



# **GLOBAL TRANSFORMATIONS**

## **Value of Systems Science**

### **(Applied Systems Analysis)**

**Professor Dr. Pavel Kabat**

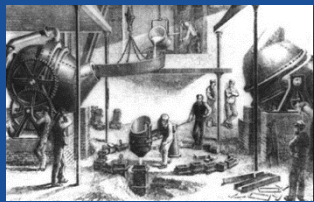
IIASA Director General and Chief Executive Officer

Professor Earth System Science

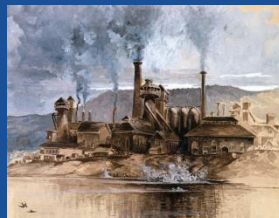
Wageningen, Netherlands

# Transformational Change

1850



1900



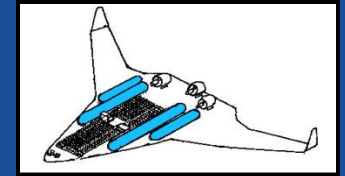
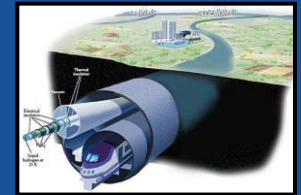
1950



2000



2050



Source: After Granger Morgan, 2013



# Disruptive Change

## Easter Parade on Fifth Avenue, New York, 13 years apart

1900: where's the car?



1913: where's the horse?



Images: L, National Archive, [www.archives.gov/research/american-cides/images/american-cides-101.jpg](http://www.archives.gov/research/american-cides/images/american-cides-101.jpg)  
R, [shorpy.com/node/204](http://shorpy.com/node/204).

Inspiration: Tona Seba's keynote lecture at AltCar, Santa Monica CA, 28 Oct 2014,  
<http://tonaseba.com/keynote-at-altcar-apollo-100-electric-transportation-100-solarby-2030/>

# THE EARLY 1970s







# 24 MEMBER COUNTRIES (NMOs)



- International, independent, interdisciplinary
- Research on major global problems
- Solution oriented, integrated systems analysis



# 24 MEMBER COUNTRIES

Representing:

**71% of the world's economy**

US\$54,797,000 million from World GDP of US\$77,302,000 million  
(including 8 of the world's 10 largest economies)

**63% of the world's population**

4,599.7 million people from World population of 7,247.9 million

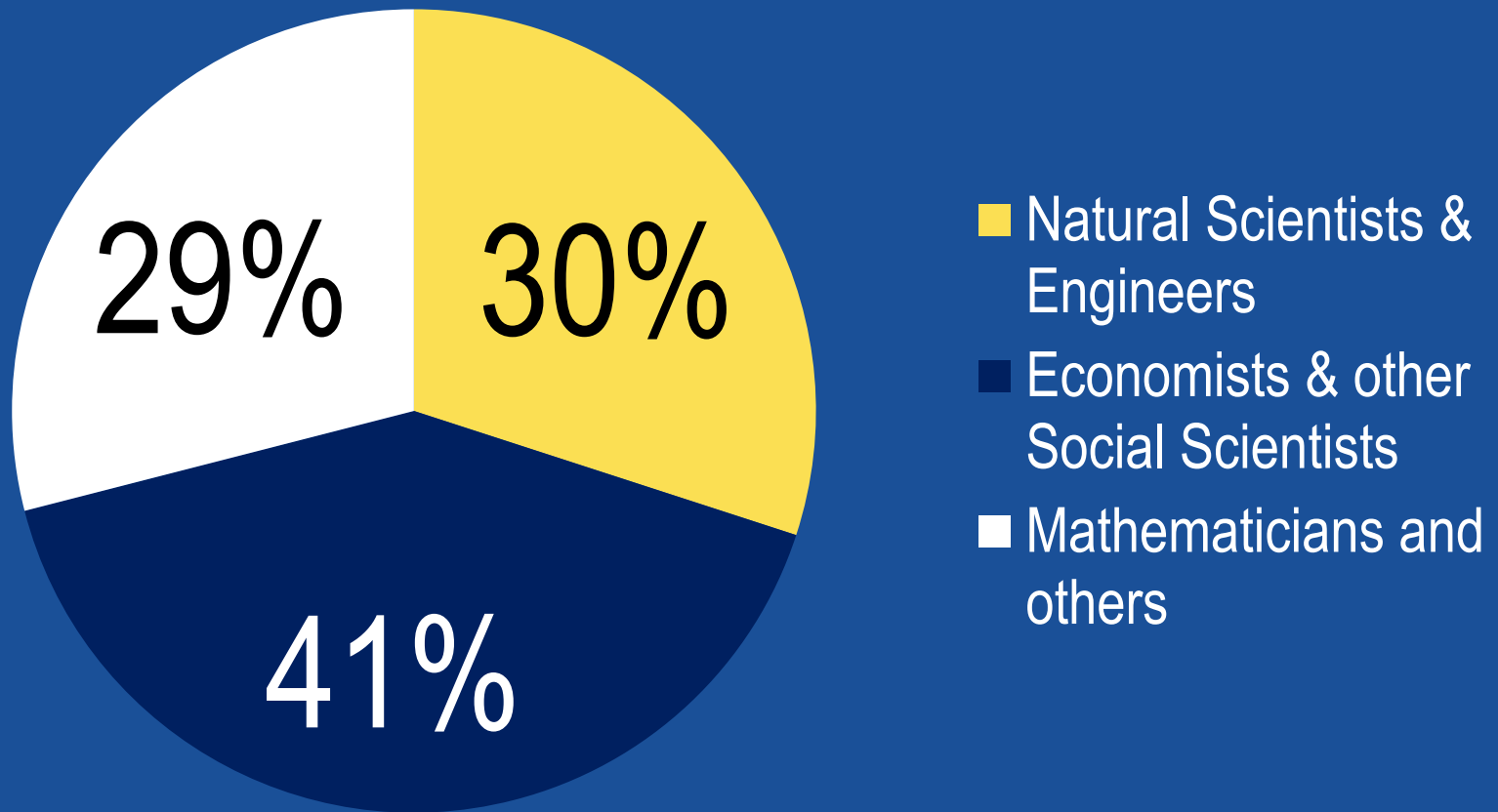
Sources: GDP figures from IMF (2014); population figures from IASA (2015)

# IIASA TRULY INTERNATIONAL

- 1,445 visitors & collaborators in 2014
- Plus ~25% of IIASA alumni (3,505 people worldwide) remain actively involved in IIASA research
- Plus ~600 partner institutions
- In sum, ~2500 researchers from some 65 countries involved in IIASA's research network (external faculty)
- And it is not just research networks: IIASA researchers took part in 112 advisory boards and steering committees in 2014



# INTERDISCIPLINARY SCIENTISTS



# IIASA's Systems Science Approach

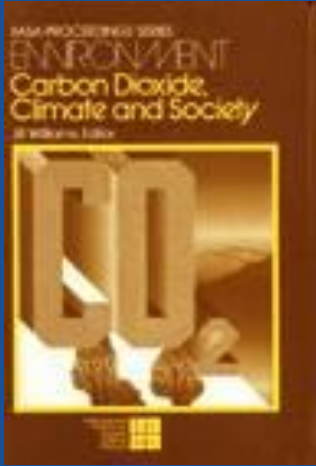
- Integrated
- Interdisciplinary
- International
- Independent
- Solution-oriented
- Long term
- Trade offs



