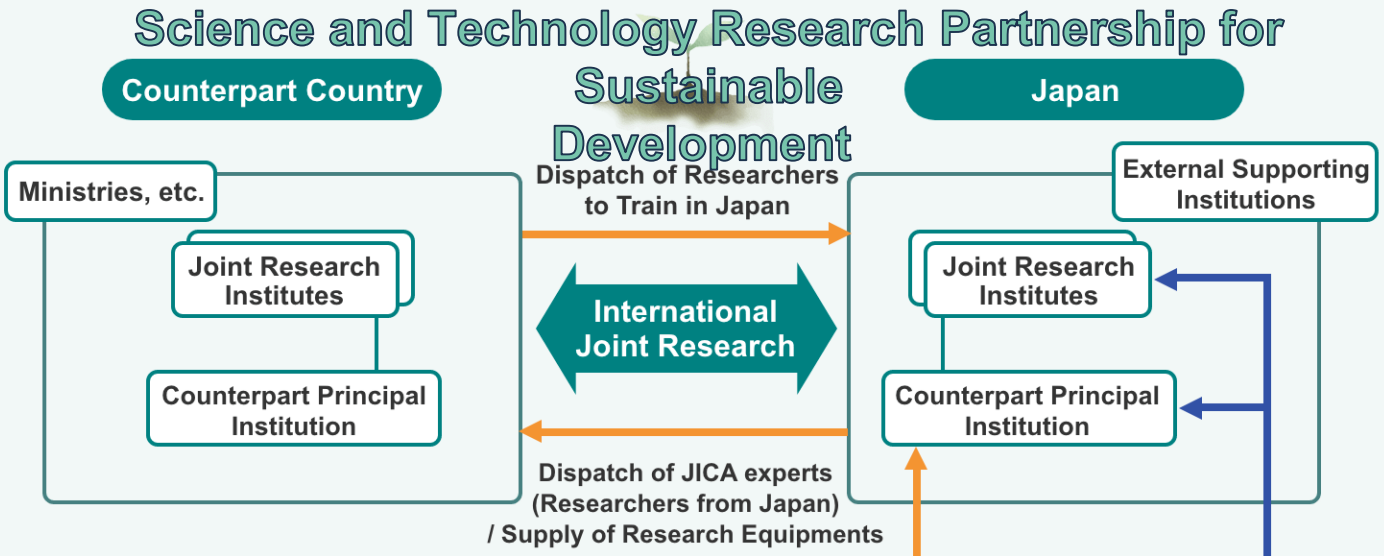
The project for development of a satellite data- and a regional chemical transport modeling-based air pollution assessment system and formation of a research center for air pollution studies

Agenda

- About SATREPS
- Implementation Structure
- Project’s purposes
- Implementation plan
- Q&A

Science and Technology Research Partnership for Sustainable Development



Supports covered by JST research expenses

Supports covered by JICA ODA expenses

※ With regard to ODA project expenses, expenses in the recipient country are managed by the principal investigator's institution, except for expenses that JICA directly shoulders, such as dispatch of long-term overseas researchers and project coordinator, etc.

Funds for research expenses in the recipient country / Project management & Evaluation

