International Institute for Applied Systems Analysis
IIASA www.iiasa.ac.at

science for global insight

Transformations to Achieve Sustainable Development Goals

TWI2050
The World in 2050
www.twi2050.org

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'Agenda 2030 and the forests', Seminarium Kungl. Skogsoch Lantbruksakademien, Stockholm, Sweden – 27 November 2018

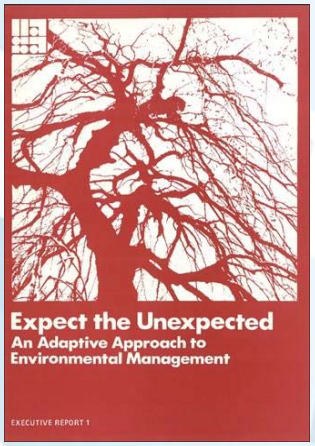
Glassboro Summit and Signing of IIASA Charter in Royal Society

Howard Raiffa YSSP Talk in 1992

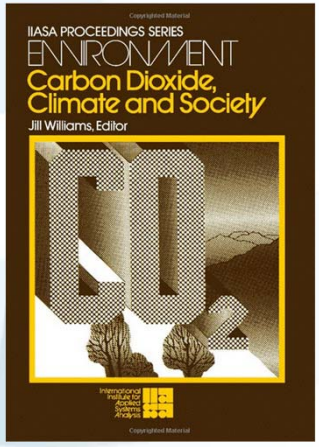
The IIASA charter was signed in London in October 1972, but the history goes back six years earlier. In 1966 American president **Lyndon Johnson** gave a rather remarkable speech — in the middle of the Cold War — in which he said it was time that the scientists of the United States and the Soviet Union 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.