=

**Systems  
Analysis**

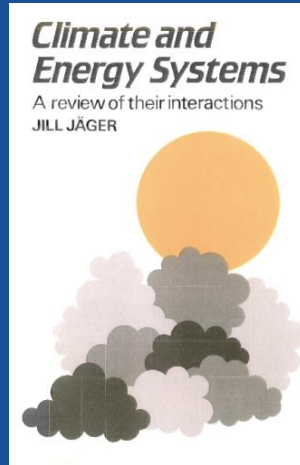
# EXAMPLES OF EARLY RESEARCH



# 1978



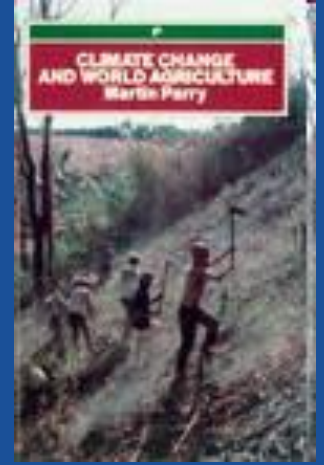
# 1981



# 1983

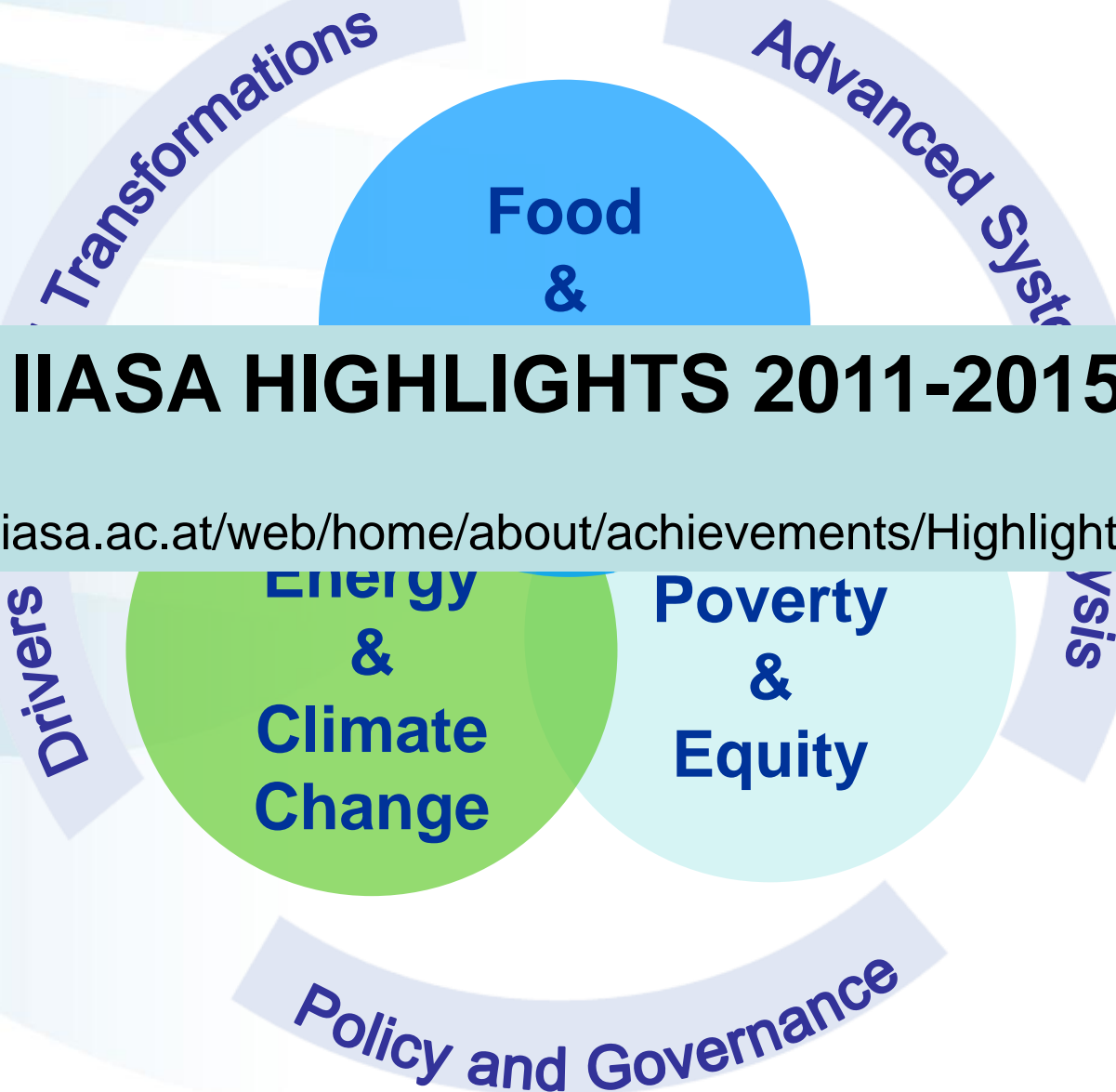


# 1986



# 1990

# IIASA RESEARCH STRATEGY



<http://www.iiasa.ac.at/web/home/about/achievements/Highlights.html>



# NEW IIASA RESEARCH FRAMEWORK

Science, Policy, Society  
Partnerships

## **Systems Approaches for Global Transformations**

### ***IIASA Research Plan 2016 – 2020***

<http://www.iiasa.ac.at/web/home/about/leadership/strategicplan/IIASA-Research-Plan2015-2020.pdf>

Integrated Systems  
Analysis

# **IIASA AS A GLOBAL HUB**

## INCREASED MAPPING OF ACTIVITIES IN ORDER TO STRATEGICALLY BUILD ON CURRENT INTERACTIONS



# Activities with Member Countries

## Australasia

IIASA collaborates with member countries of the Asia-Pacific region in the IASA network of research centres. The network is designed to facilitate the exchange of information and expertise among scientists and researchers in the region, and to provide a platform for joint research and development activities. The network is organized into several thematic areas, including:

- **Energy and Environment:** This area focuses on the development of sustainable energy systems and the management of natural resources. It includes research on renewable energy, energy efficiency, and the impact of climate change on the environment.
- **Water and Environment:** This area focuses on the management of water resources and the protection of the environment. It includes research on water quality, water scarcity, and the impact of human activities on the environment.
- **Health and Environment:** This area focuses on the impact of environmental factors on human health. It includes research on the health effects of air pollution, water pollution, and other environmental factors.
- **Policy and Management:** This area focuses on the development of policies and management strategies for sustainable development. It includes research on the impact of policy on the environment, the economy, and society.

IIASA also provides technical assistance and training to member countries in the areas of energy, water, and environment. This assistance is provided through a variety of means, including workshops, seminars, and on-site visits. IIASA also provides financial support for research and development activities in the region.

### Signposts of Innovation between IIASA and Australasia since 1990

| IIASA Research Program | IIASA Research Project | IIASA Research Project |
|------------------------|------------------------|------------------------|
| Energy and Environment | Energy and Environment | Energy and Environment |
| Water and Environment  | Water and Environment  | Water and Environment  |
| Health and Environment | Health and Environment | Health and Environment |
| Policy and Management  | Policy and Management  | Policy and Management  |

### IIASA Research Program

| IIASA Research Program | IIASA Research Project | IIASA Research Project |
|------------------------|------------------------|------------------------|
| Energy and Environment | Energy and Environment | Energy and Environment |
| Water and Environment  | Water and Environment  | Water and Environment  |
| Health and Environment | Health and Environment | Health and Environment |
| Policy and Management  | Policy and Management  | Policy and Management  |

### IIASA Research Project

| IIASA Research Project | IIASA Research Project | IIASA Research Project |
|------------------------|------------------------|------------------------|
| Energy and Environment | Energy and Environment | Energy and Environment |
| Water and Environment  | Water and Environment  | Water and Environment  |
| Health and Environment | Health and Environment | Health and Environment |
| Policy and Management  | Policy and Management  | Policy and Management  |

### IIASA Research Project

| IIASA Research Project | IIASA Research Project | IIASA Research Project |
|------------------------|------------------------|------------------------|
| Energy and Environment | Energy and Environment | Energy and Environment |
| Water and Environment  | Water and Environment  | Water and Environment  |
| Health and Environment | Health and Environment | Health and Environment |
| Policy and Management  | Policy and Management  | Policy and Management  |

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**Activities with Member Countries**

**India**

Several IIASA-supported research projects have been carried out in India, including the following:

- **Energy Policy:** IIASA has been instrumental in the development of India's energy policy, particularly in the area of nuclear energy. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Environmental Policy:** IIASA has been instrumental in the development of India's environmental policy, particularly in the area of air quality management. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Water Policy:** IIASA has been instrumental in the development of India's water policy, particularly in the area of water resource management. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Transport Policy:** IIASA has been instrumental in the development of India's transport policy, particularly in the area of road transport. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Health Policy:** IIASA has been instrumental in the development of India's health policy, particularly in the area of infectious diseases. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Education Policy:** IIASA has been instrumental in the development of India's education policy, particularly in the area of higher education. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Science Policy:** IIASA has been instrumental in the development of India's science policy, particularly in the area of basic research. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Technology Policy:** IIASA has been instrumental in the development of India's technology policy, particularly in the area of information technology. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Industry Policy:** IIASA has been instrumental in the development of India's industry policy, particularly in the area of manufacturing. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Trade Policy:** IIASA has been instrumental in the development of India's trade policy, particularly in the area of international trade. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Finance Policy:** IIASA has been instrumental in the development of India's finance policy, particularly in the area of monetary policy. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Labour Policy:** IIASA has been instrumental in the development of India's labour policy, particularly in the area of labour relations. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Social Policy:** IIASA has been instrumental in the development of India's social policy, particularly in the area of social welfare. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Law Policy:** IIASA has been instrumental in the development of India's law policy, particularly in the area of legal reform. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Culture Policy:** IIASA has been instrumental in the development of India's culture policy, particularly in the area of cultural heritage. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Religion Policy:** IIASA has been instrumental in the development of India's religion policy, particularly in the area of religious freedom. IIASA experts have provided technical assistance and training to Indian officials and scientists.
- **Other activities:** IIASA has been instrumental in the development of India's other activities, particularly in the area of international relations. IIASA experts have provided technical assistance and training to Indian officials and scientists.

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Activities with Member Countries

## Japan

Representatives of the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) have been engaged in various activities with IIASA since 1992. The MEXT has been one of the largest donors of international research grants to IIASA. In 2006, MEXT was the largest donor of international research grants to IIASA, followed by the European Union and the United States of America. In 2007, MEXT was the largest donor of international research grants to IIASA, followed by the European Union and the United States of America.

