

### **MOEJ-IIASA Introduction**

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National Institute for Environmental Studies, Japan

# I A S A

#### Long history of successful Japan-IIASA collaborations

#### Areas of research collaboration



Improving air quality and tackling climate change

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Forests: Bioenergy resource and carbon sink



change in Japan

The future of fisheries

and other evolutionary

studies

**Projecting demographic** 

publications have resulted from collaborations between IIASA and

researchers at Japanese institutions since 2010









**Reducing disaster** risk in Japan

collaborating, research,

Analyzing global water challenges



Advancing energy and integrated assessment modeling in Japan

1

500

AIR POLLUTION IN ASIA AND THE PACIFIC ENCE-BASED SOL





## THE INTEGRATED ASSESSMENT MODELING CONSORTIUM



- Co-founders: NIES, IIASA, and Stanford University
- Main scientific organization of the climate mitigation research community
- Identifies community research priorities and organizes community-wide activities and processes (eg., IPCC SSP, RCPs)



Human and Policy Dimensions

## **Greenhous Gas Emissions in the IPCC**

IIASA and NIES play key roles in the development of Representative Concentration Pathways (RCP) and Shared Socio-economic Pathways (SSP) datasets that underpin IPCC Fifth Assessment



Conceptual framework and substance of RCPs and SSPs in 3 special issues

## Sustainable low-carbon development pathways





Fujimori S., Hasegawa T., Rogelj J., Su X., Havlik P., Krey V., Takahashi K., Riahi K. (2018). Inclusive climate change mitigation and food security policy under 1.5°C climate goal. *Environmental Research Letters* **13** (7) doi: 10.1088/1748-9326/aad0f7

Fujimori et al. (2019). A multi-model assessment of food security implications of climate change mitigation. *Nature Sustainability*, **2** (5), 386–396. doi: 10.1038/s41893-019-0286-2

Oshiro et al. (2019) Mid-century emission pathways in Japan associated with the global 2°C goal: National and global models' assessments based on carbon budgets. Climatic Change.







climate change



Global warming can be limited to 1.5°C by transforming how we move around, heat our homes, and use devices.....

Alternative Pathways toward Sustainable Development and Climate Stabilization (ALPS)

#### EDITS side-event at COP26 as part of the Japan Pavilion.

Satisfying people's needs for shelter, mobility, consumer goods, and essential services is the reason why society requires materials and energy. Innovations in providing these services can deeply reduce the demand for energy and enable a demand-driven transition to net-zero societies. The Energy Demand changes Induced by Technological and Social innovations (EDITS) network studies and promotes demand-driven energy system change, at global and granular levels. The EDITS network explores the critical determinants of feasibility of such transition, its timing, costs, and their SDG synergies and tradeoffs. The EDITS community collaborates based on common interest in the demand side transition, transfers methodological knowledge, and explores modeling innovations across demand-side models.





Energy Demand changes Induced by Technological and Social innovations





## **ENGAGE** Collaboration on Net Zero Pathways



#### **Land Transformations for Net-Zero**



## Critical input for the IPCC AR6 (WGIII)

~500 **global** pathways by 9 teams provided by

NIES Japan leads **National Modelling Effort** With 50+ researchers contributing as authors - based on Fujimori et al (2020)







Hasegawa et al, 2021

#### Japan

National Member Organization/Funder: The Japan Committee for IIASA



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doctoral students since 2008 took part In the **IIASA Young Summer Scientist Program** 







Japan-IIASA MOEJ collaborative research on interactions between urban and rural **air pollution in Asia**, and the **multiple development benefits** of coordinated action (1) – **Project A** 

Air pollution in Asia is mainly perceived as an urban issue, because largest pollution levels are typically measured within cities. However, it is found that in most cities a large share of PM2.5 originates from sources outside the cities. Coordination and cooperation among authorities beyond city boundaries is indispensable.



Collaboration with scientific institutions/programs in Japan – IGES, NIES, ACAP, JTCAP, EANET



## Japan-IIASA, Project B

**3** GOOD HEALTH AND WELL-BEING

- Achieving both the 2030 Agenda and the **Paris Agreement** requires effective measures that maximize synergies of policies to limit climate change with the **SDGs**.
- Project B of MOEJ-IIASA collaboration focuses on two critical linkages:

Phase 1: Health co-benefits of national climate policies

Phase 2.1: Interactions between climate policies and biodiversity





Phase 2.2: Energy-food-water and health nexus in Bhutan

Phase 2.3: National dashboard for Asia (multi-sector vulnerability & exposure)





13 CLIMATE ACTION

# Japan's Circulating and Ecological Sphere (CES)



Circulating and Ecological Sphere:

IASA

- Rural-Urban Linkages
- Decarbonisation
- Ecosystem-based Solutions
- Resource Circulation

# Japan's Circulating and Ecological Sphere (CES)

IASA



# Japan's Circulating and Ecological Sphere (CES)



#### **MOEJ-IIASA Project B**

Climate / air pollution link Climate / biodiveristy links in Asia IASA

Circulating and Ecological Sphere:

- Rural-Urban Linkages
- Decarbonisation
- Ecosystem-based Solutions
- Resource Circulation



## Progress

#### Phase A

- Quantifications completed
- Policy report under preparation (2022)

### Phase B

- Climate & air-pollution linkages: initial scenarios completed and preliminary health assessment available (2022)
- Bhutan case study: SSP interpretations and conceptual nexus framework completed, MESSAGE model under development
- Biodiversity & Vulnerability Dashboard in Asia started (2023)

**OBJECTIVE:** Further establish science community and collaborations with Japan and IIASA in leading roles



## Thank you!