

“NOT (YET) ANOTHER COAL STORY” –

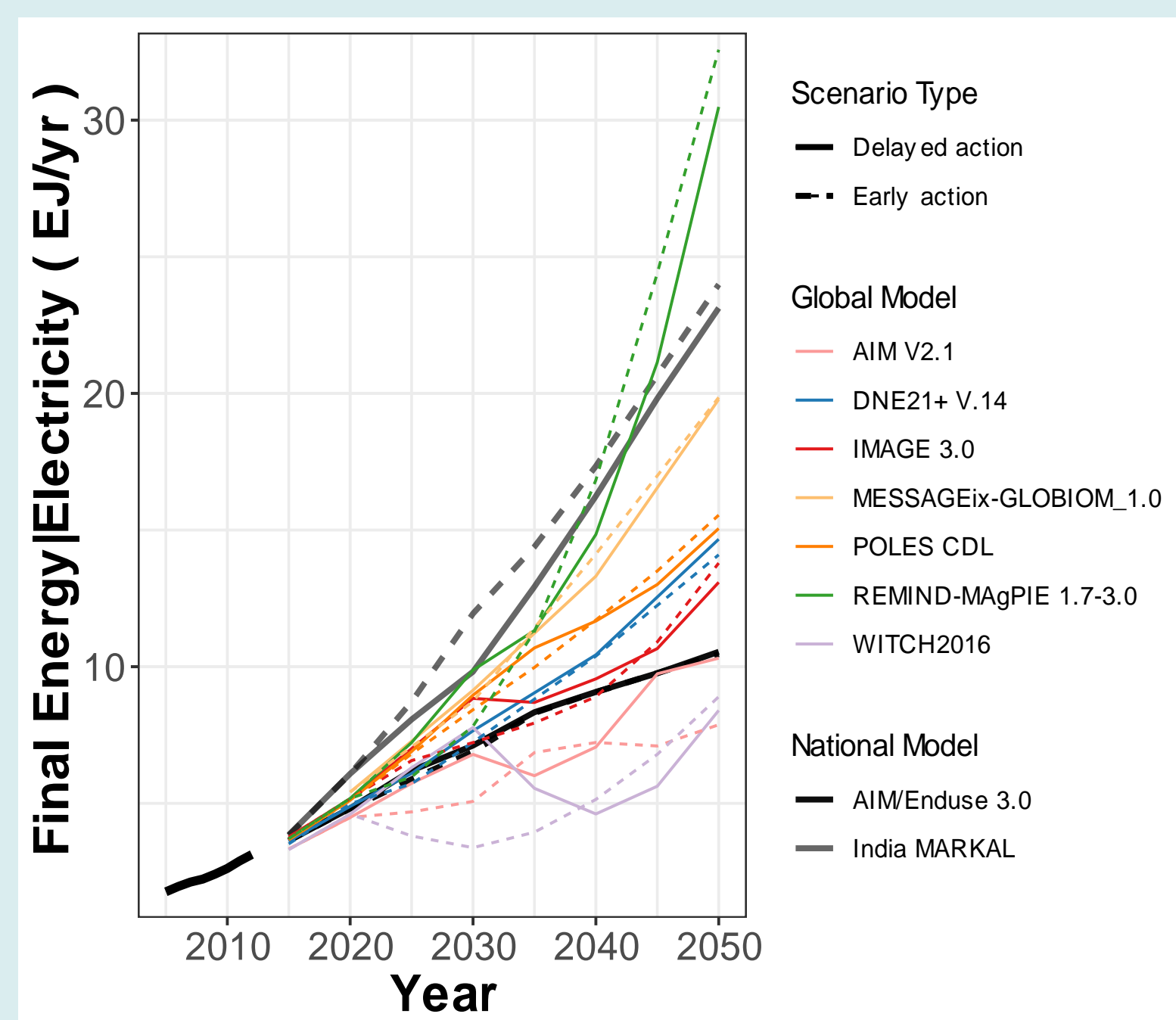
POWER SECTOR LOCK-INS IN INDIA - PERSPECTIVES FROM NATIONAL AND GLOBAL MODELS

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PIK RD III Sustainable Solutions

I

Electricity demand projected to grow strongly for decades to come.