JICA

Ministry of Foreign Affairs

Funds for research expenses in Japan / Project management & Evaluation

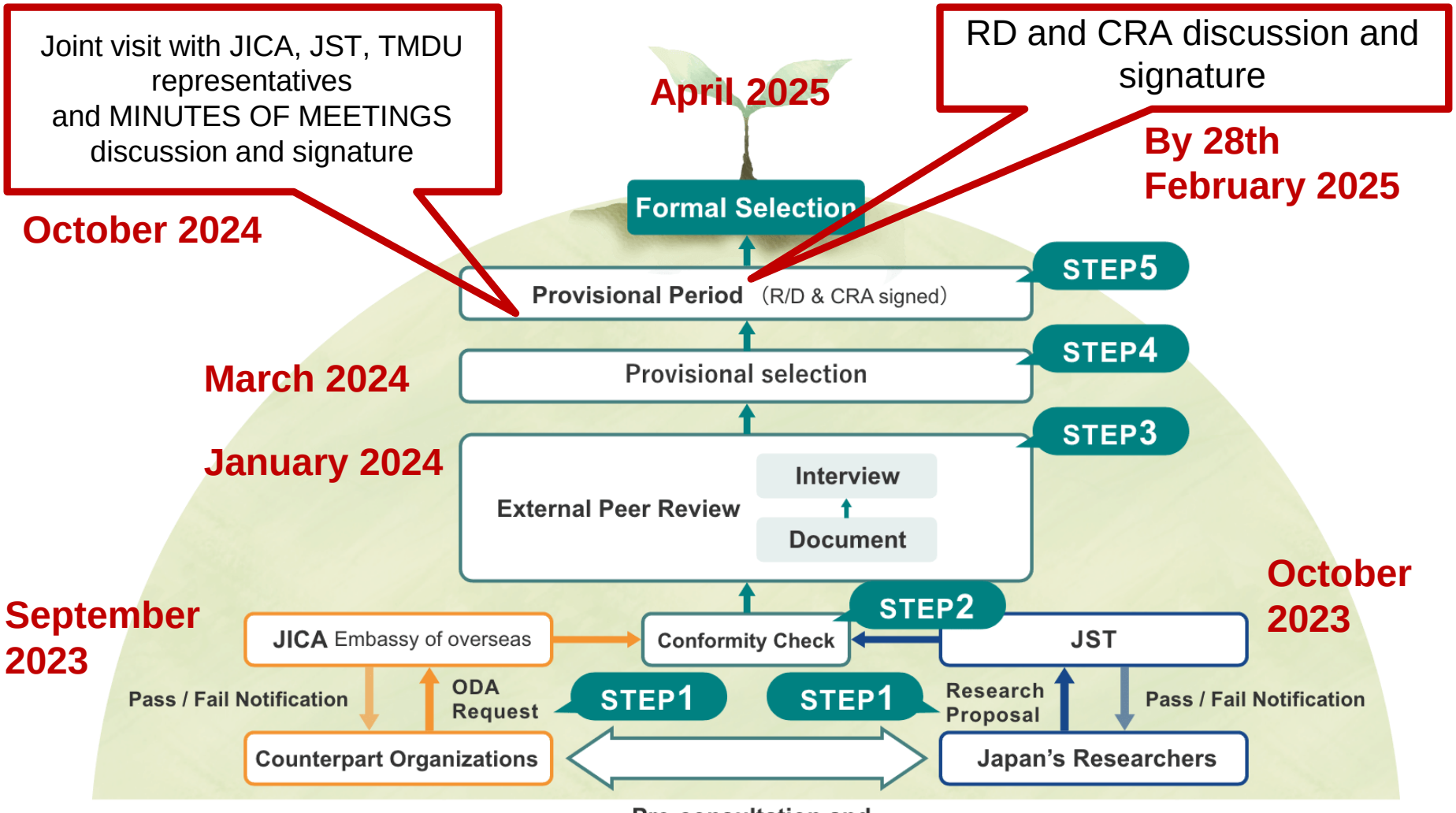
JST

Ministry of Education, Culture, Sports, Science and Technology

Duration – 5 years, starting April, 2025

JST 175 mln. yen for activities in Japan

JICA (ODA) 300 mln. yen for activities in Kyrgyzstan


Joint visit with JICA, JST, TMDU representatives and MINUTES OF MEETINGS discussion and signature
October 2024
RD and CRA discussion and signature
By 28th February 2025
April 2025
Formal Selection
STEP5
Provisional Period (R/D & CRA signed)
March 2024
STEP4
Provisional selection
January 2024
STEP3
External Peer Review
Interview
Document
September 2023
October 2023
STEP2
JICA Embassy of overseas
Conformity Check
JST
Pass / Fail Notification
ODA Request
STEP1
STEP1
Research Proposal
Pass / Fail Notification
Counterpart Organizations
Japan's Researchers