| Highlights of interactions between IIASA and Japan since 1992    |   |
|--|---|
| <b>Visiting Scientists</b><br>Japanese Scientists Visiting IIASA | <b>Visiting Scientists to IIASA</b><br>• 1992-1993: Dr. T. Kuroki, MEXT<br>• 1994-1995: Dr. T. Kuroki, MEXT<br>• 1996-1997: Dr. T. Kuroki, MEXT<br>• 1998-1999: Dr. T. Kuroki, MEXT<br>• 2000-2001: Dr. T. Kuroki, MEXT<br>• 2002-2003: Dr. T. Kuroki, MEXT<br>• 2004-2005: Dr. T. Kuroki, MEXT<br>• 2006-2007: Dr. T. Kuroki, MEXT<br>• 2008-2009: Dr. T. Kuroki, MEXT<br>• 2010-2011: Dr. T. Kuroki, MEXT<br>• 2012-2013: Dr. T. Kuroki, MEXT<br>• 2014-2015: Dr. T. Kuroki, MEXT<br>• 2016-2017: Dr. T. Kuroki, MEXT<br>• 2018-2019: Dr. T. Kuroki, MEXT<br>• 2020-2021: Dr. T. Kuroki, MEXT<br>• 2022-2023: Dr. T. Kuroki, MEXT<br>• 2024-2025: Dr. T. Kuroki, MEXT<br>• 2026-2027: Dr. T. Kuroki, MEXT<br>• 2028-2029: Dr. T. Kuroki, MEXT<br>• 2030-2031: Dr. T. Kuroki, MEXT<br>• 2032-2033: Dr. T. Kuroki, MEXT<br>• 2034-2035: Dr. T. Kuroki, MEXT<br>• 2036-2037: Dr. T. Kuroki, MEXT<br>• 2038-2039: Dr. T. Kuroki, MEXT<br>• 2040-2041: Dr. T. Kuroki, MEXT<br>• 2042-2043: Dr. T. Kuroki, MEXT<br>• 2044-2045: Dr. T. Kuroki, MEXT<br>• 2046-2047: Dr. T. Kuroki, MEXT<br>• 2048-2049: Dr. T. Kuroki, MEXT<br>• 2050-2051: Dr. T. Kuroki, MEXT<br>• 2052-2053: Dr. T. Kuroki, MEXT<br>• 2054-2055: Dr. T. Kuroki, MEXT<br>• 2056-2057: Dr. T. Kuroki, MEXT<br>• 2058-2059: Dr. T. Kuroki, MEXT<br>• 2060-2061: Dr. T. Kuroki, MEXT<br>• 2062-2063: Dr. T. Kuroki, MEXT<br>• 2064-2065: Dr. T. Kuroki, MEXT<br>• 2066-2067: Dr. T. Kuroki, MEXT<br>• 2068-2069: Dr. T. Kuroki, MEXT<br>• 2070-2071: Dr. T. Kuroki, MEXT<br>• 2072-2073: Dr. T. Kuroki, MEXT<br>• 2074-2075: Dr. T. Kuroki, MEXT<br>• 2076-2077: Dr. T. Kuroki, MEXT<br>• 2078-2079: Dr. T. Kuroki, MEXT<br>• 2080-2081: Dr. T. Kuroki, MEXT<br>• 2082-2083: Dr. T. Kuroki, MEXT<br>• 2084-2085: Dr. T. Kuroki, MEXT<br>• 2086-2087: Dr. T. Kuroki, MEXT<br>• 2088-2089: Dr. T. Kuroki, MEXT<br>• 2090-2091: Dr. T. Kuroki, MEXT<br>• 2092-2093: Dr. T. Kuroki, MEXT<br>• 2094-2095: Dr. T. Kuroki, MEXT<br>• 2096-2097: Dr. T. Kuroki, MEXT<br>• 2098-2099: Dr. T. Kuroki, MEXT<br>• 2100-2101: Dr. T. Kuroki, MEXT<br>• 2102-2103: Dr. T. Kuroki, MEXT<br>• 2104-2105: Dr. T. Kuroki, MEXT<br>• 2106-2107: Dr. T. Kuroki, MEXT<br>• 2108-2109: Dr. T. Kuroki, MEXT<br>• 2110-2111: Dr. T. Kuroki, MEXT<br>• 2112-2113: Dr. T. Kuroki, MEXT<br>• 2114-2115: Dr. T. Kuroki, MEXT<br>• 2116-2117: Dr. T. Kuroki, MEXT<br>• 2118-2119: Dr. T. Kuroki, MEXT<br>• 2120-2121: Dr. T. Kuroki, MEXT<br>• 2122-2123: Dr. T. Kuroki, MEXT<br>• 2124-2125: Dr. T. Kuroki, MEXT<br>• 2126-2127: Dr. T. Kuroki, MEXT<br>• 2128-2129: Dr. T. Kuroki, MEXT<br>• 2130-2131: Dr. T. Kuroki, MEXT<br>• 2132-2133: Dr. T. Kuroki, MEXT<br>• 2134-2135: Dr. T. Kuroki, MEXT<br>• 2136-2137: Dr. T. Kuroki, MEXT<br>• 2138-2139: Dr. T. Kuroki, MEXT<br>• 2140-2141: Dr. T. Kuroki, MEXT<br>• 2142-2143: Dr. T. Kuroki, MEXT<br>• 2144-2145: Dr. T. Kuroki, MEXT<br>• 2146-2147: Dr. T. Kuroki, MEXT<br>• 2148-2149: Dr. T. 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Kuroki, MEXT<br>• 2204-2205: Dr. T. Kuroki, MEXT<br>• 2206-2207: Dr. T. Kuroki, MEXT<br>• 2208-2209: Dr. T. Kuroki, MEXT<br>• 2210-2211: Dr. T. Kuroki, MEXT<br>• 2212-2213: Dr. T. Kuroki, MEXT<br>• 2214-2215: Dr. T. Kuroki, MEXT<br>• 2216-2217: Dr. T. Kuroki, MEXT<br>• 2218-2219: Dr. T. Kuroki, MEXT<br>• 2220-2221: Dr. T. Kuroki, MEXT<br>• 2222-2223: Dr. T. Kuroki, MEXT<br>• 2224-2225: Dr. T. Kuroki, MEXT<br>• 2226-2227: Dr. T. Kuroki, MEXT<br>• 2228-2229: Dr. T. Kuroki, MEXT<br>• 2230-2231: Dr. T. Kuroki, MEXT<br>• 2232-2233: Dr. T. Kuroki, MEXT<br>• 2234-2235: Dr. T. Kuroki, MEXT<br>• 2236-2237: Dr. T. Kuroki, MEXT<br>• 2238-2239: Dr. T. Kuroki, MEXT<br>• 2240-2241: Dr. T. Kuroki, MEXT<br>• 2242-2243: Dr. T. Kuroki, MEXT<br>• 2244-2245: Dr. T. Kuroki, MEXT<br>• 2246-2247: Dr. T. Kuroki, MEXT<br>• 2248-2249: Dr. T. Kuroki, MEXT<br>• 2250-2251: Dr. T. Kuroki, MEXT<br>• 2252-2253: Dr. T. Kuroki, MEXT<br>• 2254-2255: Dr. T. Kuroki, MEXT<br>• 2256-2257: Dr. T. Kuroki, MEXT<br>• 2258-2259: Dr. T. Kuroki, MEXT<br>• 2260-2261: Dr. T. Kuroki, MEXT<br>• 2262-2263: Dr. T. Kuroki, MEXT<br>• 2264-2265: Dr. T. Kuroki, MEXT<br>• 2266-2267: Dr. T. Kuroki, MEXT<br>• 2268-2269: Dr. T. Kuroki, MEXT<br>• 2270-2271: Dr. T. Kuroki, MEXT<br>• 2272-2273: Dr. T. Kuroki, MEXT<br>• 2274-2275: Dr. T. Kuroki, MEXT<br>• 2276-2277: Dr. |

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Activities with Member Countries

# Russian Federation

IIASA provides a wide range of services to its member countries, including technical assistance, training, and information services. The Russian Federation is one of the countries that have benefited from IIASA's activities. The following table provides a summary of the activities carried out by IIASA in the Russian Federation from 1992 to 1996.

| Activity             | Year             | Amount (USD)     |
|----------------------|------------------|------------------|
| Technical assistance | 1992             | 100,000          |
| Technical assistance | 1993             | 150,000          |
| Technical assistance | 1994             | 200,000          |
| Technical assistance | 1995             | 250,000          |
| Technical assistance | 1996             | 300,000          |
| Training             | 1992             | 50,000           |
| Training             | 1993             | 75,000           |
| Training             | 1994             | 100,000          |
| Training             | 1995             | 125,000          |
| Training             | 1996             | 150,000          |
| Information services | 1992             | 25,000           |
| Information services | 1993             | 37,500           |
| Information services | 1994             | 50,000           |
| Information services | 1995             | 62,500           |
| Information services | 1996             | 75,000           |
| <b>Total</b>         | <b>1992-1996</b> | <b>1,000,000</b> |

IIASA is a member of the United Nations Economic and Social Council, the European Union, the Organisation for Economic Co-operation and Development (OECD), and the World Bank. It is also a member of the International Association of Agricultural Economists (IAAE), the International Association of Agricultural Economists (IAAE), the International Association of Agricultural Economists (IAAE), and the International Association of Agricultural Economists (IAAE).

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# Activities with Member Countries

## South Africa

Since South Africa's membership of African Regional 2007, numerous of cooperation and collaboration have been initiated. A series of South African delegations to IIASA and several visits of IIASA experts to South Africa have resulted in a series of joint projects. The following table lists the activities that have been initiated since South Africa's membership of African Regional 2007.

| Activity   | Description  |
|--|--|
| <b>Workshop on the Role of the African Union in the Development of Africa</b><br>The workshop was held in Addis Ababa, Ethiopia, in 2007. It was organized by IIASA and the African Union. The workshop was attended by representatives of the African Union, IIASA, and other international organizations. The workshop focused on the role of the African Union in the development of Africa, and the role of IIASA in supporting the African Union's efforts. | <b>Workshop on the Role of the African Union in the Development of Africa</b><br>The workshop was held in Addis Ababa, Ethiopia, in 2007. It was organized by IIASA and the African Union. The workshop was attended by representatives of the African Union, IIASA, and other international organizations. The workshop focused on the role of the African Union in the development of Africa, and the role of IIASA in supporting the African Union's efforts. |
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**Young Scientists  
Summer Program  
2008-2014**

**China 47**

**USA 68**

**UK 6**



**Publications from  
country collaborations  
2008-2014**

**Germany 691**

**USA 605**

**UK 186**

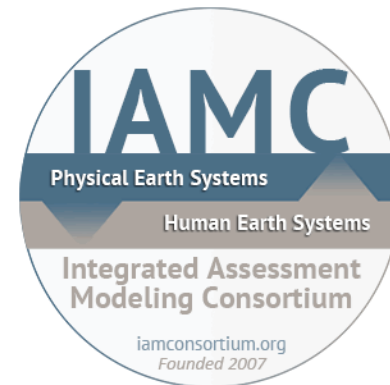


**GAINS – Integrated Assessment Model** to identify cost-effective measures to improve air quality and reduce greenhouse gas emissions



|   |              |                    |                          |               |               |            |
|---|--------------|--------------------|--------------------------|---------------|---------------|------------|
| <b>National versions of GAINS model</b> | <b>China</b> | <b>Netherlands</b> | <b>Republic of Korea</b> | <b>Russia</b> | <b>Sweden</b> | <b>UK?</b> |
|---|--------------|--------------------|--------------------------|---------------|---------------|------------|

**IAMC - Advancing the methods of integrated assessment modeling**



|                      |  |  |   |            |
|----------------------|--|--|---|------------|
| <b>IAMC Founders</b> | <b>IIASA</b><br><br>IIASA | <b>Japan</b><br> | <b>USA</b><br> | <b>UK?</b> |
|----------------------|--|--|---|------------|

# IIASA and Russia Highlights (2008-2016)

January 2017

# SUMMARY (2008-2016)

|   |  |
|---|--|
| <b>National Member Organization</b>     | Russian Academy of Sciences  |
| <b>Membership start date</b>            | 1972 (from 1972 to 1991 as the Academy of Sciences, Union of Soviet Socialist Republics)   |
| <b>Research partners</b>                | 45 institutes in Russia  |
| <b>Areas of research collaborations</b> | <p>Advancing the methods of systems analysis</p> <p>Eurasian economic integration</p> <p>Managing and monitoring Russia's forest</p> <p>Projecting Russia's future population</p> <p>Tackling air pollution and greenhouse gases in Russia</p> <p>The Arctic and Russia</p> <p>Global Energy Assessment and Russia</p> |
| <b>Capacity Building</b>                | <p>21 young Russian scientists took part in IIASA's capacity building programs; 32 students visited IIASA in 2016</p> <p>11 training workshops and 3 conferences for Russian researchers and policymakers</p>  |
| <b>Publication output</b>               | 793 publications   |
| <b>Staff</b>                            | Over 20 Russian scientists employed by IIASA every year  |

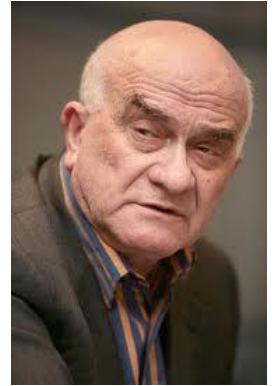
# NATIONAL MEMBER ORGANIZATION

- Russian Academy of Sciences (RAS)
- Academician Alexei Gvishiani, Director, Geophysical Center, RAS, is IIASA's Council Member
- National IIASA Committee for Russia is chaired by Academician Vladimir Kotlyakov, Director, Institute of Geography, RAS





# SOME LEADING RUSSIAN PERSONALITIES ASSOCIATED WITH IIASA



# RESEARCH PARTNERS

- 53 institutions in Russia, including:
  - Lomonosov Moscow State University (MSU)
  - Russian Academy of Sciences
  - Russian Federal Forestry Agency (Rosleskhoz)
  - Russian Foundation for Basic Research (RFBR)
  - Russian Federal State Statistic Service (ROSSTAT)
  - Scientific Research Institute for Atmospheric Air Protection (SRI Atmosphere, JSC)
  - Steklov Mathematical Institute, Russian Academy of Sciences
  - Sukachev Institute of Forest, Siberian Branch, Russian Academy of Sciences (SIF RAS)
  - Vladimir State University

# RESEARCH COLLABORATIONS

## Selected Highlights:

- Advancing the methods of systems analysis
- Managing and monitoring Russia's forests
- Eurasian Economic Integration
- Projecting Russia's future population
- Tackling air pollution and greenhouse gases in Russia
- Arctic Futures Initiative
- Global Energy Assessment and Russia

# CAPACITY BUILDING

21 Russians won places on IIASA's Young Scientists Summer Program (YSSP) between 2008 and 2016 (198 Russians since the first YSSP in 1997)





# POSTDOCTORAL FELLOWS

- Artem Baklanov (2014-2016) is analyzing iterated social dilemmas that will help reveal features of stability of interactions, thereby helping individuals learn, through interaction, how to cope with behavioral uncertainty, understand the interests of other individuals, and better adapt to changing social environments. (PhD from N.N. Krasovskii Institute of Mathematics and Mechanics of the Russian Academy of Sciences).



