Cost analysis, generation capacity of Rwanda energy system to achieve 60% of renewable share in generation mix since 2030 through horizon to 2050

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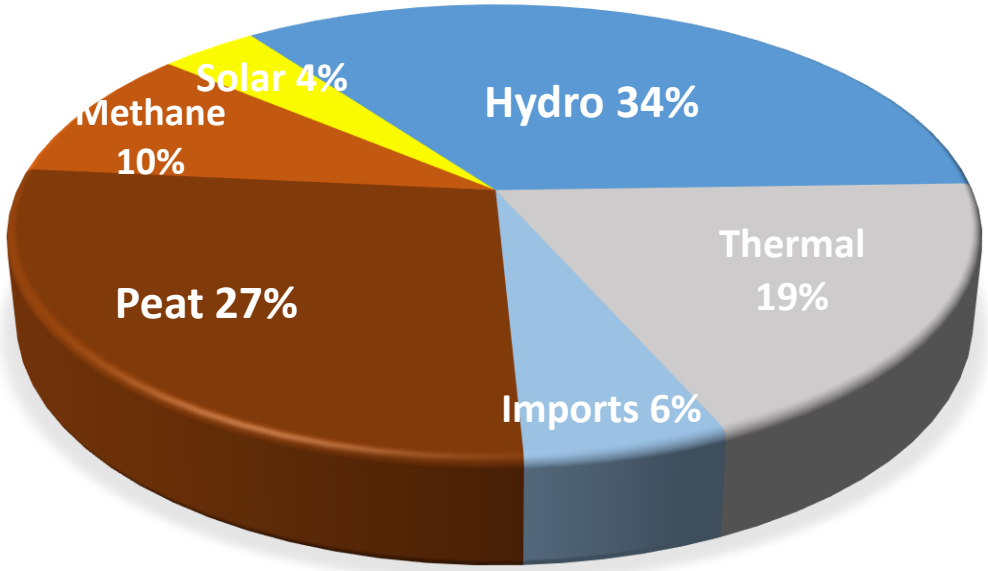
Background

Rwanda Energy Mix



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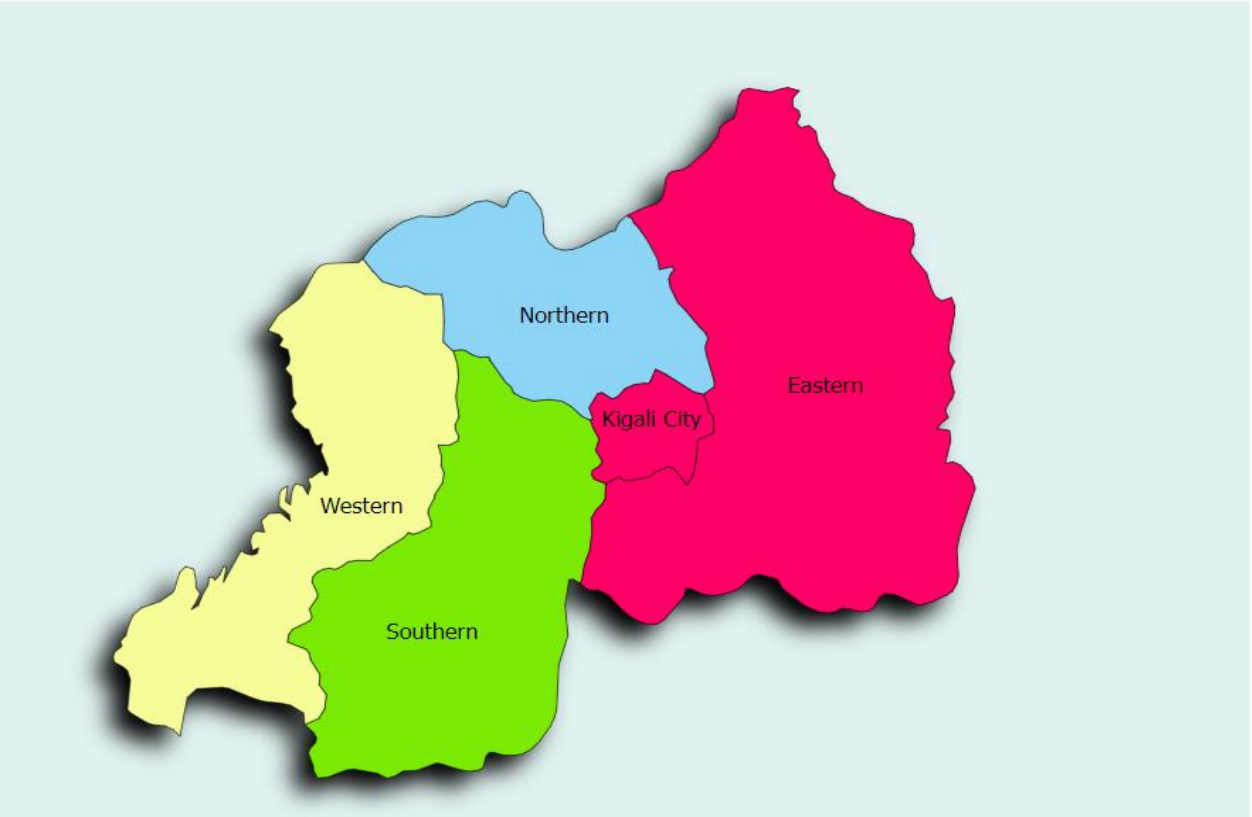