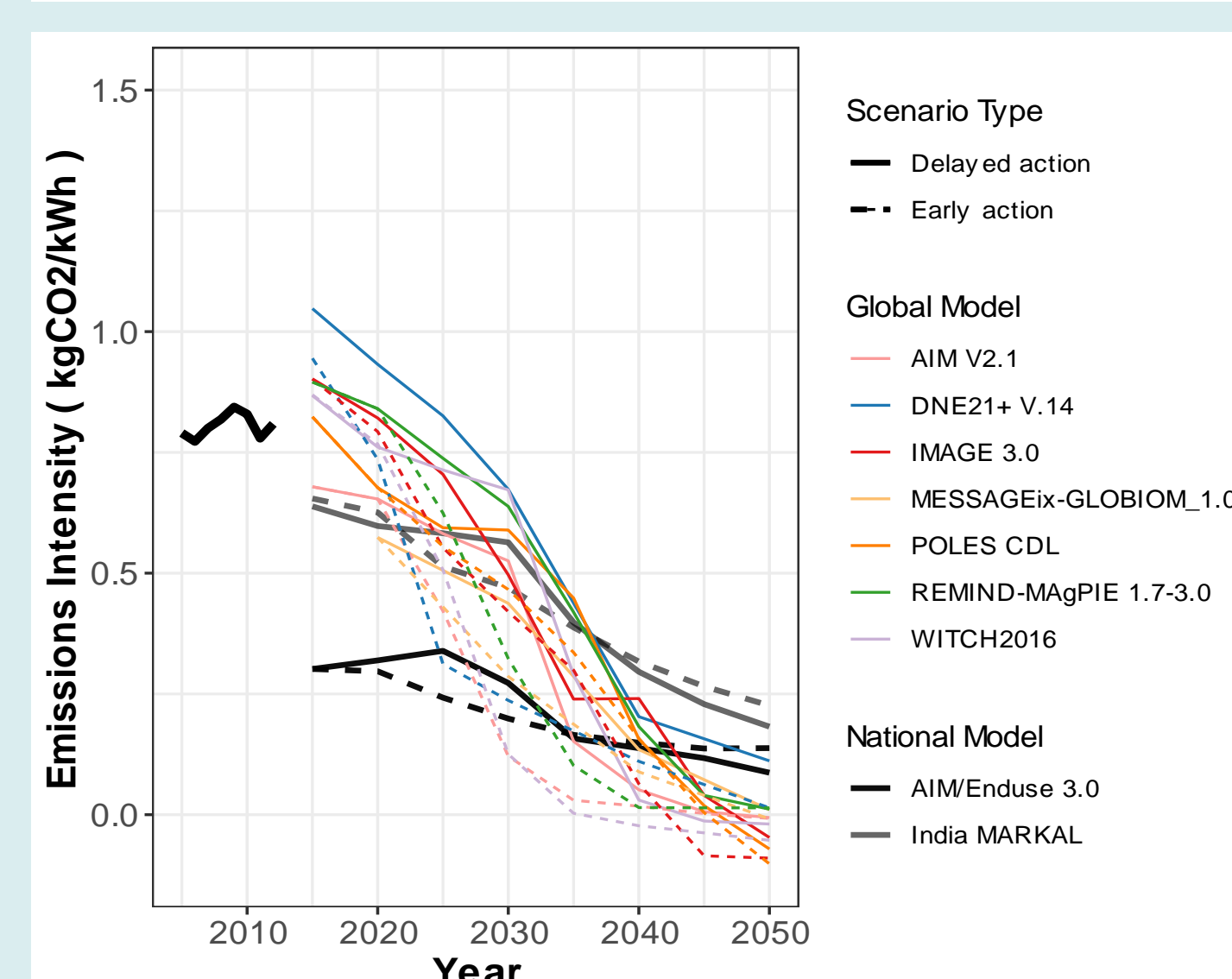
