

Welcome to the Side Event on *High Services with Low Energy and Resource Demand for Low-Carbon Pathways and the SDGs*

Keigo Akimoto, Research Institute of Innovative Technology for the Earth (RITE)
The UNFCCC side event at the COP27



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G20 Karuizawa Innovation Action Plan on Energy Transitions and Global Environment for Sustainable Growth (June 2019)



“We recognize the importance of quantitative analysis on better understanding future energy demand and supply and the role of innovation of both sides driven by digitalization, Artificial Intelligence (AI), the Internet of Things (IoT), and the sharing economy. We encourage efforts made by the global scientific community and international organizations and frameworks to further refine and develop the full spectrum of economy-wide scenarios for energy and climate models.”

Note) This is also an annex document of the G20 Osaka Leader’s declaration.

EDITS: Energy Demand changes Induced by Technological and Social innovations



Energy Demand changes Induced by
Technological and Social innovations



The EDITS project supported by Ministry of Economy, Trade, and Industry (METI), Japan

The terms: FY2020- (expectation: for five years and more)

Participating research institutes or researchers:

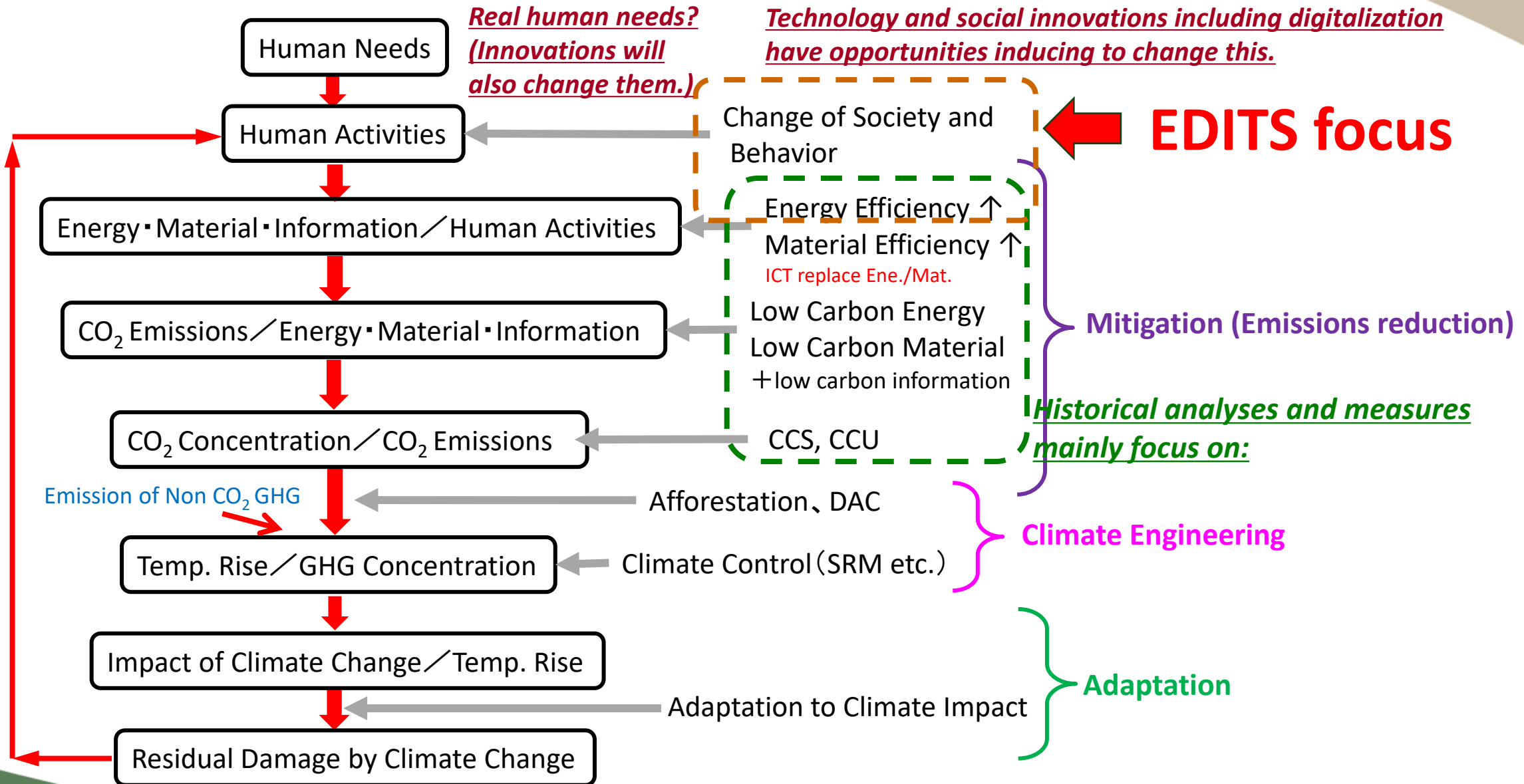
IIASA, AIT, LBNL, OECD/ITF, CMCC, Central European Univ., Univ. of Wisconsin, UCSB, UFRJ/COPPETEC, The Korean Society of Climate Change Research, The Univ. of Tokyo, Osaka Univ., RITE, and others