# ACADEMIC TRAINING WORKSHOPS

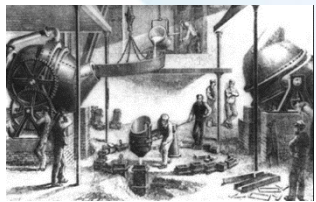
- “Summer Academy on Economic Growth and Governance of Natural Resources” at Lomonosov Moscow State University in 2015.
- “Population, Human Capital and Policy” at Lomonosov Moscow State University in 2013 & 2012
- “Economic Growth: Mathematical Dimensions” at Lomonosov Moscow State University in 2009 & 2011
- “Tutorial on IIASA’s GAINS model” for Russian national experts in 2009 at IIASA
- “New Forest Management Products” at Irkutsk Forest Management Agency in 2008
- “Forest Inventory” with the Russian Federal Forestry Agency, the Russian Institute of Continuous Education in Forestry, and partners in Austria in 2011
- “Introduction to IIASA Research” for managers from Russian oil and gas companies in 2013



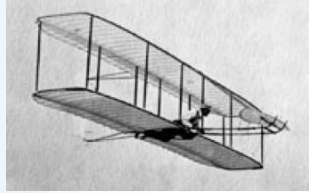


# Transformational Change???

1850



1900



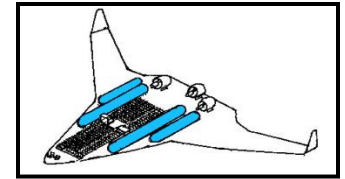
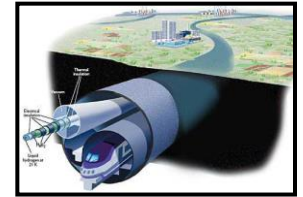
1950



