



Ministry of the Environment

ENVIRONMENT RESEARCH AND TECHNOLOGY DEVELOPMENT FUND FY2018



What is the Environment Research and Technology Development Fund?

■ Objective

To contribute to the promotion of environmental policy through research and technical development

The aim of the Environment Research and Technology Development Fund (ERTDF) is to collect scientific knowledge and accelerate technological development as necessary to promote policies such as global warming prevention, establishment of a sound material-cycle society and establishment of a society in harmony with nature, while ensuring security and safety through environmental risk management. The fund promotes research and development in the area of environmental issues overall.

■ Features

Adopting and executing research proposals which meet administrative needs in accordance with environmental policies

The ERTDF is a policy-oriented, competitive fund. It calls for proposals from industry, academia and government institutes. Proposals are expected to meet administrative needs, and are competitively examined and selected by the committee and appropriate subcommittees.

The ERTDF strongly promotes research and development in accordance with strategic administrative needs. For example, the “Strategic Research and Development Area (I and II)” consists of competition among research teams based on an outline for selecting research themes and project leaders established by the Ministry of the Environment.

Ensuring a transparent and fair evaluation process by using committees composed of outside specialists

The ERTDF comprises a committee and several subcommittees consisting of outside specialists. The committee is responsible for selection of proposals, intermediate evaluation and ex-post evaluation. Proposals are examined and selected by the committee and appropriate subcommittees in terms of the necessity and effectiveness of the research, and efficient use of funds.

To ensure transparent, fair and efficient fund management, the Ministry of the Environment refers to evaluation results to decide which research projects to adopt and allocate a research budget to in order to support appropriate progress in the research projects.

■ Research Fields

In fiscal 2016, seven former research fields were reorganized and condensed to five fields in line with the “Promotion Strategy for Environmental Research & Environmental Technology Development” (Policy Recommendation Report of the Central Environmental Council in August 2017).

• **Common to All Fields / Cross-sectional through Different Fields**

- Presentation of visions and principles toward the realization of a sustainable society
- Values and lifestyle changes toward the realization of a sustainable society
- Discovery and utilization of new technology “seeds” that contribute to solving environmental issues
- Research and technical development that contribute to response to environmental issues caused by disasters
- Other related R&D

• **Low-carbon Field**

- Formulation of low-carbon and sustainable scenarios that flexibly respond to climate change
- Research and technical development of measures to adapt to climate change
- Clarification, forecasting and assessment of measures in response to global warming phenomena
- Other related measures

• **Sound Material-Cycle Field**

- Establishment of technical and social systems to promote the 3Rs (Reduce, Reuse and Recycle)
- Research and technical development to contribute to optimal waste disposal, extended lifetime of disposal facilities and improvement of their functioning
- Establishment of technology and systems to promote energy recovery from biomass waste
- Other related measures

• **Harmony with Nature Field**

- Research and technical development toward fulfilling scientific knowledge on conserving and contributing to biodiversity
- Research and technical development toward continued utilization of ecosystem services and conservation and restoration of linkages among forests, *Sato* (rural settlements), rivers and the sea
- Other related measures

• **Safe and Secure Field**

- Research for promoting inclusive risk evaluation and management of chemical substances
- Research to advance, assess and clarify countermeasure techniques for managing and improving air, water and soil environments
- Other related measures

*Research and technological development for CO₂ emission reduction at energy origin is funded by the Special Account for Energy Policy.

The ERTDF system is explained on the following Ministry of the Environment (MOE) websites:

- <http://www.env.go.jp/policy/kenkyu/index.html>
- <http://www.env.go.jp/policy/kenkyu/suishin/gaiyou/index.html>

Information on calls for proposals is provided at the Environmental Restoration and Conservation Agency’s (ERCA’s) ERTDF website:

<https://www.erca.go.jp/suishinhi/>



■ **History of the ERTDF**

The ERTDF originated through the integration of three competitive research funds, the Global Environmental Research Fund (GERF), the Environment Technology Development Fund (ETDF) and the Grant-in-Aid for Scientific Research about Establishing a Sound Material-cycle Society.

