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Adaptation and Mitigation Pathways

Nebojsa Nakicenovic

Deputy Director General

International Institute for Applied Systems Analysis

Professor Emeritus of Energy Economics

Vienna University of Technology

Global warming of 1.5°C above pre-industrial levels in the context of strengthening the global response to the threat of climate change, Scoping Meeting for the IPCC Special Report WMO, Geneva. – 15 August 2016



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Adaptation and Mitigation Pathways: Research Needs

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WCRP REPORT

World Climate Research Programme



GLOBAL
I G B P
CHANGE



ICSU

International Council for Science

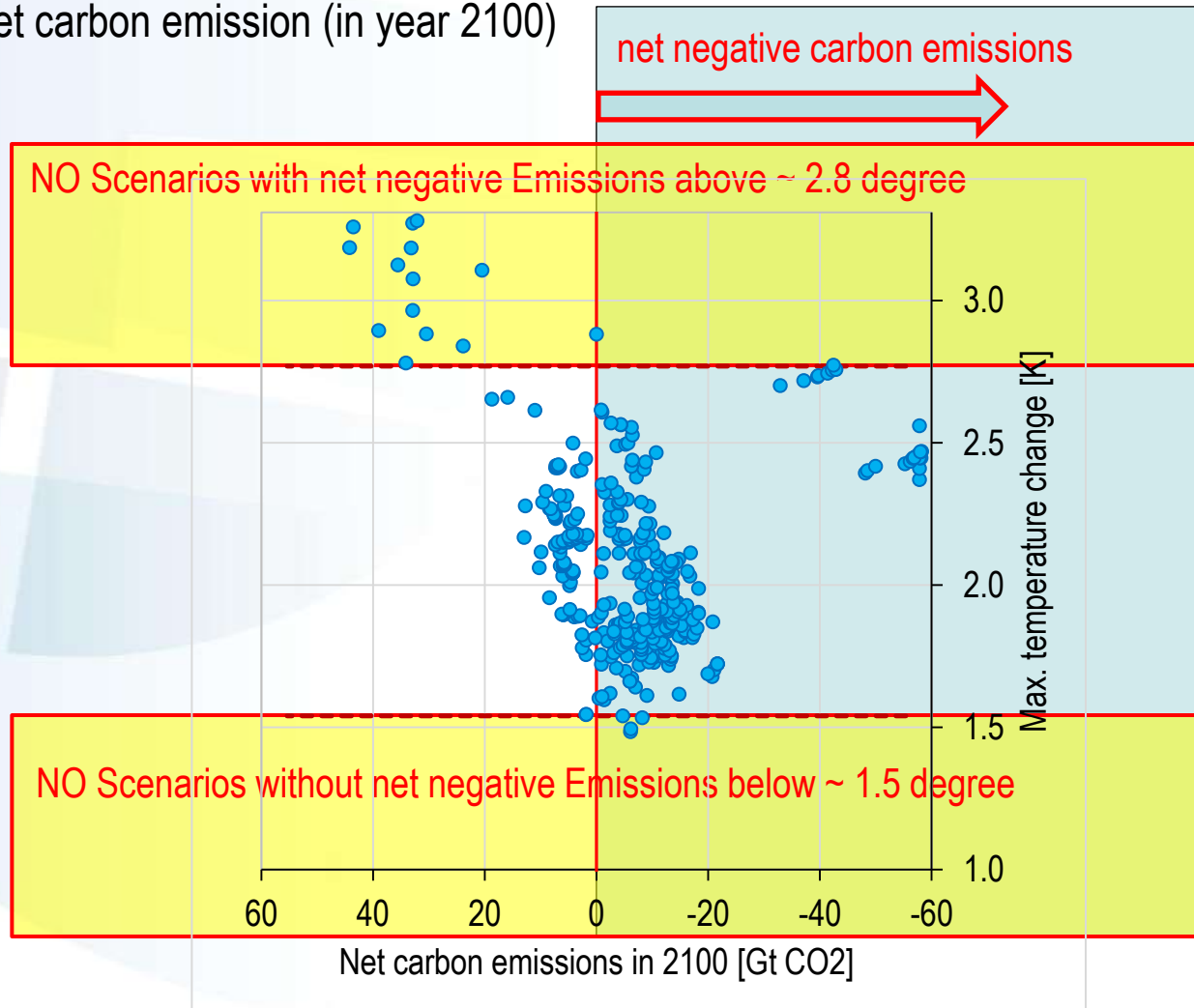


Nakicenovic

2016 #3

Net-negative CO₂ Emissions

Max. temperature change in 21th century
Net carbon emission (in year 2100)





