

# Advancing SDG 7 and its interlinkages with other SDGs

**Nebojsa Nakicenovic**

Deputy Director General

International Institute for Applied Systems Analysis

Professor Emeritus of Energy Economics

Vienna University of Technology

*Session 2b: STI for ensuring access to affordable, reliable, sustainable and modern energy for all (SDG 7), Workshop on Science, technology and Innovation for SDGs, Incheon – 29 November – 1 December 2017*



# 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



# 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

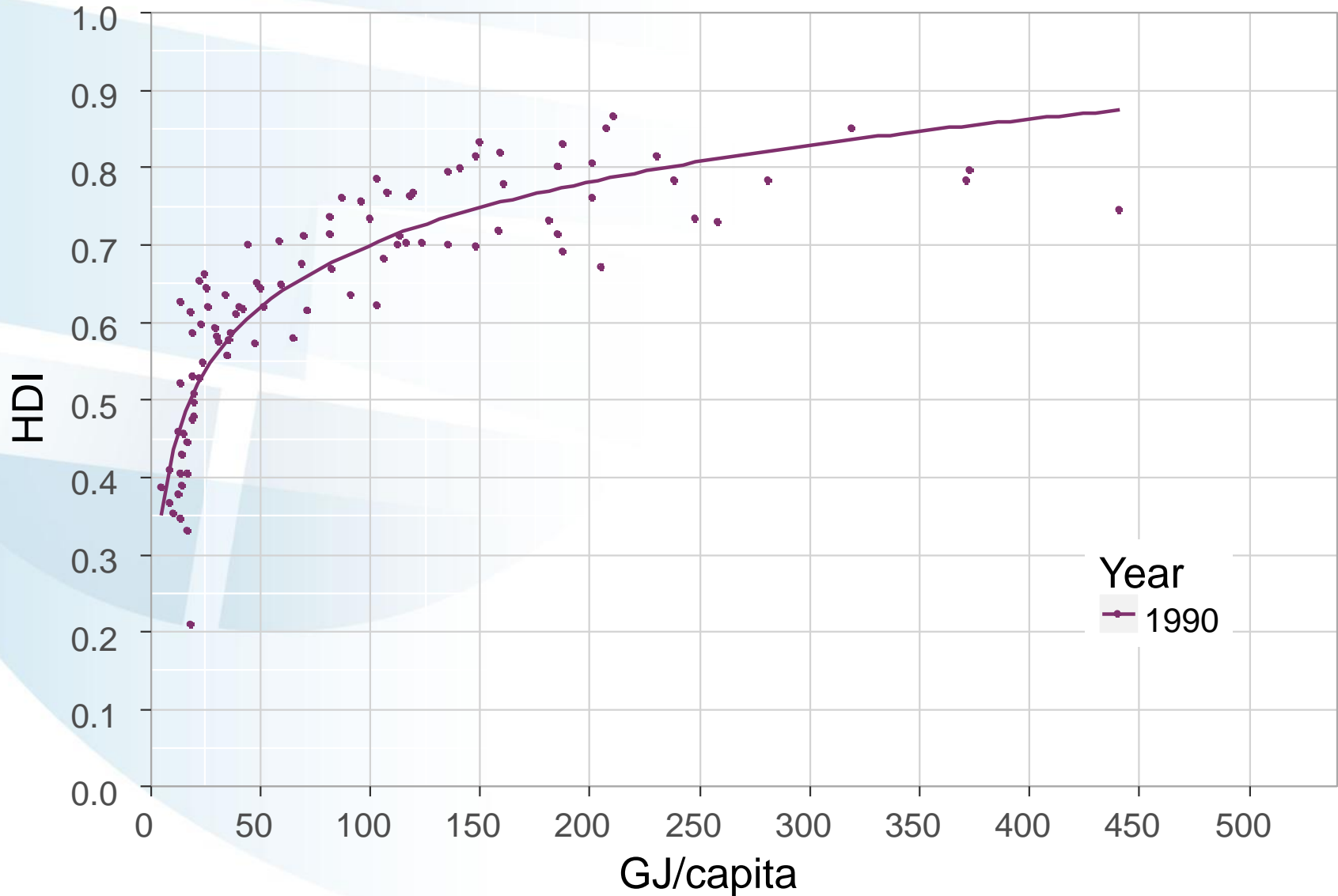
**17** PARTNERSHIPS FOR THE GOALS

**SUSTAINABLE DEVELOPMENT GOALS**

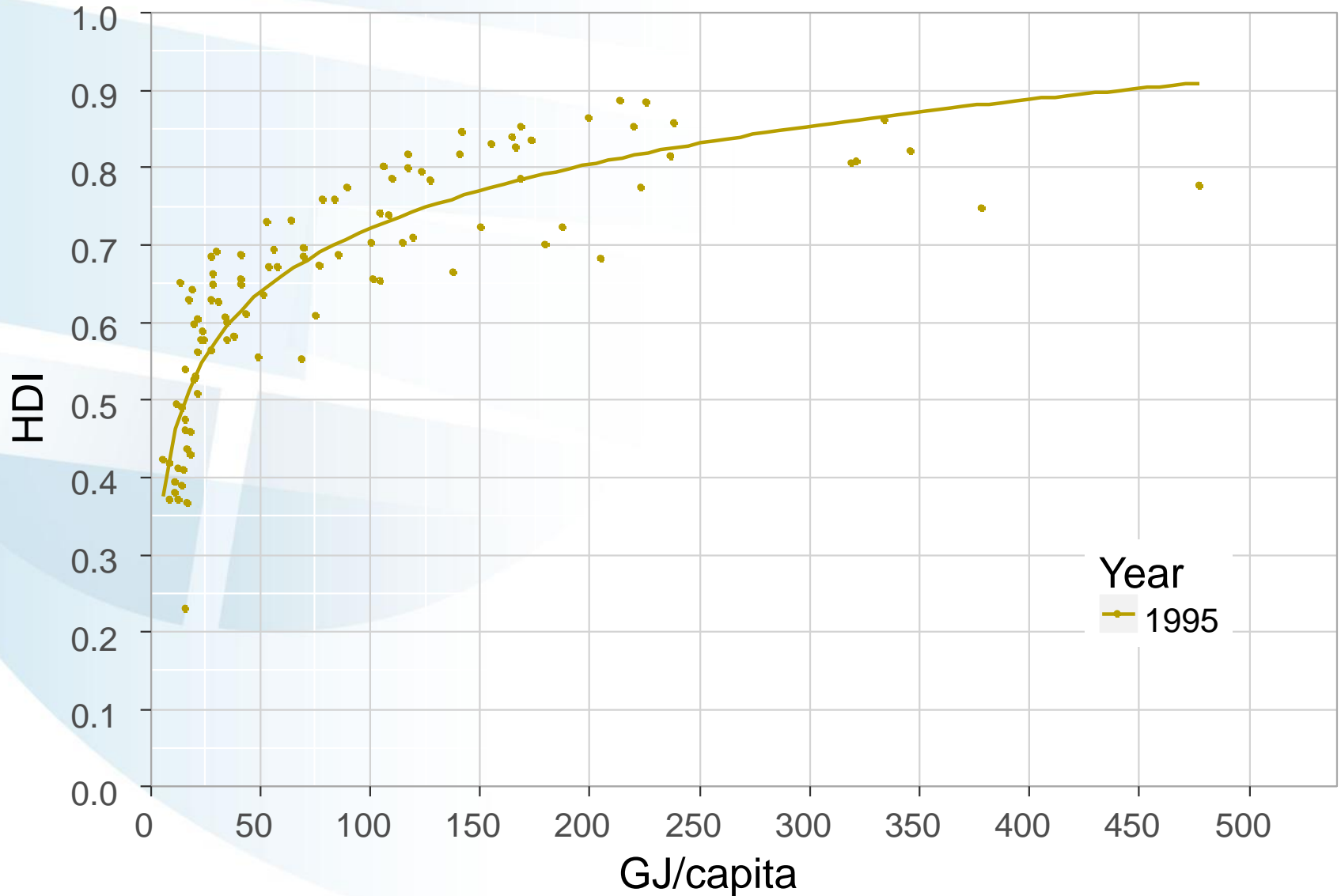
