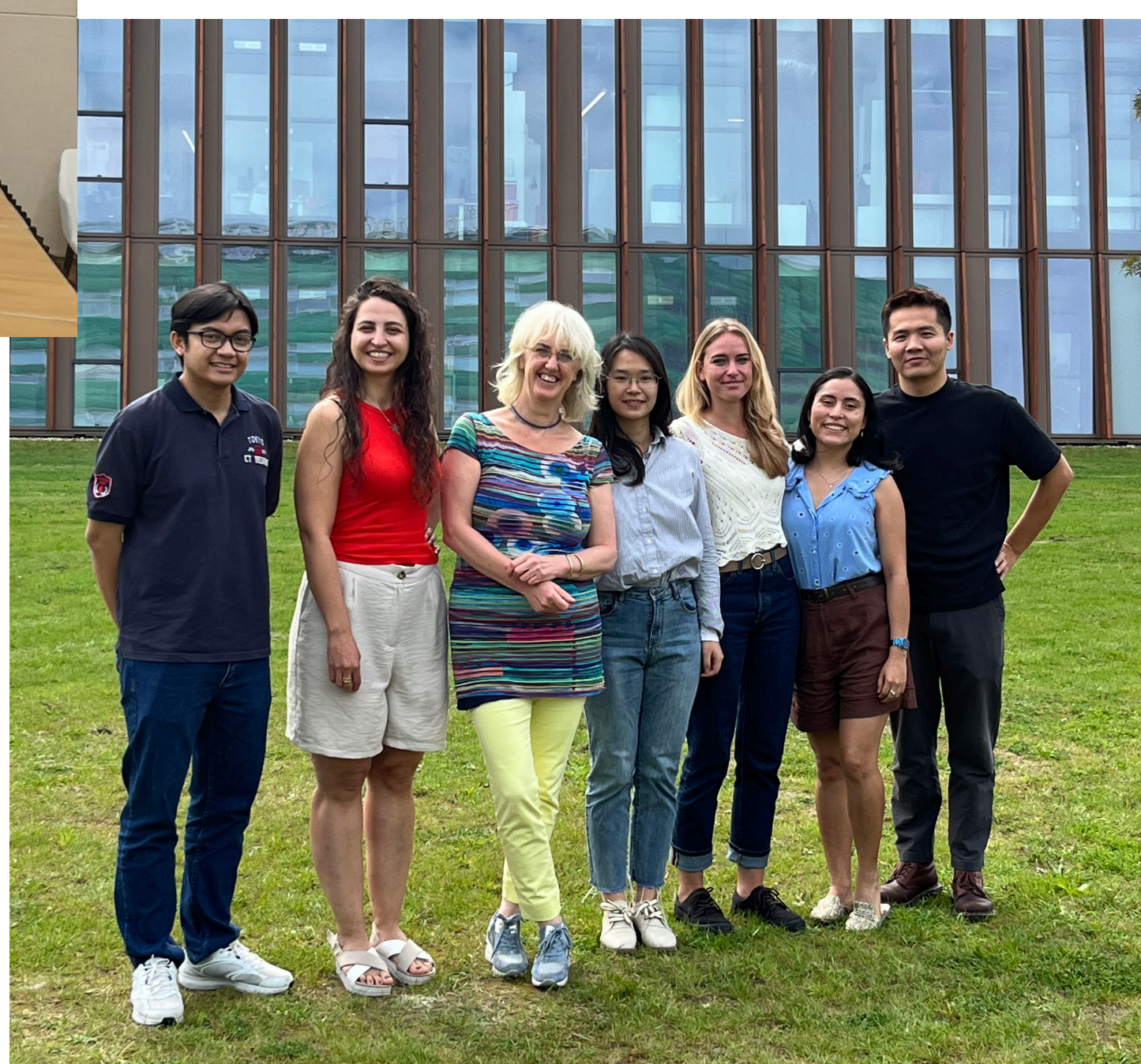


Shaping the Future: Back-End Nuclear Fuel Cycle Strategies in the Energy Transition

