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Modeling Decarbonization Pathways in the Power Sector in Developing Countries: The case of Colombia

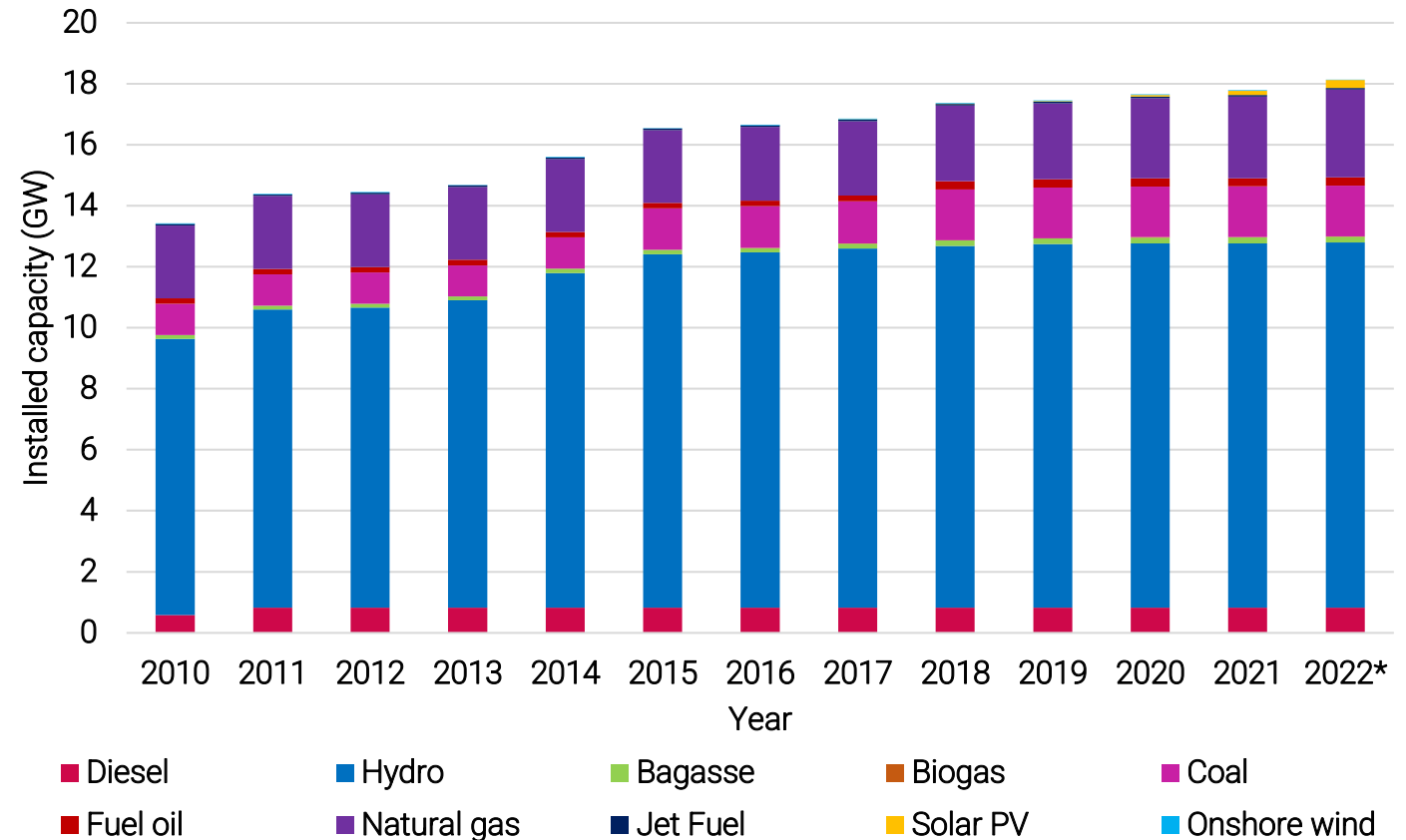


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Energy Modelling Platform Latin America and The Caribbean (EMP-LAC)
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Context

- National Determined Contribution (Gobierno de Colombia, 2020): 51% GHG reduction by 2030 and carbon neutrality by 2050
- Electricity consumption should grow three times at the same time that the power system is decarbonized fully by 2050 (Plazas, 2022)
- Colombia is highly vulnerable to the effects of global warming and climate change (Gobierno de Colombia, 2021a; Portafolio, 2021; UNODC, 2008)