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

The World in 2050 (TWI2050)

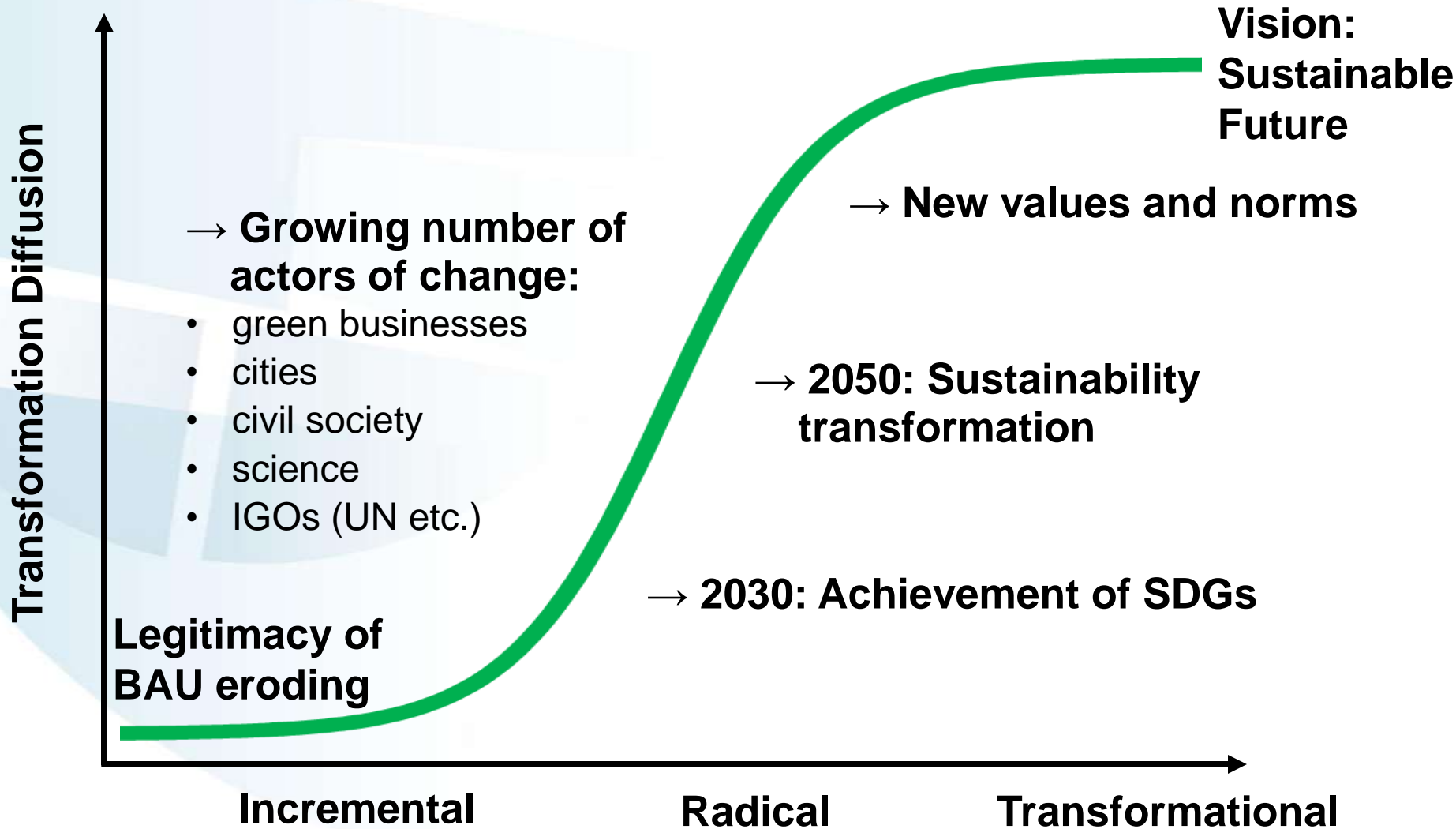
- ➔ How to achieve global development within a safe and just operating space
- ➔ “Safe space” of interaction among SDGs: sustainability narratives and integrated models e.g. SSP1, GEA, DDPP
- ➔ Multiple-benefits and tradeoffs of transformation toward sustainable futures