Installed capacity: 311.1MW
Electrification rate: 61.1%
Share of RE in the energy mix: 42%

Rwanda target by 2030

- **Research question**

How will Rwanda achieve the generation mix of 60% from renewable resources by 2030 and 0 emissions by 2050?

- **Context**

The current generation mix is made by:
Hydro, Peat, Methane, Thermal, solar, Imports

- **Challenge**

✓ Hydro has the greatest share resource but still not enough to achieve the target
✓ Exploitation of other Renewable resources such as solar which still has a small share, wind and biomass…

Generation mix scenarios

Business As Usual (BAU)

- Current existing policies and guidelines

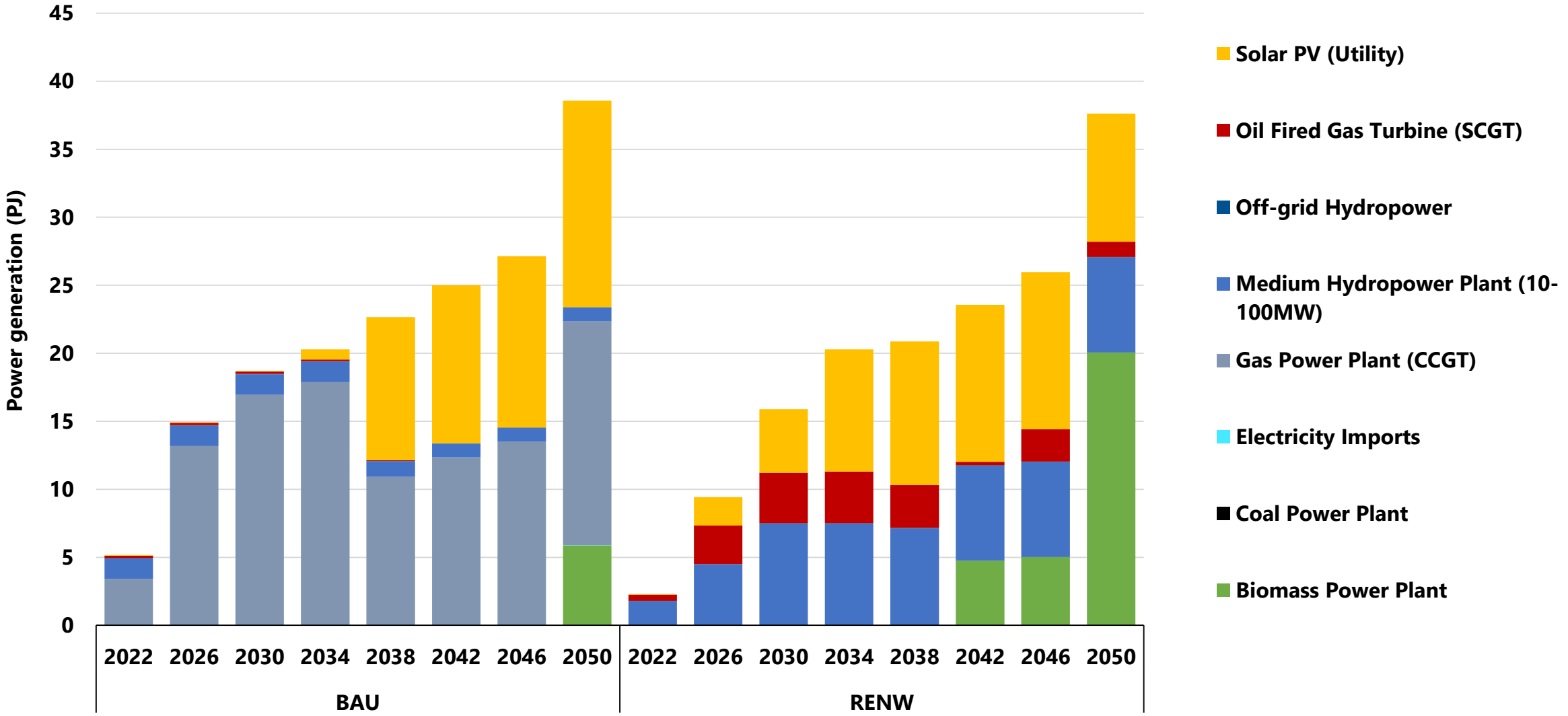
The current generation mix remain with limited penetration of non-renewable energy

