Future Role of IPCC

Yoichi Kaya
Chairman, Japanese Liaison Committee for IPCC

2017. 1. 26

Contents

Basic character of IPCC

1. Gathering of scientists supported by governments
   → the duty of co-operation for policy making
   → the duty of gathering the most recent scientific information
2. Basic stance of IPC
   policy relevant but not policy prescriptive
3. Key issues
   To what extent do we provide with useful informations?

The followings are three examples.

Skepticism on global warming

1. Those who are skeptic about global warming
   ex.1 ratio of those who are skeptic about GW in USA
   40% or around (public review)
   ex.2 US government
   1）President Trump
   2）Considerable number of republicans in the diet
2. Extence of several scientific skepticism
   Ex.：H.Svensmark
   Solar irradiance→magnetic field around sun
   →total flux of cosmic ray on the earth
   →total clounds on the earth surface
   →earth surface temperature

Treatment of skepticism in the past IPCC reports (1)

1. General

source:WG1 SPM p.17

It is extremely likely that human influence

(95 – 100%)

has been the dominant cause of the observed warming since the mid-20th century.

Treatment of skepticism in the past IPCCreports —(2) the case of Svensmark—

1. Solar irradiance — Global temp. change

1)source:IPCC AR5 WG1 SPM p.19

Not correlated in the data between 1986-2008

2) source:IPCC AR5 WG1 Box.10.2 p885

Almost the same as above

2. Cosmic ray — cloud cover

source: IPCC AR5 WG1 chap.7, p.613

Not correlated

Request to IPCC on the skepticism about global warming

1. Introduce real examples of skepticism
2. Show clear evidence for rejecting skepticism

Example：Svensmark's skepticism

1）Clear explanation of his skepticism

2）Clear explanation of the evidence

ex.：results of statistical analysis on the relation of solar irradiance and earth surface temperature