Nearly 100 researchers including many IPCC lead authors will be involved in.

[Objectives]

- ✓ To create a research community with a focus on end-use, demand-side perspectives that furthers dialogue and cross-fertilization of research and policy analysis through the sharing of novel data, novel concepts, methodologies and policy analyses.
- ✓ To improve the state-of-art of demand modeling in environmental and climate policy analysis, via methods and model intercomparisons and assisting the transfer of conceptual and methodological improvements across disciplines, sectors, and environmental domains.
- ✓ To better inform policy via structured model experiments and simulations that assess potential impacts, barriers, as well as synergies and tradeoffs to other SDG objectives of demand-side policy interventions, particularly in novel fields and service provision models such as digitalization, sharing economy, or the integration of SDG and climate objectives in synergistic policy designs.

Response measures to climate change

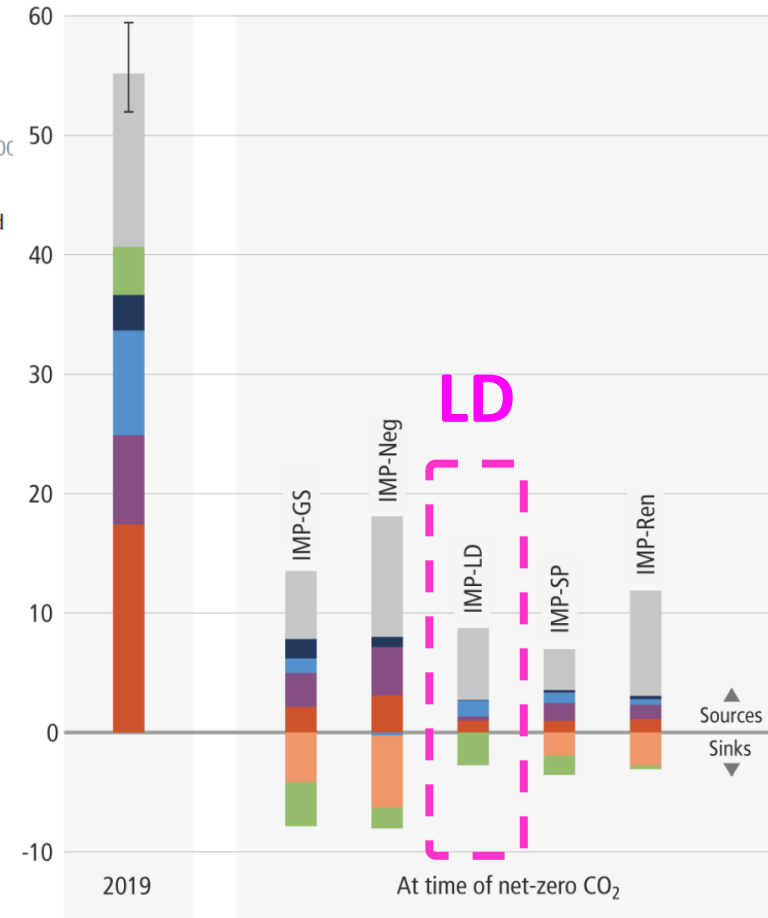


Low Energy Demand (LED) scenarios

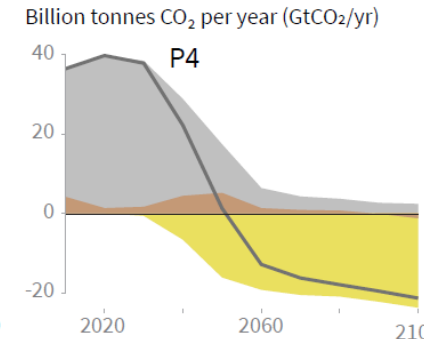
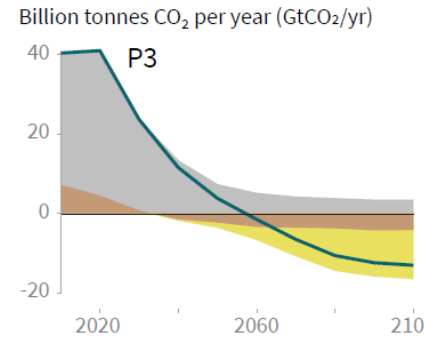
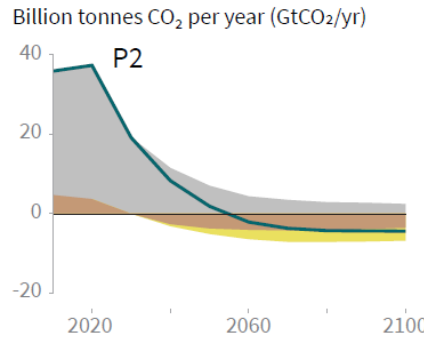
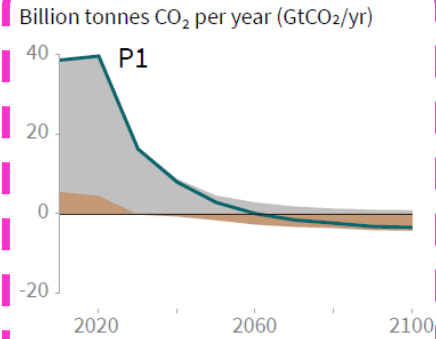
IPCC Special Report on 1.5 C (SR15)

IPCC 6th Assessment Report (AR6)

e. Sectoral GHG emissions at the time of net-zero CO₂ emissions (compared to modelled 2019 emissions)



● Fossil fuel and industry ● AFOLU ● BECCS



P1: A scenario in which social, business, and technological innovations result in lower energy demand up to 2050 while living standards rise, especially in the global South. A down-sized energy system enables rapid decarbonisation of energy supply. Afforestation is the only CDR option considered; neither fossil fuels with CCS nor BECCS are used.

P2: A scenario with a broad focus on sustainability including energy intensity, human development, economic convergence and international cooperation, as well as shifts towards sustainable and healthy consumption patterns, low-carbon technology innovation, and well-managed land systems with limited societal acceptability for BECCS.