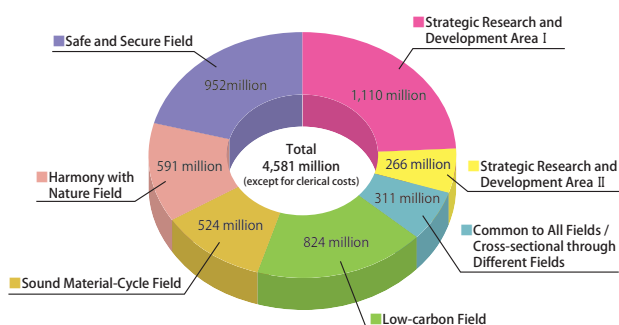
In fiscal 2012, the Rehabilitation Adoption budget was established, in addition to the General Adoption budget of the ERTDF that was funded by the general account. The former was funded by a special account for the Great East Earthquake Rehabilitation, and solicited proposals for “contribution to earthquake restoration and reconstruction.” It was created to promote technical development and accumulation of scientific knowledge absolutely necessary for expediting rehabilitation in disaster areas. The research projects funded by the special account for the Great East Earthquake Rehabilitation finished their terms in fiscal 2014.

Since October 2016, a part of the funding operations of ERTDF was entrusted to the Environmental Restoration and Conservation Agency of Japan (ERCA), to promote effectiveness and efficiency of the Fund.

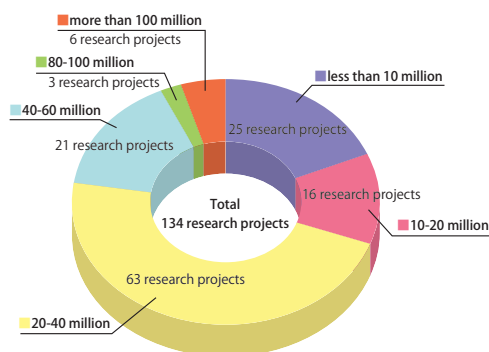
■ **Number of Research Projects Underway and Budget in Fiscal 2018**

In fiscal 2018, one new project in Strategic Area I, three new projects in Strategic Area II and 35 new projects in Environmental Problem Research Area have been newly adopted. As a total in fiscal 2018 the research projects conducted comprise nine Strategic Area projects (6 in Area I and 3 in Area II) and 125 others.

