



Reducing footprints, enhancing resilience

Systems science for transformations to sustainability IIASA Strategy 2021–2030 (Summary)

TODAY'S GLOBAL CHALLENGES

The next decade is critical for our planet. Governments have committed to a sustainable future for all (Agenda 2030) that also limits human-induced climate change as set out in the Paris agreement, and reduces disaster risks as described in the Sendai Framework. However, looming planetary and environmental tipping points and growing socioeconomic inequities, combined with increasing extreme events (e.g., COVID-19), are impeding effective multilateral cooperation.

At the heart of accomplishing these ambitious goals is to address them as part of an undivided whole. Only an integrated systems approach will prevent solutions for one problem causing unintended consequences elsewhere. Systems science provides the skills and tools that are necessary to engage strongly with these challenges. By adopting a systems approach, governments can pursue win-win policies that jointly achieve multiple goals.

Building on almost fifty years experience in systems science, IIASA is well positioned to further develop these research methods and apply them to policy solutions to reduce human footprints, enhance the resilience of natural and socioeconomic systems, and help achieve the sustainable development goals.

IIASA VISION, MISSION, AND STRENGTHS

The **mission of IIASA** is to support research in relation to problems of modern societies arising from scientific and technological development. The institute draws on its strengths of systems science and interdisciplinarity to address such problems, while engaging with a global scientific network to amplify its research and impact. The unique institutional setting of IIASA facilitates independent research based on international research teams combining global and local knowledge.

Building on these foundations, **the IIASA vision for 2021 to 2030** is to “be the primary destination for integrated systems solutions and policy insights to current, emerging and novel global sustainability challenges, threats, and opportunities”. The institute’s new strategy combines three integrated pillars—research, impact enhancement, and implementation—to deliver on this vision.

PILLAR 1: RESEARCH

OBJECTIVES AND THEMES

Over the next decade IIASA research will focus on transformational changes towards sustainable social-economic-environmental systems. Building on existing expertise and committed to developing new competencies, IIASA research will focus on the following key driving forces for development:

- Governance and institutions
- Technology and innovation
- Economy and society
- Population and behavior

These drivers act on the often-incompatible domains of production and consumption, biodiversity and ecosystem services, and equitable and resilient societies. A systemic, integrated approach to these driving forces defines the research priorities of IIASA to address global challenges through their impact on the identified domains. Underpinning the research will be a continued emphasis on methodological advances and innovations in system analysis methods and approaches for sustainability (see figure).



Figure: Key societal driving forces and pressures that impact sustainability transformations.

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IIASA will make a concerted effort to provide cutting-edge, systemic, solutions-oriented research to its partners and stakeholders. Its objectives are:

- **To advance systems analysis** by focusing on interdependencies and interactions between elements of nested complex systems.
- **To enhance policy impact** by providing analytical and/or modeling tools that would simplify the complexity of inter-connected systems and unveil sustainable policy options.
- **To exploit the digital revolution** for the opportunities arising from digital technologies and their applications, as well as advancements in computing capabilities, among others, to enrich integrated systems science research.
- **To anticipate and respond to emerging issues** arising in a dynamic environment by continuously engaging in strategic horizon scanning and being prepared to respond, with agility, to rapidly developing and novel risks.
- **To further research excellence** through targeted investments in high priority research areas and by building requisite skill sets.



THE IIASA RESEARCH THEMES

The IIASA research themes bring together existing expertise with new skills to pursue a broader systems science approach to identifying pathways to sustainability.

1. GOVERNANCE AND INSTITUTIONS

Enhancing the capabilities of governance systems at all scales to successfully address today's grand sustainability challenges.

2. TECHNOLOGY AND INNOVATION

Harnessing the potential benefits of technology and innovation in the transformation to a sustainable future.

3. ECONOMY AND SOCIETY

Precipitating alternative socioeconomic systems and approaches that facilitate rather than undermine transformations to sustainable and just societies.

4. POPULATION AND BEHAVIOR

Facilitating the wide scale behavioral changes required to move towards sustainability.

5. EQUITY AND RESILIENCE

Fostering transformations to more resilient and just societies that leave nobody behind.

6. PRODUCTION AND CONSUMPTION

Transforming current production and consumption patterns to create an economy that decouples economic development and human wellbeing from environmental degradation and reduces the total consumption of materials and energy.

7. BIODIVERSITY AND ECOSYSTEM SERVICES

Developing sustainable pathways to land, water, food, and biodiversity security while preventing impacts such as land degradation, groundwater depletion, and biodiversity loss

PILLAR 2: ENHANCING IMPACT

Building on the institute's record of scientific excellence, collaboration with partners, and policy impact, IIASA will enhance the impact of its research through:

SCIENCE DIPLOMACY

IIASA will use its reputation as a neutral scientific broker and bridge builder to develop trust and help divergent views jointly confront and negotiate solutions to problems of global interest.

STRENGTHENING PARTNERSHIPS

IIASA will work with a wide range of stakeholders, member countries, and leading scientific organizations across the world to achieve outstanding results.

BUILDING CAPACITY

IIASA will build capacity in systems thinking and analysis by educating and training a new generation of scientists, professionals, and leaders, as well as making IIASA research, data, models, and analytical tools openly available to the research community.

PILLAR 3: IMPLEMENTATION

IIASA will enable the new strategy by:

PROVIDING AN ENVIRONMENT FOR RESEARCH EXCELLENCE

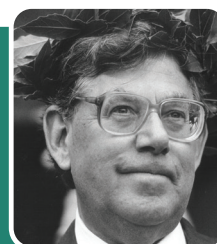
IIASA will enhance its working environment to continue to attract and retain the best talent, enhance diversity and career development, and support all staff to reach their full potential.

IMPLEMENTING BEST PRACTICE, FIT FOR PURPOSE OPERATIONS AND SUPPORT SERVICES

IIASA values efficiency and will ensure its operations and support services are goal-oriented, committed to best practice standards, and always seek to use resources judiciously.

"Only an international, interdisciplinary research institute like IIASA can bring together experts from numerous disciplines and countries to effectively examine the global challenges facing our world. I only regret not having more time to spend at IIASA."

Paul Crutzen (Nobel Prize, Chemistry, 1995)



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ABOUT IIASA:

The International Institute for Applied Systems Analysis (IIASA) is an international scientific institute that conducts research into the critical issues of global environmental, economic, technological, and social change that we face in the twenty-first century. Our findings provide valuable options to policymakers to shape the future of our changing world. IIASA is independent and funded by prestigious research funding agencies in Africa, the Americas, Asia, and Europe. www.iiasa.ac.at

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