Agenda

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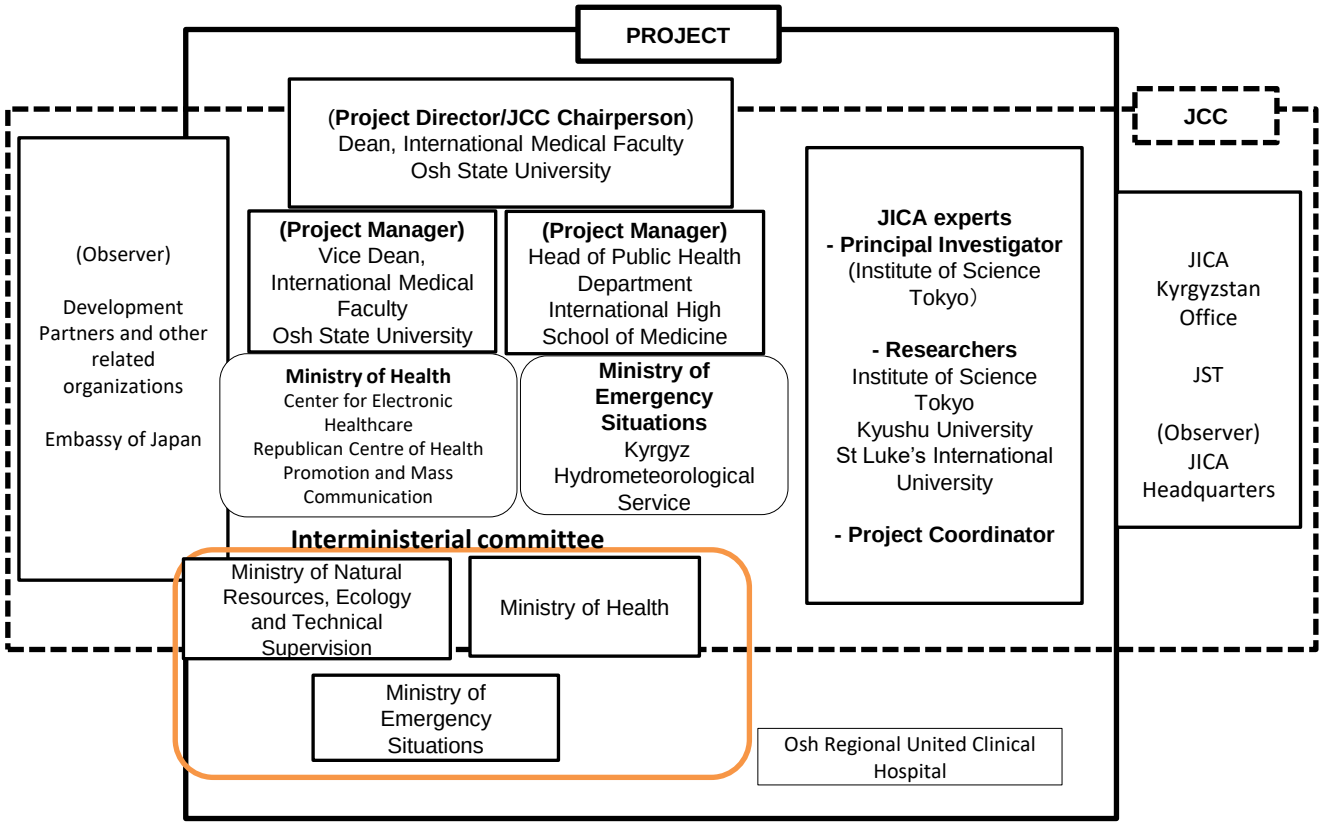
Implementation Structure



Agenda

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Overall Goal

The function of the Osh State University as a research center for ambient and indoor air pollution is maintained, and the knowledge and awareness among relevant ministries and the general public about ambient and indoor air pollution are enhanced.