Research Projects Conducted in Fiscal 2018

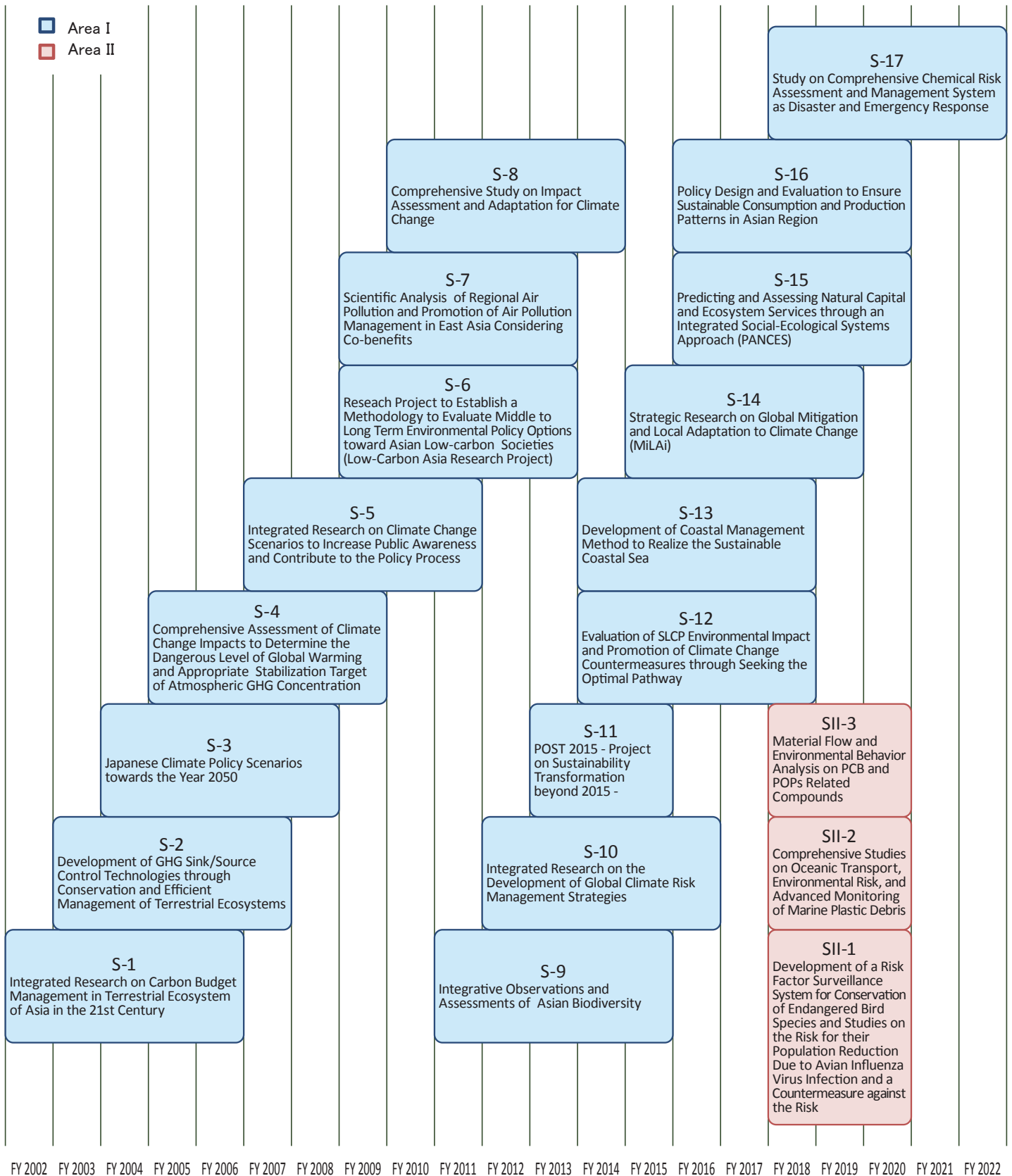


Budget allocated for research fields (unit: yen)



Numbers of research projects per budget size (unit: yen)

Strategic Research and Development Area (I & II) – Projects and Research terms –



● Strategic Research and Development Area I :

Large-scale research and development projects that should be strategically focused on or that are expected to achieve pioneering results by integrating individual research and creating scenarios, with the view to leading the world or in light of international situations.

● Strategic Research and Development Area II :

Medium-scale research and development projects that should be strategically focused on with short-term period in light of international or domestic situations.

List of Research Projects Conducted in FY2018

Project Code / Research Title

Strategic Research and Development Area (I) total 6 research projects

- S-12 / Evaluation of SLCP Environmental Impact and Promotion of Climate Change Countermeasures through Seeking the Optimal Pathway
- S-13 / Development of Coastal Management Method to Realize the Sustainable Coastal Sea
- S-14 / Strategic Research on Global Mitigation and Local Adaptation to Climate Change (MiLAi)
- S-15 / Predicting and Assessing Natural Capital and Ecosystem Services through an Integrated Social-Ecological Systems Approach (PANCES)
- S-16 / Policy Design and Evaluation to Ensure Sustainable Consumption and Production Patterns in Asian Region
- S-17 / Study on Comprehensive Chemical Risk Assessment and Management System as Disaster and Emergency Response

Strategic Research and Development Area (II) total 3 research projects

- SII-1 / Development of a Risk Factor Surveillance System for Conservation of Endangered Bird Species and Studies on the Risk for their Population Reduction Due to Avian Influenza Virus Infection and a Countermeasure against the Risk
- SII-2 / Comprehensive Studies on Oceanic Transport, Environmental Risk, and Advanced Monitoring of Marine Plastic Debris
- SII-3 / Material Flow and Environmental Behavior Analysis on PCB and POPs Related Compounds

Common to All Fields / Cross-sectional through Different Fields total 15 research projects

