

# Integrating public opinion and political dynamics into (agent-based) integrated assessment modelling

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## Introduction

- Integrated Assessment Models (climate-economy models) often overlook abrupt change, political turnover, and public-opinion dynamics [1, 2].
- In reality, climate policy is shaped not only by costs and emissions, but also by voters, lobbying, and short-term political incentives [2, 3].
- As a result, policies that appear cost-effective in standard models may still fail because they trigger backlash or lose political support [4, 5].
- Climate policy must therefore be evaluated not only for effectiveness, but also for political feasibility [4,5].

## We extend the Dystopian Schumpeter–Keynes [6] model with a coupled socio-political module.

- Political opinion evolves with economic conditions, climate perception, lobbying, and social influence, using empirically calibrated opinion dynamics.
- Every four model years, households vote for a **green** or **brown** party, with electoral propensities calibrated from the European Election Studies and the Chapel Hill expert survey.
- Climate policy can trigger backlash through short-term economic costs or strengthen green industries and build support for further climate action.

We define six socio-political scenarios by varying the opinion-dynamics parameters within their confidence intervals to address the following question:

## Which climate policy packages are both effective and politically feasible?

## Results

- Opinion dynamics significantly shape climate outcomes.
- All policy pathways remain vulnerable to socio-political feedbacks.
- More reactive populations tend to generate stronger backlash against climate policy
- Lobbying delays the green transition and should therefore be explicitly accounted in policy-feasibility assessments.
- The performance of pure carbon taxes appears particularly sensitive to backlash and lobbying pressure.
- Policy mixes including a ban on the construction of new brown plants are more feasible across the scenarios.