2000

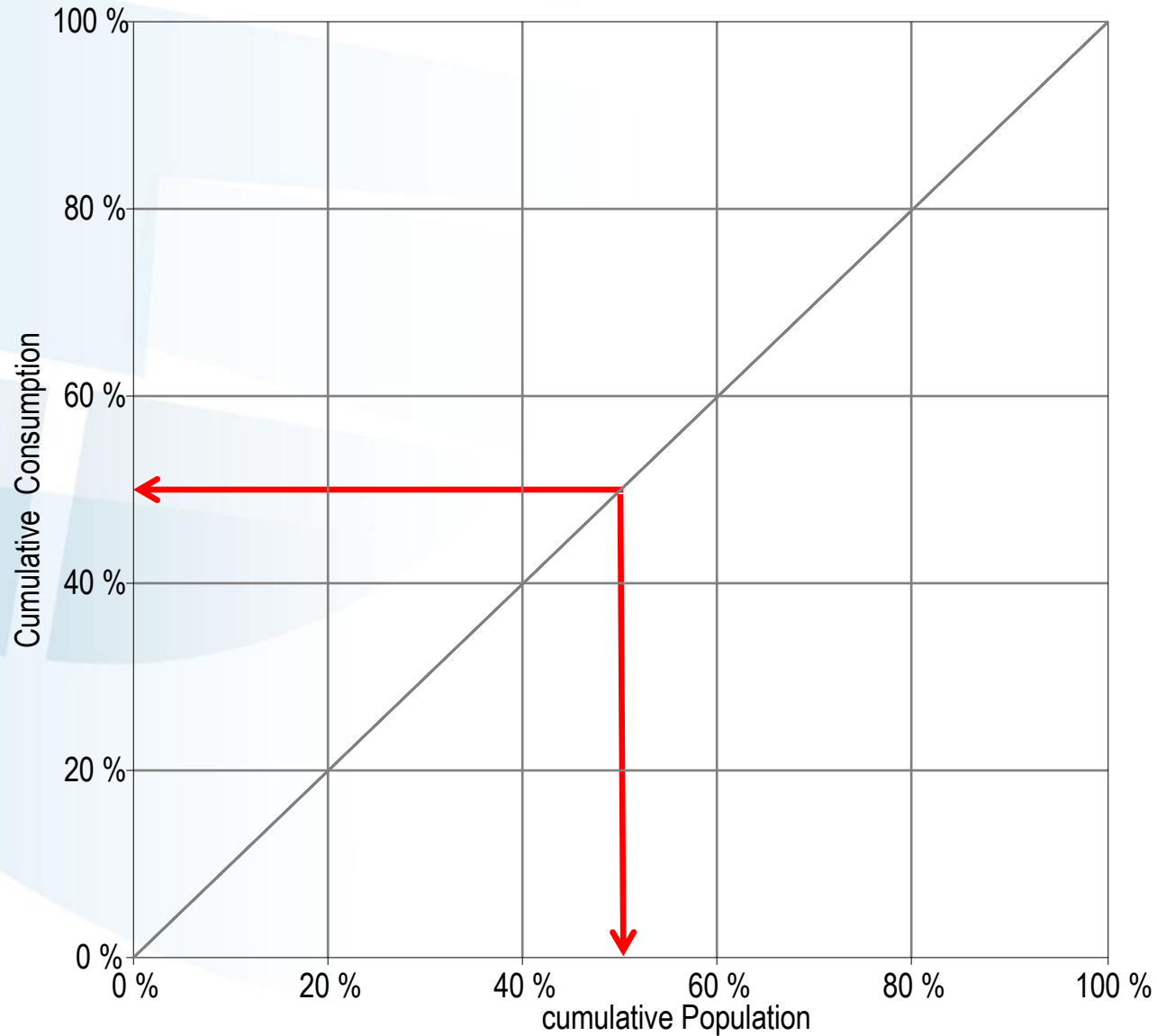


2050

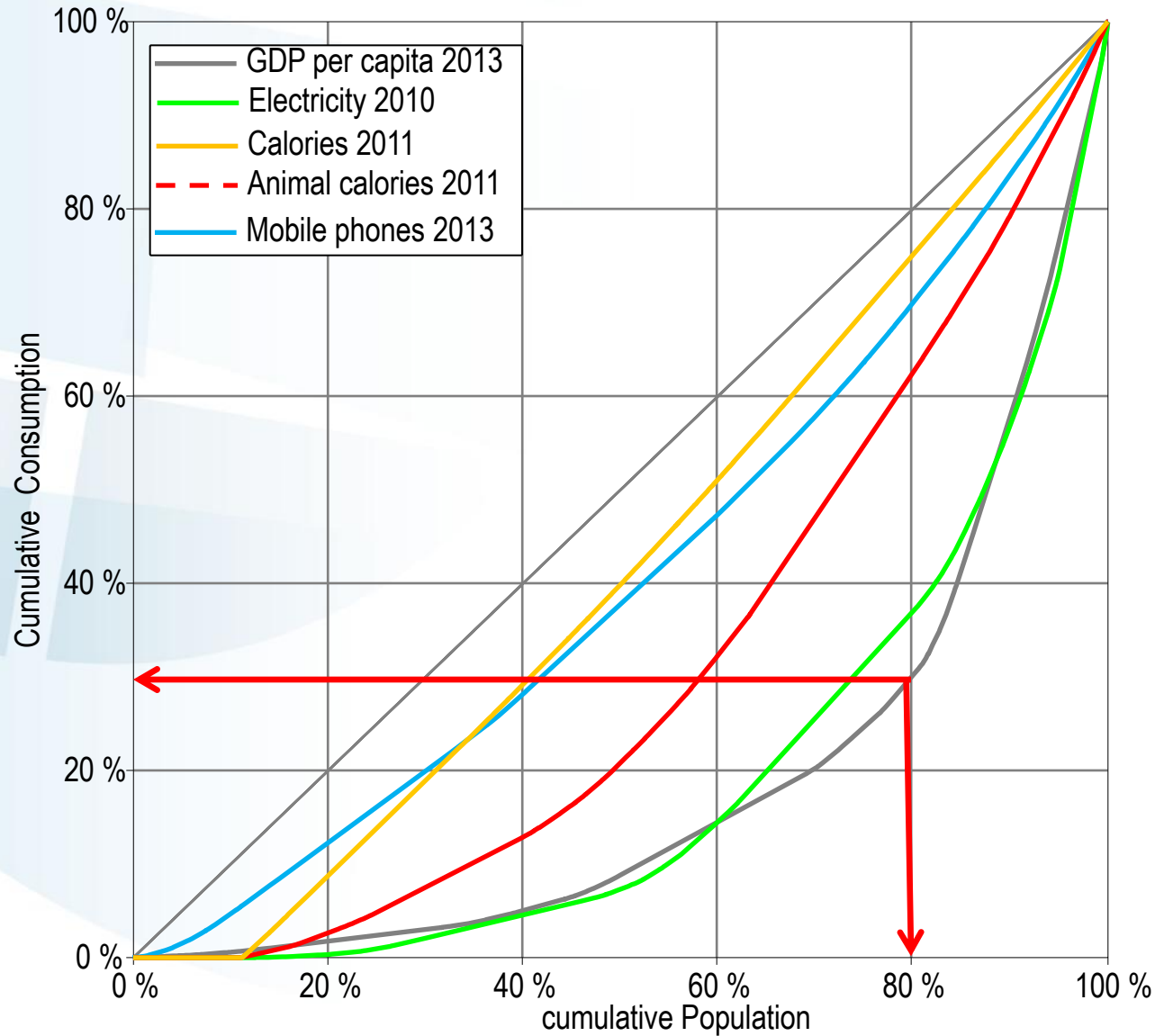


Source: After Granger Morgan, 2013

# Global Lorenz Distributions



# Global Lorenz Distributions







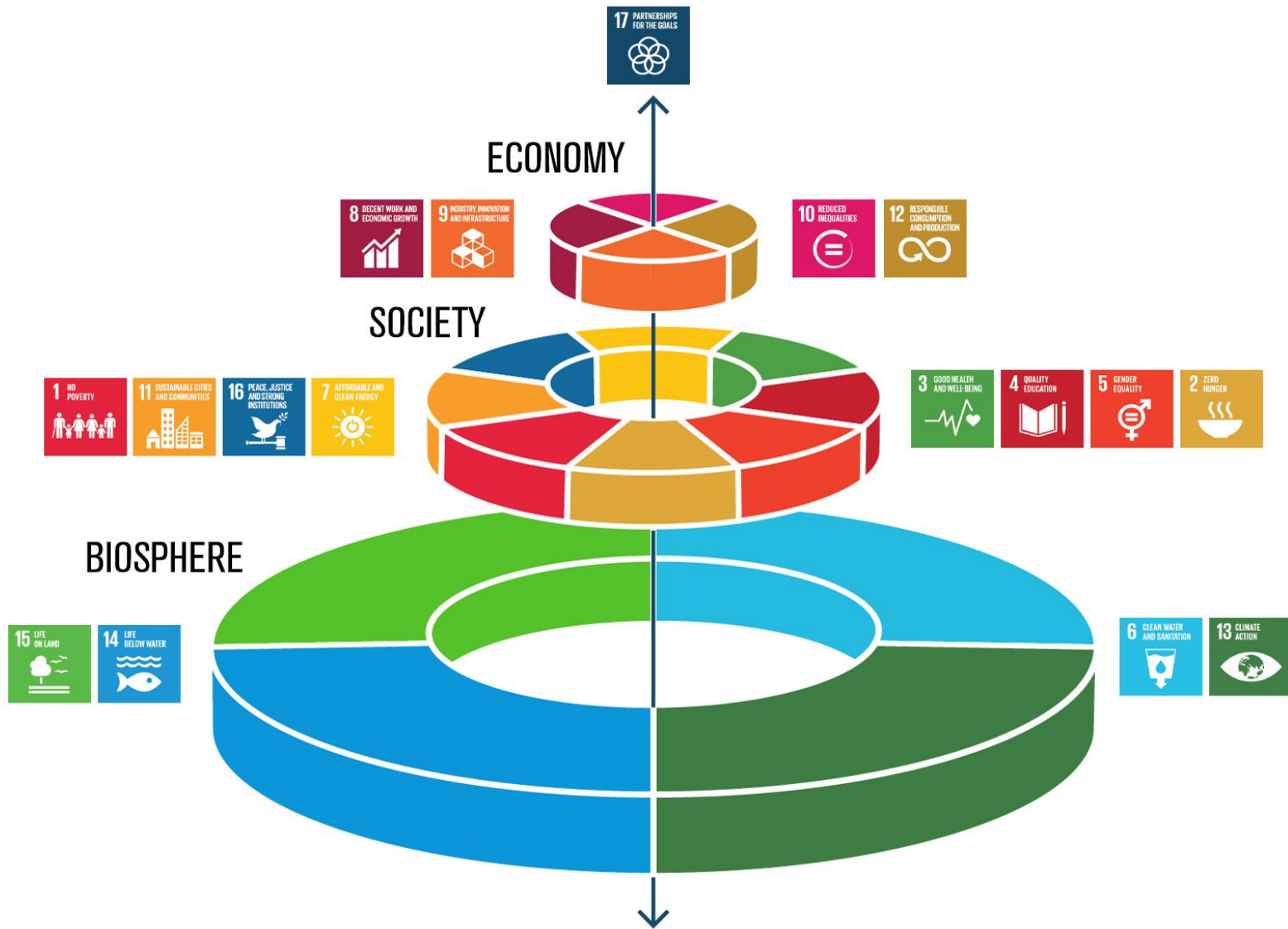
# SUSTAINABLE DEVELOPMENT GOALS



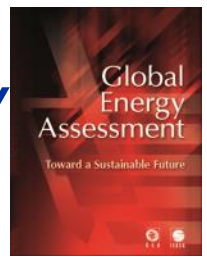
➡ SDG Implementation Guiding Principles & Specific Measures to Achieve SDGs



# SUSTAINABLE DEVELOPMENT GOALS



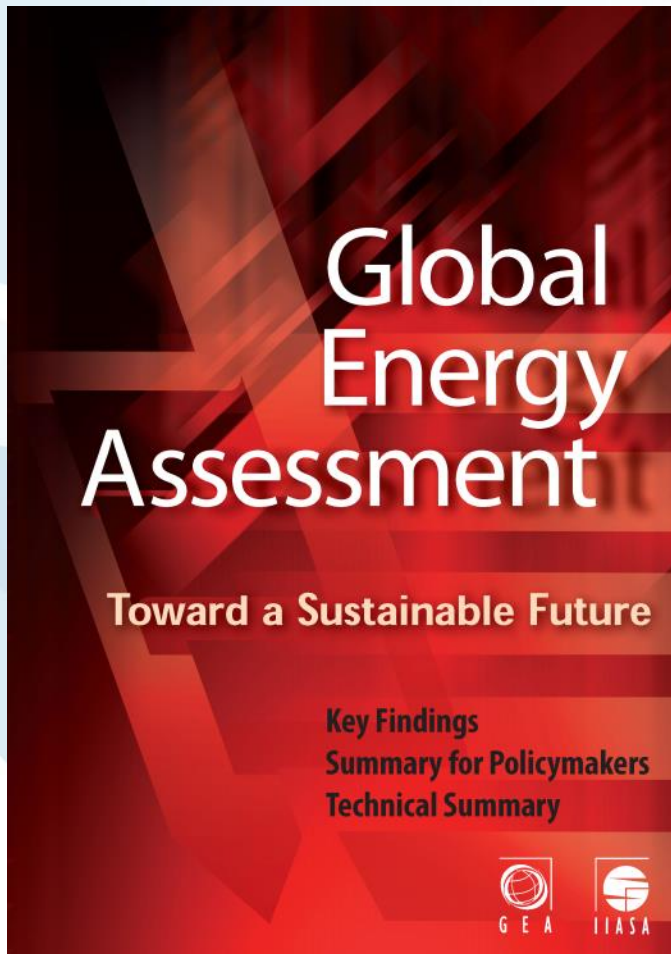
# GLOBAL ENERGY ASSESSMENT AND GERMANY



- Launched in 2012 at Rio +20 Summit
- Outcomes include defining the aspirational yet feasible objectives for the UN Secretary-General's Sustainable Energy For All Initiative:
  1. Ensure universal access to modern energy services by 2030
  2. Double the global rate of improvements in energy efficiency by 2030
  3. Double the share of renewable energy in the global energy mix by 2030



# GLOBAL ENERGY ASSESSMENT AND RUSSIA

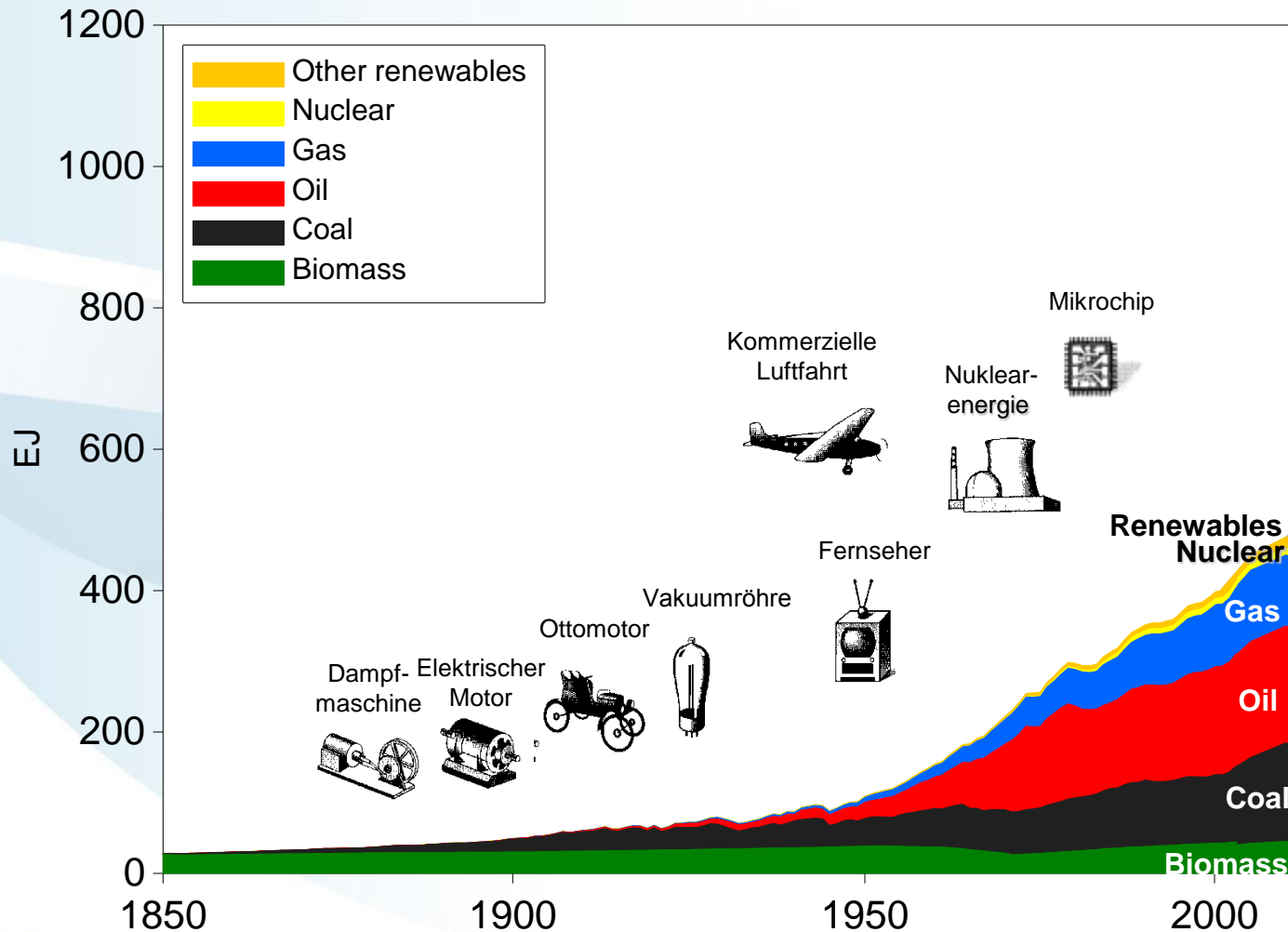


Yuri Kononov, Russian Academy of Sciences, served as a member of the GEA Organizing Committee and Secretariat

- UN Secretary-General's Sustainable Energy For All initiative adopted GEA's key findings