# Sankt. Petersburg Airport Duty Free



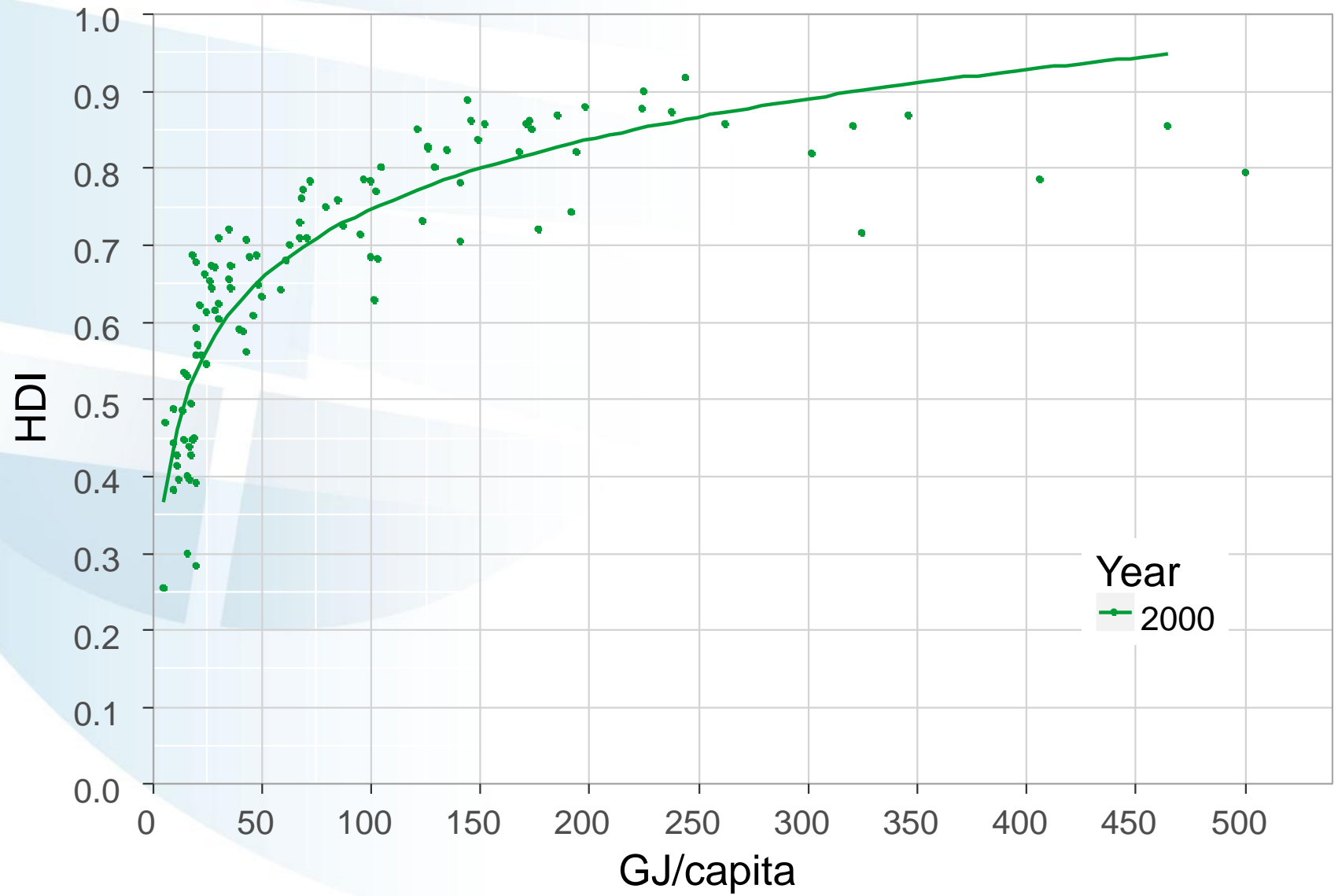
# Human Development Index & Energy



# Human Development Index & Energy

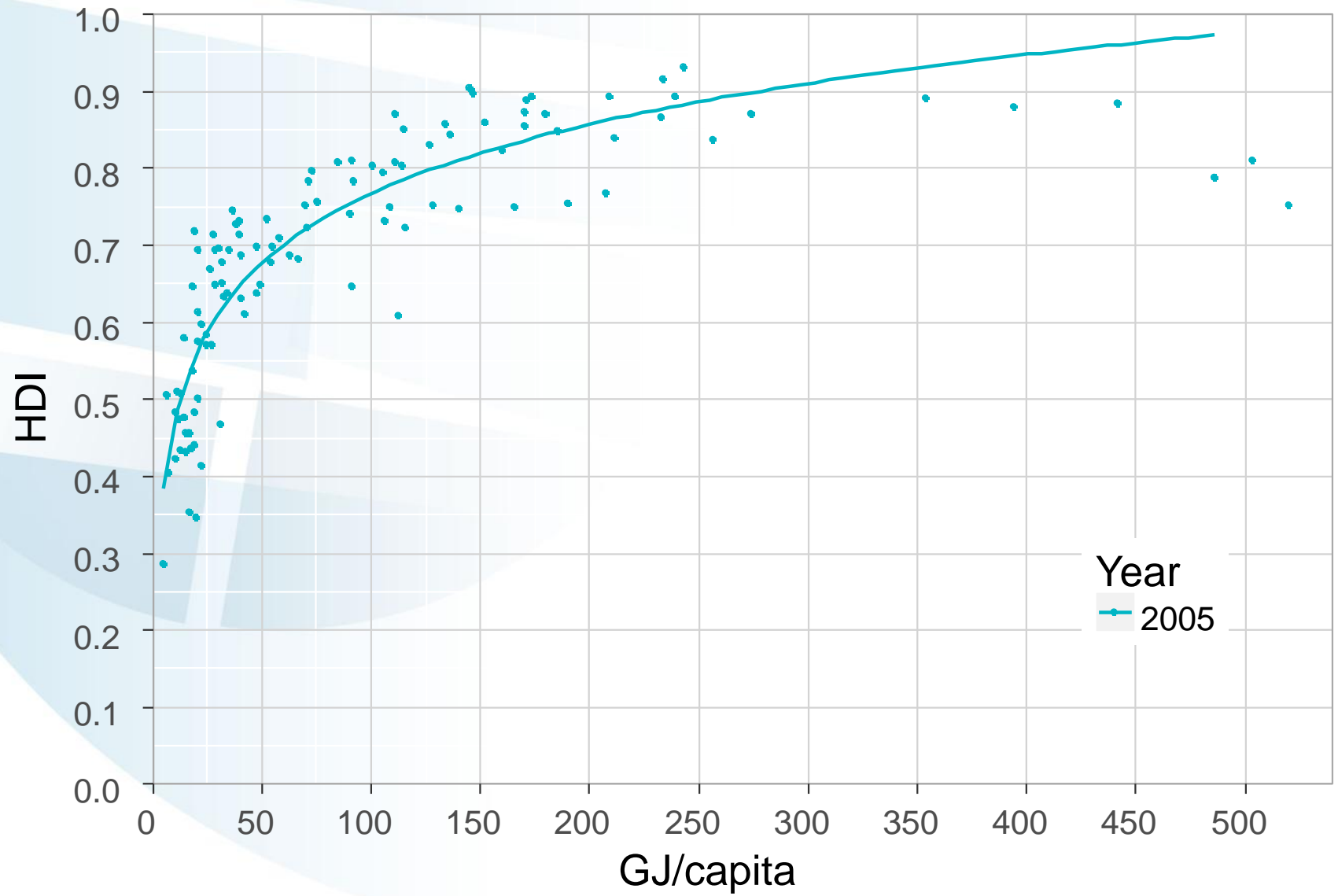


# Human Development Index & Energy



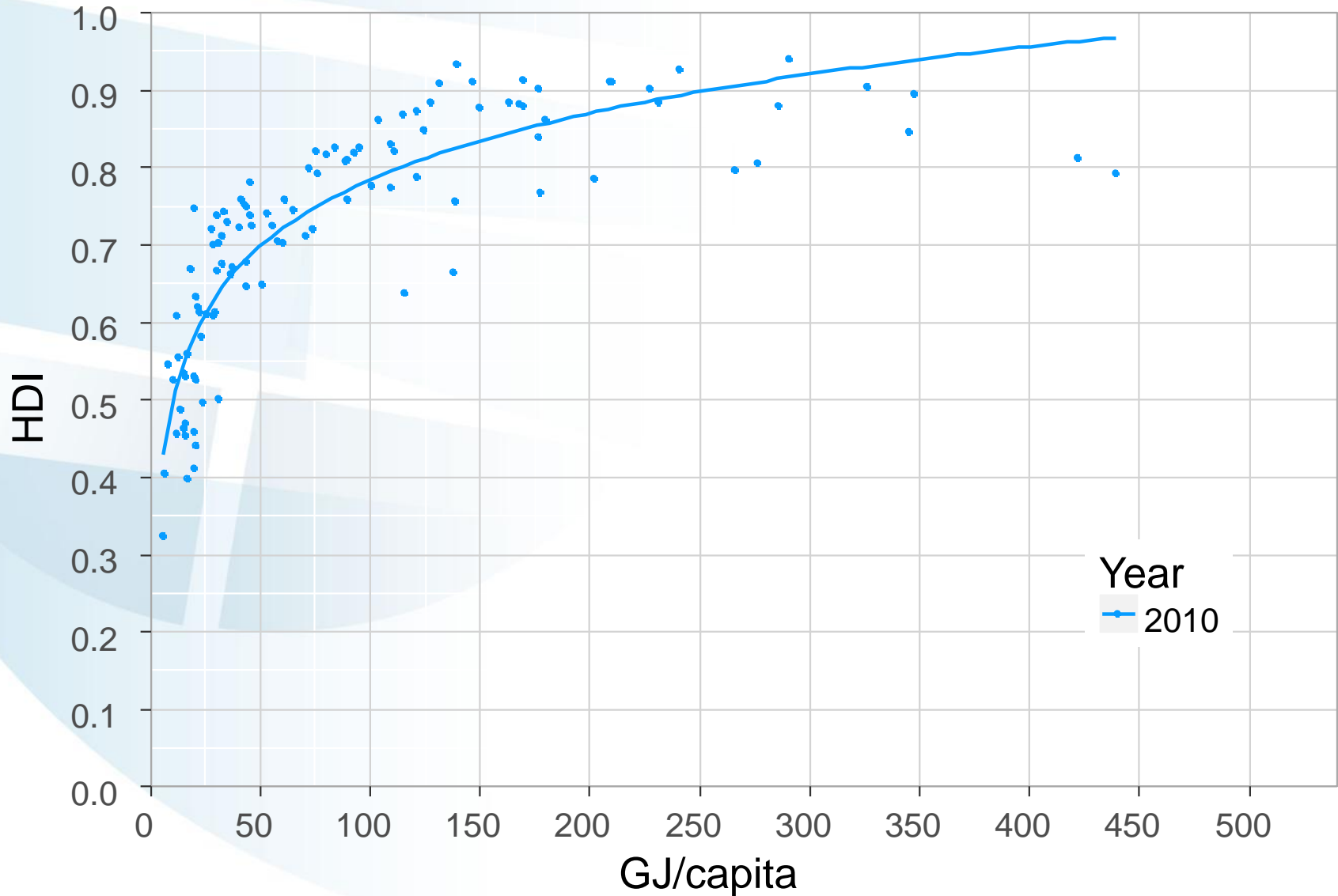


# Human Development Index & Energy

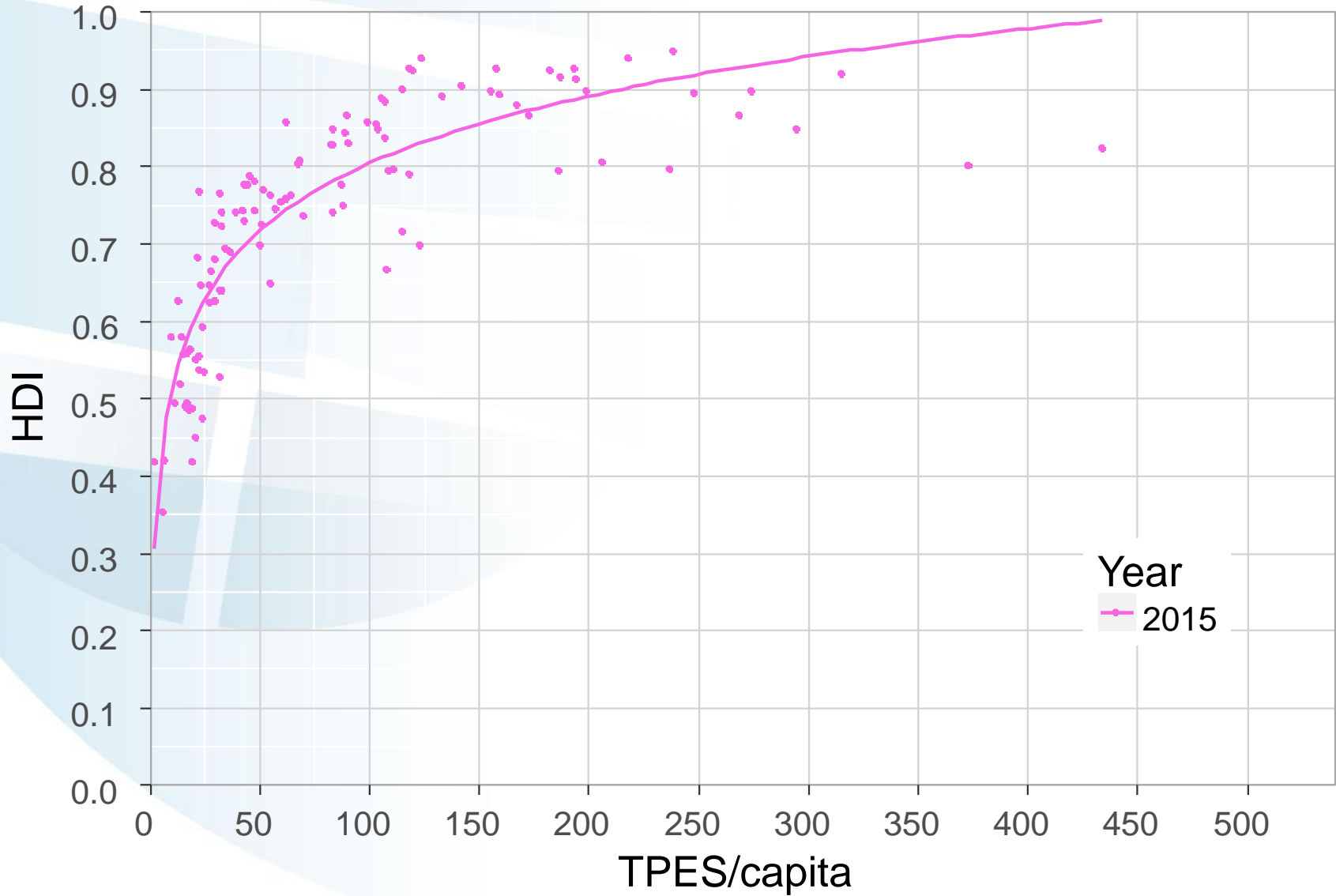