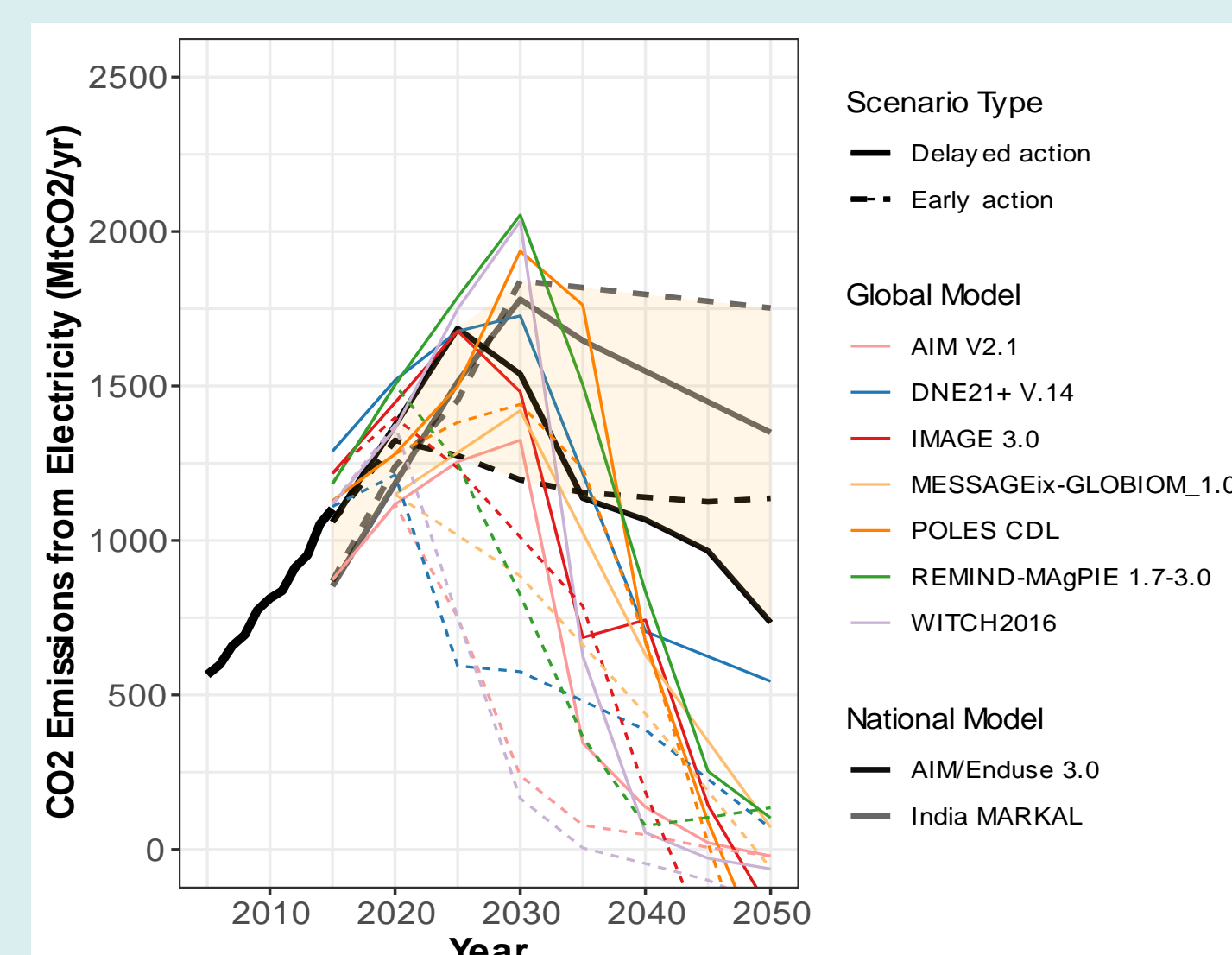