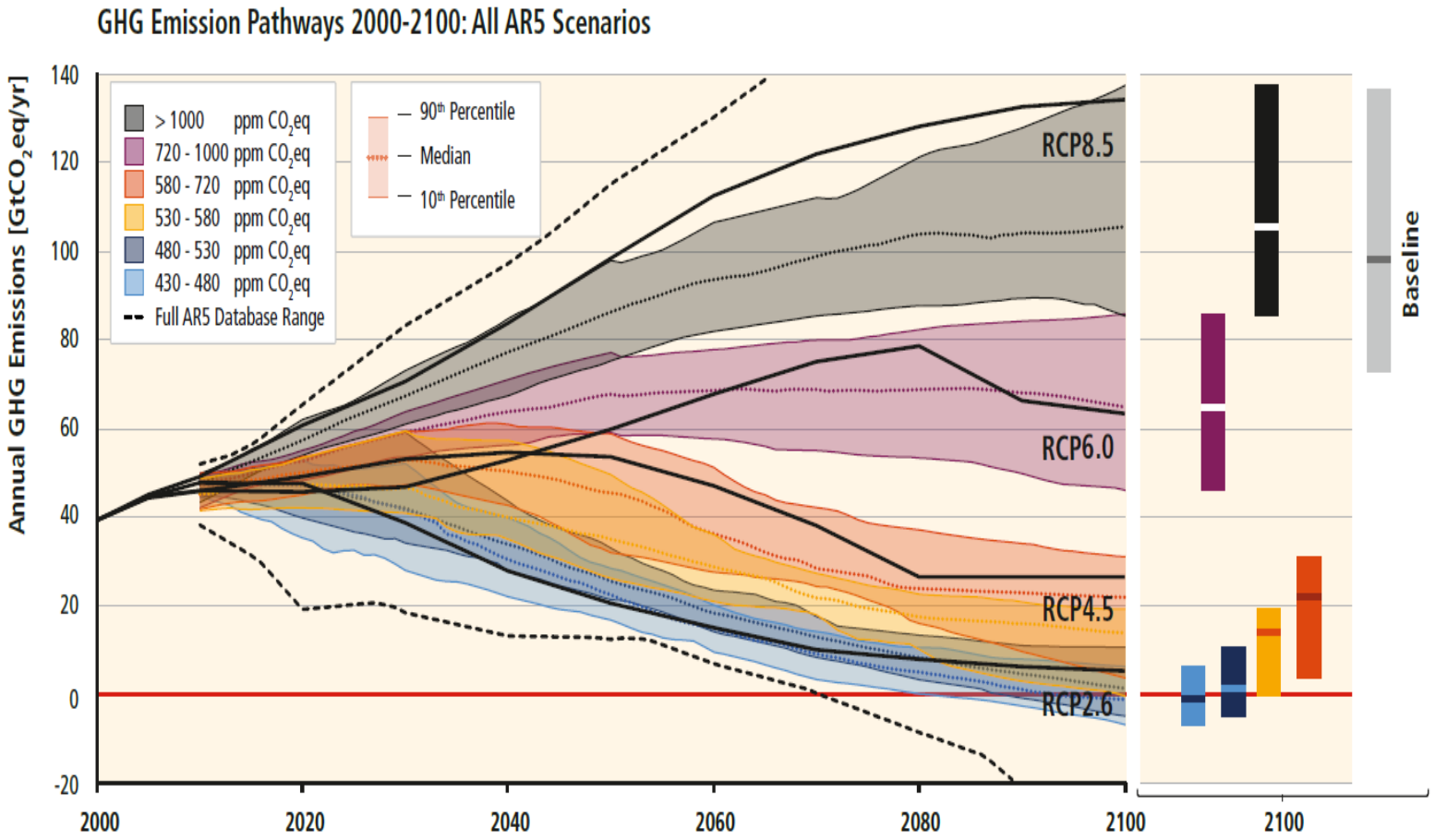
About future emission pathways

1. Past example

   RCP2.6～8.5 → emission pathways

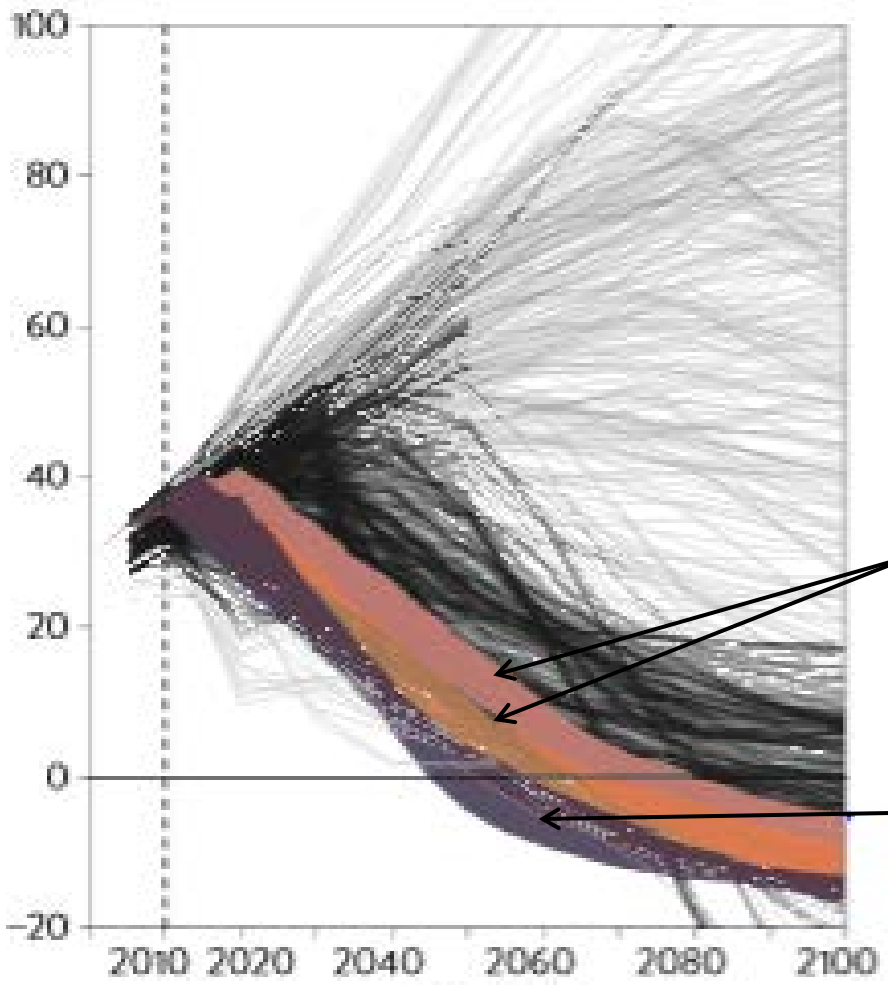
2. AR6: 2degree and 1.5 degree target pathways and mitigation measures, particularly new ones such as negative emissions