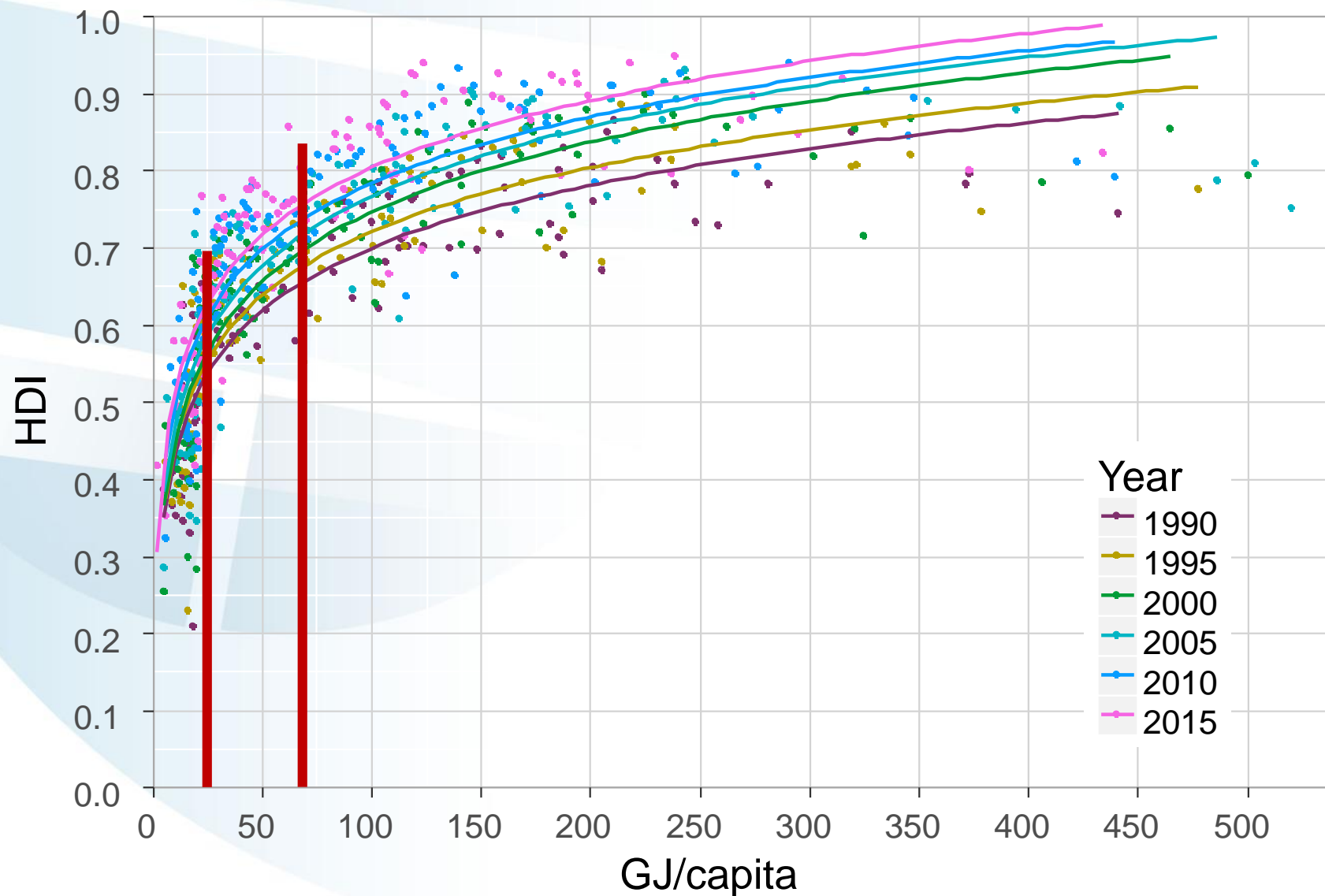
# Human Development Index & Energy

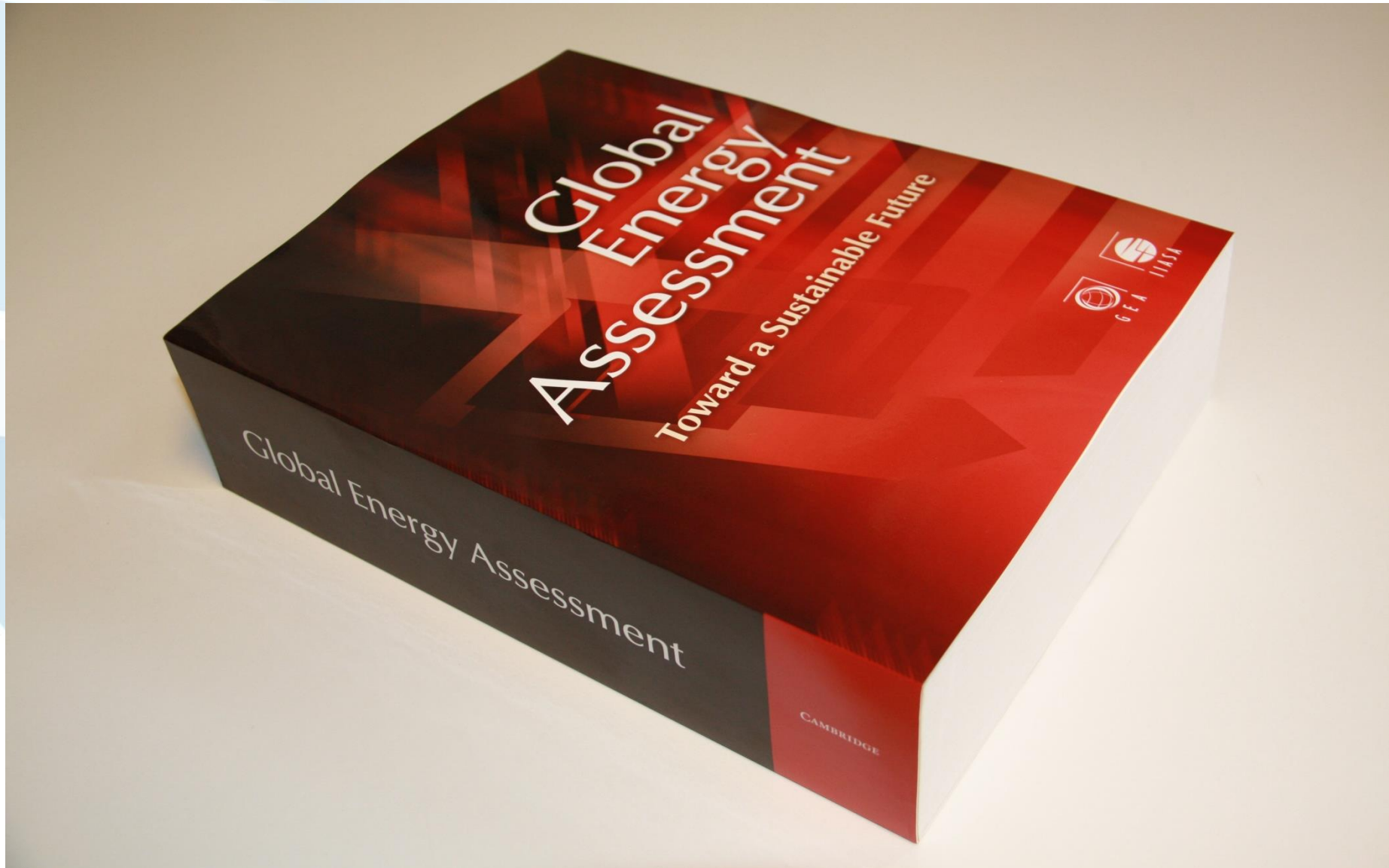


# Human Development Index & Energy



# Human Development Index & Energy





# Global Energy Assessment

Toward a Sustainable Future



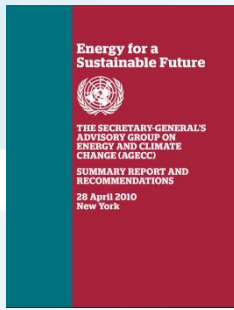
