



WORLD
RESOURCES
INSTITUTE

NUCLEAR POWER IN THE IPCC SIXTH ASSESSMENT REPORT

WITH AN OBSERVATION ON THE FCCC GLOBAL STOCKTAKE

Karl Hausker, Ph.D.

Senior Fellow, Climate Program

khausker@wri.org

October 2023

IPCC Workgroup III: Growth in Primary Energy Sources (Table TS.2)

- Growth in primary energy from *[1.5° scenarios, immediate action]*
 - for nuclear-- **2050: +90%** *[with large interquartile ranges]*
 - for “modern biomass”-- **2050: +290%**
 - non-biomass renewables (solar, wind, hydro)-- **2050: +725%**

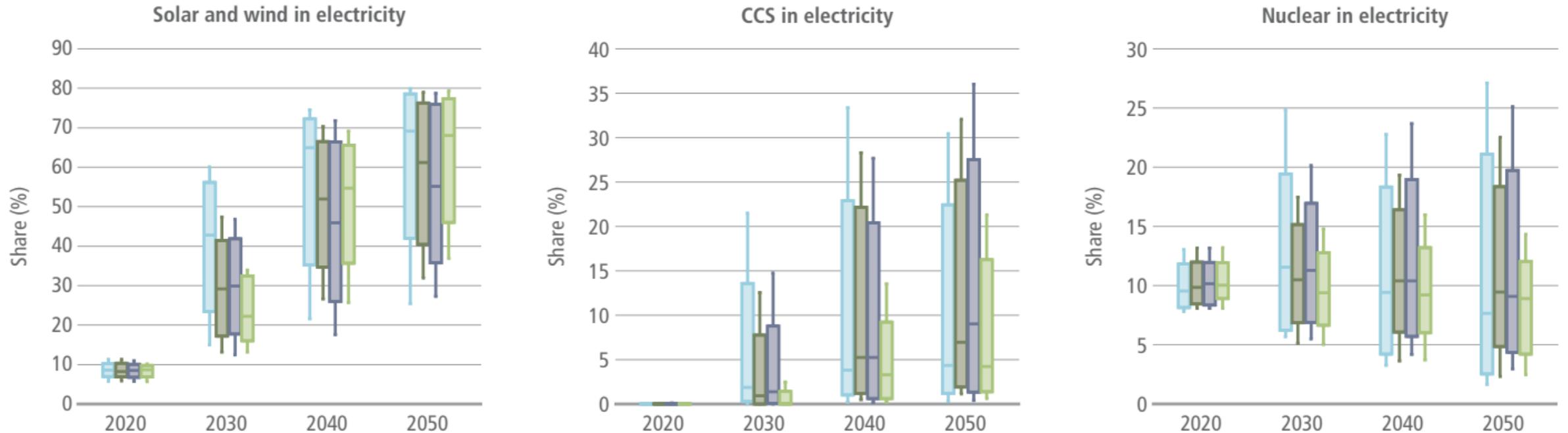
Global indicators	1.5°C (>50%)	1.5°C (>50%) by 2100	2°C (>67%)		
	Immediate action, with no or limited overshoot	NDCs until 2030, with overshoot before 2100	Immediate action	NDCs until 2030	All
Change in primary energy from nuclear in 2030 (% rel to 2019)	40 (10,70)	10 (0,25)	35 (5,50)	10 (0,30)	25 (0,45)
in 2050 (% rel to 2019)	 90 (15,295)	100 (45,130)	85 (30,200)	75 (30,120)	80 (30,140)
Change in primary energy from modern biomass in 2030 (% rel to 2019)	75 (55,130)	45 (20,75)	60 (35,105)	45 (20,80)	55 (35,105)
in 2050 (% rel to 2019)	 290 (215,430)	230 (170,420)	240 (130,355)	260 (95,435)	250 (115,405)
Change in primary energy from non-biomass renewables in 2030 (% rel to 2019)	225 (155,270)	100 (85,145)	150 (115,190)	115 (85,130)	130 (90,170)
in 2050 (% rel to 2019)	 725 (545,950)	665 (535,925)	565 (415,765)	625 (545,700)	605 (470,735)

IPCC Workgroup III: Electricity Generation Mix (Fig. 6.30)

- Solar and wind grow to be predominant source of zero-C power [55-70%]
- “VRE” does not exceed 80% of total generation in any scenario.

- CCS in electricity shows a wide range of penetration in the scenarios
- Median values cluster in 5-10% range in 2050.

- Nuclear also shows a wide range of penetration
- Median values cluster in 10% range, 2030-2050
- Would still roughly double in TWh in 1.5 scenarios



Clean/firm electricity complements high VRE grids

■ Limit warming to 1.5°C (>50%) with no/limited overshoot
■ Return warming to 1.5°C (>50%) after a high overshoot

■ Limit warming to 2°C (>67%), with action starting in 2020
■ Limit warming to 2°C (>67%), with NDCs until 2030

Summary for Policymakers: Nearly all references to nuclear power are removed

- Throughout the full report, nuclear is on a “short list” of three or four low- or no-carbon technologies. Example:¹
 - “Nearly all electricity in pathways limiting warming to 2°C (>67%) or 1.5°C (>50%) is also from low- or no-carbon technologies, with different shares across pathways of: nuclear, biomass, non-biomass renewables, and fossil fuels in combination with CCS” (p.84)
- However, the SPM truncates this list to exclude nuclear (and biomass).
 - “In these global modelled pathways, in 2050 almost all electricity is supplied from zero- or low-carbon sources, such as renewables or fossil fuels with CCS...” (p.24, C.3.2)
- The word “nuclear” barely appears in the SPM
 - Once in Figure SPM.7 (laundry list of options for 2030)
 - Once in a negative reference in nuclear’s ‘high upfront investment’ costs. (p. 25)

¹ Other examples: WG p. 299, p. 332 , p. 342, p. 354

Nuclear power missing in FCCC Global Stocktake (Sep. 2023)

Synthesis Report of the First Global Stocktake

Marking the end of the technical assessment phase, the report is a guiding input for the Global Stocktake at COP 28.



United Nations
Climate Change

- **Contains text very parallel to WGIII SPM, Sec. C.4.1 on how to achieve net-zero CO2 energy systems**
 - **BUT: substitutes 'renewable energy' for 'zero-carbon electricity'**
 - **AND: the word 'nuclear' does not appear in the 46pp report**

“115. Net zero CO2 energy systems require the phasing out of all unabated fossil fuels over time, rapid scaling up of renewable energy, widespread electrification of end uses, use of clean fuels, including low-carbon hydrogen and ammonia, solutions for applications that are more challenging to electrify, and boosting energy efficiency gains and demand-side management.”