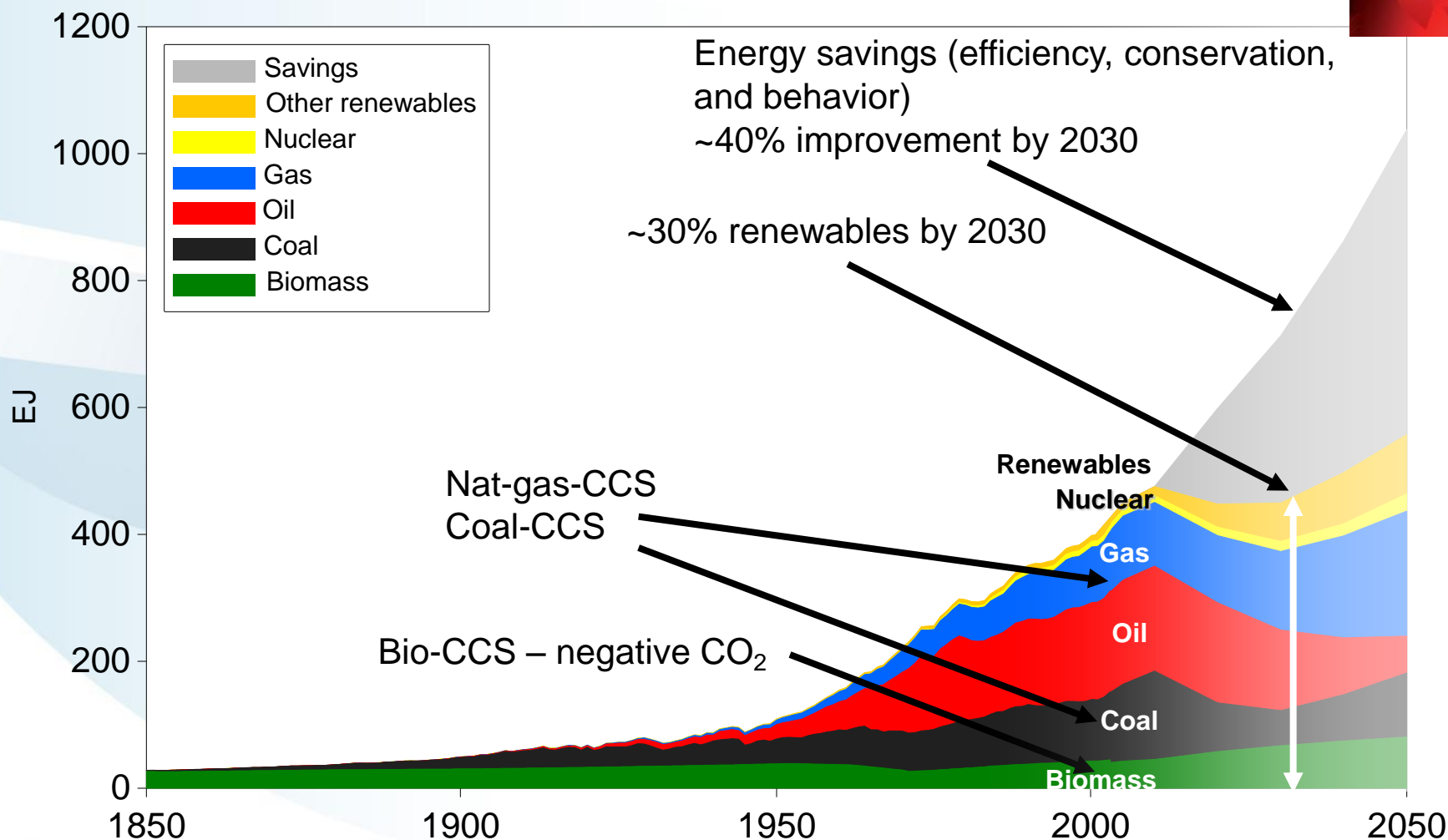
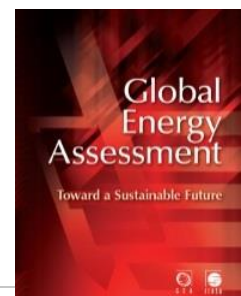
# Global Primary Energy Historical Evolution





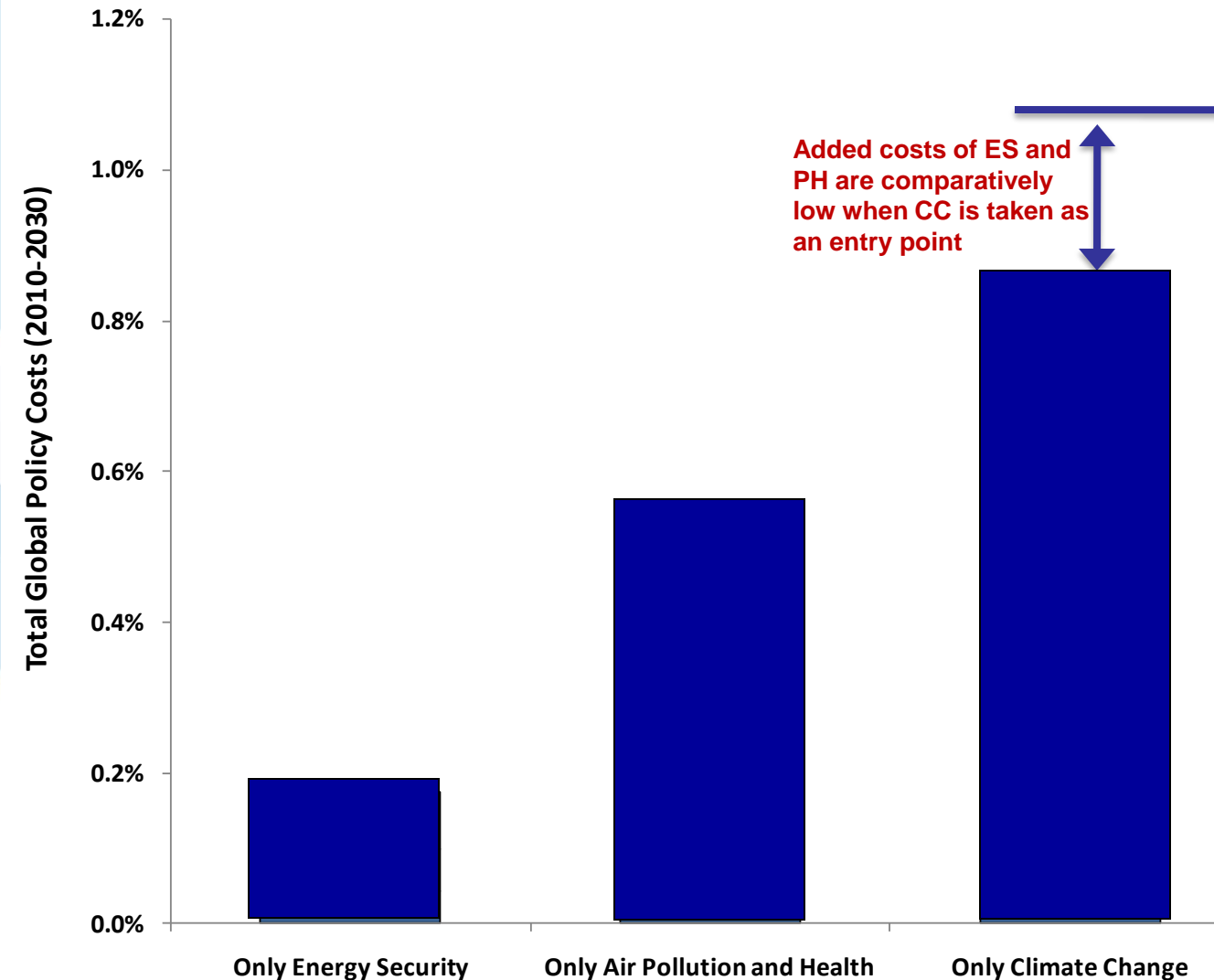
# Global Primary Energy

## A Transformational Pathway



Source: Riahi et al, 2012

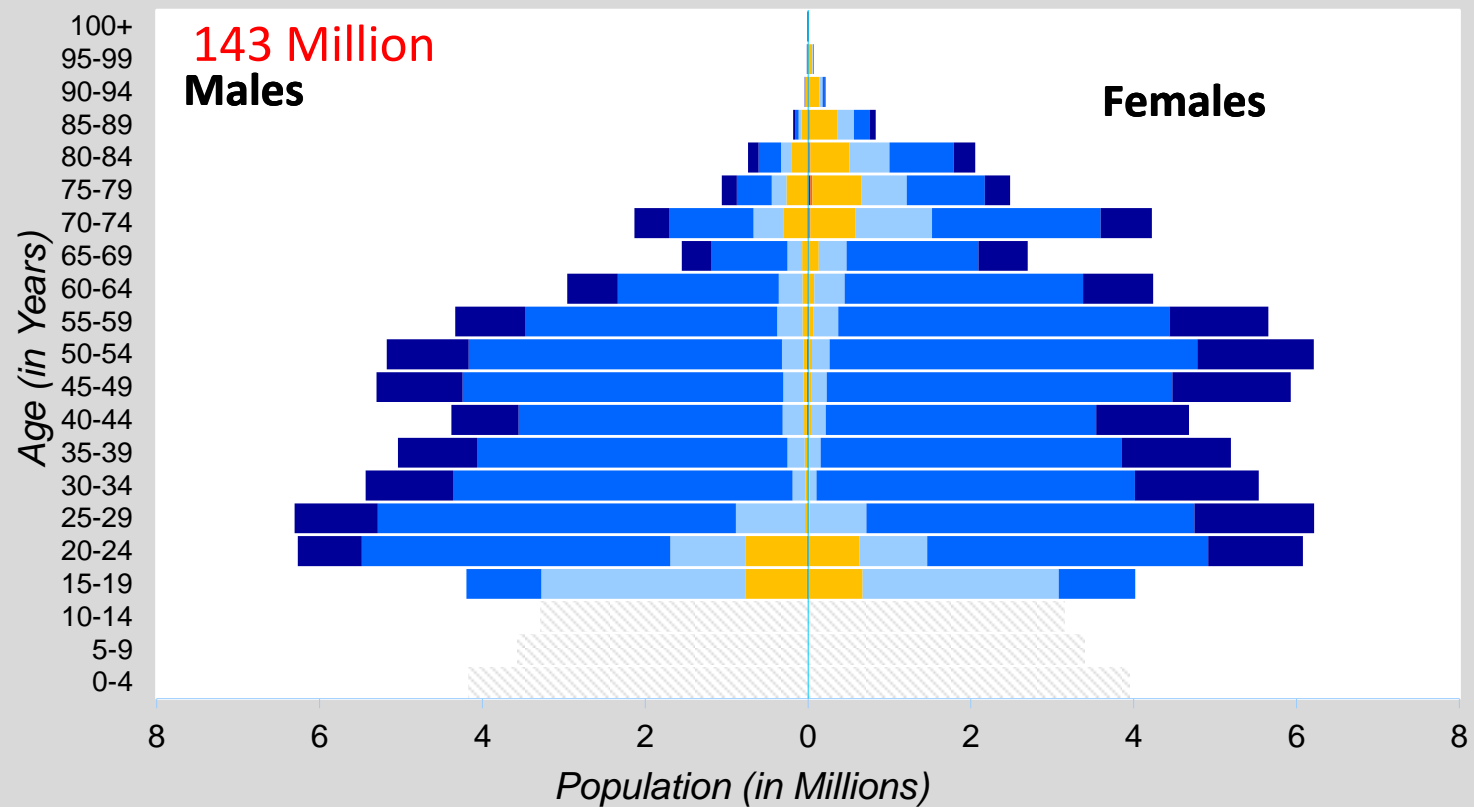
# Multiple Benefits of Integrated Policies