- 1-1601 / Development of Models for Resource Use and Waste Management and Evaluation of Effectiveness of Policies towards a Sound Material-cycle Society
- 1-1602 / Development of Aquatic Ecosystems Monitoring System that Seamlessly Connects Field Investigation and Robot, Sensor and Communication Technology
- 1-1603 / Integrated Approach for Dissemination of Decentralized Domestic Wastewater Treatment System in Southeast Asia
- 1-1604 / Development of Innovative Resource Recycling System Using the Functions of Black Soldier Fly (*Hermetia illucens*)
- 1RF-1602 / Practical Application of Multi-channel Radioactivity Depth Distribution Measuring System and Establishment of Its In-situ Measurement Technique
- 1-1701 / A Study on the Removal and Fixation of Radionuclides by Coprecipitation with Barite
- 1-1702 / Study on Stabilization Technique of Wastes Polluted with Radioactive Cs and Sr for Interim Storage and Final Disposal
- 1-1703 / Developing Indicators, Economic Valuation Methodologies and Models for Assessment of Business Impacts on Biodiversity
- 1RF-1701 / The Regional Implementation of Sustainable Development Goals by Japanese Local Governments
- 1RF-1702 / Development of All-around Analysis Technique for Liquid and Solid Samples Using Laser Spectroscopy in High Temperature Plasma

- 1-1801 / Comprehensive Research Design for Integrative Evaluation for Sustainable Development Goals
- 1-1802 / Improvement of Assessment Methods for Atmospheric Behavior of Accidentally Discharged Hazardous Materials by Comprehensively Analyzing Nuclear Accident Data
- 1-1803 / Development of Organizational Management Methodology for Smaller Public Authorities towards Appropriate Disaster Waste Management
- 1-1804 / Development of Genetic Evaluation Method for Wild Plants in Radioactive Contamination Area
- 1-1805 / Development of Subcritical Water Washing System for Cleanup and Reuse of Contaminated Soil and Volume-reduction of Radioactive Waste

Low-carbon Field total 27 research projects

- 2-1601 / Evaluation Study on the Soil Carbon Changes through the Land Use Changes between Forest Land and Cropland and its Application to GHG Inventory
- 2-1602 / Asian Precipitation — Highly-Resolved Observational Data Integration Towards Evaluation (APHRODITE) of the Extreme Events
- 2-1603 / Comprehensive Research on Carbon Capture and Storage Legal Framework, Policy and Strategy
- 2-1604 / Global Warming Impacts on Thermohaline Circulation and Subsequent Biogeochemical Change in the Japan Sea
- 2-1605 / Assessing and Projecting Greenhouse Gas Release from Large-scale Permafrost Degradation
- 2RF-1601 / Development of the Comprehensive Simulation Model of Sun-Induced Fluorescence for Estimating the Ecosystem-level Photosynthesis
- 2-1701 / Development of an Integrated Observation and Analysis System for Monitoring Greenhouse Gas Sources and Sinks
- 2-1702 / Integrated Analyses of Climate Policies for Simultaneous Realization of the Paris Agreement and the SDGs
- 2-1703 / Black Carbon and Dust Particles in the Arctic: Behavior in Association with Global Radiative Forcing
- 2-1704 / Multi-model Analysis of Long-term Climate Policy of Japan: Mitigation Pathways and Uncertainties
- 2-1705 / A Comprehensive Study on Response and Feedback of Asian Forest Soil Carbon Flux to Global Warming
- 2-1706 / Transition Strategies to the Renewable City - To Resiliently Cope with Climate Change and Large-scale Natural Disasters -
- 2-1707 / An ex-post Analysis of Carbon Pricing and the Proposal of Policy Options to Achieve the Japanese Long-term GHG Emissions Reduction Target
- 2-1708 / Development of Pluralistic Evaluation System of Vulnerability to Climate Change for Local Environmental Planning
- 2-1709 / A Research for Validity Evaluation of HFC and GHG Reducing Measure for Ozone Layer Recovery
- 2-1710 / Development of a Monitoring and Evaluation System of the Methane Budget for Different Source Categories in East Asia toward Intended Emission Reduction