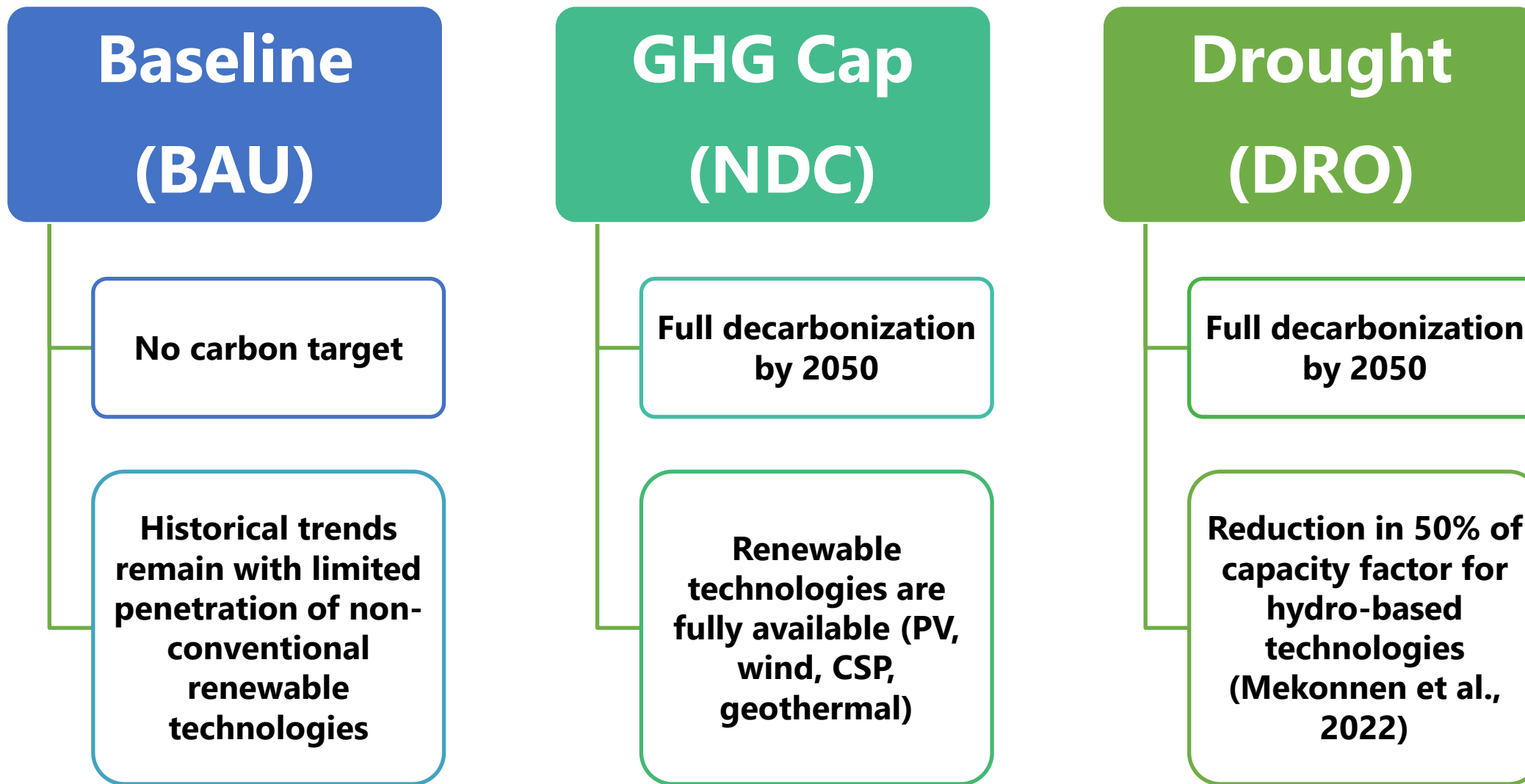


Source: XM, 2022

Research questions:

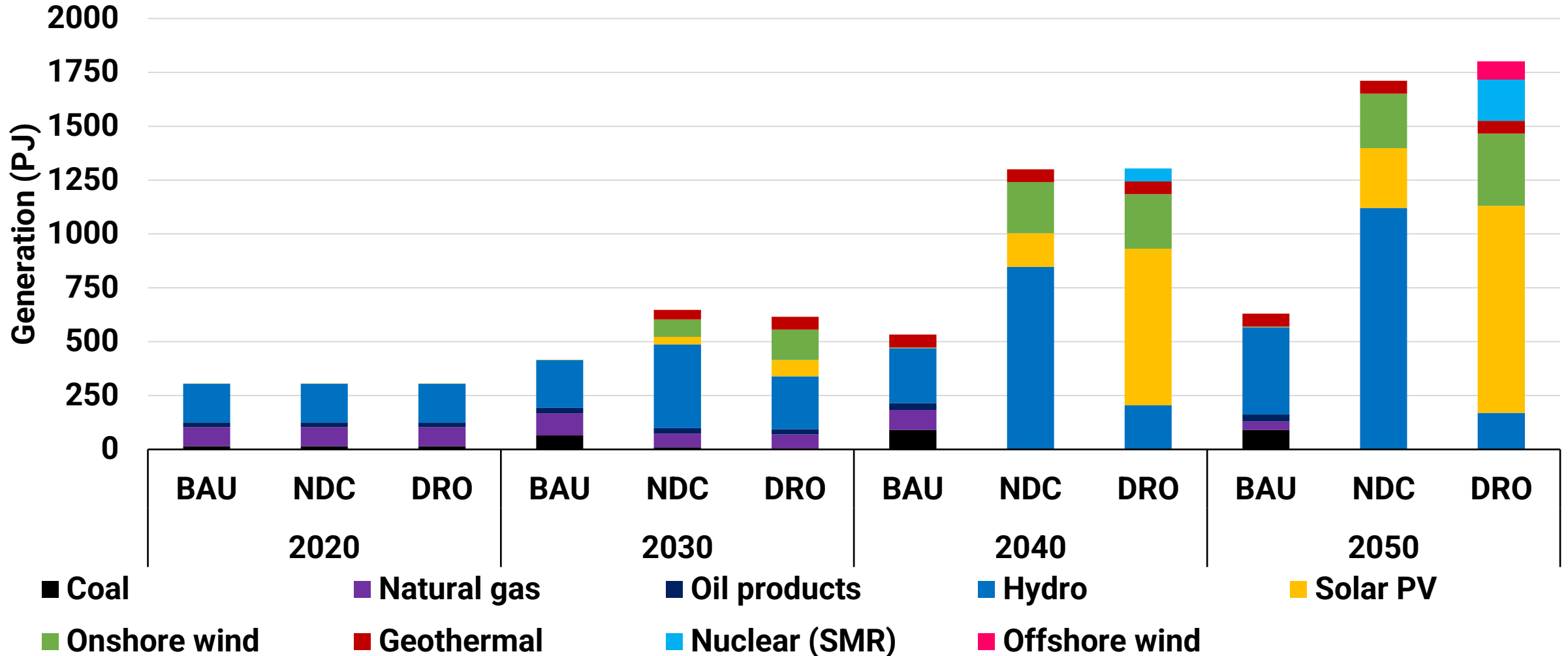
- **How will the Colombian power mix evolve under a full decarbonization target by 2050?**
- **What is the effect of a periodical drought season caused by the ENSO in the performance of a decarbonized power system in Colombia?**

Scenarios



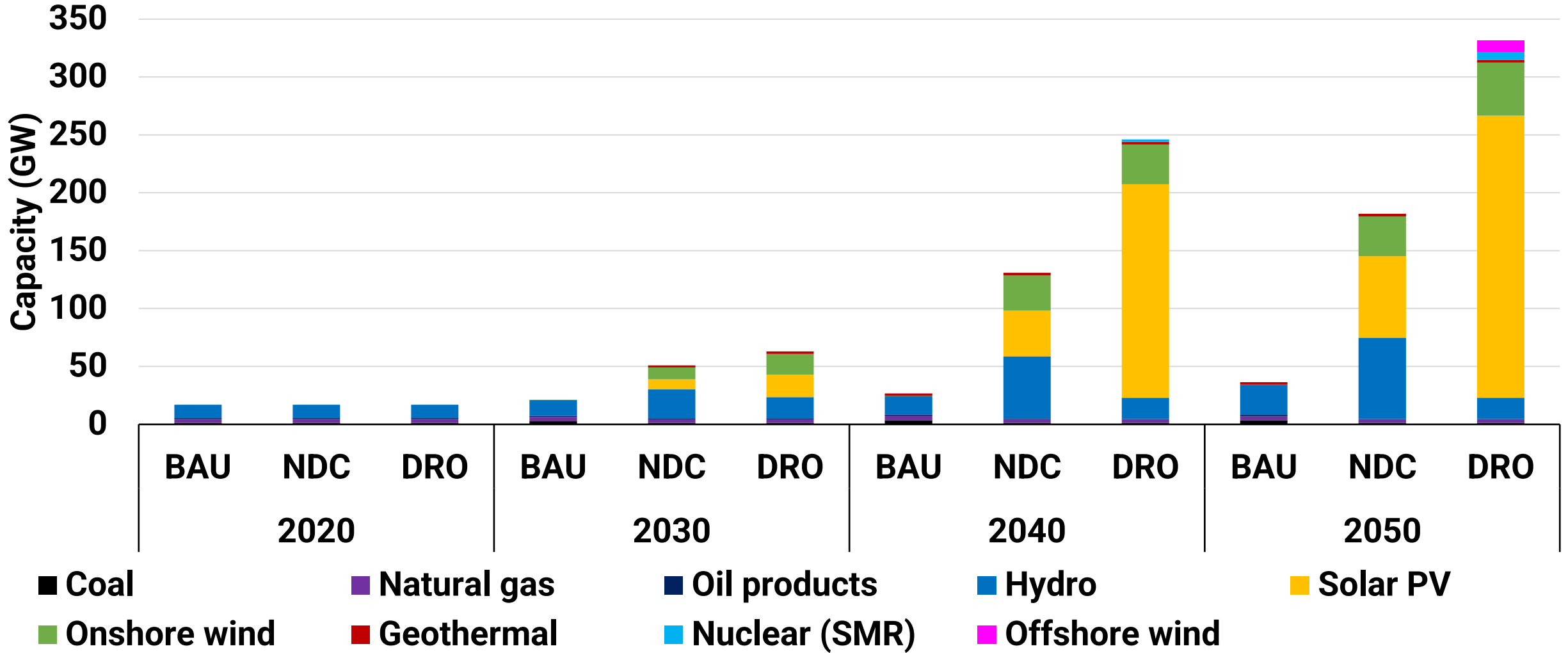
Results (1/4)