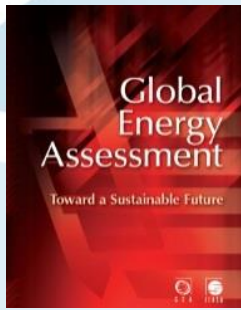
## Energy for a Sustainable Future



**THE SECRETARY-GENERAL'S  
ADVISORY GROUP ON  
ENERGY AND CLIMATE  
CHANGE (AGECC)**

**SUMMARY REPORT AND  
RECOMMENDATIONS**

**28 April 2010  
New York**



SUSTAINABLE ENERGY  
FOR ALL

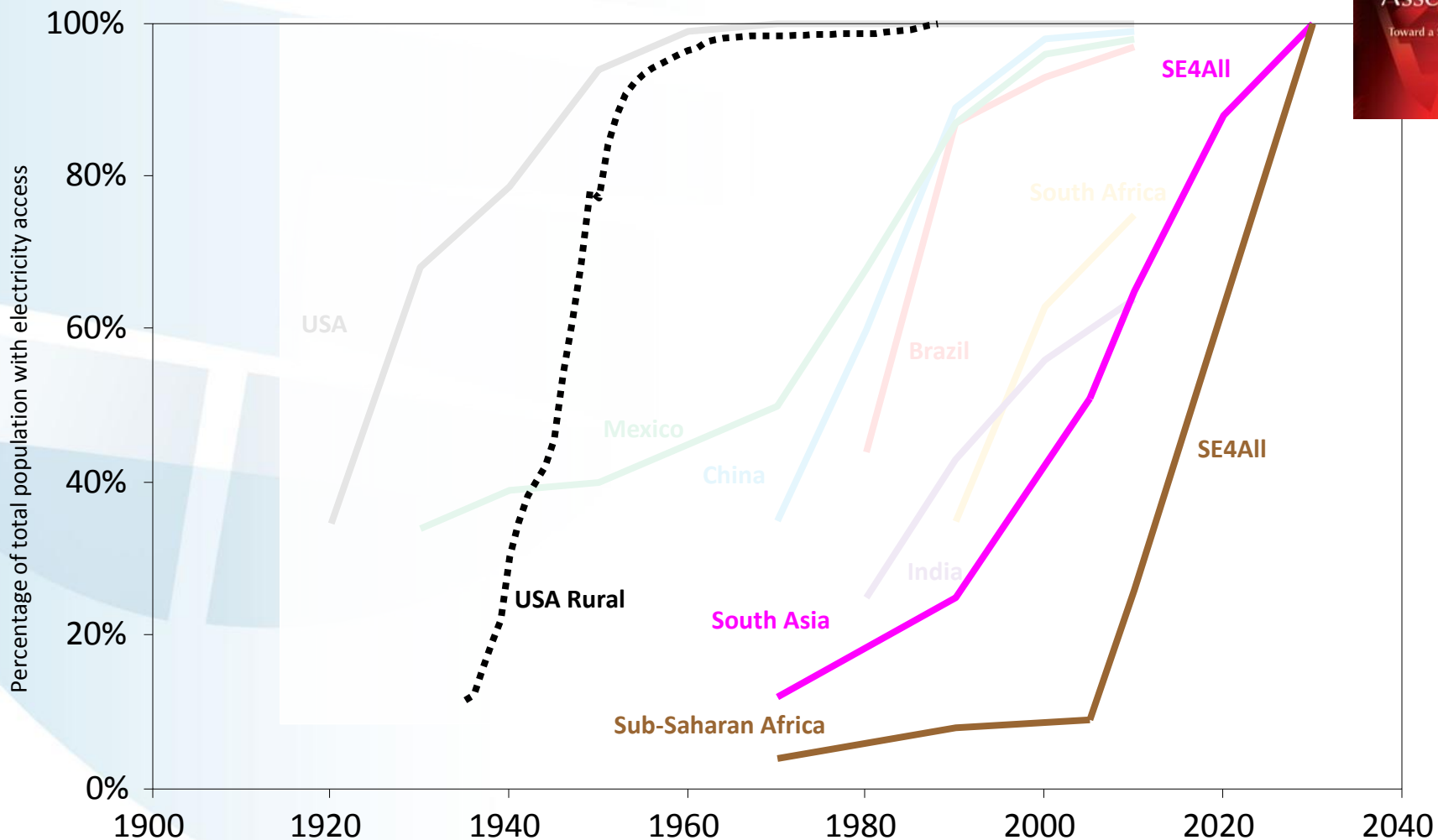
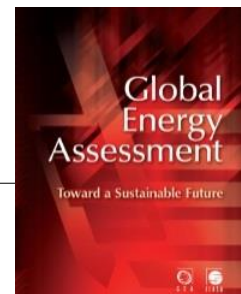