The beginning: Systems & integrated perspective

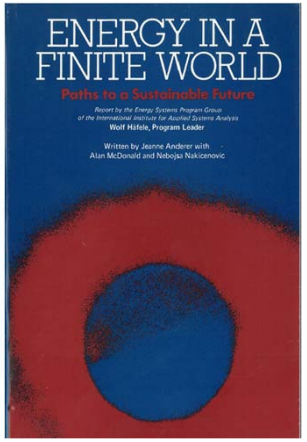
Early IIASA Related Reports



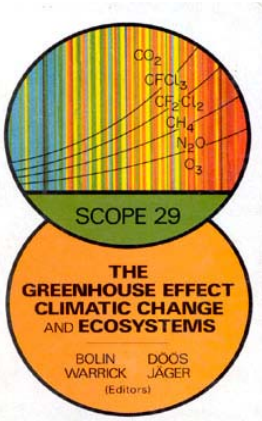
1979



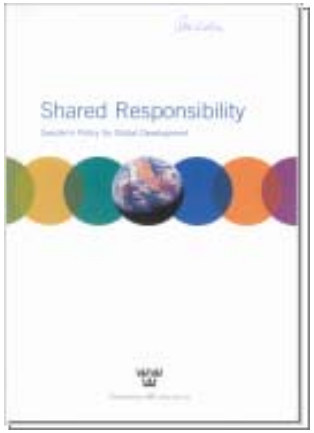
1978



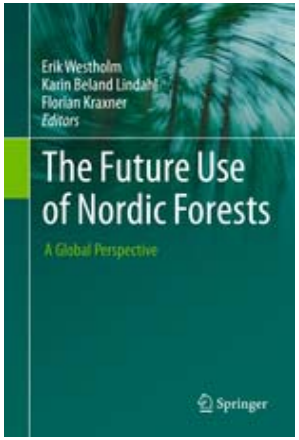
1981



1986



2004

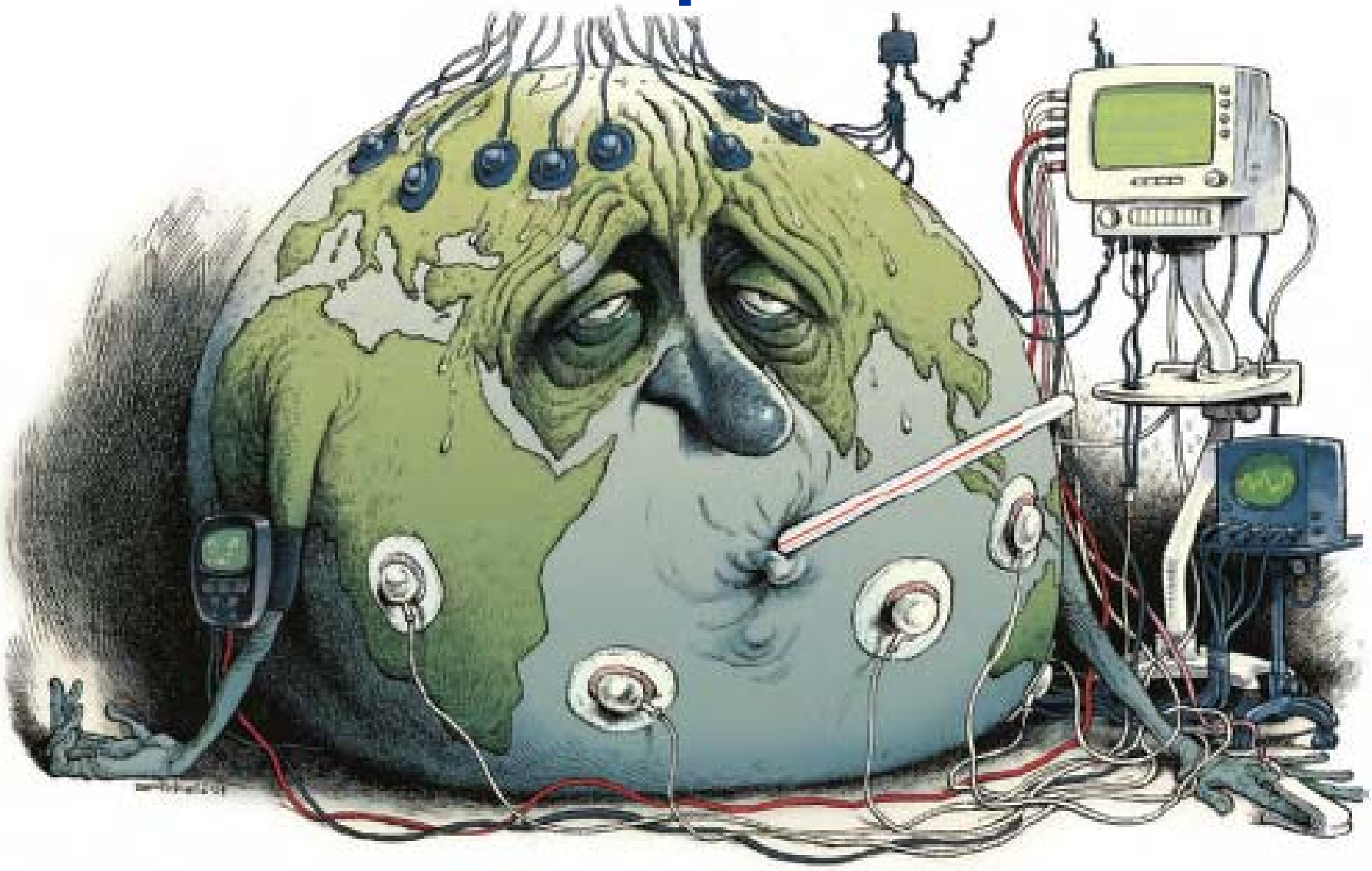


2015

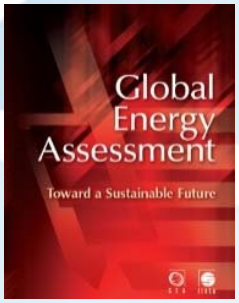
Four Great Achievements since the Beginning of Industrial Revolution

- Life expectancy has doubled in a century
- One billion are obese while less go hungry
- More die by suicide than war and violence
- Everyone in the world has a mobile phone

Collective Responsibility in the Anthropocene



SUSTAINABLE DEVELOPMENT GOALS
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS



VIENNA ENERGY FORUM

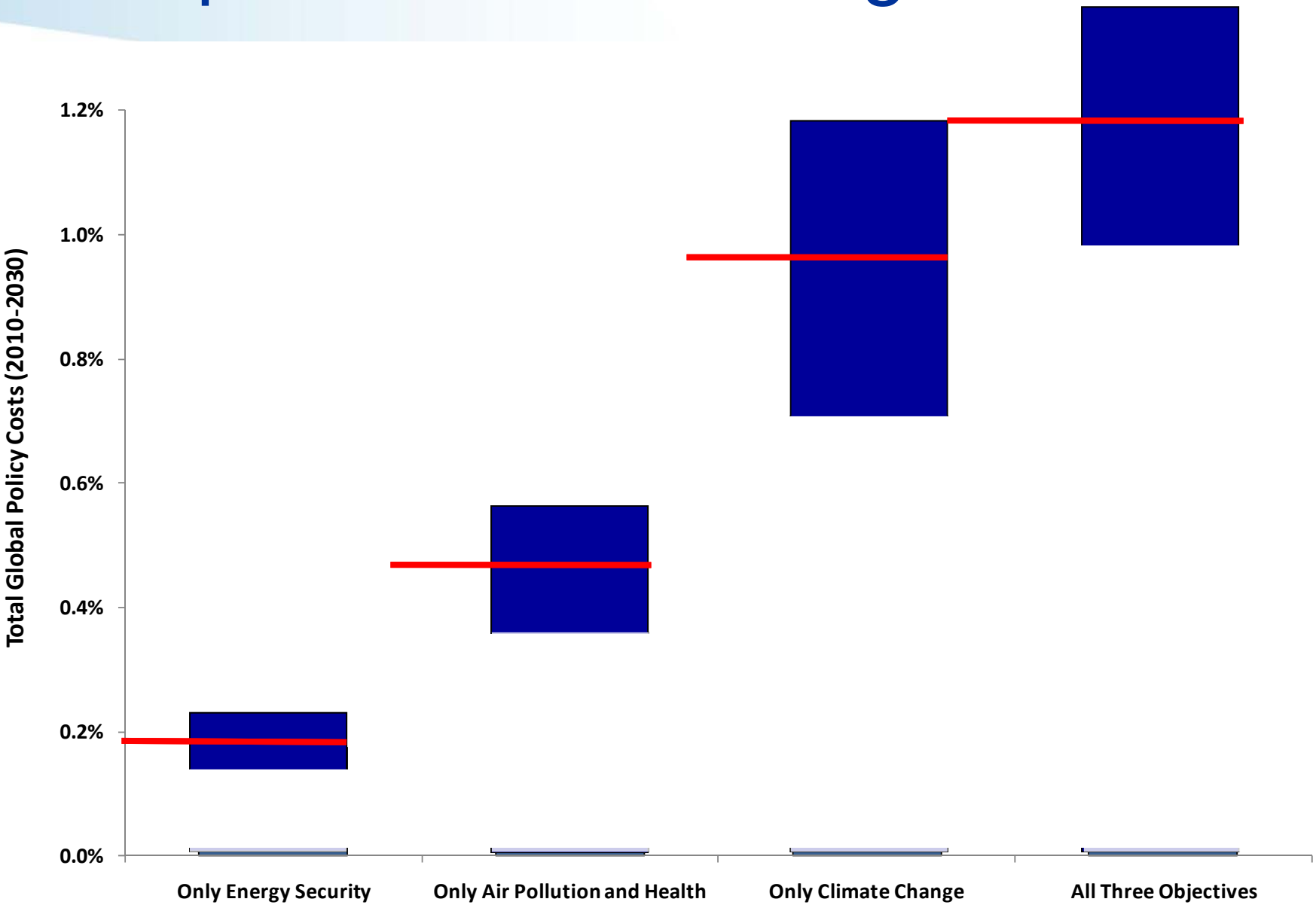
7 AFFORDABLE AND CLEAN ENERGY

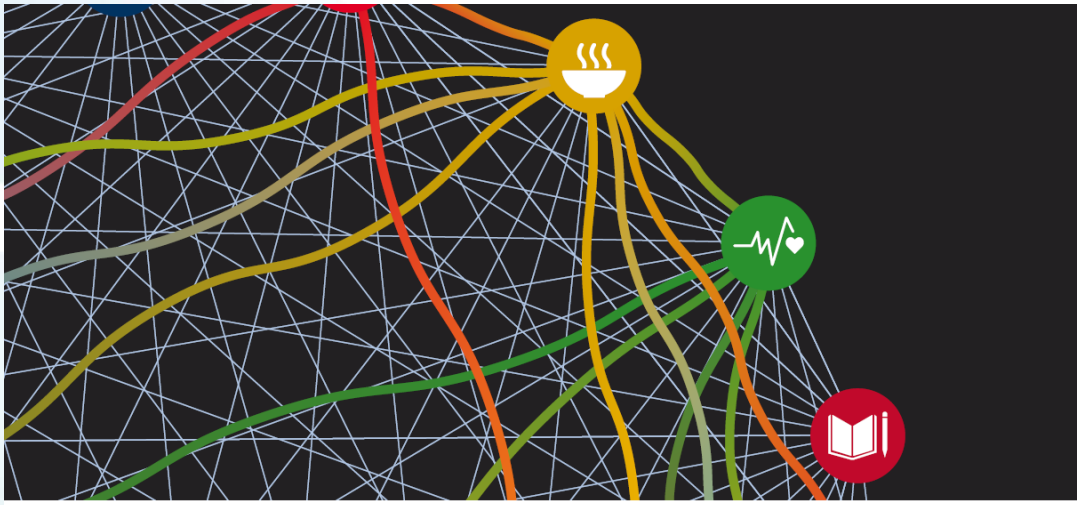
2030 Energy Goal (SDG7)