Electricity Annual Generation



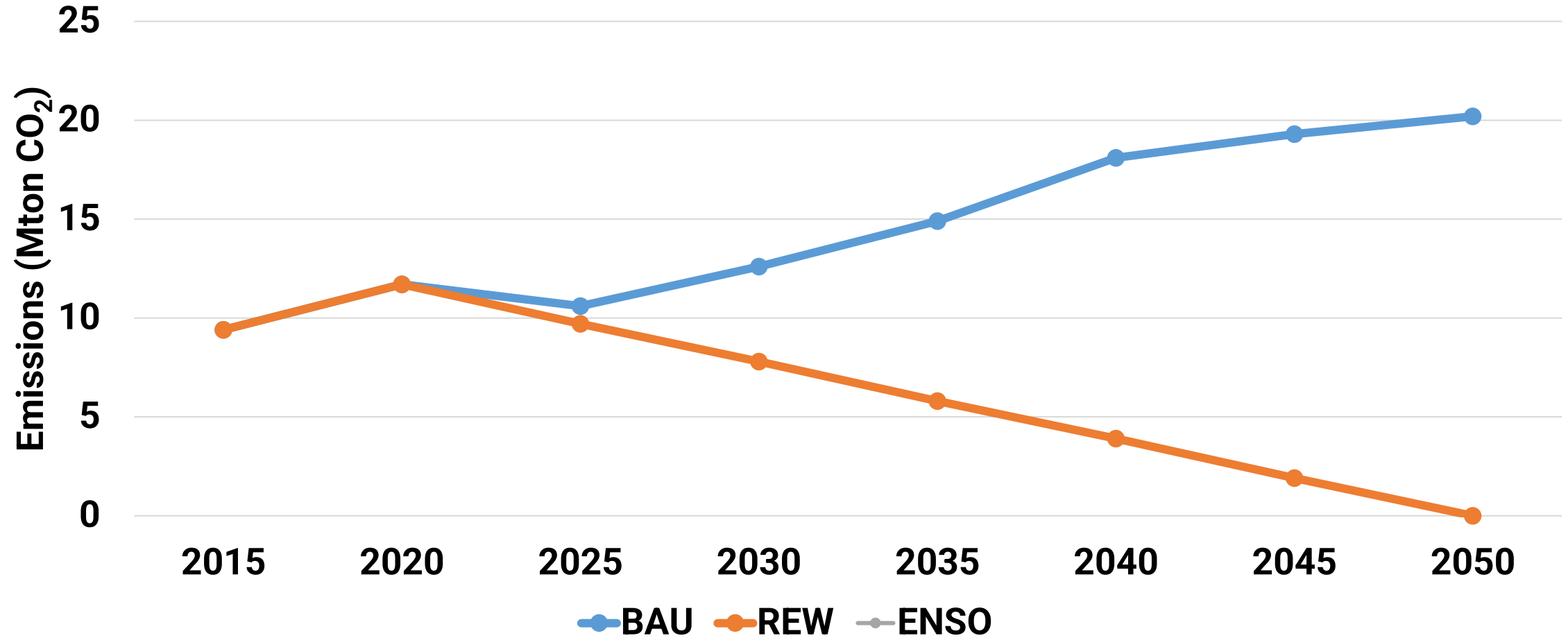
Results (2/4)

Total Installed Capacity



Results (3/4)

Annual emissions



Results (4/4)

Total discounted cost