Scenario name	Definition
Early action	Currently implemented policies till 2020 followed by a carbon budget constraint till 2050.
Delayed action	Currently implemented policies and NDC till 2030 followed by carbon budget constraint till 2050

* The budgets for national models were chosen by the respective teams, representing the maximum mitigation effort, till 2050, possible through their models.
* The budgets for India for global models were the outcome of the global carbon budget which was the same across models (2011-1000 of 1000 GtCO₂)

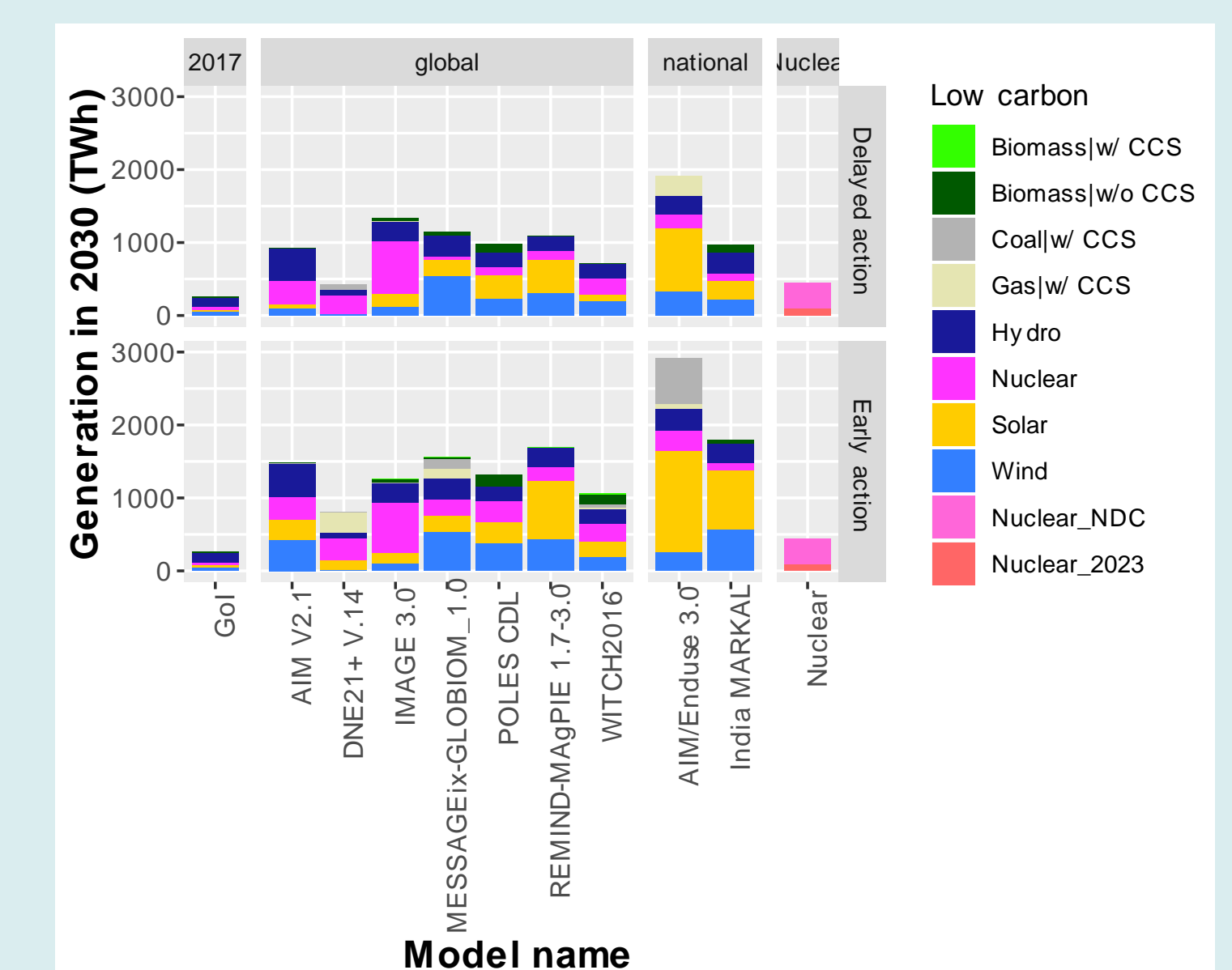
II

With the current NDC, power sector emissions continue to rise till 2030, in spite of relative decarbonisation.