- Universal Access to Modern Energy
- Double Energy Efficiency Improvement
- Double Renewable Share in Final Energy

Aspirational & Ambitious but Achievable

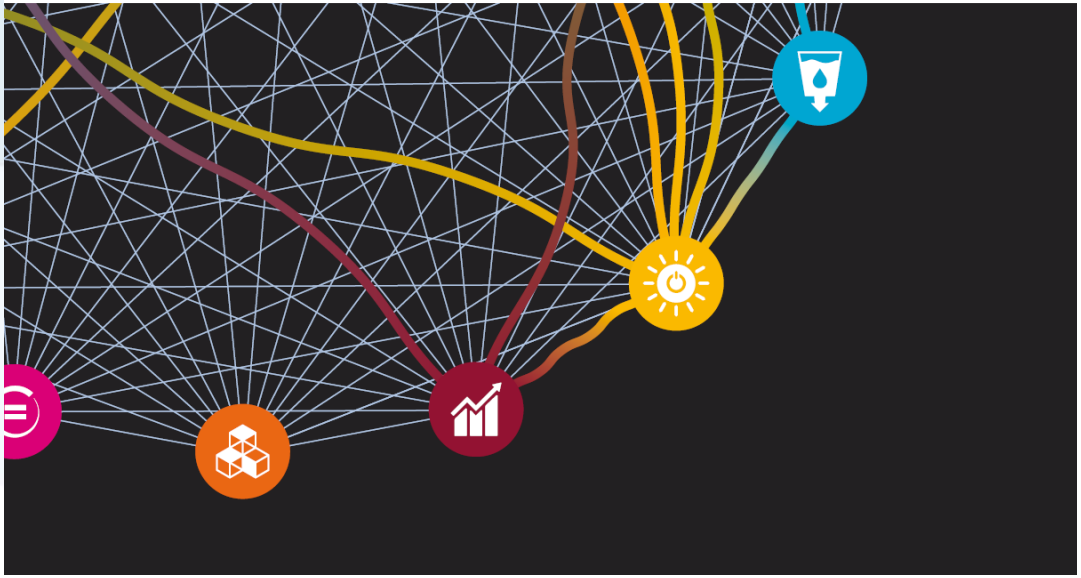
Multiple Benefits of Integrated Policies





A GUIDE TO SDG INTERACTIONS: FROM SCIENCE TO IMPLEMENTATION

INTERNATIONAL COUNCIL FOR SCIENCE



Interactions between SDG 7 & other SDGs

Sustainable Development Goals

1 – No Poverty
2 – Zero Hunger
3 – Good Health and Well-being
4 – Quality Education
5 – Gender Equality
6 – Clean Water and Sanitation
7 – Affordable and Clean Energy
8 – Decent Work and Economic Growth
9 – Industry, Innovation and Infrastructure
10 – Reduced Inequalities
11 – Sustainable Cities and Communities
12 – Responsible Consumption and Production
13 – Climate Action
14 – Life below Water
15 – Life on Land
16 – Peace, Justice and Strong Institutions
17 – Partnerships for the Goals

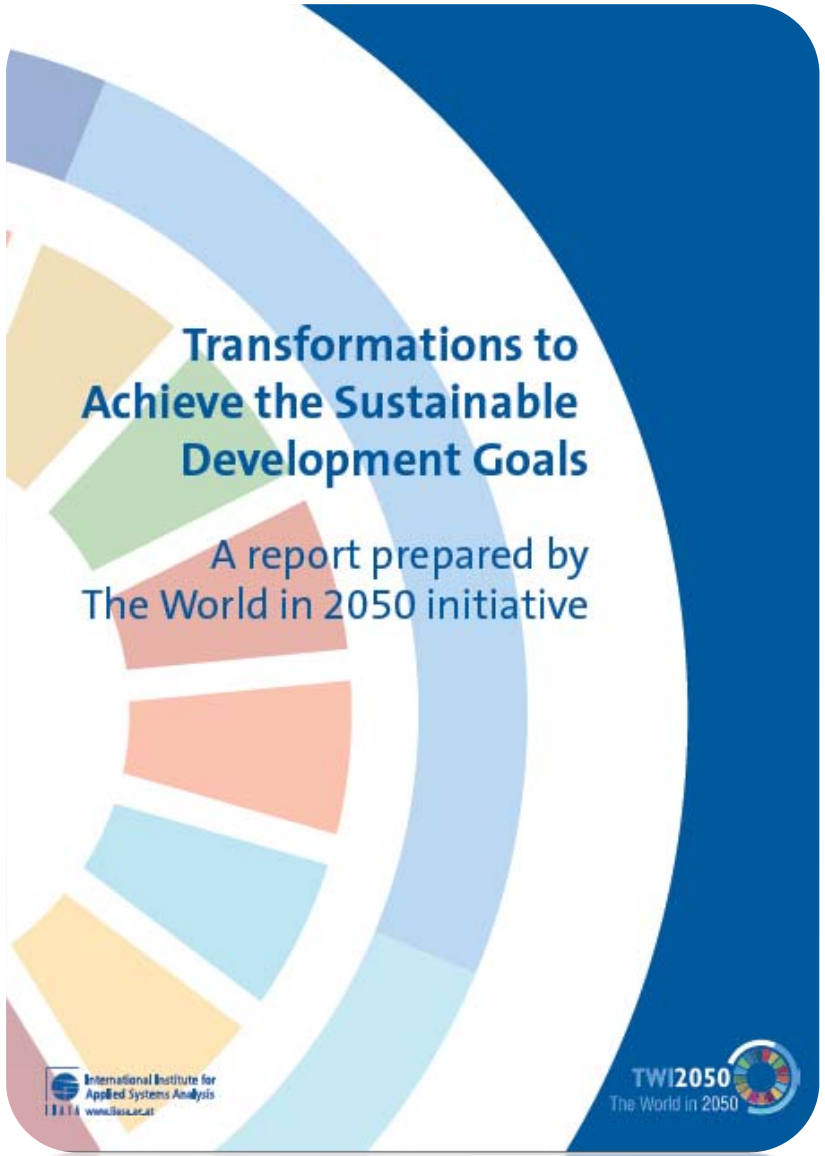
TWI2050 Report (www.TWI2050.org)