## 2030 GEA Goals and Targets

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

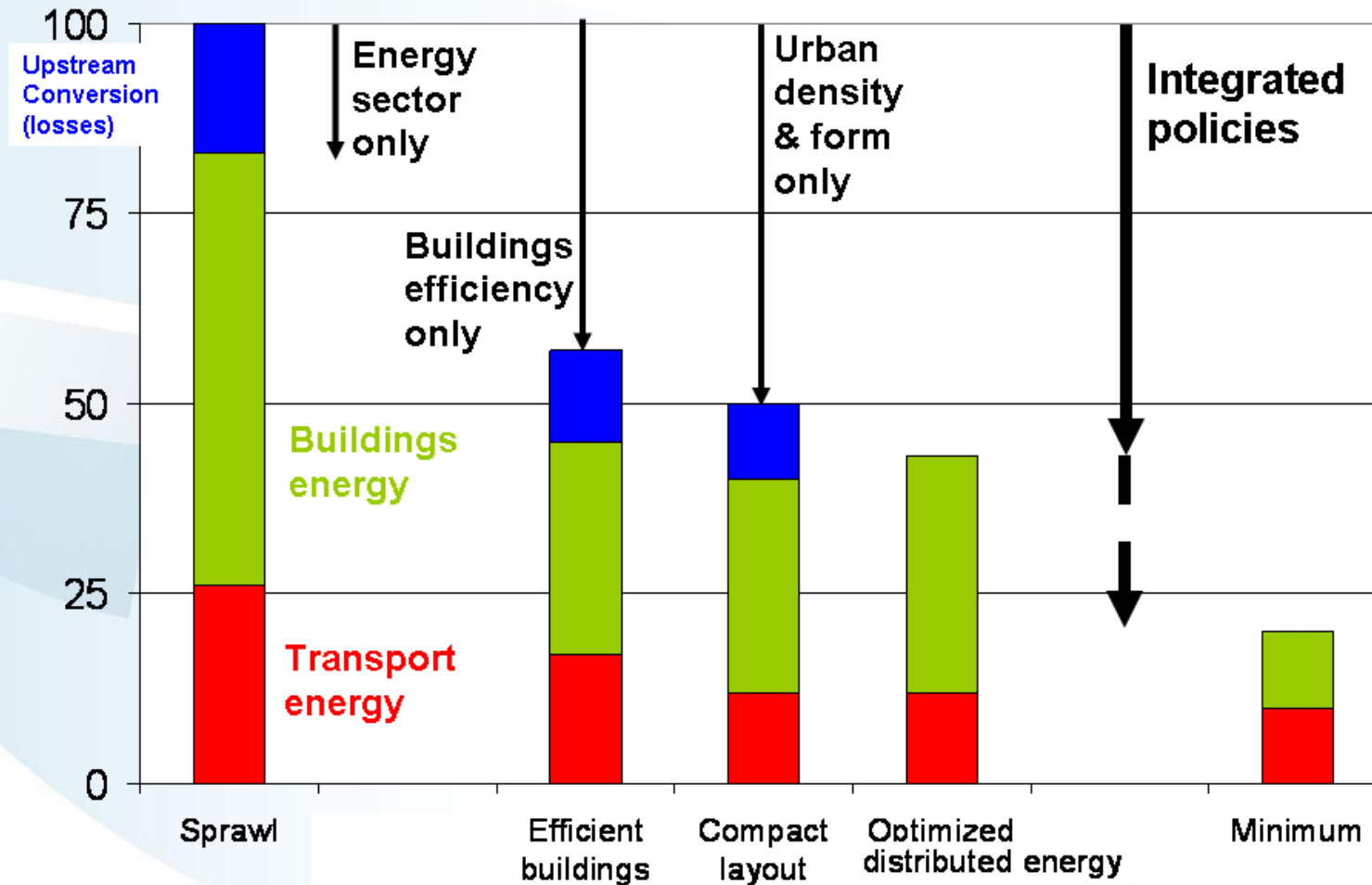
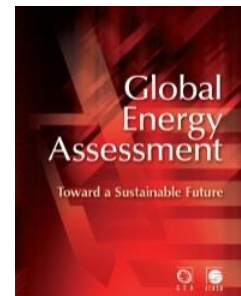
Aspirational & Ambitious but Achievable

# Electrification

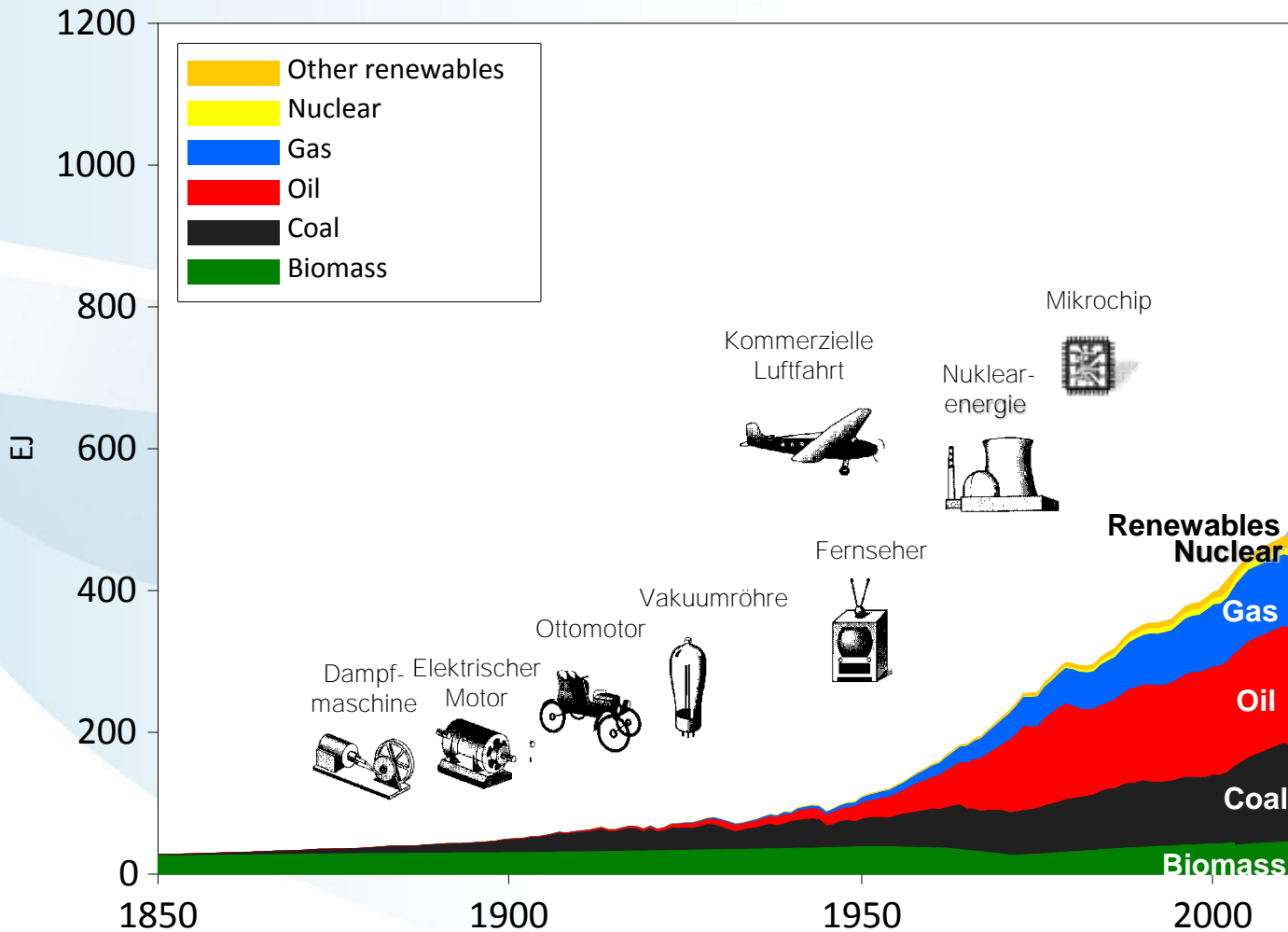
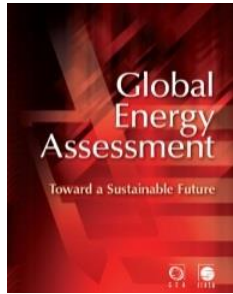