The World in 2050 (TWI2050)



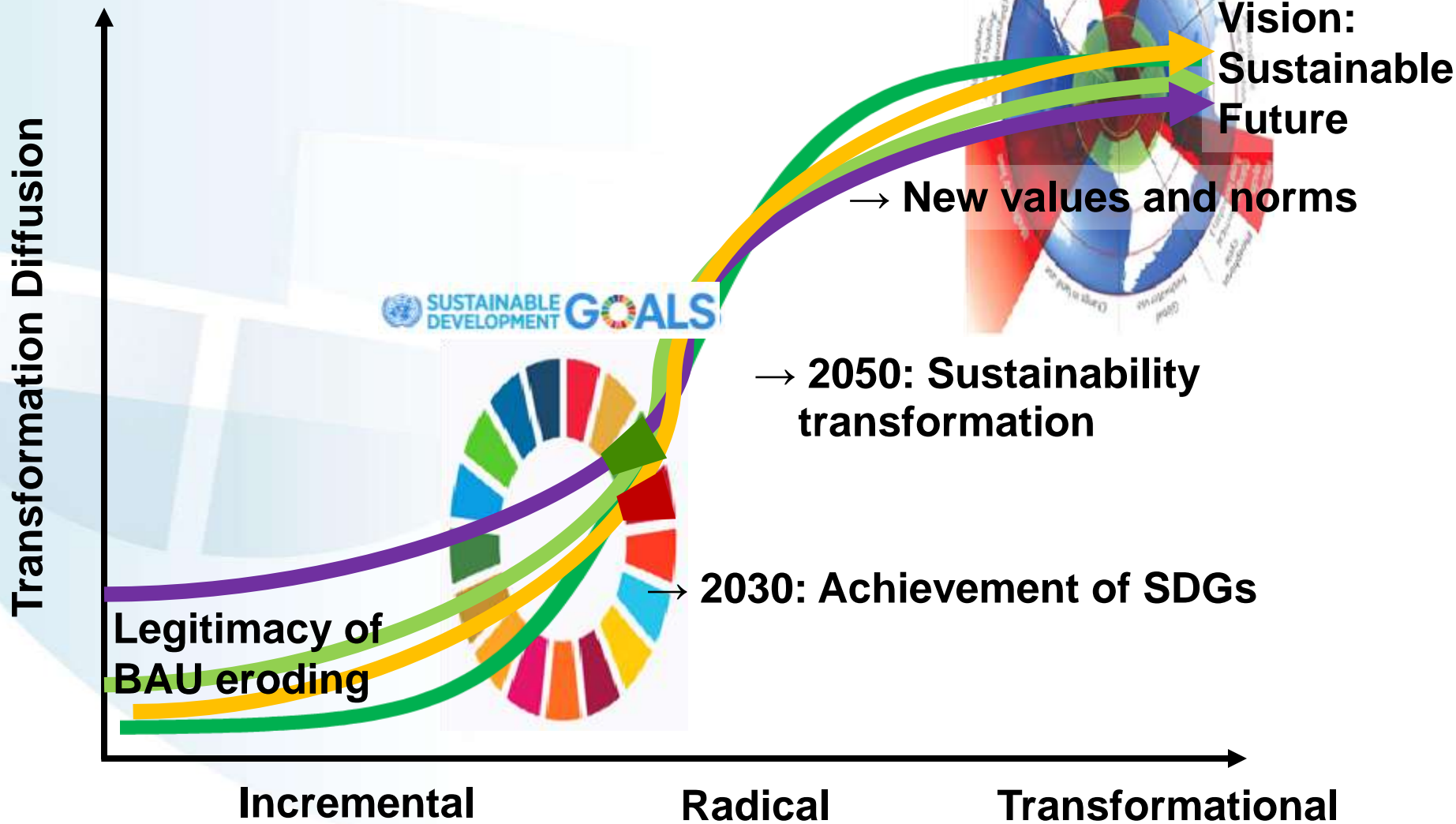
The World in 2050 (TWI2050)