Project Purpose

Air pollution and its impacts on health and the economy are visualized, and policy recommendations are made by strengthening the capacity of the Osh State University as a research center for ambient and indoor air pollution.

Agenda

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Output 1: Air pollution assessment systems using satellite data are developed.

1-1 Air pollution estimation model is developed by utilizing deep learning and Japanese data.
1-2 Air pollution estimation model is developed by utilizing transfer learning and satellite data from the Kyrgyz Republic.
1-3 The monitoring network is strengthened by the installation of monitoring instruments in Osh
1-4 Deep learning model is developed by calculating historical air pollution data based on a regional chemical transport model.
1-5 An institutional arrangement is established at the Osh State University to produce and publish an air pollution map for the whole Kyrgyz Republic and update it based on the air pollution estimation model.

Output 2: Air pollution assessment and prediction systems based on a regional chemical transport model and inventories are developed

2-1 The emission inventory is developed by refining existing inventories to the actual situation of the Kyrgyz Republic.
2-2 An air pollution assessment and prediction system is developed based on a regional chemical transport model and the refined inventories.
2-3 An institutional arrangement for continuous improvement of the air pollution assessment and prediction system is established at the Osh State University, with a clear picture of the air pollution situation in the Kyrgyz Republic through comparison and verification with the air pollution map and field observation data.
2-4 Policy recommendations to relevant ministries are made by estimating the projected effects of proposed policies on ambient air pollution.

Output 3: Evaluation systems for health and economic impacts of air pollution are developed.

3-1 A cohort study in hospitals and households is conducted in Bishkek and Osh.
3-2 Component analysis of PM2.5 and PM10 -PM2.5 is conducted as ambient air pollution data.
3-3 The health and economic impacts of air pollution is evaluated through examination of the relationships between air pollution and health in each region.
3-4 A system to calculate the decreased risk of disease from air pollution for each proposed policy in each region is developed.
3-5 Policy recommendations to relevant ministries are made by calculating the health and economic impacts of proposed policy on ambient air pollution.

Output 4: Scientific knowledge contributing to the control of indoor air pollution is expanded and accumulated.

4-1 Indoor pollutant concentrations are measured by newly developed pollutant measuring instruments.
4-2 The health impacts of indoor air pollution are analyzed by using data on indoor pollutant concentrations, socio-economic context, fuels used for indoor heating and cooking, use of home insulation, etc. and health outcomes.
4-3 A randomized controlled trial is conducted to measure the effect on participants' knowledge of the health impacts of indoor air pollution, clean energy and their motivation for air pollution control.
4-4 Policy recommendations are made to relevant ministries by measuring the health and economic impacts of the proposed policy on indoor fuels.

Output 5: The actual situation concerning ambient and indoor air pollution to be clarified in this research and the scientific findings that contribute to control measures are made known to all concerned.

5-1 A campaign based on behavioral science theory is designed to raise awareness of the impacts of ambient and indoor air pollution on health and to promote awareness of measures such as home insulation to reduce coal use and the use of public transport, which include both source control and exposure prevention strategies.

5-2 The designed campaign is implemented in collaboration with the Osh State University and the Republican Center for Health Promotion and Mass Communication under the Ministry of Health

5-3 The effectiveness of the campaign is verified through qualitative research and questionnaire surveys.

5-4. Awareness-raising materials produced by the campaign are shared on the websites of relevant organizations

5-5. Seminars on recommended policies are held for relevant ministries

To provide training to Kyrgyz researchers and specialists

Japanese partners will develop a training program and conduct the training to researchers from OshSU, IHSM and specialists from the Kyrgyz Hydromet, CEH, RCHPMC, the Ministry of Health, the Ministry of Natural Resources, Ecology and Technical Supervision and other relevant partner institutions.

Agenda

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Thank you!

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