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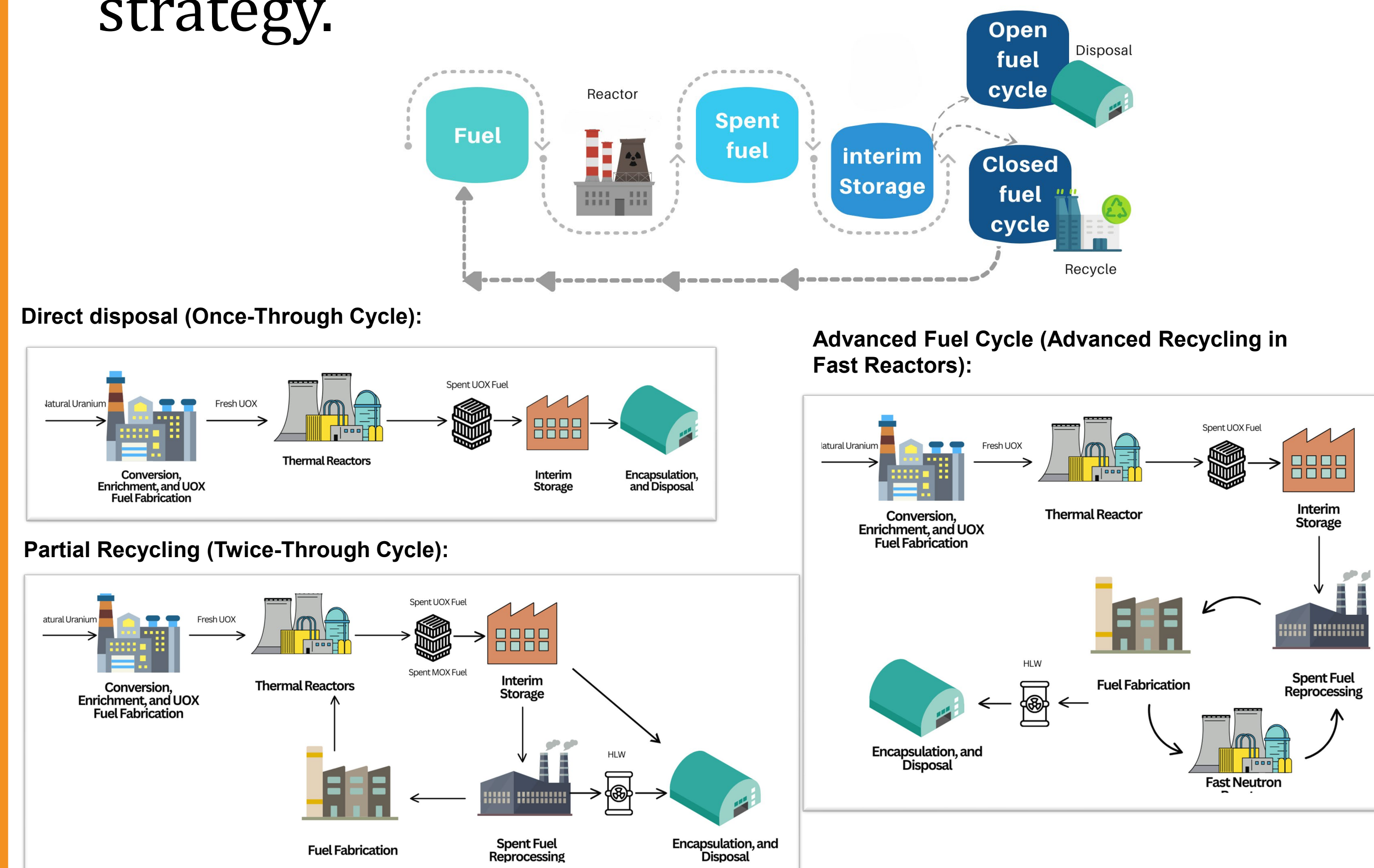


Project Overview

- Assessing the amount and type of radioactive waste generated.
- Evaluating whether the higher cost of recycling spent fuel is justified by waste reduction and environmental benefits: Reduction of high-level waste (HLW), Lower dependency on natural uranium, Mitigation of proliferation risks.

Methods

- Calculate the Levelized Cost of Electricity (LCOE) for different back-end nuclear fuel cycle strategies.
- Determine the amount and type of radioactive waste produced by each strategy.