P3: A middle-of-the-road scenario in which societal as well as technological development follows historical patterns. Emissions reductions are mainly achieved by changing the way in which energy and products are produced, and to a lesser degree by reductions in demand.

P4: A resource and energy-intensive scenario in which economic growth and globalization lead to widespread adoption of greenhouse-gas intensive lifestyles, including high demand for transportation fuels and livestock products. Emissions reductions are mainly achieved through technological means, making strong use of CDR through the deployment of BECCS.

LED

The IPCC reports show some scenarios of low energy demands, but more comprehensive and quantitative scenarios will be needed.

Direct:
 Buildings (Dark Blue)
 Industry (Blue)
 Transport (Purple)
 Energy Supply (pos.) (Red)
 Energy Supply (neg.) (Light Red)
 LULUCF (Green)
 Non-CO₂ from all sectors (Grey)

SDGs and a low energy demand society

Achieving Goal 12 is well coordinated with achieving other eleven Goals

Responsible Consumption & Production:

End poverty, reduce overconsumption, minimize waste and environmental impacts



Source: IIASA, LED scenario

Deep emission reductions at affordable costs will be a key to achieving multiple SDGs, and digitalization, and the related other innovations will contribute to the achievement.

IPCC AR5 Ch.5 – Knowledge Gaps



Authors: Felix Creutzig, Joyashree Roy, Arnulf Grubler, Eric Masanet, and others

- 1. Better metric to measure actual human well-being**
- 2. Evaluation of climate implication of the digital economy**
- 3. Scenario modelling of services**
- 4. Dynamic interaction between individual, social, and structural drivers of change**

These gaps will also be tackled in the EDITS project.

Thank you very much for your attention!

**Please also join a side-event for the EDITS
at the Japanese pavilion;
17 November, 10:30-12:00 (local time)**



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<https://iiasa.ac.at/web/home/research/researchPrograms/Energy/Research/EDITS/EDITS.html>

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