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



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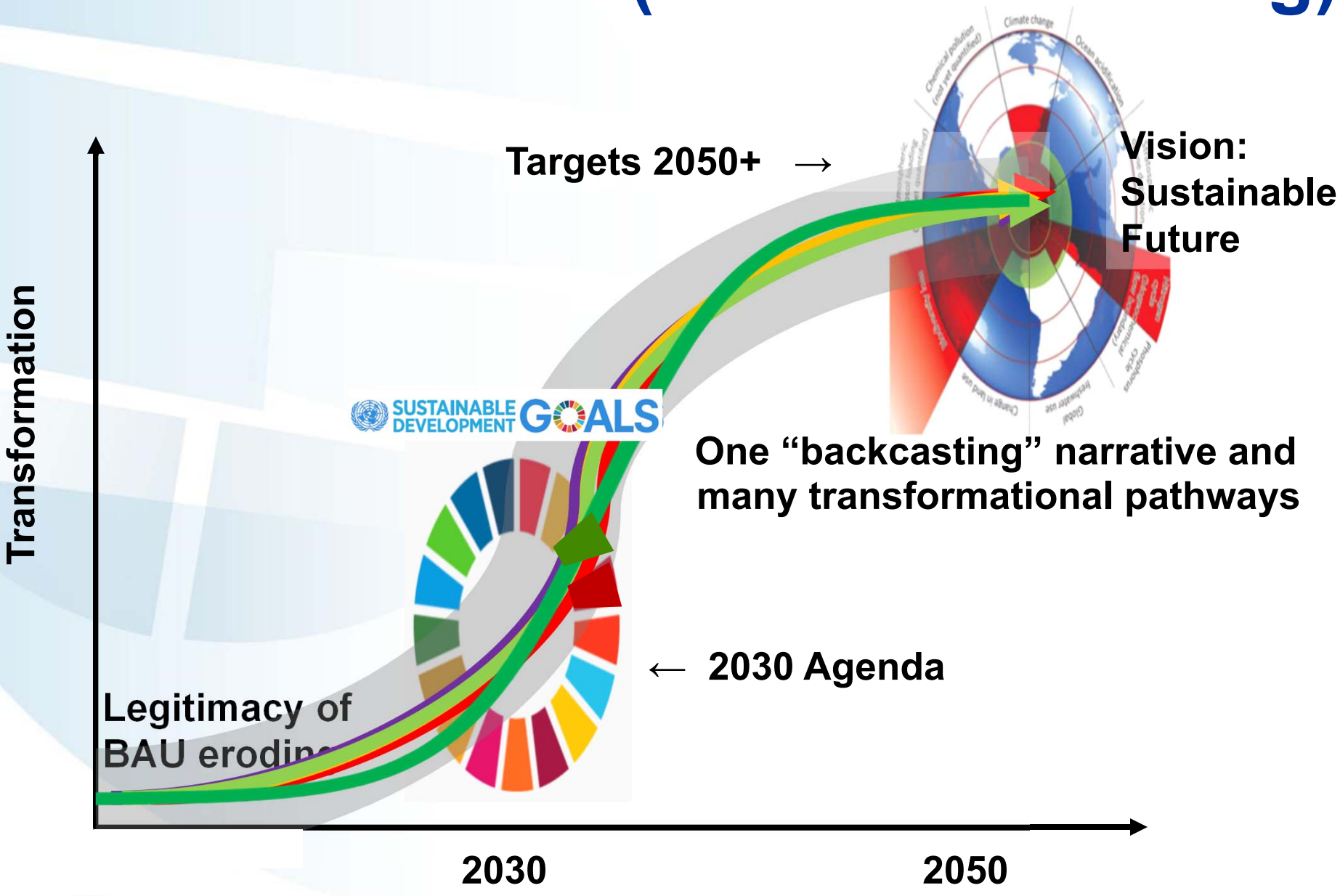
TWI2050 Writing Meeting
5-7 March 2018, IIASA

Some Key Messages

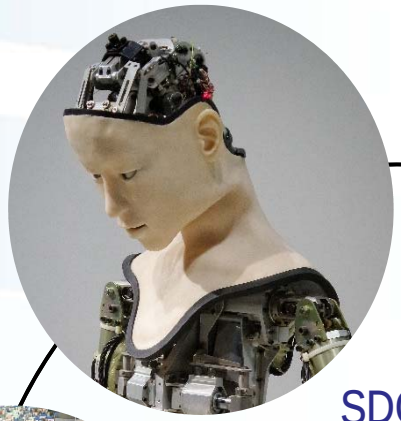
- Attaining the SDGs in a resilient and lasting way, requires vigorous action now, and a people and planet focus beyond 2030!
- As everything is integrated in the connected world, the grand transformation requires a holistic perspective!
- Transformational change is needed but to succeed we must take along winners and losers!
- The world is at crossroads as we are currently experiencing signs of a counter-transformation!
- A central element of the sustainability transformation is effective and inclusive governance!
- Think globally, act locally! Think long-term, act now!

The World in 2050 (www.TWI2050.org)



Six Major Transformations (TWI2050.org)

Digital revolution
Artificial intelligence, big data, biotech, nanotech, autonomous systems



Human capacity & demography
Education, health, ageing, labor markets, gender, inequalities

Smart cities
Decent housing, mobility, sustainable infrastructure, pollution

SDGs:
Prosperity
Social Inclusion
Sustainability

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The World in 2050
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Consumption & production
Resource use, circular economy, sufficiency, pollution