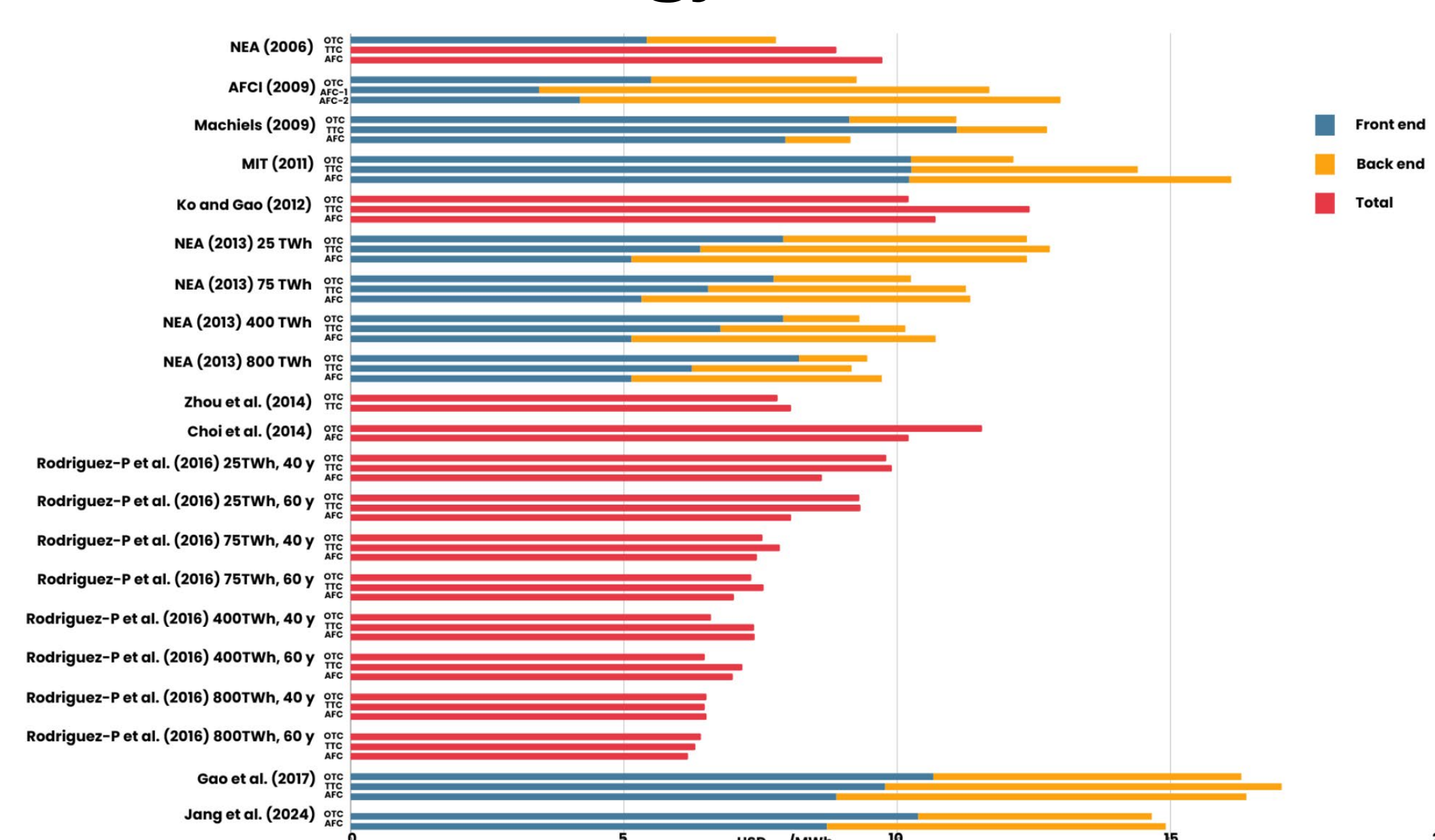


Project Overview

- Evaluating the economic impact of different back-end nuclear fuel cycle strategies on electricity costs.
- Identifying the optimal strategy and technology for minimizing cost and radioactive waste in the Dutch energy mix.

Methods

- Transfer Levelized Cost of Electricity (LCOE) data of nuclear energy for different back-end strategies into the IESA-Opt model.
- Use IESA-Opt to determine the best strategy for the Dutch energy mix.



Policy & Decision-Making Impact

- Provide policy insights on the feasibility of nuclear fuel recycling in countries like the Netherlands.
- Support informed decision-making in the energy sector.
- Help stakeholders (government, nuclear operators, waste disposal organizations) select optimal technologies and strategies.

Working Group

First Supervisor: Prof. Nasser Kalantar-Nayestanaki, Research Director, Faculty of Science and Engineering, University of Groningen.
Second Supervisor: Prof. Dr. Ir. Machteld van den Broek, TU Delft, specializing in Energy System Integration.

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