What is IIASA?

An introduction to the International Institute for Applied Systems Analysis

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MAJOR GLOBAL CHALLENGES
Shall I Compare Thee To A Summer’s Day?

by William Shakespeare

Shall I compare thee to a summer’s day?
Thou art more lovely and more temperate.
Rough winds do shake the darling buds of May,
And summer’s lease hath all too short a date.
Sometime too hot the eye of heaven shines,
And often is his gold complexion dimm’d;
And every fair from fair sometime declines,
By chance or nature’s changing course untrimm’d;
But thy eternal summer shall not fade
Nor lose possession of that fair thou ow’st;
Nor shall Death brag thou wander’st in his shade,
When in eternal lines to time thou grow’st:
So long as men can breathe or eyes can see,
So long lives this, and this gives life to thee.
SDG2: BY 2030, END HUNGER
SOLVING GLOBAL CHALLENGES

Natural Systems

IIASA’s Expertise

Technology & Infrastructure Systems

Human & Social Systems
IIASA’S HISTORY
THE 1960s

Sources: US Department of Interior, The Guardian
1972
IIASA’S members have changed

2000: 12 NMOs + 3 affiliate NMOs
(Global North)
IIASA’S members have changed

2018:23 NMOs
(Global North and Global South)
IIASA’S APPROACH
 ATTRACT THE BEST SCIENTISTS (2016)

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific Staff</td>
<td>348</td>
</tr>
<tr>
<td>Research visitors to IIASA</td>
<td>2,229</td>
</tr>
<tr>
<td>Global research network</td>
<td>~3,500</td>
</tr>
<tr>
<td>Research partners</td>
<td>~700</td>
</tr>
</tbody>
</table>
NOBEL PRIZE WINNERS

Professor Tjalling Koopmans and Professor Leonid Kantorovich
Nobel Prize in Economics (1975)
NOBEL PRIZE WINNERS

Professor Paul Crutzen
Nobel Prize for Chemistry (1995)
NOBEL PRIZE WINNERS

Professor Thomas C. Schelling
Nobel Prize for Economics (2005)
NOBEL PRIZE WINNERS

Intergovernmental Panel on Climate Change
Nobel Peace Prize (2007)
YOUNG SCIENTISTS SUMMER PROGRAM
POSTDOCTORAL FELLOWS (2017)

Peter Bednarik (Austria), EEP, RISK
Gergely Boza (Hungary), EEP
Bushra Khalid (Pakistan), EEP, POP
Edward Byers (USA), ENE, TNT, WAT
Sibel Eker (Turkey), EEP, POP
Franziska Gaupp (Germany), ESM, RISK
Adam French (USA), RISK, ASA

Fei Guo (China), ENE, AIR
Alison Heslin (USA), RISK, POP
Mateusz Iskrzynski (Poland), EEP
Christina Kaiser (Austria), EEP
Mia Landauer (Finland), RISK, AFI
Alma Mendoza (Mexico), ESM
Sennai Mesfun (Eritrea), ESM

Chai Molina (Israel), ASA, EEP
Asjad Naqvi (Pakistan, Austria), RPV, ASA
Piera Patrizio (Italy), ESM
Nandita Saikia (India), POP
Matthias Wildemeersch (Belgium, Singapore), ASA, ESM
Sam Hyun Yoo (South Korea), POP
Shaohui Zhang (China), AIR, ENE
INTERDISCIPLINARY SCIENTISTS

- 29% Natural Scientists & Engineers
- 30% Social Scientists
- 41% Mathematicians and others
IIASA PROGRAMS

- World Population (POP)
- Energy (ENE)
- Air Quality & Greenhouse Gases (AIR)
- Transitions to New Technologies (TNT)
- Risk & Resilience (RISK)
- Evolution & Ecology (EEP)
- Advanced Systems Analysis (ASA)
- Ecosystem Services & Management (ESM)
- Water (WAT)

Systems Approaches in Support of Sustainability

GLOBAL HEALTH
INTERNATIONAL COLLABORATIONS (2016)

615 publications
including 406 peer-reviewed articles

Over 1,500 authors from 159 institutions in 50 countries
HOME OF IIASA SINCE 1972
IIASA AS A CONVENOR OF GLOBAL SCIENCE

May 2015
IPCC Expert Meeting on Scenarios
Participants: 98
IIASA’S MEMBERS:
Represent scientific community of a country and are often the National Academy or principal research funding agency
FUNDING

• Annual income in 2016 was €22 million of which 56% was from IIASA’s National Member Organizations

• Additional funding comes from contracts and grants. Between 2012 and 2016, IIASA’s research was awarded grants that amounted to €45 million. This was part of a total funding portfolio of €360 million of the external projects in which IIASA was and is involved.
EXAMPLE OF IIASA’S IMPACT
EFFECTS OF AIR POLLUTION
CAUSES OF AIR POLLUTION
Cut sulfur dioxide by 30%

Moderate costs

Ecosystem highly resilient to acid rain

Cut sulfur dioxide by 30%

Very high costs

Ecosystem highly vulnerable to acid rain
THE RAINS MODEL

For 43 European countries:

- Pollution generation & control options, including costs
- Atmospheric transport and deposition
- Impacts on the environment
ASK THE RAINS MODEL

Any number of “What if…?” questions:

• How much would it cost to reduce sulfur dioxide levels to a given standard for all of Europe?
• For the worst-affected areas only?
• What is the cheapest way to stop acidification of forest soils in Bohemia?
• What would be the impact of a new emissions standard for, say, power plants on eutrophication? On acidification? On ozone formation?

RAINS gives answers to such questions, usually within minutes.
INTERNATIONAL TREATY

Convention on Long-range Transboundary Air Pollution

• Signed by 33 European governments
• One of the most successful multilateral treaties protecting the environment
• Helped Europe to cut sulfur dioxide emissions by 60% over the past 20 years
• With support of RAINS, treaty and EU now tackles multiple air pollutants (SO$_2$, NO$_x$, NH$_3$, VOCs, PMs)

RAINS extended to include greenhouse gases (GAINS) and used by numerous parties and organizations involved in climate change negotiations
CLEAN AIR IN EUROPE

- SO$_2$ reduction
- Actual SO$_2$ emissions
IIASA RESEARCH HAS HAD A POSITIVE IMPACT

2. EU National Emissions Ceiling Directive
3. EU Thematic Clean Air Strategy
4. EU Climate and Energy Strategy for 2030
5. Climate and Clean Air Coalition to reduce short-lived climate pollutants
6. Objectives of the UN Secretary General’s Sustainable Energy for All Initiative
7. Helps Brazil with long term planning for future energy
8. Emission scenarios for IPCC Third, Fourth and Fifth Assessment Reports
9. Catastrophe Bonds to make Mexican public finances resilient to major natural disasters
10. Pest management practices in forests in North America and Scandinavia
11. Forest management practices in Russia
12. Underpins US Dept of Justice antitrust case against Microsoft (technology lock-in)
Thank you

For further information about IIASA:
www.iiasa.ac.at or inf@iiasa.ac.at

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