# Policy Integration for Urban Energy Efficiency Improvement

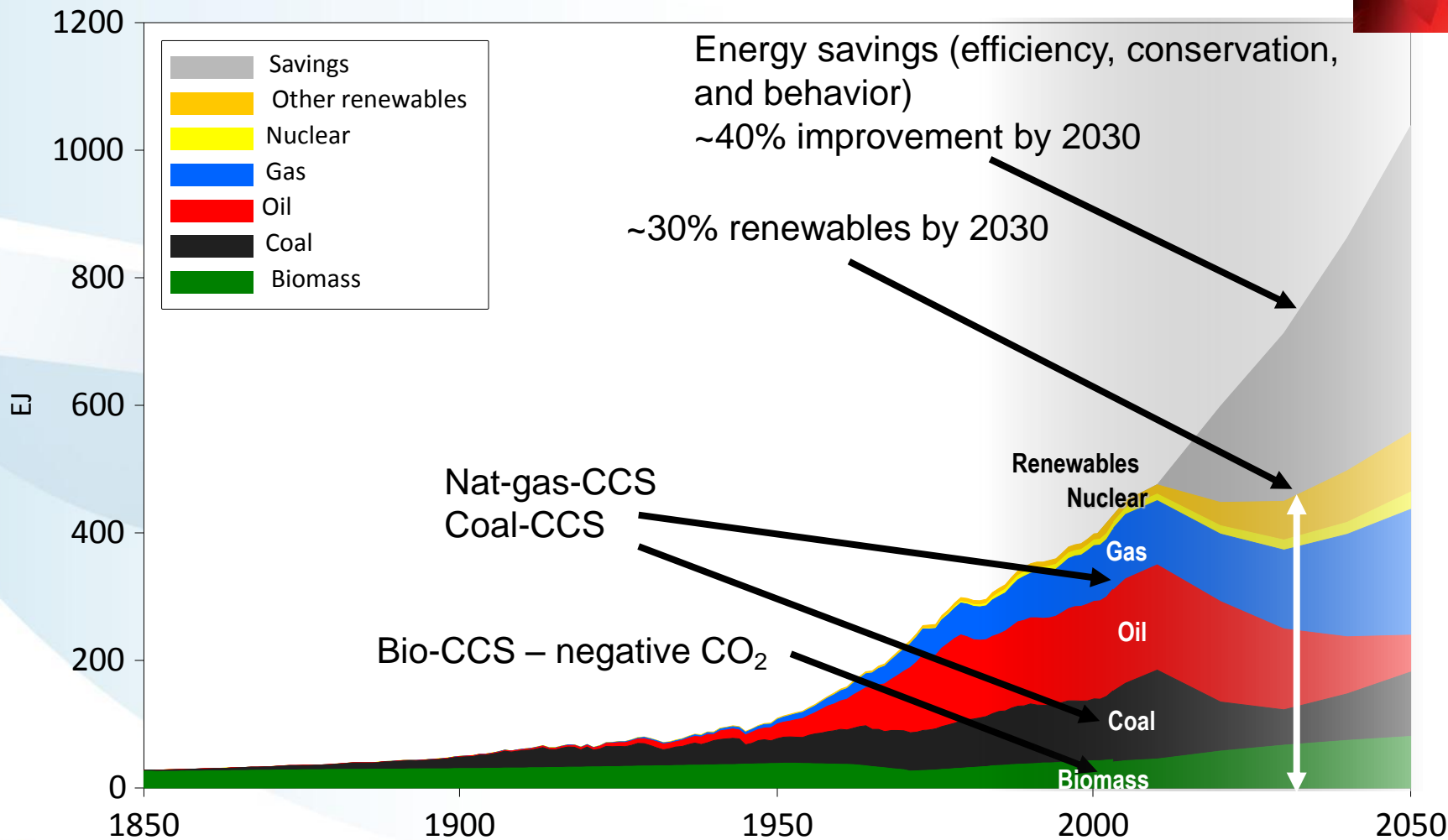
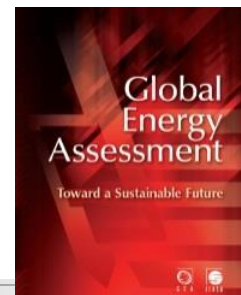