“Doing More with Less” within Planetary Boundaries

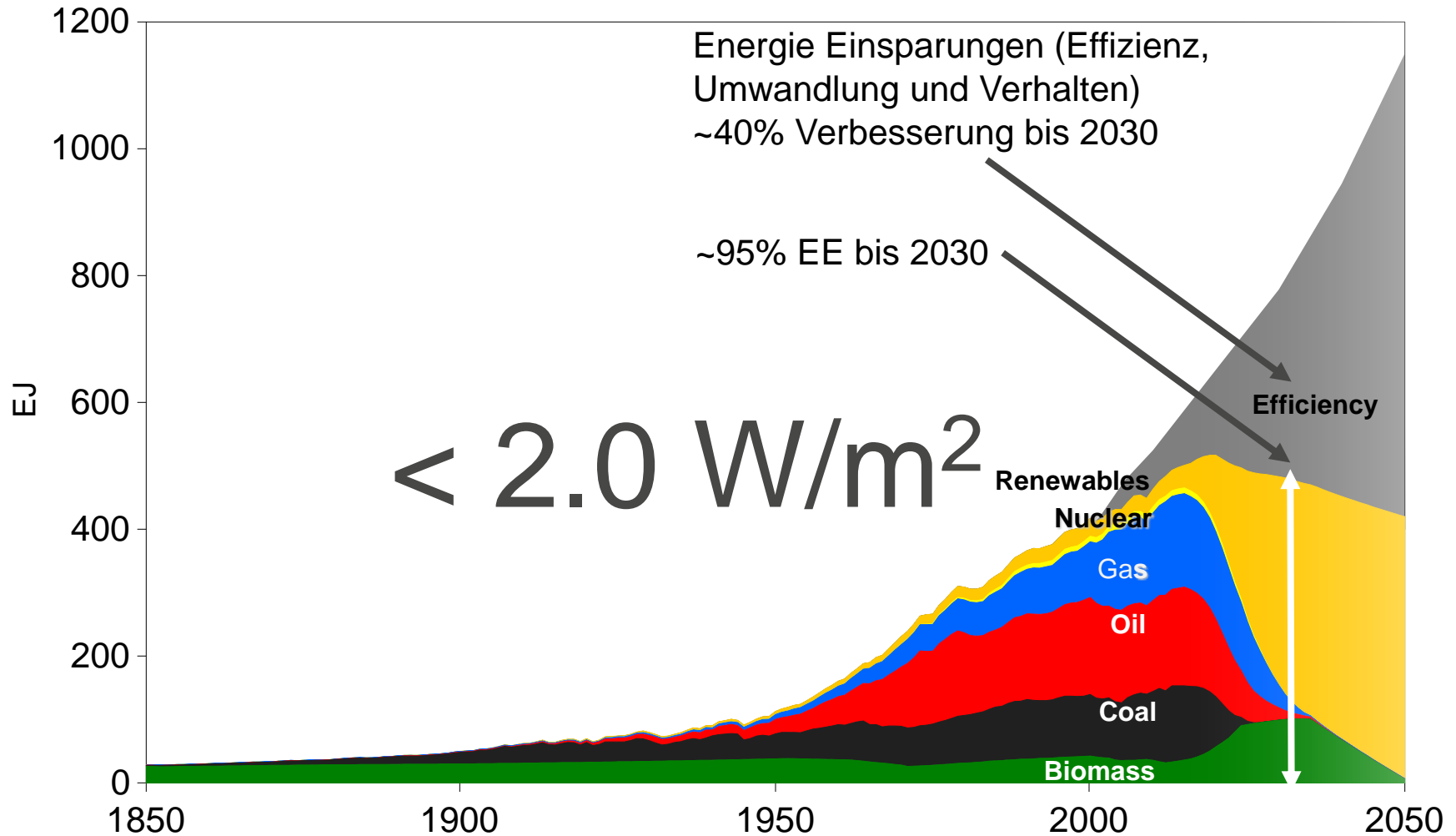


The World in 2050 (TWI2050)