60% share of Renewables

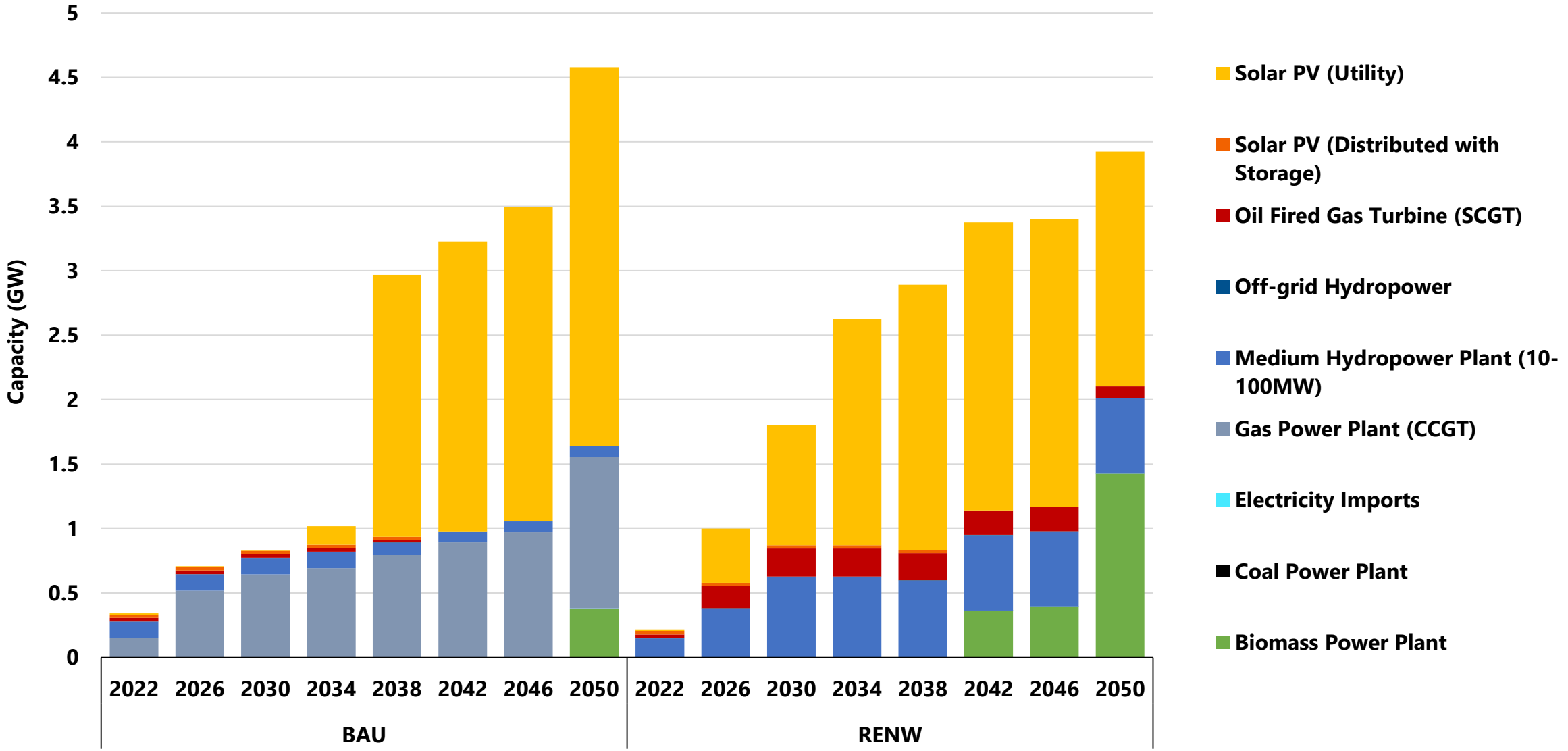
- Apply policies that enable the use of renewable resources
- Introduce incentives that will contribute to the target achievement