RCP:Representative Concentration Pathways
（number: 2100　Radiative forcing (W/m2))



Source:Rogelj,J.et al:Nature c.c. vol.5.June 2015

Global CO2 emission (Gt/y)



2°Ctarget case

1.5°C target case

Difficulty in anthropogenic CO2 absorption

＜Main measures for CO2 absorption＞

1. Afforestation and Reforestation

CO2 absorption per year:　9ton/ha

2. BECCS（biomass burning＋CCS）

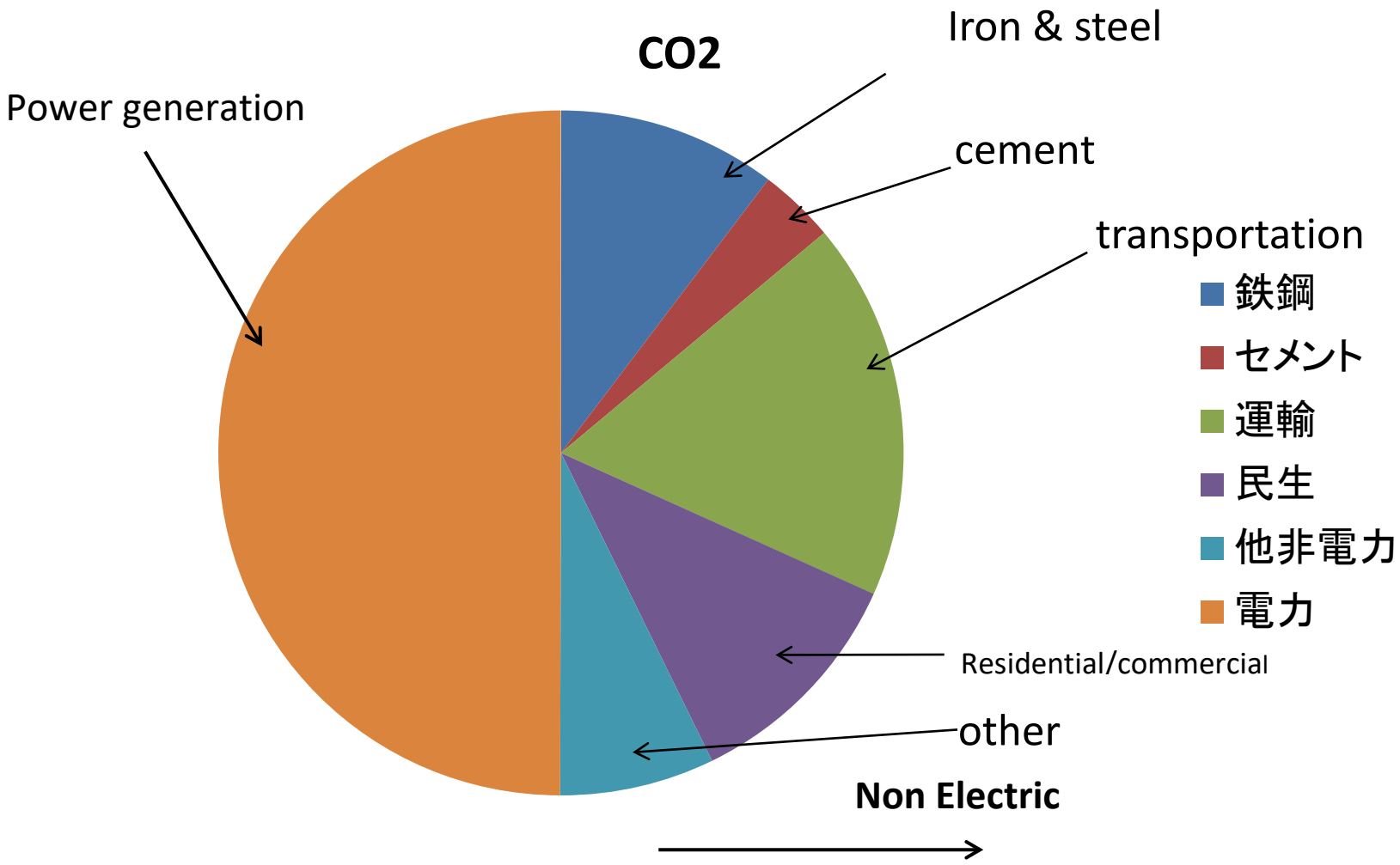
CO2 absorption of grass fields　about 5ton/ha