Source: McCollum, Krey, Riahi, 2012

# PROJECTING RUSSIA'S FUTURE POPULATION

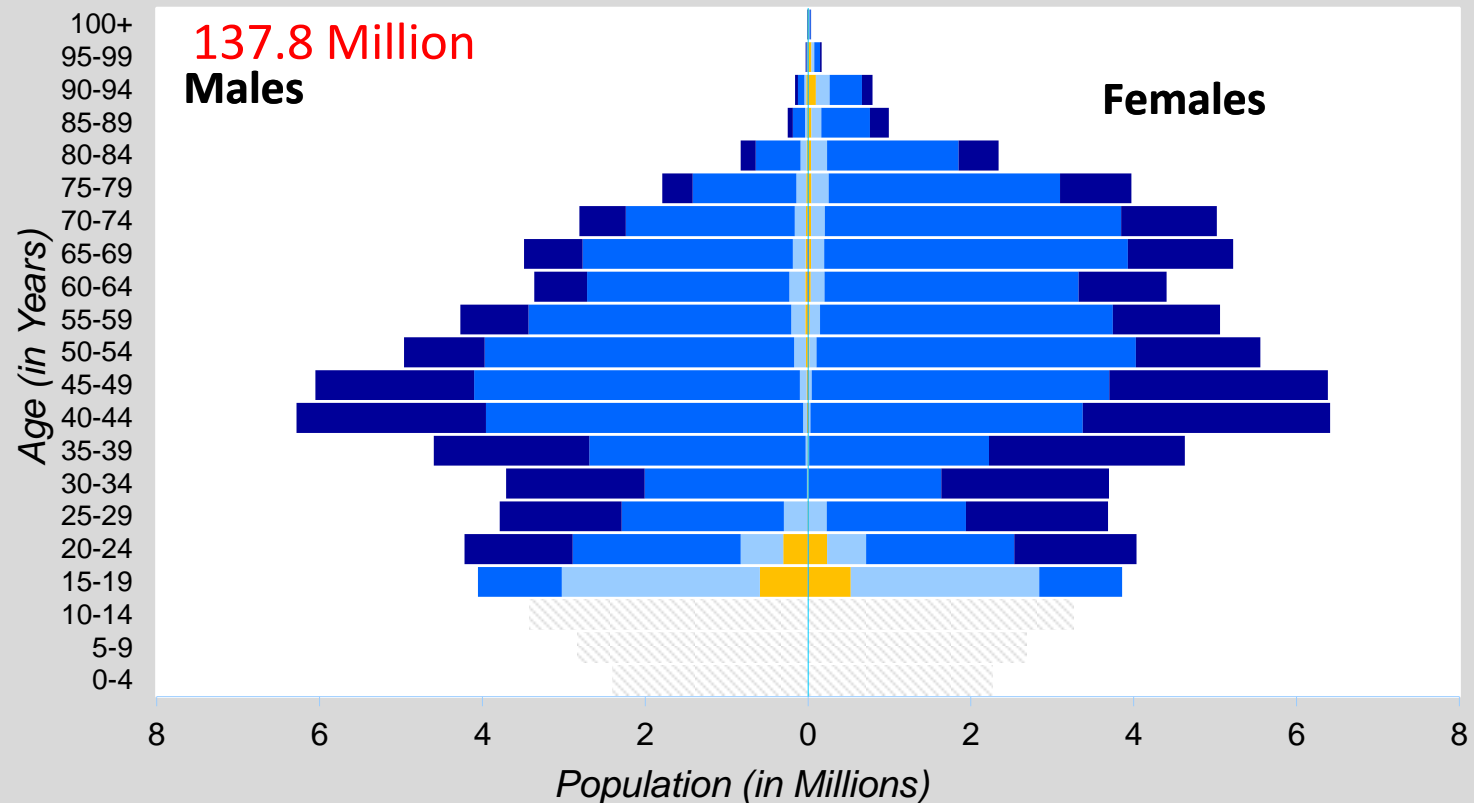
## Russia - Base Year 2010



Pop < 15 yrs    No Education    Incomp. Primary    Primary  
Lower Secondary    Upper Secondary    Post Secondary