# Global Primary Energy Historical Evolution



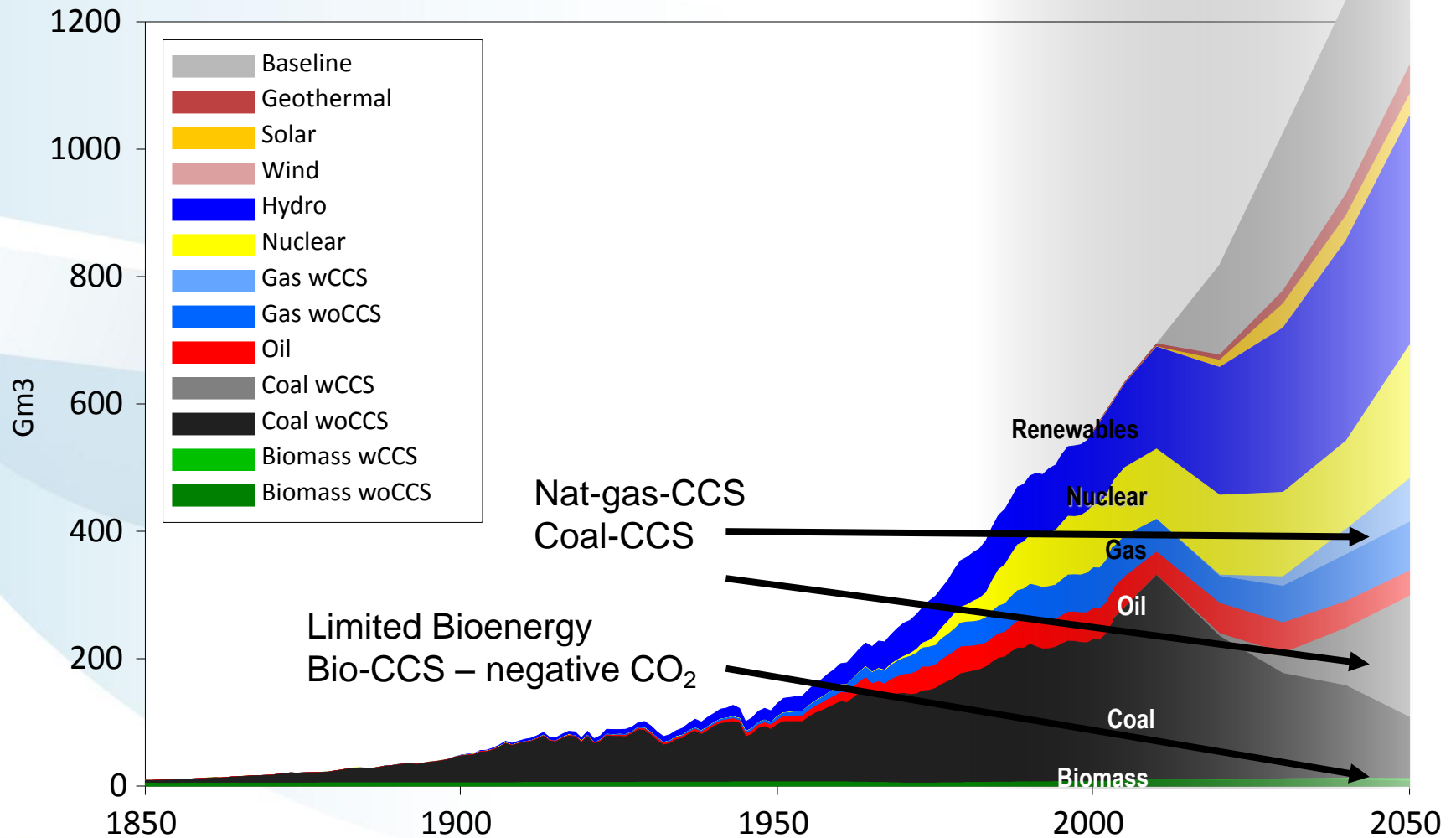
# Global Primary Energy

## A Transformational Pathway



# Global Water Withdrawals

## A Transformational Pathway



# The World in 2050 (TWI2050.com)

“Doing More with Less” within Planetary Boundaries

Target space 2050+ →

Vision:  
Sustainable  
Future

Transformation Diffusion



One “backcasting” storyline and many transformational pathways

← Target space 2030

Legitimacy of  
BAU eroding

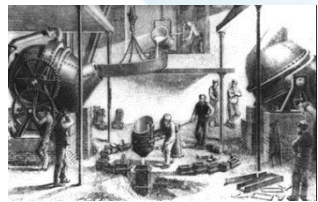
2030

2050

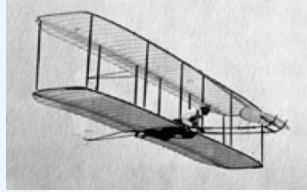


# Transformational Change

1850



1900



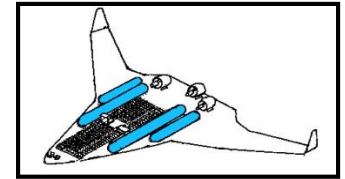
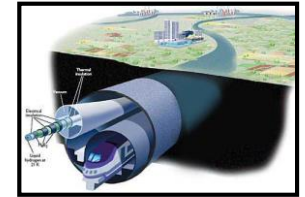
1950



2000



2050



# Disruptive Change

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

1900: where's the car?

1913: where's the horse?

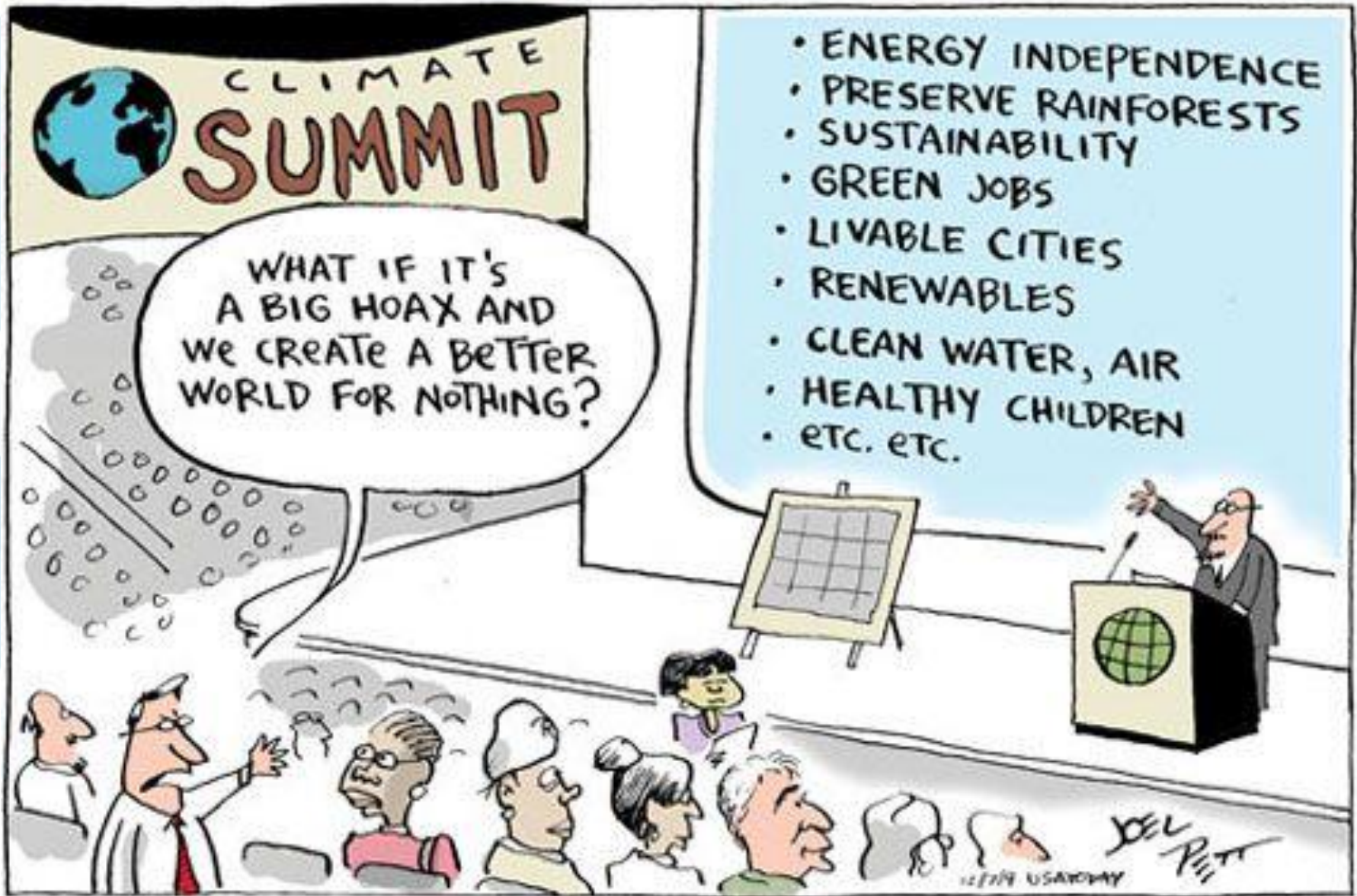


Images: L, National Archive, [www.archives.gov/research/american-cities/images/american-cities-101.jpg](http://www.archives.gov/research/american-cities/images/american-cities-101.jpg)  
R, [shorpy.com/node/204](http://shorpy.com/node/204).

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



# Social Responsibility of Science





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

# THANK YOU



science for global insight

## [naki@iiasa.ac.at](mailto:naki@iiasa.ac.at)



IIASA, International Institute for Applied Systems Analysis