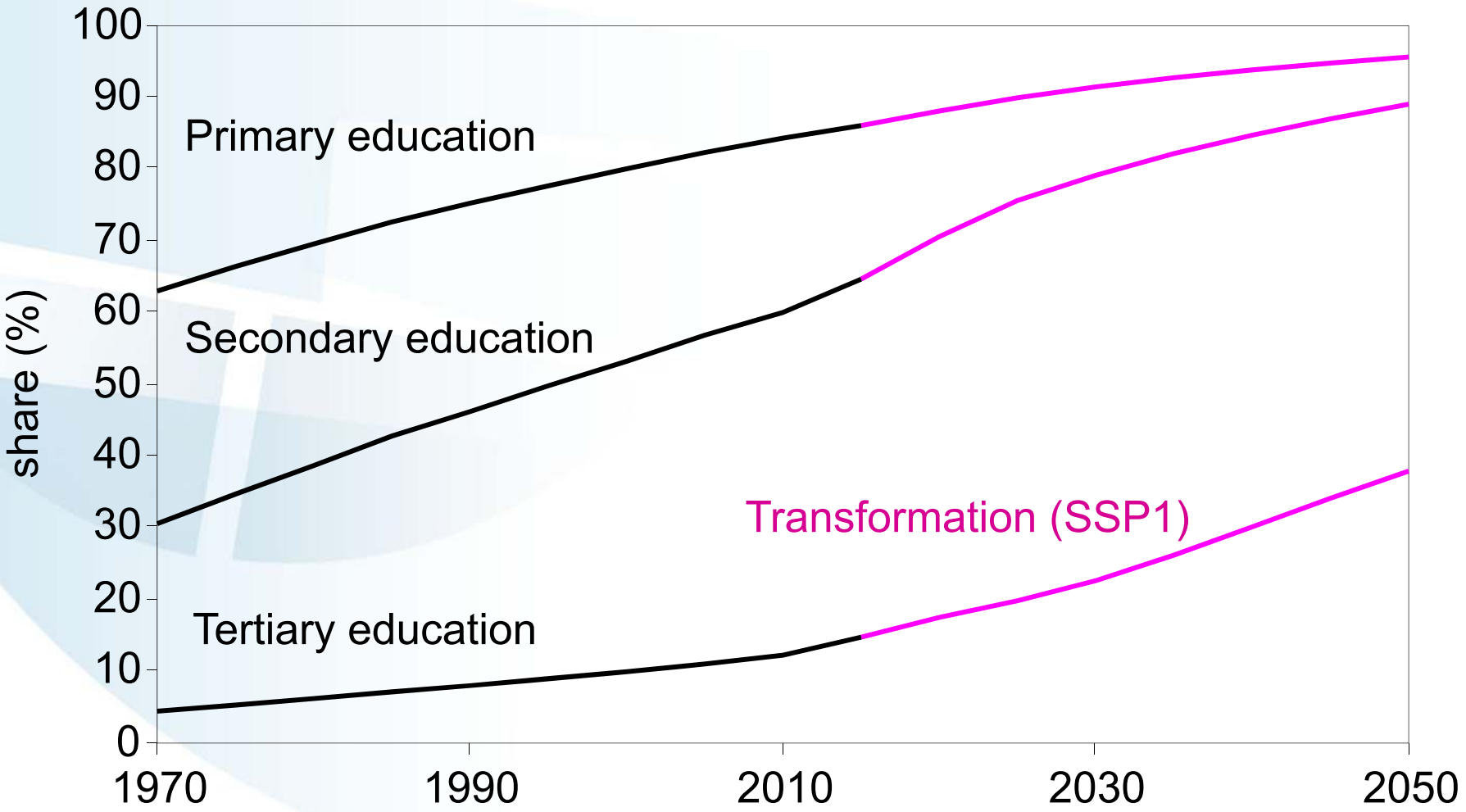
Food, biosphere & water
Sustainable intensification, biodiversity, forests, oceans, healthy diets, nutrients

Decarbonization & energy
Energy access, efficiency, electrification, decent services

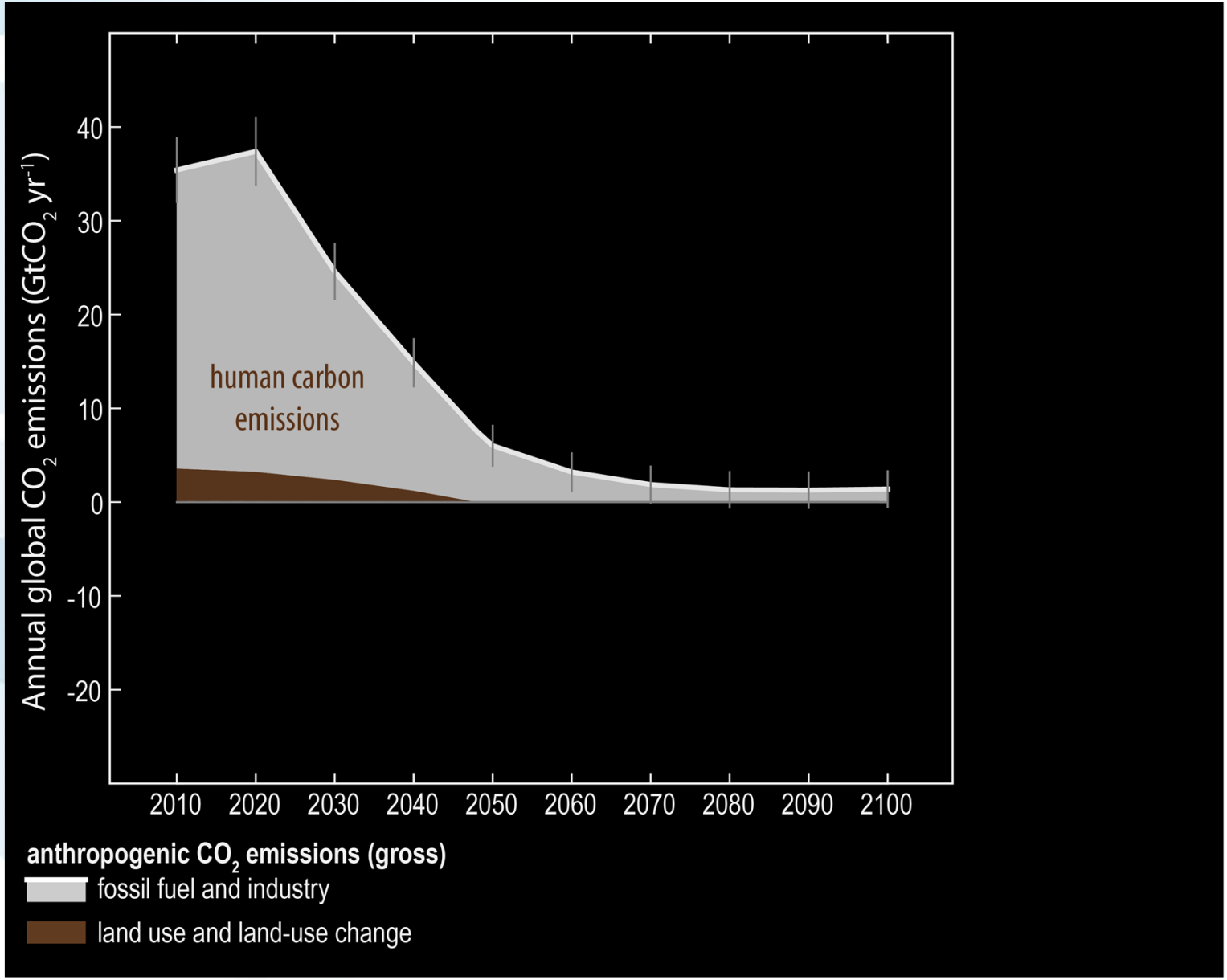
TWI2050 The World in 2050 Nakicenovic

2018 #15

Education and Human Capacity



Moore's "Carbon Law"



