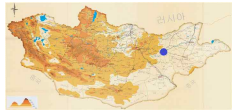
Gas Monitor

Particulate Matter Monitor

Vacuum pump

6. Installation of Air Quality Monitoring Equipment(On-Site)

The installation site and measuring instruments in Undurkhaan (Khentii Aimag, April 23, 2025)



Customs clearance and transportation of measuring instruments

Inspection of foundation work at the monitoring station

Power supply connection work

On-site installation of measuring stations

On-site training and hands-on practice

Indoor Installation of Gas Monitoring Equipment

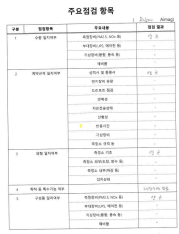
Outdoor Installation of Fine Dust Monitors

On-site transportation of measuring instruments

6. Installation of Air Quality Monitoring Equipment (Inspection & Performance testing)

설치(납품)확인서

주요점검 항목

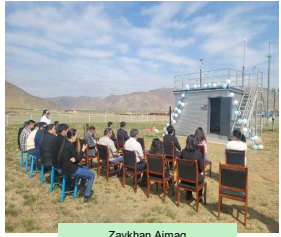


6. Installation of Air Quality Monitoring Equipment(Completion)

Arhangai Aimag

Khentii Aimag

Khuvsgul Aimag



Zavkhan Aimag

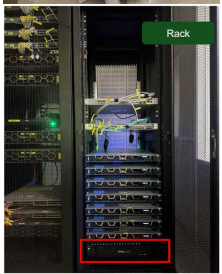
Orkhon Aimag

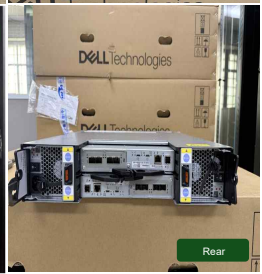
7. Development of Integrated Air Quality Management System (Field Surveys and Stakeholder Interviews)

7. Development of Integrated Air Quality Management System (On-site Inspection)

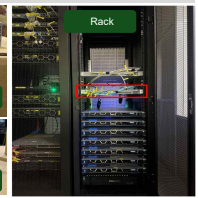
7. Development of Integrated Air Quality Management System (Compatibility & Verification)

Storage





SAN Switch



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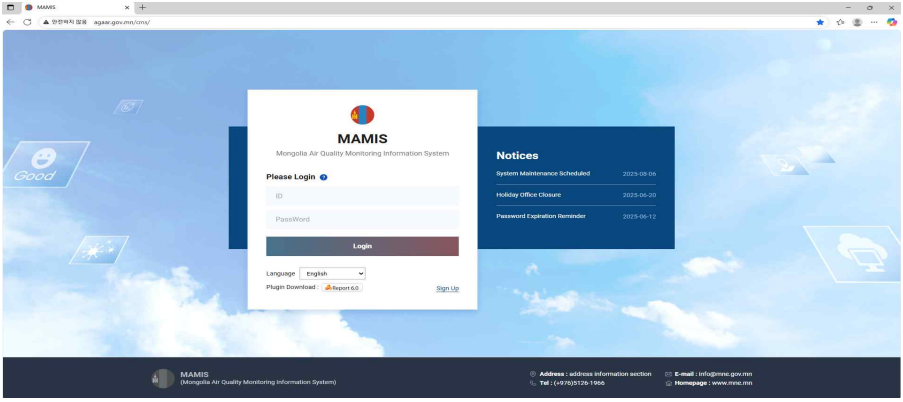
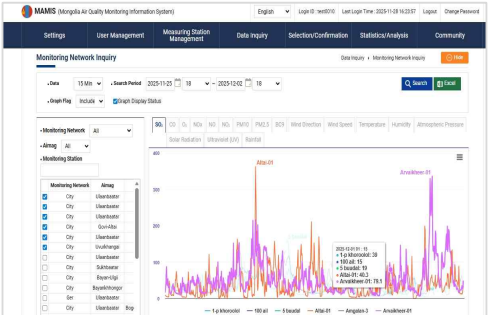
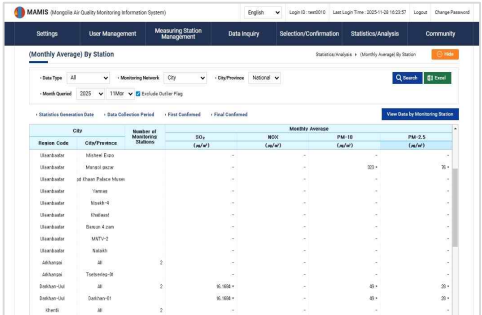
7. Development of Integrated Air Quality Management System
(Establishment of Mongolia's National Air Quality Management System)