3. DAC (Chemical absorption of CO2 in the air)

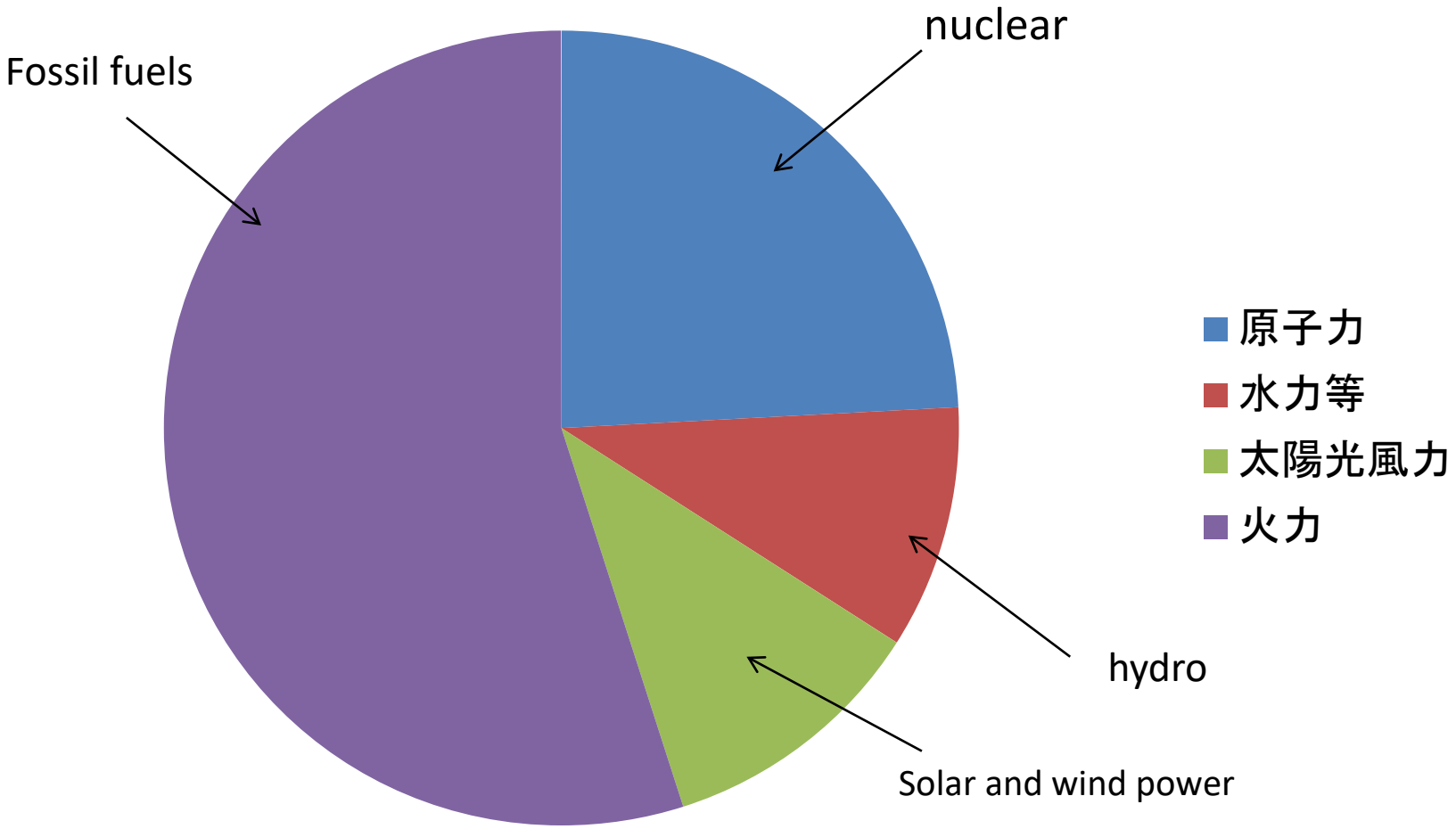
＜Area neccesary for 1 / 2 ＞

10Gt/y CO2 →　1Gha or greater＞total area of USA

CO2 emission in Japan in 2013