Promote domestic renewable resources to achieve 60% of RE share

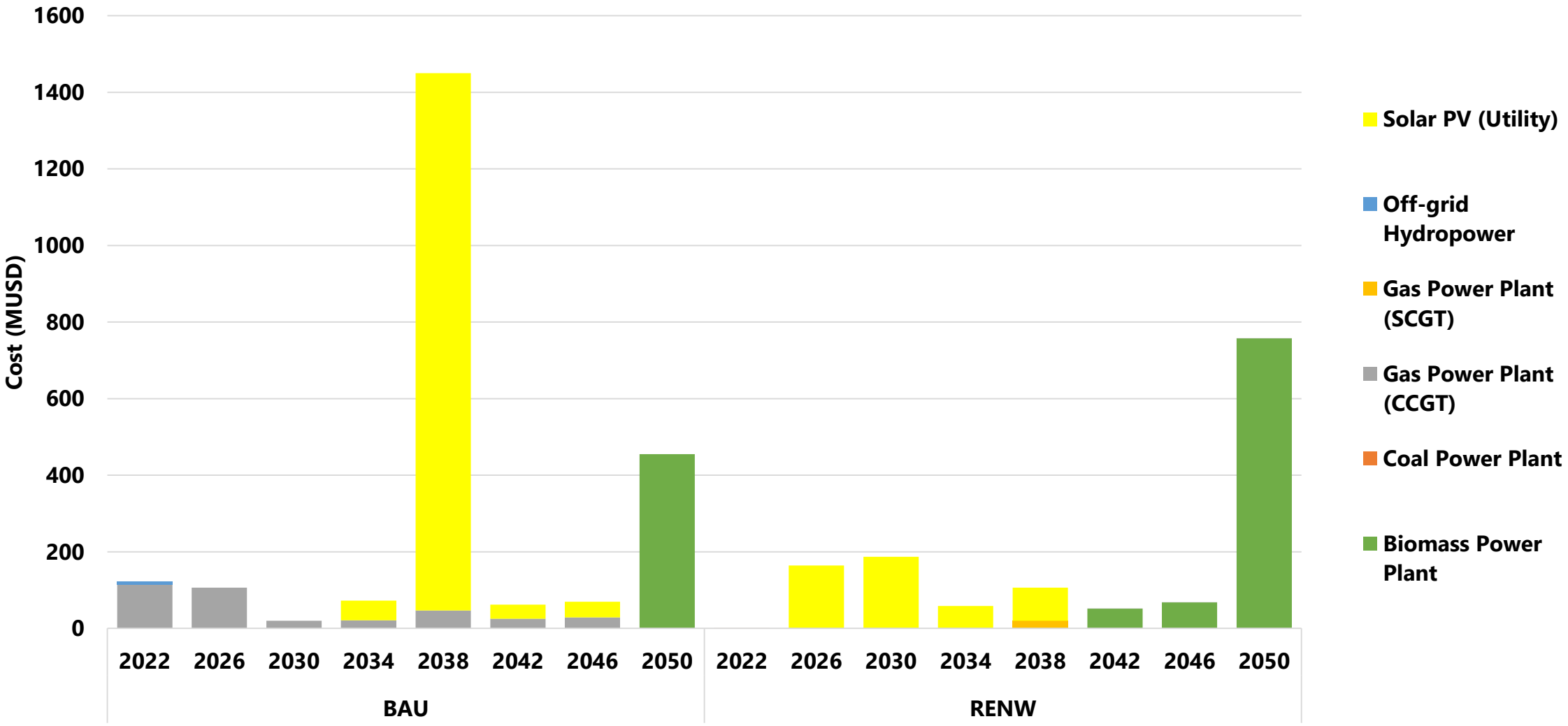
BAU Vs Renewable scenario



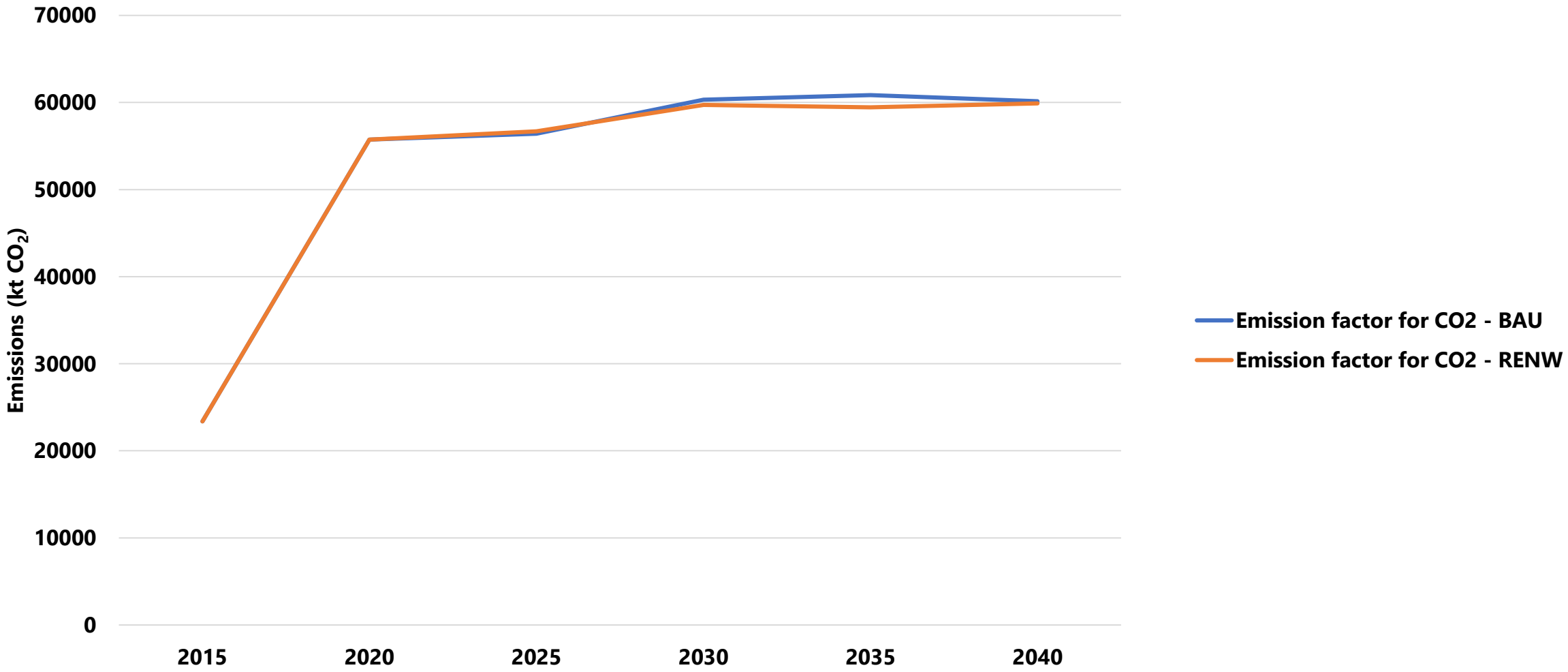
Installed capacity



Capital Investment



Emission status



Conclusions and Policy Insights

- More investment in solar power plants and Biomass power plants are required to achieve the target of 60% of RE share in the energy mix.
- Beyond 2040, investment in biomass is highly needed to meets the demand.
- Gas power plants and solar are the requisite resources for the BAU, hence more investment are needed for these resources.

Future Work

- With OSeMOSYS we plan to model the increase of hydropower plants, limit the biomass to decrease/eliminate the emissions


THANK YOU
MURAKOZE

Rwanda Reference Energy System