- 2-1711 / Low Carbon Re-development Planning of Municipalities: Development and Application of Analytical Models Coupling Resources and Energy Use
- 2-1712 / Development of Coastal Disaster Reduction Assessment Method by Green Infrastructure Considering Climate Change
- 2RF-1701 / Study of Super-Typhoon Response to Global Warming in the Asian Region Using Global Non-hydrostatic Model
- 2-1801 / Study on Risks due to Global Climate Change Impacts that could Affect Socio-economic Activities in Japan
- 2-1802 / Estimation of Regional-Global Methane Emissions and Refinement of Its Estimate by GOSAT-2 and Surface Observations
- 2-1803 / Better Quantification of Anthropogenic Emissions of Black Carbon and Methane in East Asia and Cost-benefit Analysis of Emissions Reduction
- 2-1804 / Scenarios for Expanding Renewable Energy Use Considering Visions of Society in 2050
- 2-1805 / Shared Socioeconomic Pathways for Climate Change Impact and Adaptation Assessment in Japan
- 2RF-1801 / Development of Hydrogen Storage Materials for Medium-Distance Transportation and Long-Term Storage
- 2RF-1802 / Development of an Open Global Water Risk Assessment Tool to Support Investigation of Adaptation Measures to Climate Change in the Private Sector
- 2RF-1803 / Future Projection and Estimation of Effects of Forest Management on Carbon Budget in Forest Ecosystem Using Ultra-high Resolution Climate Projection Data

Sound Material-Cycle Field

total 30 research projects

- 3K163001 / New Assessment Indicators and Indicator Framework for Establishing a Sound Material-Cycle Society
- 3K163003 / Development of the Utilization System for Captured Animals "Wild boar and Sika deer" by Appropriate and Efficient Processing
- 3K163005 / Study on the Environmentally Sound Management of Wastes Containing Newly Listed POPs
- 3K163006 / Development of Quantitative Estimation Procedure for Disaster Debris in the Catastrophic Disasters in Collaboration with Disaster Prevention Research
- 3K163007 / Development of New Treatment Technology for Exhaust Gas Generated by Waste Incineration Using Carbonate Type Mg-Al Layered Double Hydroxides
- 3K163009 / Study on Policy, Consciousness and Behavior to Improve the Effectiveness, Safety and Reliability of Disaster Waste Management
- 3K163010 / Development of PGM Recycling Processes without Emissions of Toxic Substances Including Nitrate-Nitrogen
- 3K163011 / Large-scale Disaster Waste Treatment and Management System Considering Disaster and Region Characteristics
- 3-1701 / Long-term Environmentally-sound Management of Treated Waste Consisting of Elemental Mercury in an Aboveground Facility
- 3-1702 / Principles and Practical Implementation of Quality Control for Recycling Waste Gypsum Board
- 3-1703 / Development of Advanced Recycling Technology for Fly Ash to Enable Cement-free Concrete
- 3-1704 / Material Flow Analysis of Prefectures to Promote Sound Material Cycles by Use of Data in Official Reports Collected for Waste Management

- 3-1705 / Research of Creation and Practice of High Value-added Recycling Technology on Waste Plastics
- 3-1706 / Modification of Recycled Resin Using Nanocellulose-based Waste Materials
- 3-1707 / Test and Design Methods for Safe and Sustainable Inert Waste Landfills
- 3-1708 / Development of Rational Recycling Technology for Laminated Hard-to-Handle Panels such as PV and LC
- 3-1709 / Study on Technologies and Social Systems for Efficient Utilization of Heat Recovered from Waste
- 3-1710 / Development of Organic Solvent Free Separation Techniques to Create High Efficiency Recycle Systems for Critical Metals
- 3-1711 / Recovery of Carbon Fiber from CFRP by Two Stage Low Temperature Gasification
- 3RF-1701 / Separation Process Development for Poly(vinyl chloride) and Copper Recovery from Wire Harness
- 3J173001 / Practical Development of Resilient Landfill for Prompt Recovery Restoration from Earthquake
- 3J173002 / Development of Surface Treated Wood Powder for WPC Using
- 3-1801 / Assessment Foundation for Plastics Cycles towards Introduction of Advanced Recycling Technologies and Integration with the Arterial Industries
- 3-1802 / Evaluation on Long-Term Environmental Safety of Storage and Disposal Sites for Hazardous Wastes
- 3-1803 / Fixation and Insolubilization of Cesium in Fly Ash Generated from Thermal Treatment of the Designated Waste by Using Aluminosilicate
- 3-1804 / Establishment of "Bottom ash Green Reforming Technology" Combining Physical Sorting and Aging Processes
- 3-1805 / Analysis on the Status of Avoidable Food Waste for the Development of an Indicator for SDG 12.3
- 3RF-1801 / Development of Rapid Carbonization System of Biomass Using Microwave Heating
- 3RF-1802 / Development of Biomass Plastics Reinforced with Cellulose Fiber
- 3RF-1803 / Development of Solid Catalyst Process for Selective Synthesis of Valuable Chemicals from Waste Plastics