# PROJECTING RUSSIA'S FUTURE POPULATION

## Russia - Projections 2030 - SSP1

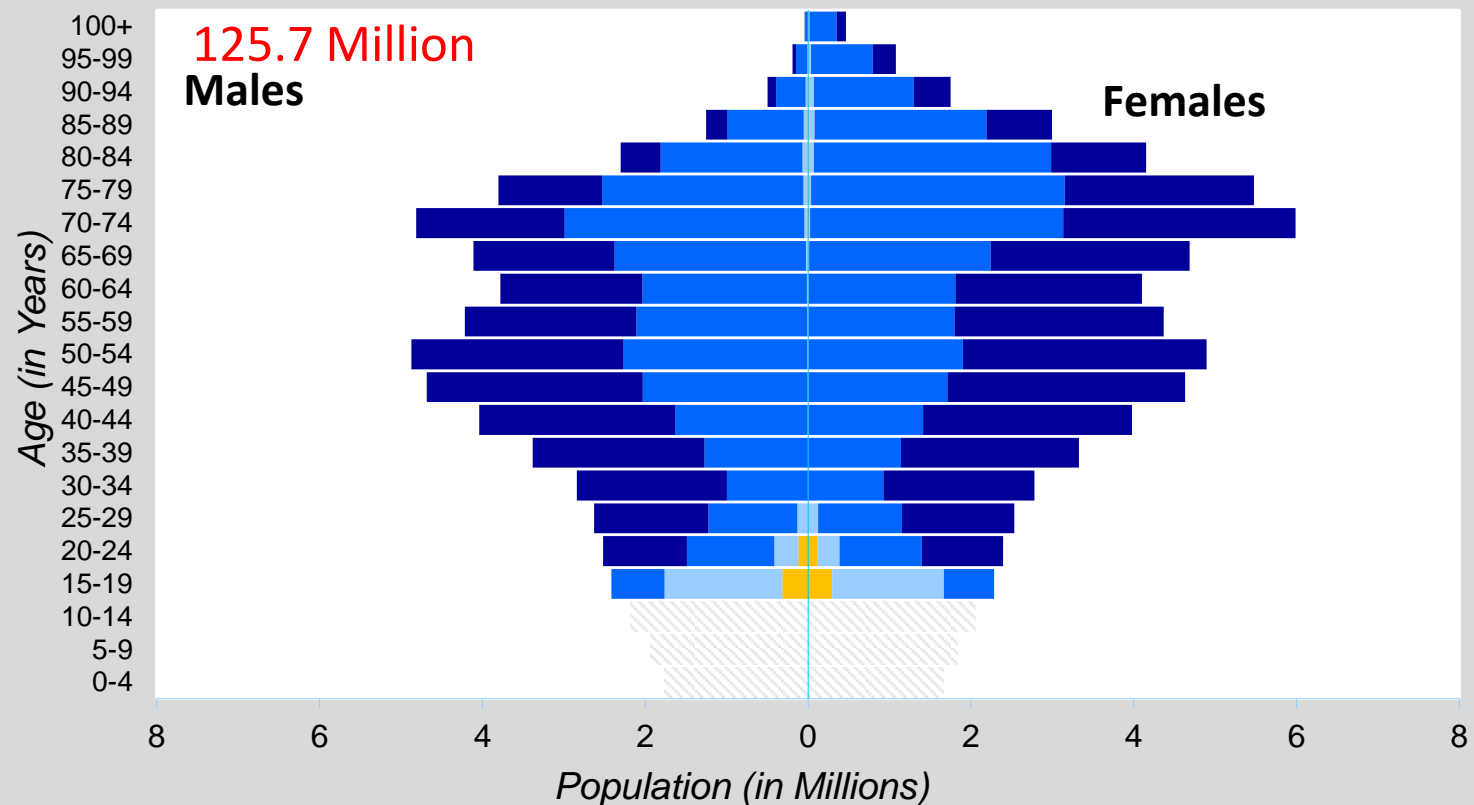


Pop < 15 yrs    No Education    Incomp. Primary    Primary

Lower Secondary    Upper Secondary    Post Secondary

# PROJECTING RUSSIA'S FUTURE POPULATION

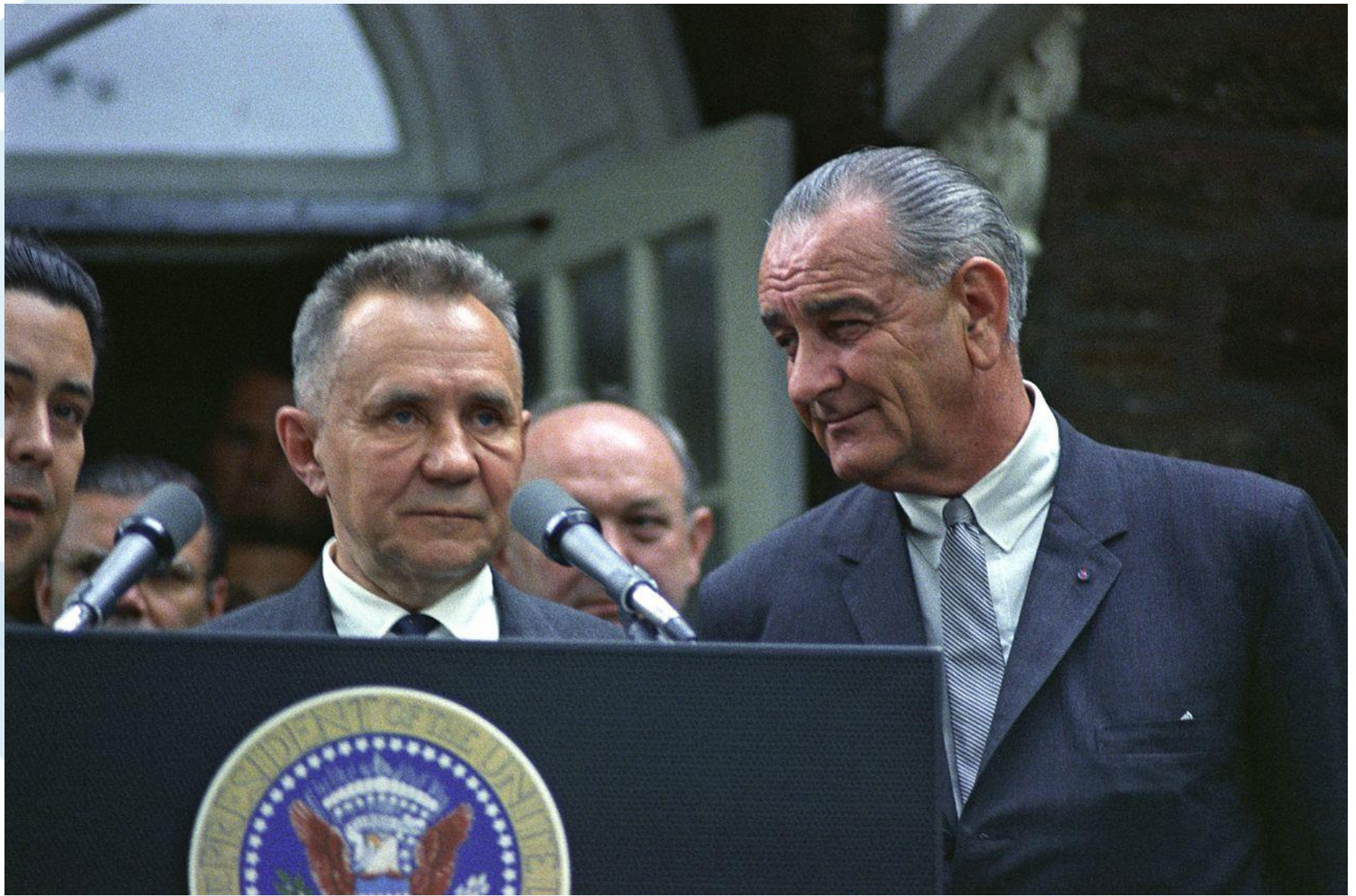
## Russia - Projections 2060 - SSP1



Pop < 15 yrs    No Education    Incomp. Primary    Primary  
Lower Secondary    Upper Secondary    Post Secondary



# IIASA SCIENCE TO POLICY & SCIENCE DIPLOMACY



Premier Alexei Kosygin and President Lyndon Johnson  
during the meeting in Glassboro in 1967





Bridging new divides.....



Sources: BBC, Salon



IIASA Charter (1972): “Convinced that science and technology, if wisely directed, can benefit all mankind,

Believing that international co-operation between national institutes promotes co-operation between nations and so the economic and social progress of peoples;

Hereby resolve to establish an International Institute for Applied Systems Analysis.”



# International Institute for Applied Systems Analysis in the 1970s and 1980s

- Founding members bring together scientists from Bulgaria, Canada, Czechoslovakia, France, Germany (Democratic Republic & Federal Republic), Italy, Japan, Poland, UK, USA, USSR
- Conducts first international and integrated assessments in energy (1973-1981), climate change (1976-78)
- Develops new research field of adaptive ecosystem policy and management (1975)
- Develops more reliable population projections (1980)
- Its research findings influence water policy in Europe, USA and USSR (1982)
- An international environmental treaty is first to accept a single scientific model to guide its negotiation and implementation (1989)



1989



2015

# GLOBAL NETWORK OF FOREIGN MINISTRY SCIENCE AND TECHNOLOGY ADVISERS

- Science diplomacy short course at IIASA, 18-19 October 2016
- Co-organized with Fletcher School of Law and Diplomacy at Tufts University, and the International Network of Government Science Advice
- Teaching from science advisors from foreign ministries in Japan, New Zealand, UK and USA
- Participants from foreign ministries in Argentina, Chile, Ghana, Kazakhstan, Kenya, Malaysia, Oman, Panama, Poland, Senegal, South Africa, Ukraine, and Vietnam among others.



# ARCTIC FUTURES INITIATIVE

*BETTER UNDERSTANDING OF  
THE GLOBAL DRIVERS ;  
IMPACT ON and FEEDBACKS  
WITH THE ARCTIC*



Holistic research approach by

- Generating policy relevant questions
- Collaboration with the Arctic Council, Arctic Economic Council, Arctic research community, governments, corporate decision makers and research funders
- Using IIASA methodological frameworks
- Holistic integrated assessment

# EURASIAN ECONOMIC INTEGRATION

- Analyze the challenges and benefits of greater economic integration between Russia, Belarus and Kazakhstan
- Explore future collaboration between the EAEU and the EU
- Study scenarios of Eurasian integration from Shanghai to Lisbon, its global integration, and future roles of key players including China, EU, Japan and Russia
- Partners include:
  - Administration of the President of the Russian Federation,
  - Russian Academy of Sciences,
  - Eurasian Development Bank,
  - Vienna Institute for International Economic Studies





# Economic Integration within a wider European and Eurasian Space

- Eurasian Economic Union (EAEU) is a **new and promising integration process** on the post-soviet space
- Scenarios of a **win-win EU-EAEU interaction**?
- Impact on and role of countries “of the **common neighborhood**” (Ukraine, Moldova)?
- Connection with the developments in the key neighboring countries (**China, Japan**)?
- Role of **global trends** (liberalization of trade vs. protectionism, new energy sources, climate change, massive migration,...)?
- Motivated by the ambition to (re)establish a deep economic cooperation between the EU/EAEU and their neighbors - “**Lisbon to Vladivostok**” concept





# IIASA's work on the economic integration

- 2013-2017: Facilitate **de-politicized dialogue** between advisers and decision makers across all relevant domains (European, etc.)
- Three pillars:
  - Goods and services: **Trade in general**, including (tariff) + **critical sectors**: energy, transport
  - Capital flows: **Investments**
  - People: **Migration**
- More information:

<http://www.iiasa.ac.at/web/home/research/eurasian/EconomicIntegration.html>



# Second Phase of IIASA led Eurasian Economic Integration Project

- More focus on participants from the industrial sector
- More focus on the role of bilateral economic and industrial sectors (e.g. Russia-Germany, Russia-France, Russia-Austria, Russia-Finland)
- More focus on new geo-economical and geo-political realities (TTIP, TPP, China, Japan, USA) and potential impact of these on trade and economic cooperation
- More emphasis on sectors like transport (Northern Sea Route), energy (role of renewables, LNG, shale gas), trade regimes, infrastructure ...





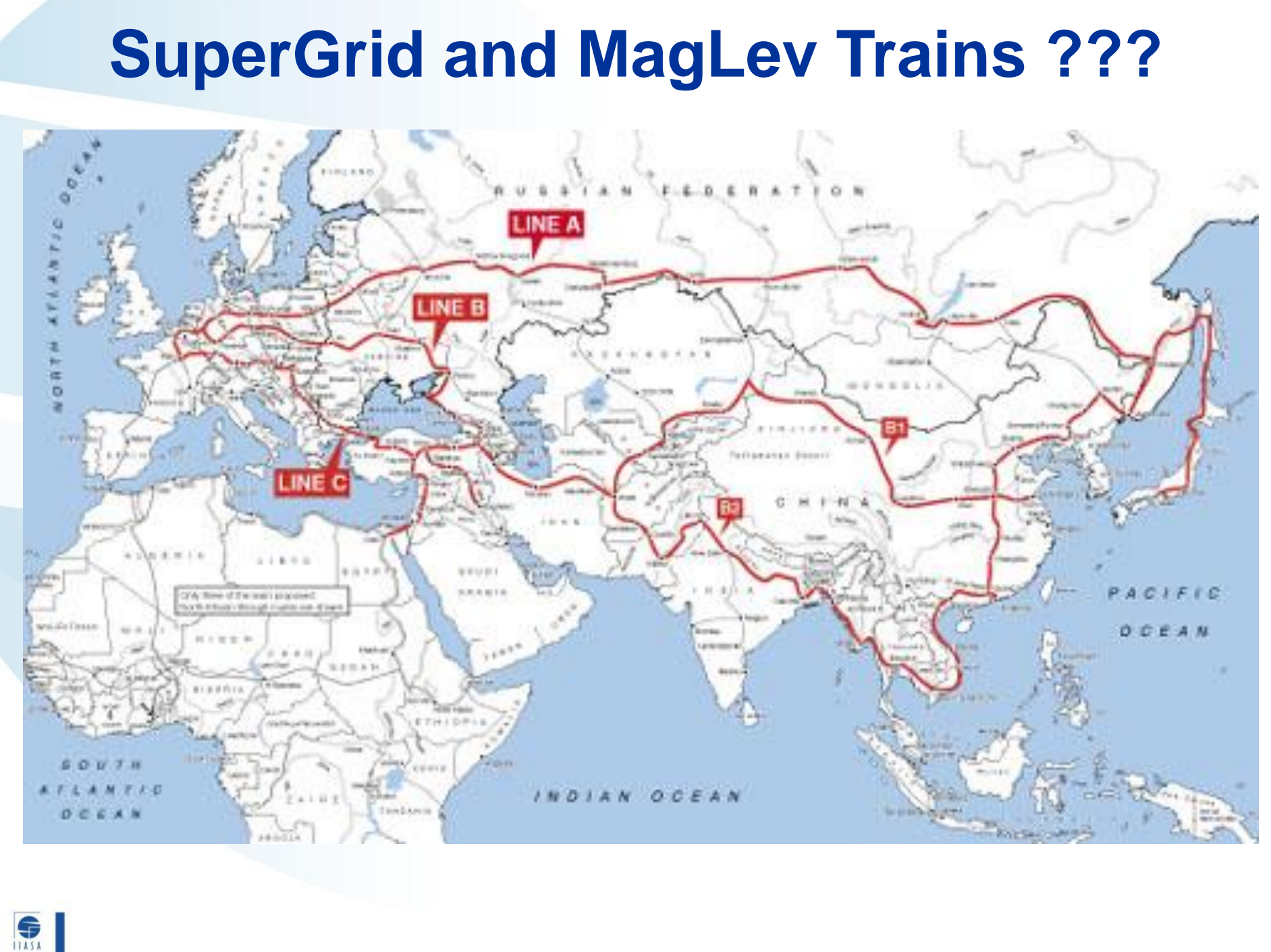
# SuperGrid and MagLev Trains ???

The map illustrates a global network of proposed high-speed rail lines. Line A connects Europe to Russia, Line B connects Europe to China, and Line C connects Europe to Africa. The map also shows other regional routes and labels for major geographical features.

Key features on the map include:

- Line A:** A red line connecting Europe to Russia.
- Line B:** A red line connecting Europe to China.
- Line C:** A red line connecting Europe to Africa.
- Other routes:** Various other red lines are shown across the world, including a line from China to Southeast Asia and another from India to Australia.
- Geographical labels:** The map includes labels for major continents (Europe, Asia, Africa, North America, South America), oceans (North Atlantic, South Atlantic, Indian, Pacific), and numerous countries.

Source: <http://www.iasa.ac.uk>



# FURTHER INFORMATION

IIASA and Russia

[www.iiasa.ac.at/russia](http://www.iiasa.ac.at/russia)

Russian Academy of Sciences

[www.ras.ru](http://www.ras.ru)

[tkhromova@gmail.com](mailto:tkhromova@gmail.com)

# Thank you and welcome soon at IIASA !!

