Sustainable Development for All
The World in 2050

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SDGs:
Prosperity
Social Inclusion
Sustainability

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IIASA, International Institute for Applied Systems Analysis
Glassboro Summit and Signing of IIASA Charter in Royal Society

Howard Raiffa YSSP Talk in 1992

The IIASA charter was signed in London in October 1972, but the history goes back six years earlier. In 1966 American president Lyndon Johnson gave a rather remarkable speech — in the middle of the Cold War — in which he said it was time that the scientists of the United States and the Soviet Union worked together on problems other than military and space matters, on problems that plague all advanced societies, like energy, our oceans, the environment, health. And he called for a liaison between the scientists of East and West.
UN DESA and UNFCCC conference on synergies between the SDGs and the Paris Agreement – 1-3 April 2019 Copenhagen.
Using knowledge on interlinkages to exploit synergies and minimize trade-offs in the policy process can contribute to overall policy coherence.

- Survey of existing publications
- A tool to visualize the cumulated interlinkages from a set of publications
- Meta analysis of the main studies on interlinkages
Interactions between SDG 7 & other SDGs

Source: McCollum et. al, 2018
Multiple Benefits of Integrated Policies

Source: McCollum et. al, 2012; IPCC, 2014

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Key Messages Synthesis

1. Framing and Introduction
2. The Challenges Ahead
3. Sustainable Development Pathways
4. Governing the Transformation

- >60 authors from ~20 organizations
- >150 contributors and participants
TWI2050 Report (www.TWI2050.org)

Key Considerations

1. Six Fundamental Transformations for a Sustainable Future for All
2. The Digital Revolution
3. Preconditions for a Sustainable Digital Revolution
4. Digitalization and Sustainable Development
5. Governing the Transformation toward Sustainability in the Digital Age

➢ 45 authors from ~20 organizations
Six Transformations to achieve the Sustainable Development Goals

Jeffrey D. Sachs¹, Guido Schmidt-Traub®, Mariana Mazzucato³, Dirk Messner⁴, Nebojsa Nakicenovic⁵ and Johan Rockström⁶

The Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change call for deep transformations in every country that will require complementary actions by governments, civil society, science and business. Yet stakeholders lack a shared understanding of how the 17 SDGs can be operationalized. Drawing on earlier work by The World in 2050 initiative, we introduce six SDG Transformations as modular building-blocks of SDG achievement: (1) education, gender and inequality; (2) health, well-being and demography; (3) energy decarbonization and sustainable industry; (4) sustainable food, land, water and oceans; (5) sustainable cities and communities; and (6) digital revolution for sustainable development. Each Transformation identifies priority investments and regulatory challenges, calling for actions by well-defined parts of government working with business and civil society. Transformations may therefore be operationalized within the structures of government while respecting the strong interdependencies across the 17 SDGs. We also outline an action agenda for science to provide the knowledge required for designing, implementing and monitoring the SDG Transformations.
Six Major Transformations (TWI2050.org)

Digital Revolution for Sustainable Development

Sustainable Cities & Communities

Sustainable Food Land, Water & Oceans

SDGs: Prosperity, Social Inclusion, Sustainability

Education, Gender & Inequality

Health Wellbeing & Demography

Energy Decarbonization & Sustainable Industry

Nakicenovic 2018 #10
Six Major Transformations (TWI2050.org)

Digital Revolution for Sustainable Development

Sustainable Cities & Communities

Sustainable Food Land, Water & Oceans

SDGs: Prosperity, Social Inclusion, Sustainability

Education, Gender & Inequality

Health Wellbeing & Demography

Energy Decarbonization & Sustainable Industry

www.twi2050.org
Technology Diffusion Compared
(access to cellphones)

Cellphones
\(\Delta t = 13\) yrs
OECO

Cellphones
\(\Delta t = 11\) yrs
Non-OECO

Source: Grubler, 2016
Technology Diffusion Compared
(access to safe sanitation and cellphones)

Cellphones
Δt = 13 yrs

OECD

Toilets
Δt = 72 yrs

Non-OECD

Cellphones
Δt = 11 yrs

Toilets
Δt = 52 yrs

Source: Grubler, 2016
Impact of IC Technology Convergence

Source: Grubler et al., 2018
**The Map of Artificial Intelligence Ethical Issues**

**Short Term**
- Structural unemployment
- Fairness in algorithms
- Machine ethics
- Proliferation of autonomous weapons

**Long Term**
- Finalizing human values for machines to propagate
- Status of humanity in a world dominated by artificial agents
- Controlling artificial general intelligence and creating friendly superintelligence
- Consciousness in artificial intelligence
- Well-being of AIs
- Moral status of mind uploads

**AI as agents**

**AI as subjects**

Source: Gartner, 2017
The World in 2050 (TWI2050.com)

“Doing More with Less” within Planetary Boundaries

→ Growing number of actors of change:
  • green businesses
  • cities
  • civil society
  • science
  • IGOs (UN etc.)

→ 2030: Achievement of SDGs

→ 2050: Sustainability transformation

→ Governance; values and norms; morality and ethics

→ 2050: Sustainable Future for All

Legitimacy of BAU eroding

Source: After WBGU, 2011
The World in 2050 (TWI2050.com)

Digitalization for Sustainability

Source: After WBGU, 2019
The World in 2050 (TWI2050.com)

Digitalization for Sustainability

Sustainable Digitalized Societies

Source: After WBGU, 2019
The World in 2050 (TWI2050.com)

Digitalization for Sustainability

Sustainable Digitalized Societies

Future of Homo Digitalis?

Source: After WBGU, 2019
Some Key Messages

- Transformational and holistic change is needed but to succeed we must take along winners and losers.
- The world is at crossroads as we are currently experiencing signs of a counter-transformation.
- Six transformations reduce the complexity of the 17 SDGs rendering 2030 Agenda actionable.
- Digitalization is central like all six transformations but is challenging the absorptive capacity of society.
- Essential for sustainability transformation is effective and inclusive governance, values and norms (How).
- Build responsible knowledge societies capable of taking action towards sustainability in the Digital Age.
STI Policy Coherence

Paradox of STI:
- cause of problems, e.g. as negative externalities
- but solution, if socially and environmentally sound

Key to
- Understand inter-relationships, interdependencies and trade-offs
- Leverage synergies among STI policies and SDGs
- At all levels - global, national, regional and local

Tools to support policy coherence:
- integrated assessments
- systems thinking
- road-maps

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cutting science budget is killing the future
THANK YOU

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