III

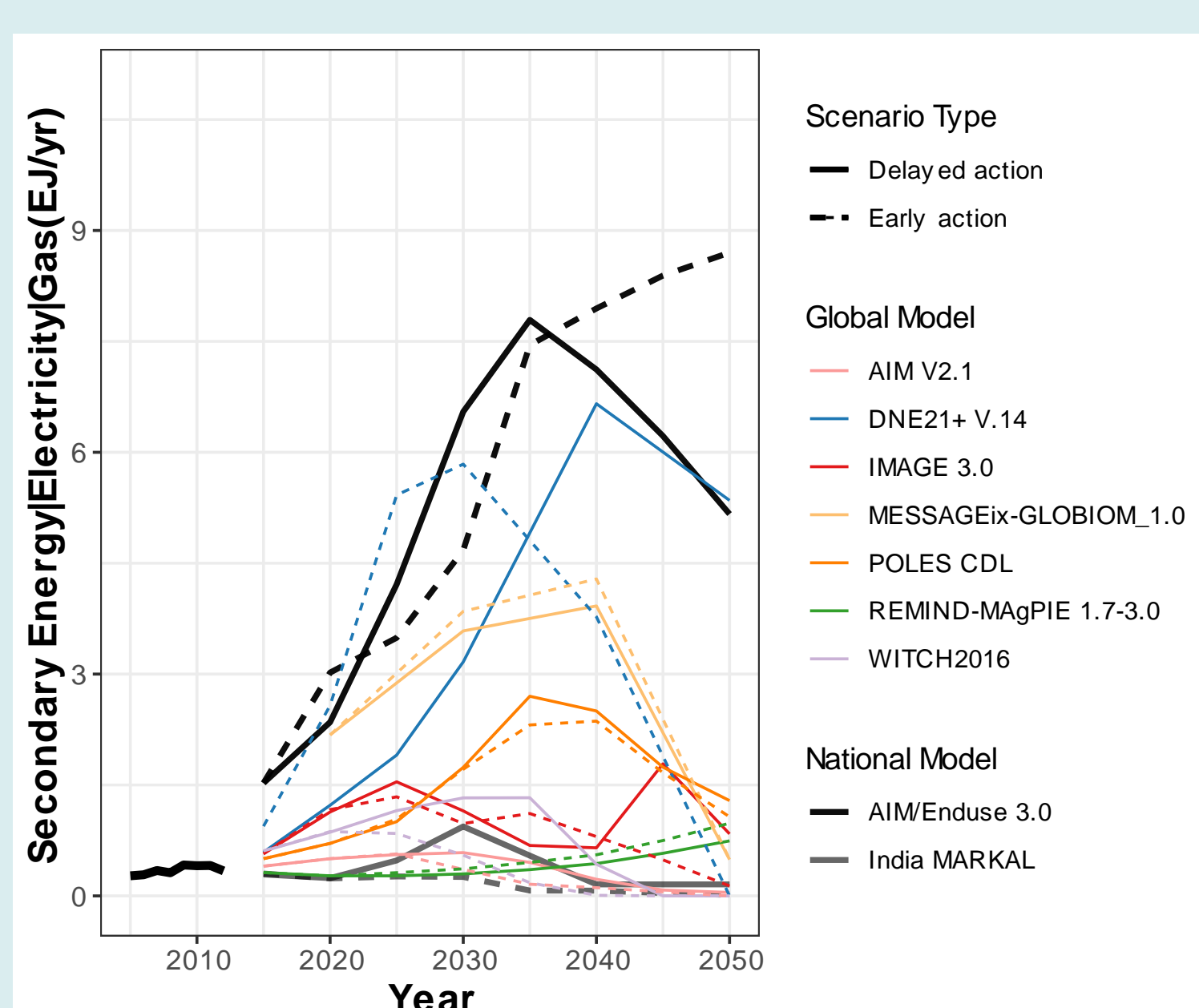
Absolute low-carbon electricity until 2030 is substantial in most models.



- Both national and global models see large increase in expansion of low-carbon electricity compared to current (2017) levels.
- Most of the expansion takes place in wind and solar, although a few models are very optimistic about nuclear.
- Although India has a large nuclear target, (see NDC and Nuclear_2023 : current + under construction), nuclear plants have long construction times (~5 y) and historically nuclear addition has been slow.

IV

Very strong role of gas as bridge-fuel foreseen in some models.