Rog in

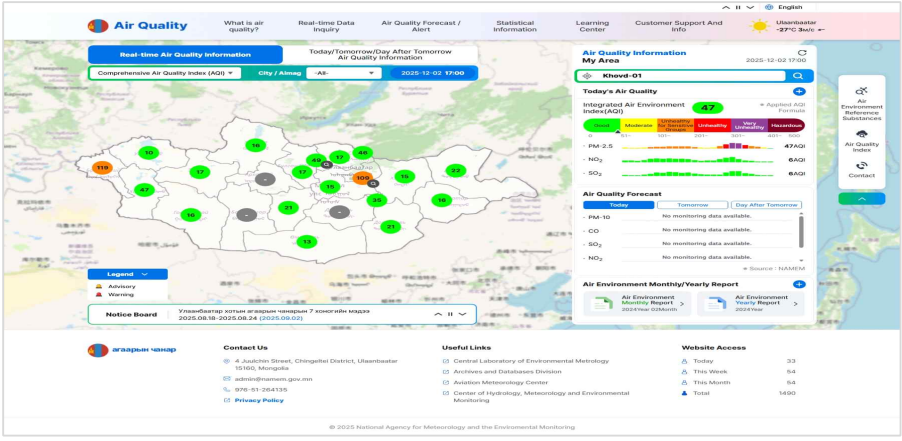


7. Development of Integrated Air Quality Management System
(Establishment of Mongolia's National Air Quality Management System)





7. Development of Integrated Air Quality Management System
(Establishment of Air Mongolia(Agaarin channel))



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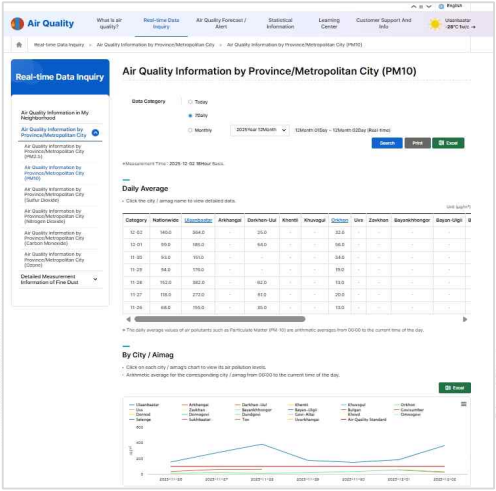