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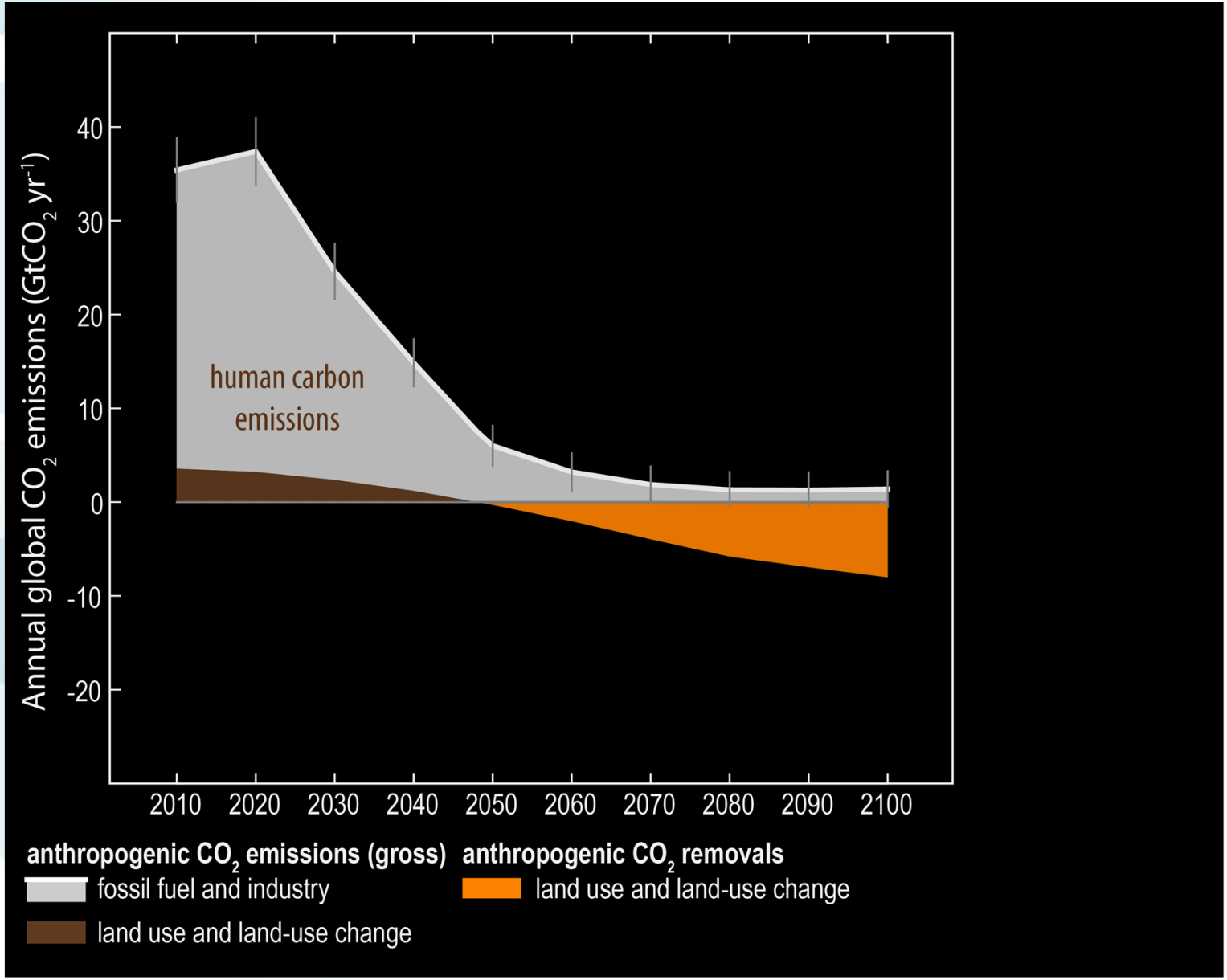

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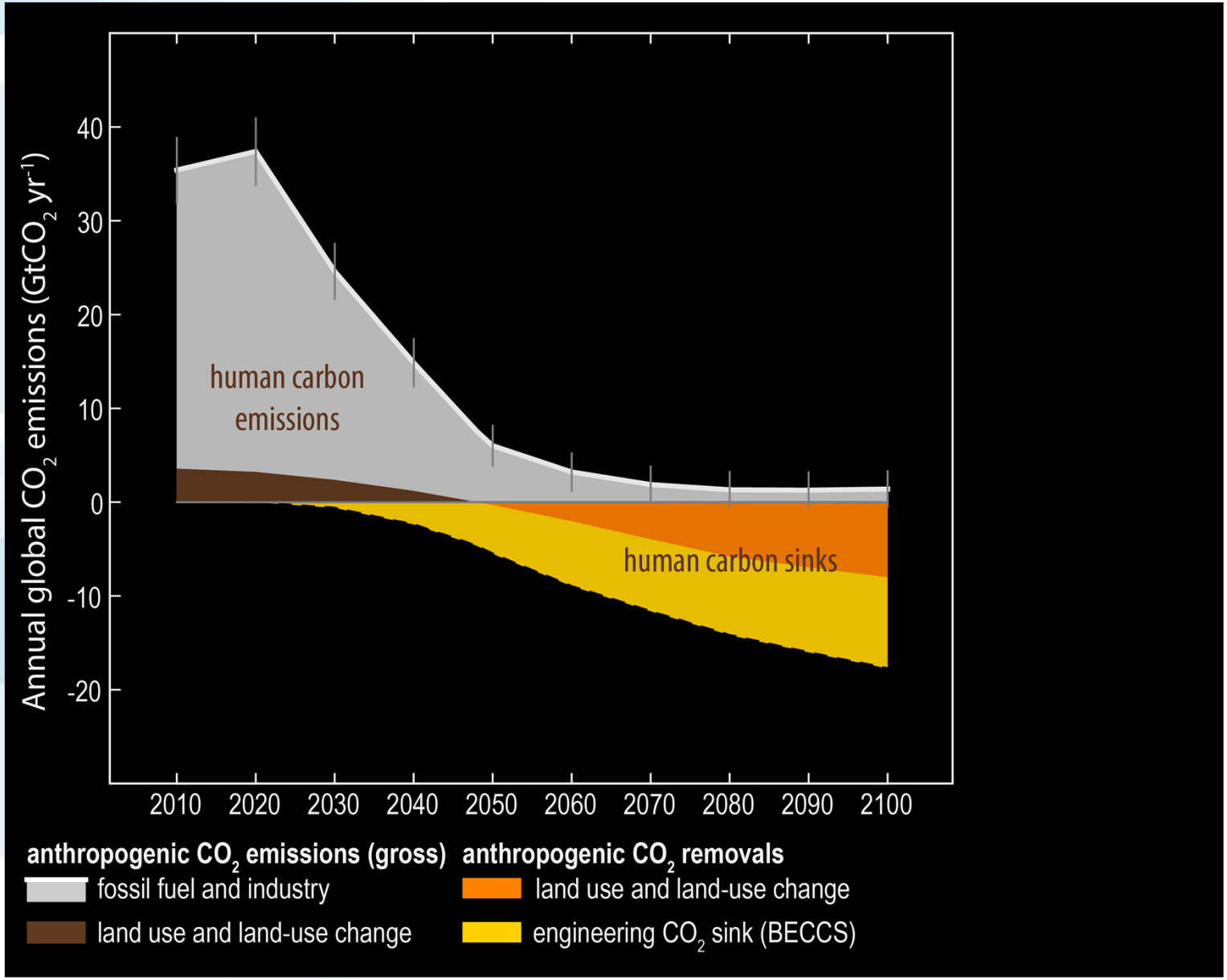