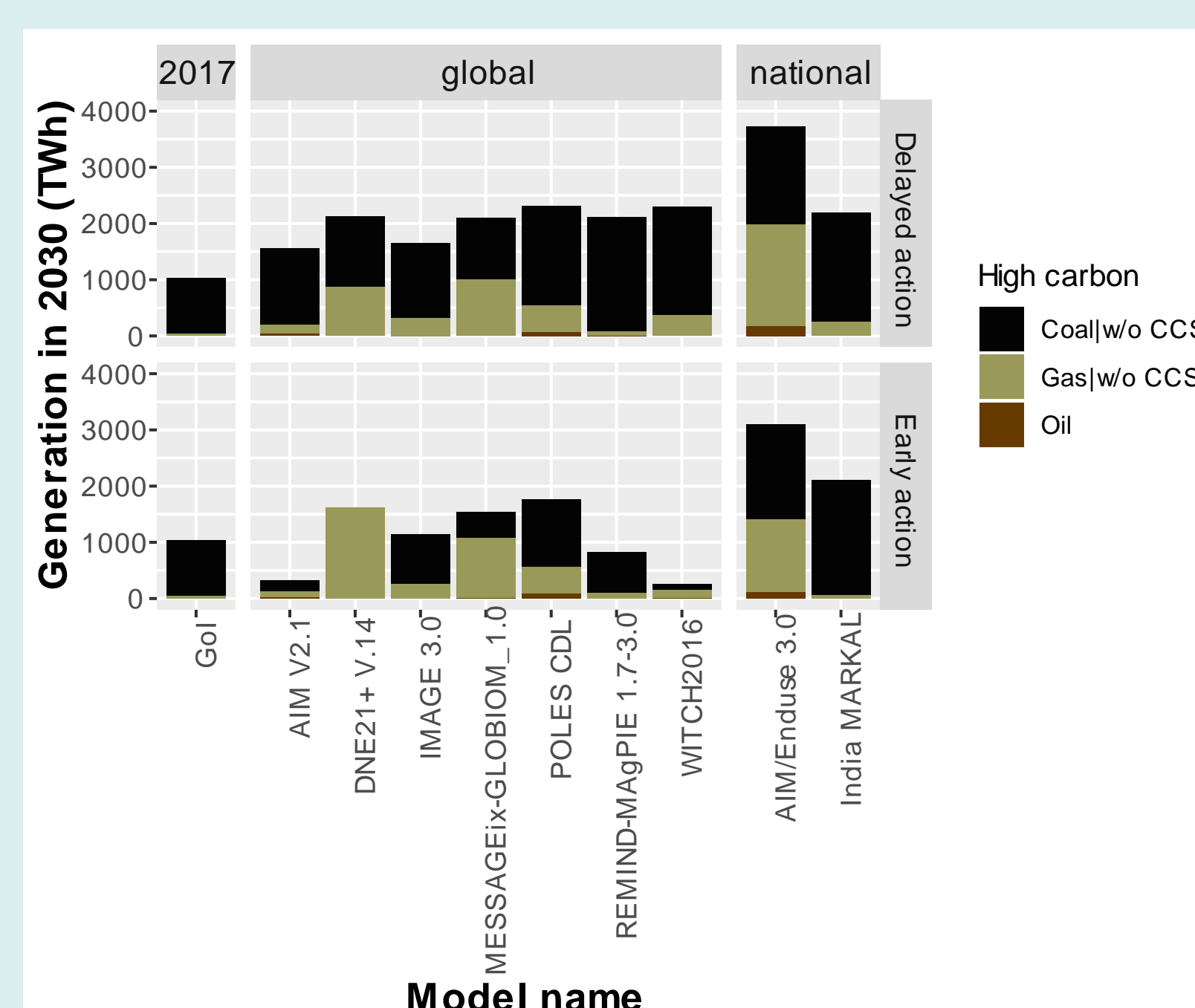


- Some models are very optimistic about the potential for gas.
- As seen above, India has currently very little gas-based generation, because of its scarcity and no long distance gas infrastructure from gas-rich countries.
- Current stranded gas capacity of 14 GW because of high gas prices[^]
- Thus, the optimistic projections seem questionable, especially in global models, which in most cases do not explicitly represent bilateral trade or gas infrastructure.