Harmony with Nature Field

total 21 research projects

- 4-1601 / Conservation Planning for SE Asian Tropical Forests Based on Assessments of Undescribed Tree Species Richness and Forest Management Policies
- 4-1602 / Development and Application of Environmental DNA Methods for the Estimation of Community Composition and Genetic Diversity in Aquatic Systems
- 4-1604 / Studies on Gut Bacteria of Japanese Rock Ptarmigan for Its Potential Use in In-situ and Ex-situ Conservation Protocol
- 4-1605 / Optimum Conservation of Species Designated by the Endangered Species Preservation Act using Information Obtained from Sequencing Breakthrough
- 4-1606 / Studies on Population Management and Habitat Restoration of Socio-Ecological Production Landscapes for the Successful Reintroduction of Crested Ibis.
- 4-1701 / Scientific Clarification and Countermeasure to Ecological Impacts of Pesticides on Dragonflies

4-1702 / Problem Solving and Establishment of a Base for Restoring Natural Habitat of Rare Japanese Plant Species

4-1703 / Development of Verification Test Fish of a New Eradication Method, Gene-Induced Suppression for Alien Population (GSAP)

4-1704 / Development of Sika Deer and Wild Boar Population Estimation Model and Sustainable Management System under Heterogeneous Environment

4-1705 / Development of Multifaceted Evaluation Axis and Construction of Information Base for Conservation of Wetland Ecosystems

4-1706 / Development on Methods for Estimating Population Size of Deer with Ground and Remote Sensing Techniques

4-1707 / Development of In Situ and Ex Situ Conservation Procedures for Endangered and Heritage Species in Amami and Ryukyu Islands

4RF-1701 / Effects of Ocean Acidification on Ecosystem Services: an Investigation Using a CO₂ Seep

4-1801 / Development of Measures for Expansion Prevention and Effective Reduction of Invasive Alien Species *Ludwigia grandiflora* subsp. *Hexapetala*

4-1802 / Spatial Prioritization of Biodiversity and Ecosystem Services to Environmental Changes: a Case of Adaptive Management of Land Use for Japan

4-1803 / Development of Bird Sensitivity Mapping for Protecting Main Colonies of Seabirds from Offshore Wind Farms

4-1804 / Development of Ecosystem Management Techniques for Forests on Okinawa and Amami Islands toward a Natural World Heritage Site

4-1805 / Complementary Role of Green and Gray Infrastructures : Evaluation from Disaster Prevention, Environment, and Social and Economical Benefit

4-1806 / Investigating Coral Bleaching Mechanisms and Potential Biochemical Prevention/Rescue Measures

4RF-1801 / Development of Ex situ Conservation of Endangered Ogasawara Mulberry for Lost Endemic Forest

4RF-1802 / Elucidation of the Influence of the Rodenticide Spraying on Wildlife in the Ogasawara Islands

Safe and Secure Field

total 32 research projects

5-1601 / Establishment of a Reference Modeling for Source Apportionment and Effective Strategy Making to Suppress Secondary Air Pollutants

5-1602 / Evaluation and Management of Emerging Chemicals by the Comprehensive Monitoring Using Local Networks

5-1603 / Development and Application of Novel Microbial Source Tracking Tools for Waterborne Infectious Disease Control

5-1604 / Factors Controlling Enhancement of Urban PM_{2.5} and Development of a Supporting Method for Administrative Monitoring Data

5-1605 / Studies on PM_{2.5} Composition, Oxidative Potential, Health Hazard and Their Model Prediction