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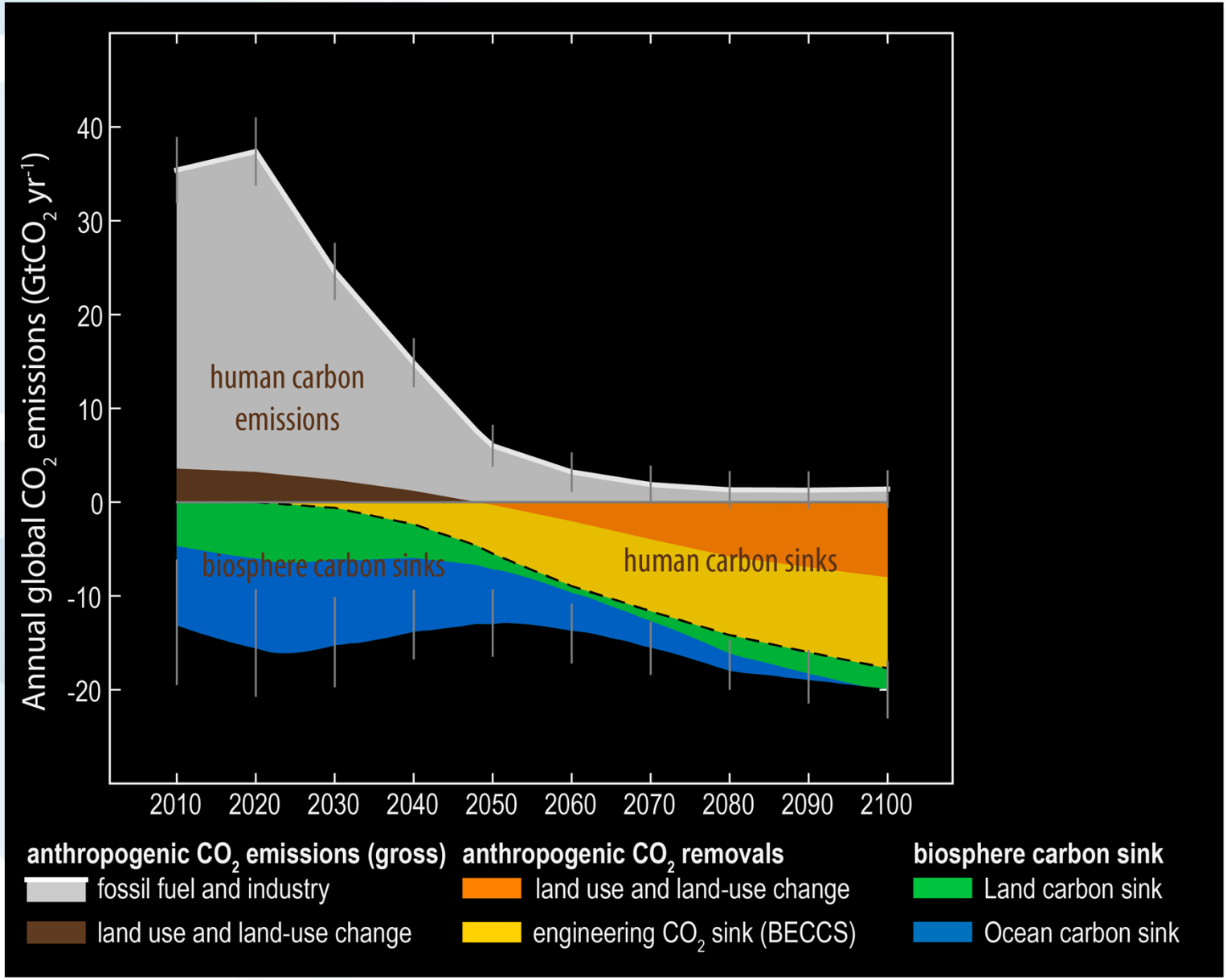
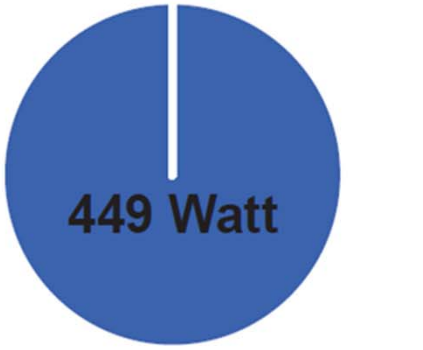


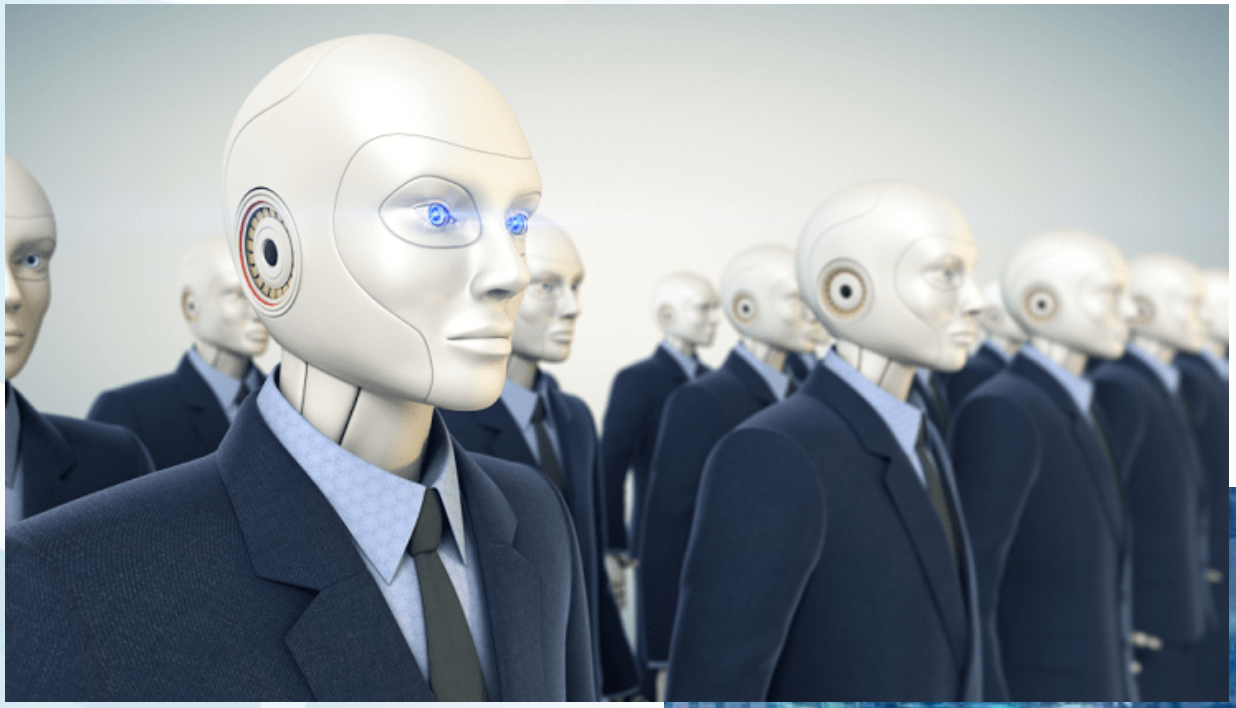
IC Technology Convergence (LED)