[^] NITI Aayog, *Energising India*, 2017

V

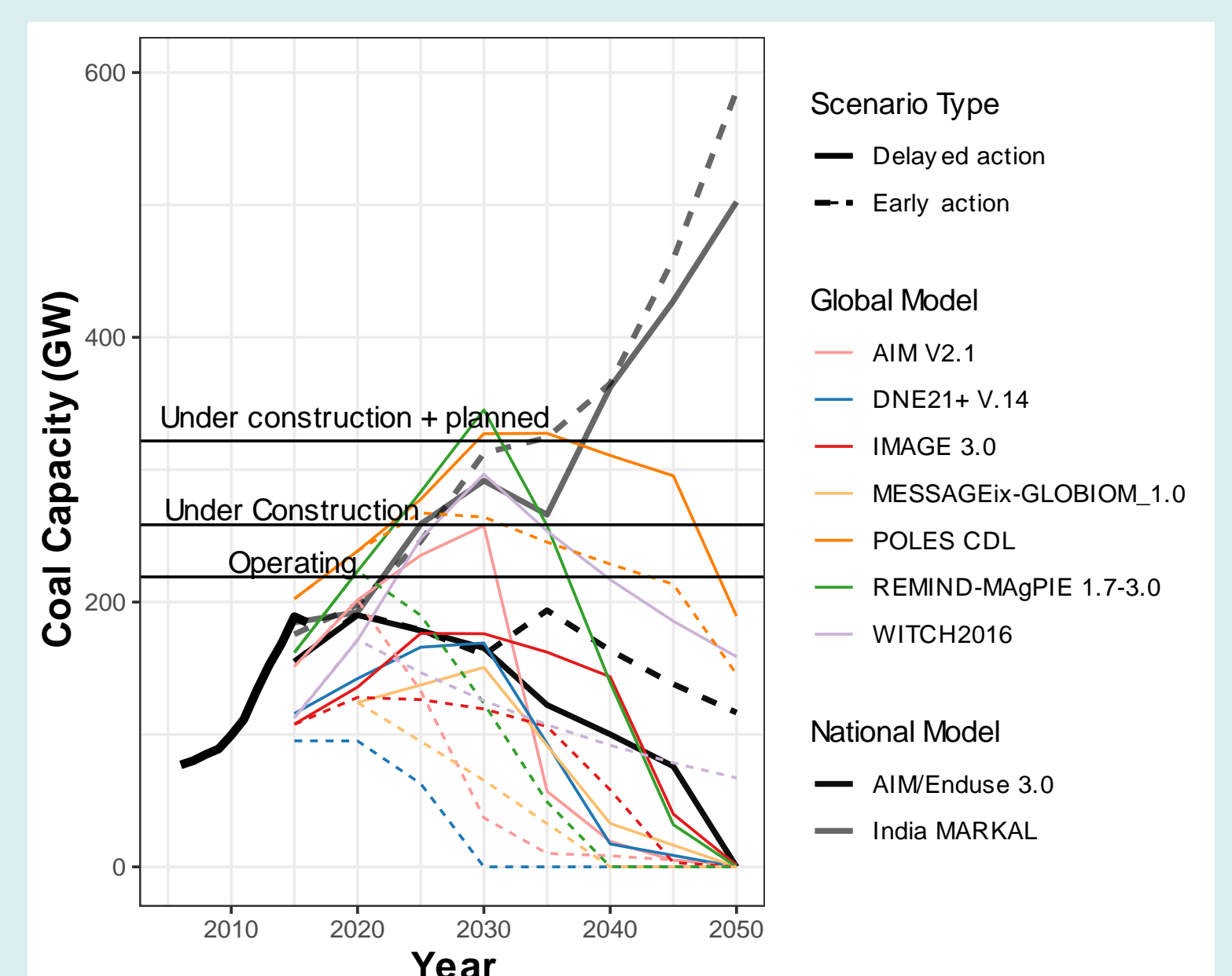
National models show greater path-dependency of coal than global models.



- National and global models agree that coal generation increases until 2030 under NDC policies, compared to 2017 value (horizontal line in background)
- With strengthening beyond NDCs after 2020, most global models foresee strong reduction, while national models project similar values.

VI

Very high carbon lock-in if all coal plants being constructed or planned go online, as foreseen in most NDC scenarios.



- Most models project additional >100 GW of coal plants w/o CCS go online until 2030, under NDC targets. These new coal plants would make ambitious budgets very difficult to achieve.
- The relatively low budgets achieved in global delay scenarios are only possible through large-scale premature retirement, implying huge stranded assets and raising the question of political feasibility.