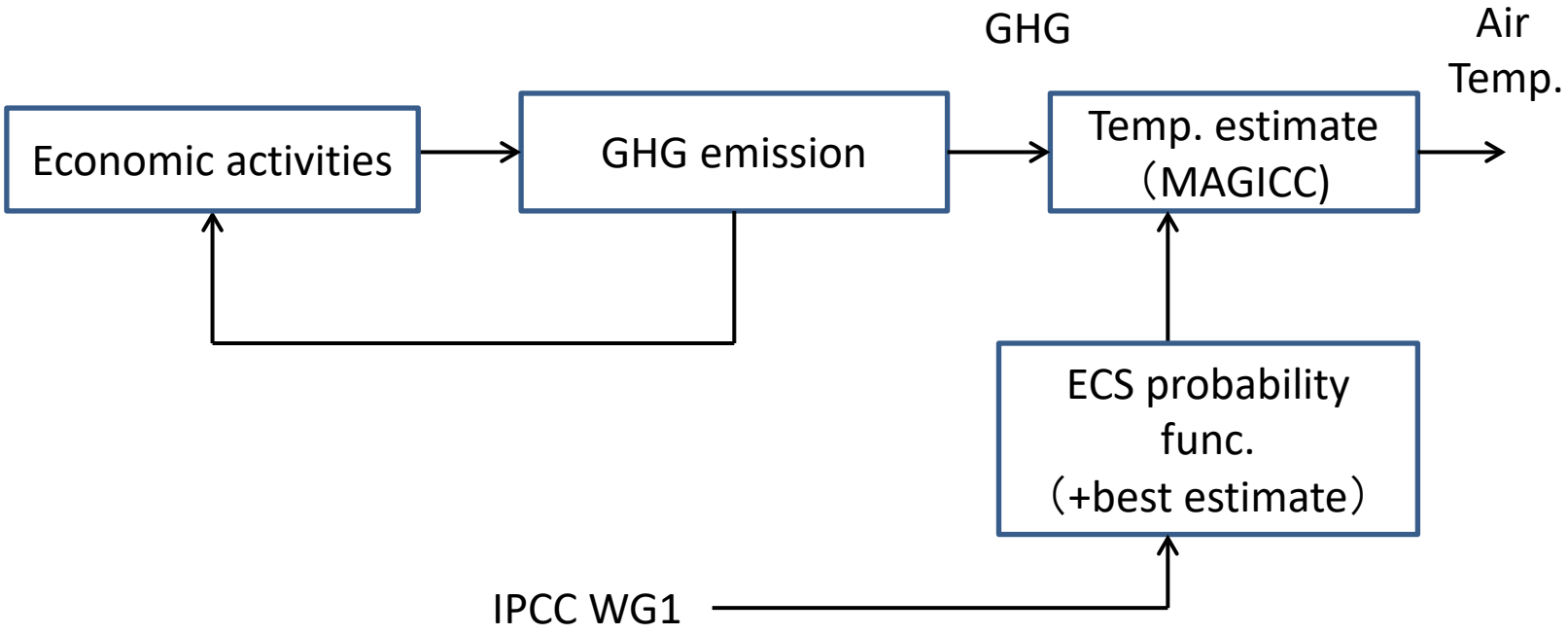
Structure of power generation - Japan, 2030-



ECS in IPCC report (Equibrium Climate Sensitivity)

	estimate	best estimate
AR1～3 AR3	1.5～4.5℃	2.5℃
AR4	2.0～4.5℃	3.0℃
AR5	1.5～4.5℃	no concensus