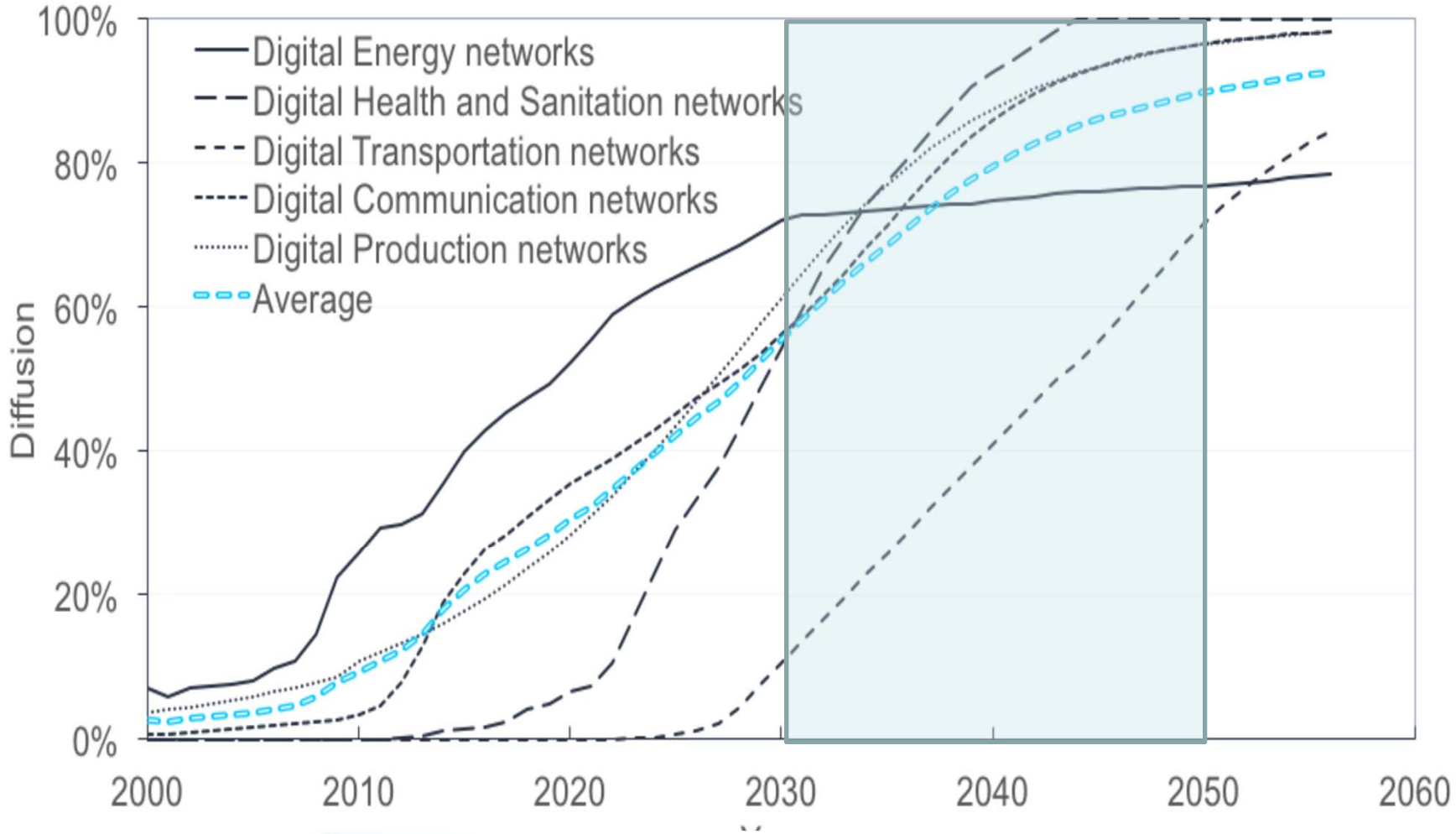
Power consumption

Stand-by

Digital Revolution

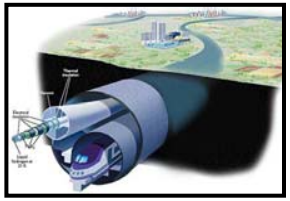
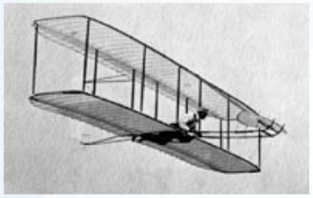
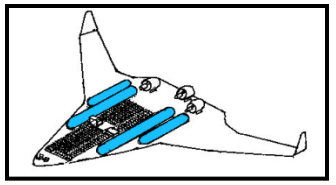
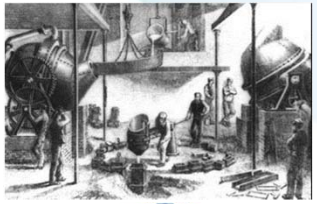


Technology Diffusion Compared
digital revolution



Source: Nokia Bell Labs, 2017

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-cities/images/american-cities-101.jpg;
R, shorpy.com/node/204.
Inspiration: Tona Seba's keynote lecture at AltCar, Santa Monica CA, 28 Oct 2014,
http://tonyseba.com/keynote-at-altcar-expo-100-electric-transportation-100-solar-by-2030/

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THANK YOU

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