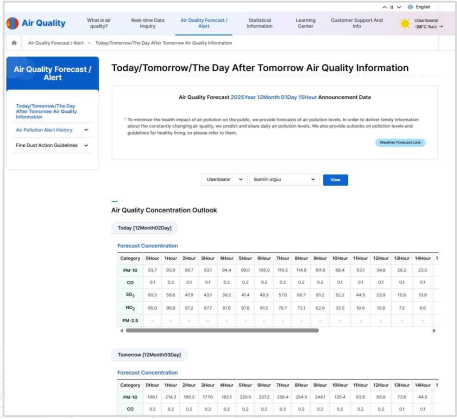

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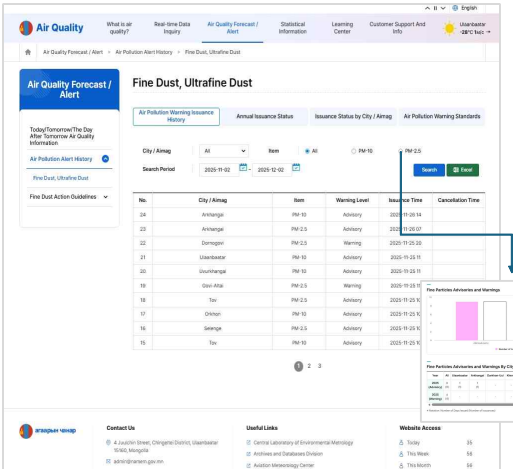
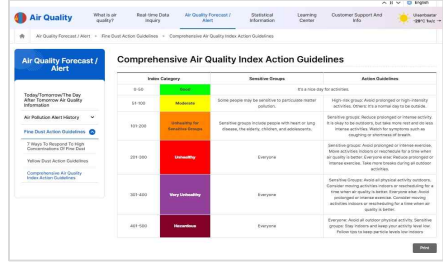
(Establishment of Air Mongolia(Agaarin channel))





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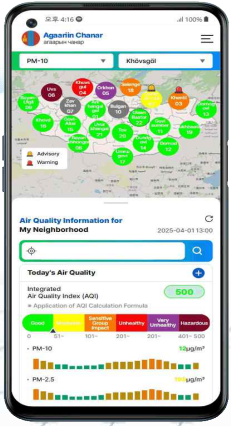

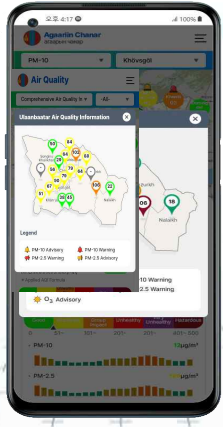

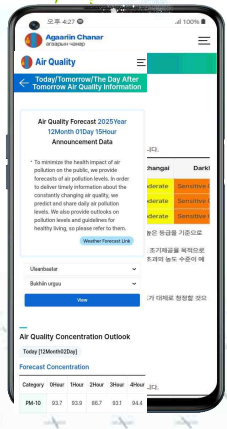

8. Capacity Building(Inviting & Local education)

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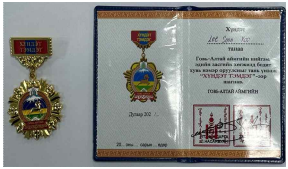
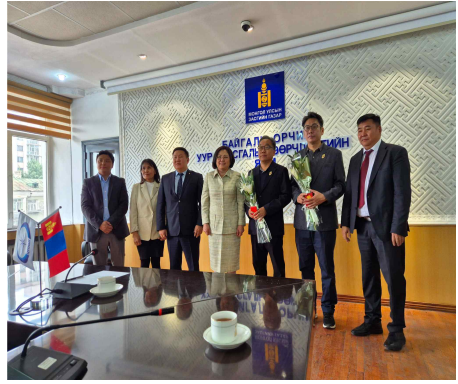
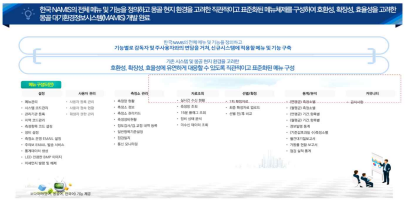
1. Public Promotion of the Mongolia-Korea Week (KOREA WEEK)

2. Receiving of Mongolian Government Medals and Certificates





Enhancing Global Leadership	**Implementation of pioneering and proactive ODA projects to improve air quality in Northeast Asia**
Exporting Korea's Best Practices	**Exporting Korea's Air Quality Policies Tailored to Overseas Needs (Air Korea, NAMIS)**
Supporting the Overseas Expansion of Domestic Companies	**Establishing a Foundation for Overseas Expansion**
Package Model	**Developing exemplary ODA projects in Korea's air quality sector for dissemination to other Countries**



KGID 2026 SEJONG

A flagship success story of the MECC's Green ODA is taking shape in "Mongolia"

Scientific
Air Quality Measurement

Systematic
Air Quality Management System

Sustainable
Maintenance System

Establishment of a Mandatory follow-up management System

Thank you

Ministry of Climate, Energy and Environment

K-eco