“Doing More with Less” within Planetary Boundaries

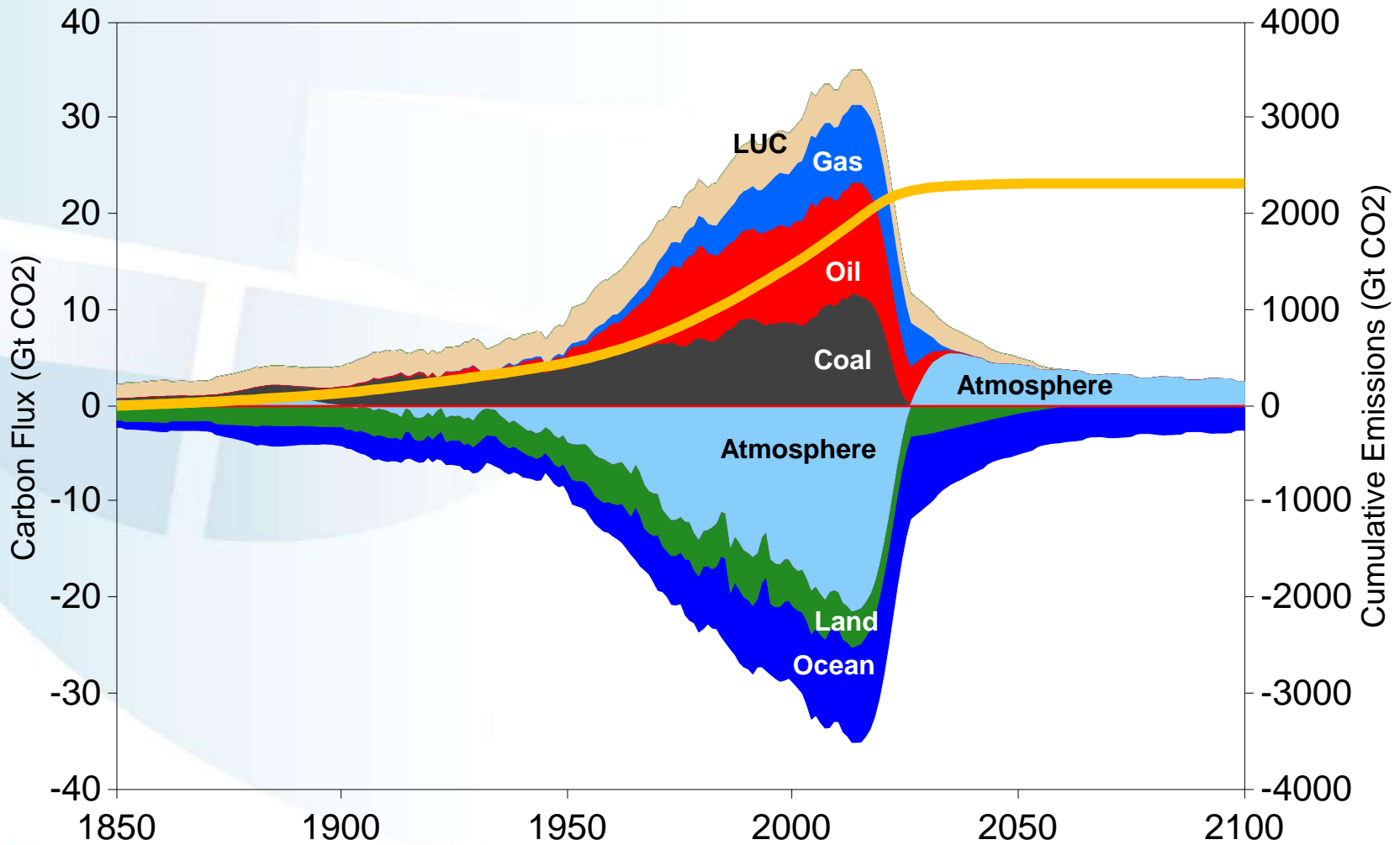


Globale Primärenergie WBGU



Source: Sterner et al. 2016 after WBGU, 2011

Carbon Flux



Transformational Change

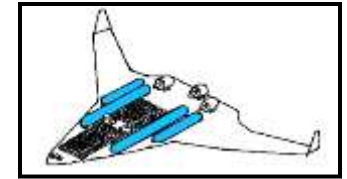
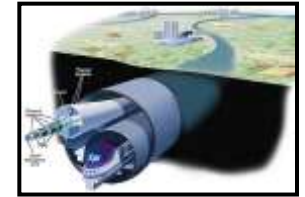
1850

1900

1950

2000

2050



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/>



Scenario Challenges

- ➔ Full range of alternative pathways to be assessed based on different methodologies
- ➔ Transformation toward safe and resilient futures to encompass all sustainable goals
- ➔ Genuine new low stabilization scenarios and not merely stringent mitigation with old ones

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THANK YOU

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