Long-term projection of water use in Japan under stringent climate policy scenarios

Jing-Yu Liu, Shinichiro Fujimori, Kiyoshi Takahashi, Tomoko Hasegawa, Wenchao Wu, Toshihiko Masui and Naota Hanasaki

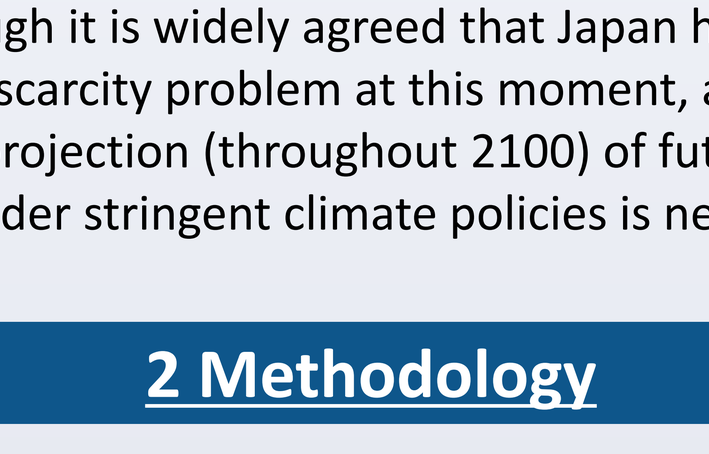
National Institute for Environmental Studies

1 Background

- The 2015 Paris agreement set stringent long-term climate goals (2° C and 1.5° C). Meanwhile, sustainable development goals (SDGs) of the 2030 Agenda were also adopted. SDG 6 is about water scarcity.
- Although it is widely agreed that Japan has no water scarcity problem at this moment, a long-term projection (throughout 2100) of future water use under stringent climate policies is necessary.

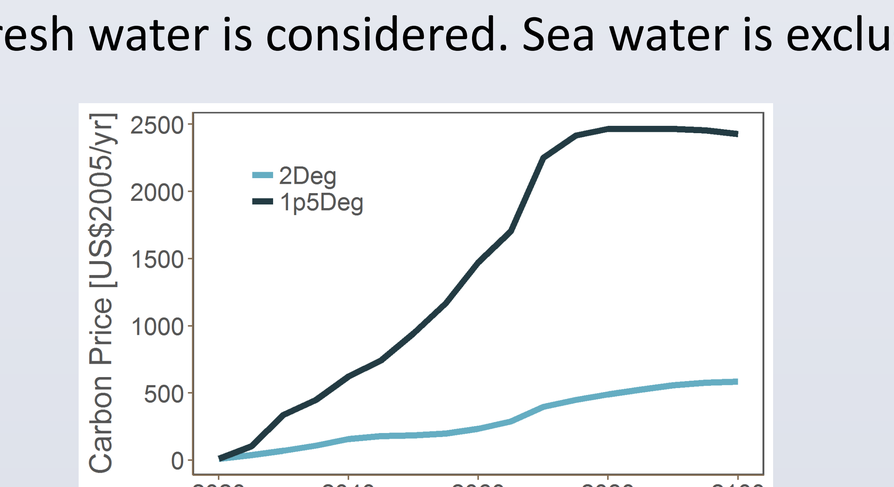
2 Methodology

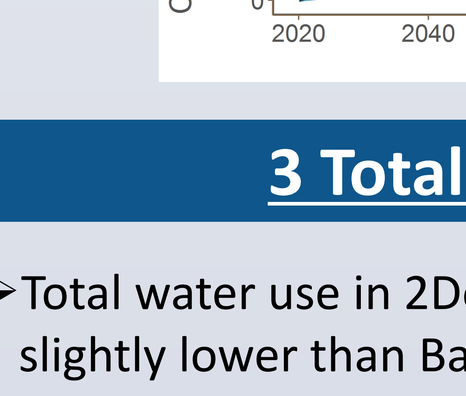
- Model: AIM/CGE-Japan with a water module
- Socioeconomic scenarios: SSP2
- Climate policy scenarios: BaU, 2Deg, 1p5Deg
- Fresh water is considered. Sea water is excluded.