Structure of main models in IPCC



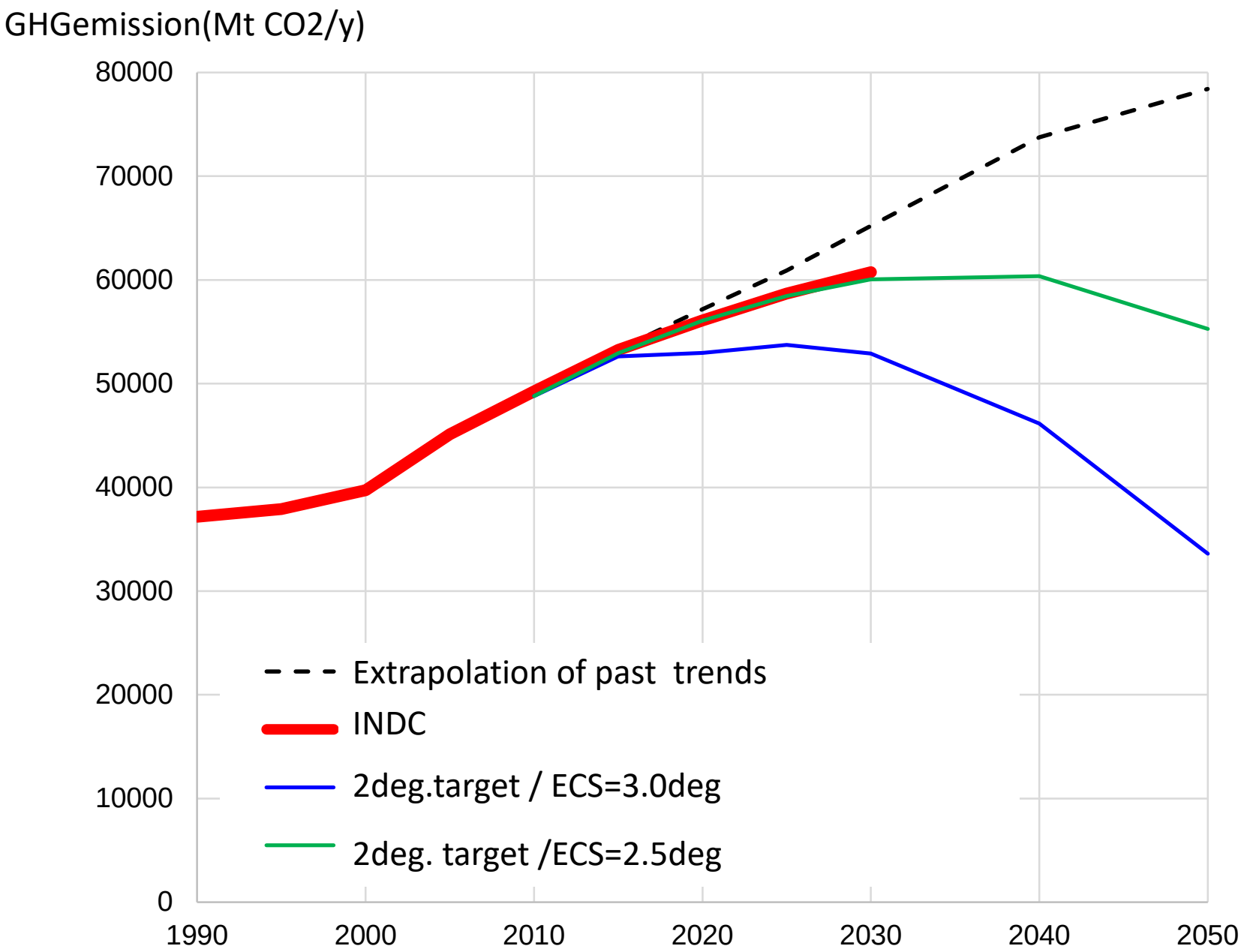


Fig. Impact of ECS value on emission paths

Concluding remarks

1. IPCC should deliver as clear informations as possible on climate change, including results of feasibility evaluation of major response measures.

These efforts will greatly increase values of informations provided by IPCC, but these are not contradictory to the IPCC spirit of "policy relevant but not prescriptive".

2. IPCC should utmost efforts for reducing uncertainties of important parameters of climate change such as climate sensitivity.