5-1606 / Determination of Natural and Anthropogenic Sources for Contaminants in Soils Using Instrumental Analyses and Leaching Tests

5-1607 / Evaluation of Organic Carbon Budgets in Lake Biwa for Management of Water Quality and Ecosystem

5-1651 / Identification of the Factors Responsible for the Health Effects of PM_{2.5} by Newly Developed Sampling Methods and Exposure Experiments

5-1652 / Determination of Exposure Source of Persistent Organic Pollutants (POPs) in Japanese Cohort Studies: Using Rapid and Simultaneous Analysis of POPs in Human Serum

5-1653 / Study on the Management of Anthropogenic Chemicals with the Consideration of Their Transformation Processes

5-1654 / Assessment of the Exposure and Effects of Antibacterial Substances such as Paraben and Triclosan on Allergy in Infants

5RF-1602 / Development of the Differentiation Methods for Natural and Anthropogenic Source of Chromium (VI) Based on the Elution Rates

5-1701 / Behavior Analysis and Site Investigation Method of Chloroethylene and its Parent Substances in Soil and Groundwater

5-1702 / Understanding and Modeling on Methylation and Bioaccumulation of Mercury in Marine Ecosystems

5-1703 / Proposal of Regulation Program for Pesticide Residue in Succeeding Crops

5-1704 / Development of Measuring System on Mercury Exposure in the Contaminated Site and Its Surrounding Area

5-1705 / A Comprehensive Risk Management and Presentation of Toxicity Equivalency Factors of Unintentional Brominated Dioxin-like Compounds

5-1706 / Development of Simultaneous Analysis Methods for "Investigated Items" and Selection Procedures for Their Candidates for Water Environment Conservation

5-1707 / Development of a Multimedia Model for Predicting Spatiotemporal Distribution of Hydrogen Peroxide

5-1708 / Investigation on Removal Characteristics of PM_{2.5} in Flue Gas Treatment Equipments of Large Scale Plant

5-1709 / Research on Airborne Ultrafine Particulate Matters around an Airport Based on Advanced Analytical Techniques

5-1710 / Study on Method of Assessing the Annoyance by Tonal Components Contained in Wind Turbine Noise

5-1751 / A Study for Acute Effects of Stroke and Mortality Caused by PM_{2.5} and Coarse Particle

5-1752 / Mechanism Elucidation and Risk Management Modeling of Combined Exposure to Chemicals in Children

5-1753 / Combined Exposures to Environmental Chemicals and Effects on Allergies and Immunity

5RF-1701 / Development of Control System Based on Effective Concentration and Smart Device Detection for Water Preservation

5-1801 / Model, Field, and Laboratory Studies on Source Apportionment of Anthropogenic and Biogenic Organic Aerosol

5-1802 / Assessment Study for Air Quality Improvement Obtained from the 2020 Global Sulphur Limit in Marine Fuels

5-1803 / Development of Short-term Chronic Toxicity Tests Using Marine and Estuarine Organisms

5-1851 / Validation of Effectiveness of Urinary Dialkylphosphates as Markers for Exposure Assessment of Organophosphorus Compounds

5RF-1801 / Toward Development of Methods for Assessing Ecological Risks of Exposure to Chemical Mixtures in the Field: Use of Water-Quality and Benthic Invertebrate Surveys and Effect-Based Monitoring

5RF-1802 / Development of Portable Sensing System for Toxic Chemicals Using Supramolecule-modified Graphene

Information on calls for proposals

Schedule

The schedule and arrangements are announced on ERCA's and the MOE's ERTDF webpages. The call for applications is announced and assignment proposals are accepted from September to October.

Application Procedures

The necessary application forms for proposals can be downloaded from ERCA's ERTDF webpage. Proposals are accepted through the Cross-ministerial R&D Management System (e-Rad).

Selection of Research Projects

After the application forms have been checked, the Planning Committee for Environment Research and its subcommittees composed of outside specialists will evaluate the proposed research projects. First, the proposals will be narrowed down in an initial screening of the written descriptions. The remaining proposals will then be evaluated for final selection on the basis of interviews. Notification of approved proposals will be made every March. The results of the evaluation will be sent to the applicants after the selections have been made.

Inquiry

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published in October 2018