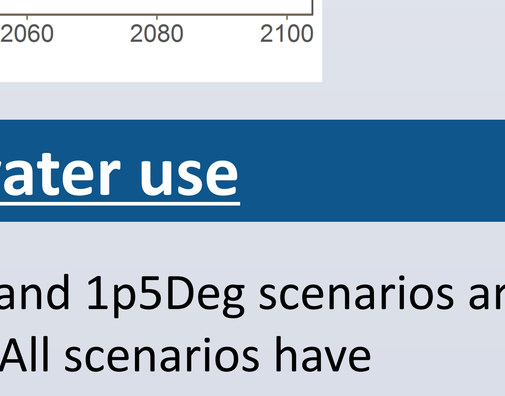


3 Total water use

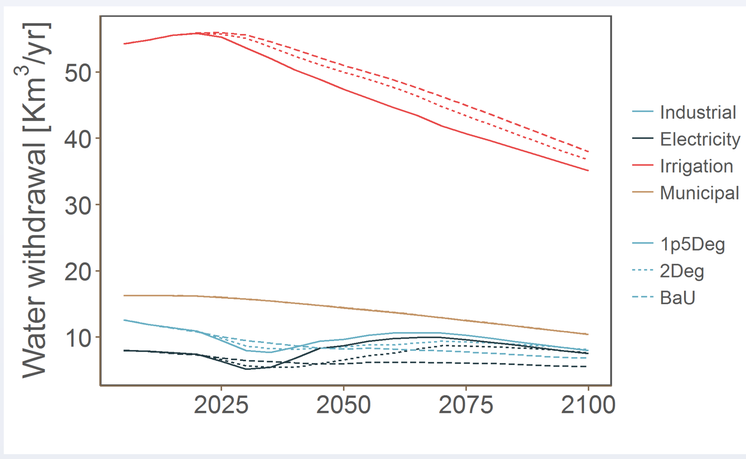
- Total water use in 2Deg and 1p5Deg scenarios are slightly lower than BaU. All scenarios have reduced water use with time mainly due to population decrease.





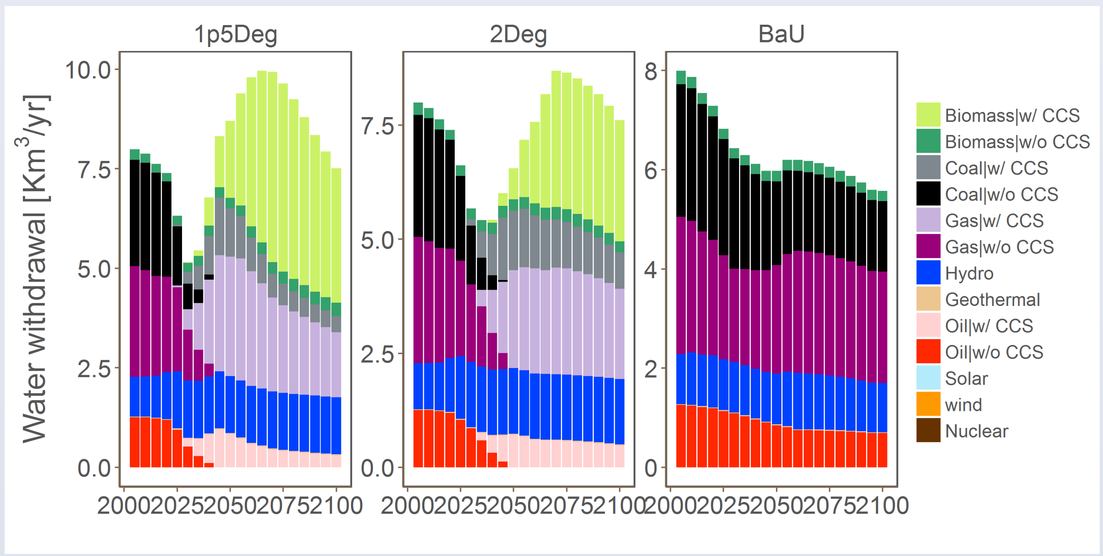


4 Sectoral water use

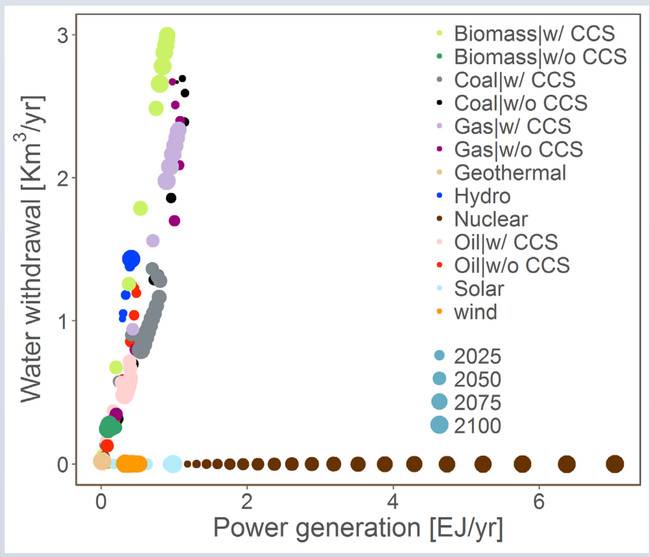


- Different from total amount, sectoral water use vary from BaU in mitigation scenarios, except for municipal sector.

5 Water use in the power sector



- Water use for different technologies in the power sector has drastic changes due to power mix transformation.



- Water use intensity comparison among technologies in the power sector

6 Summary

- Stringent climate policies show little threat to water scarcity condition in Japan.
- Total amount of water use show small decrease due to climate policies, whereas huge structural change is expected, among different sectors, as well as among different technologies in the power sector.