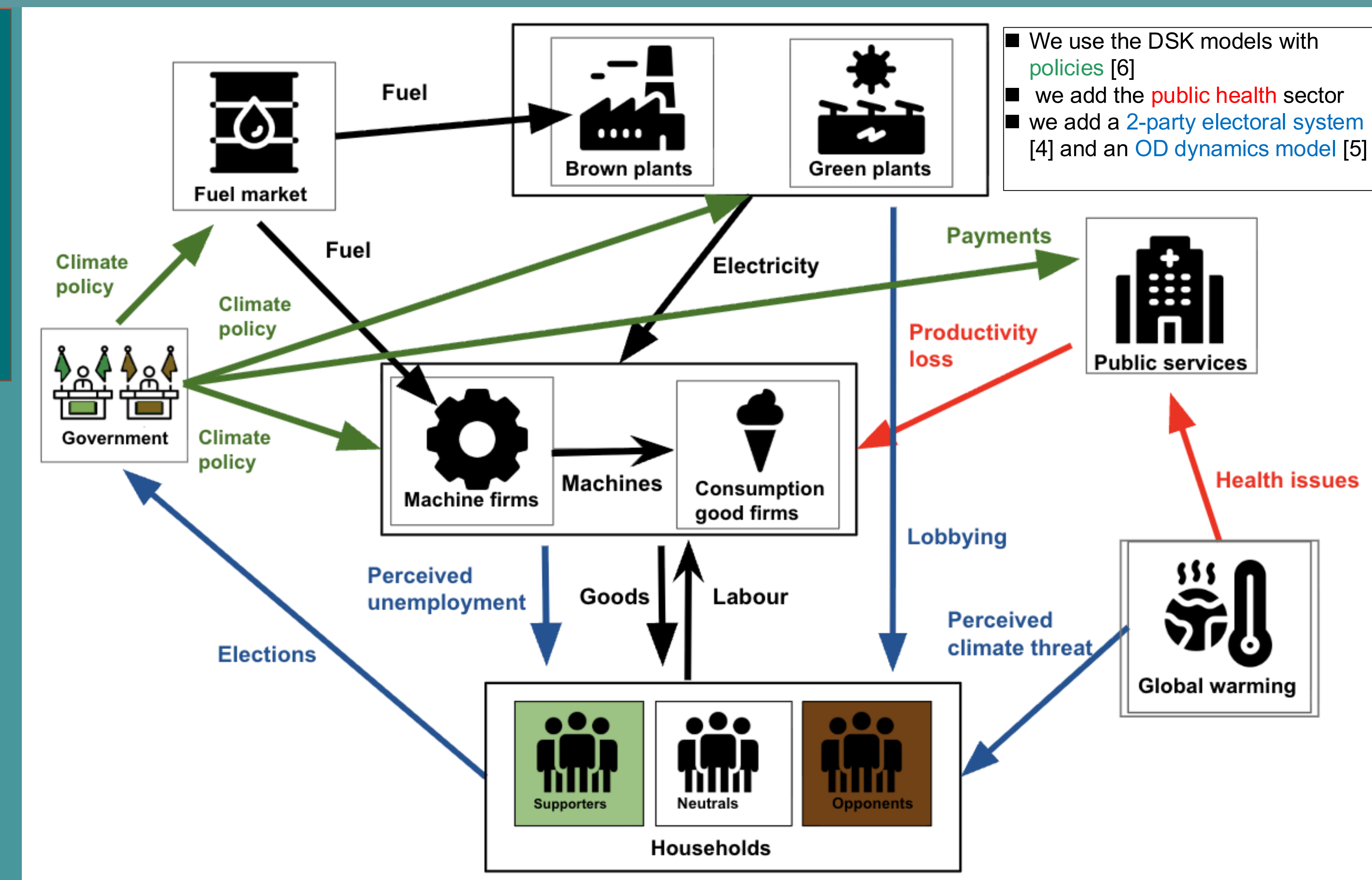


Figure 1

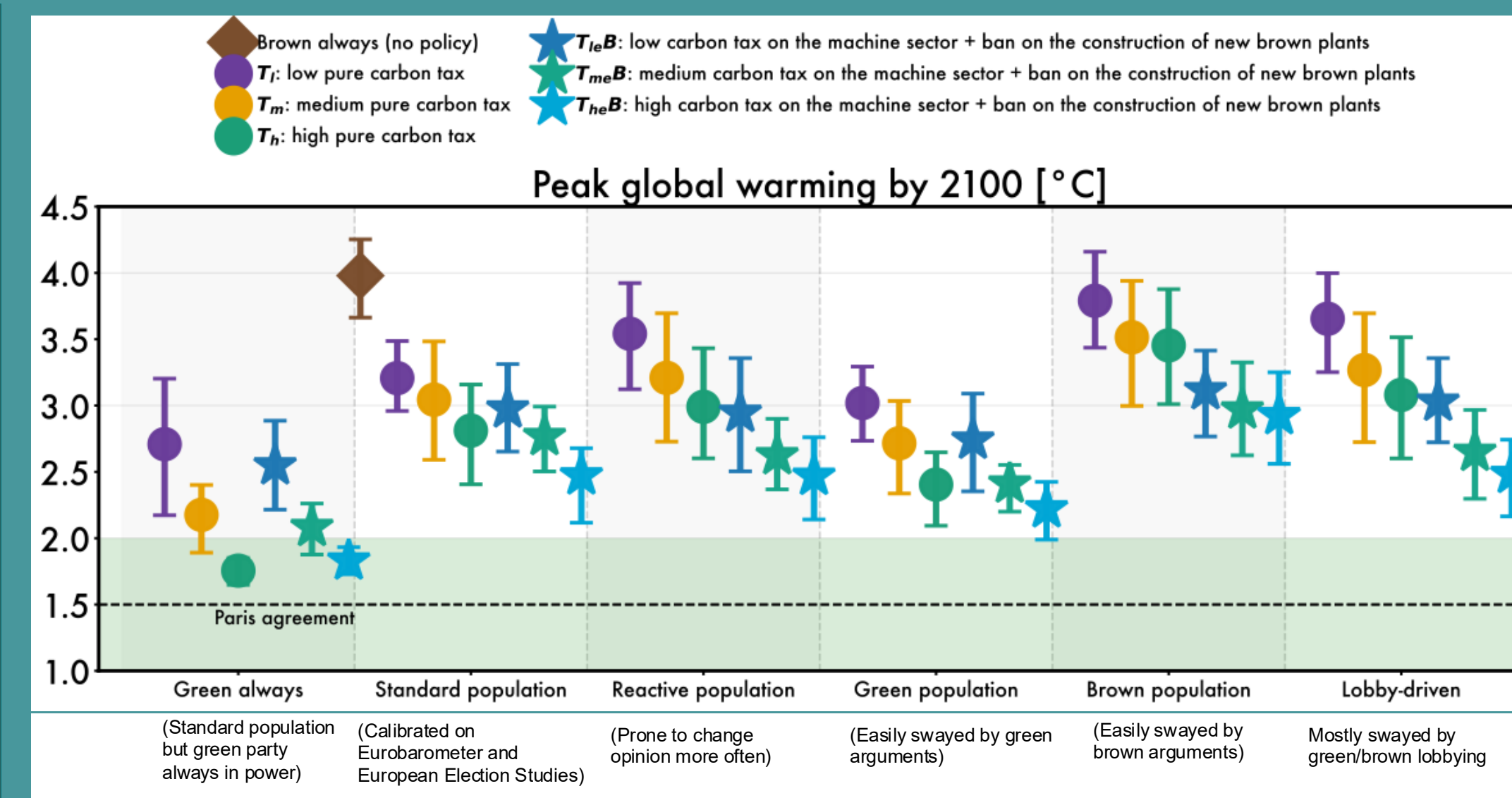


Figure 2

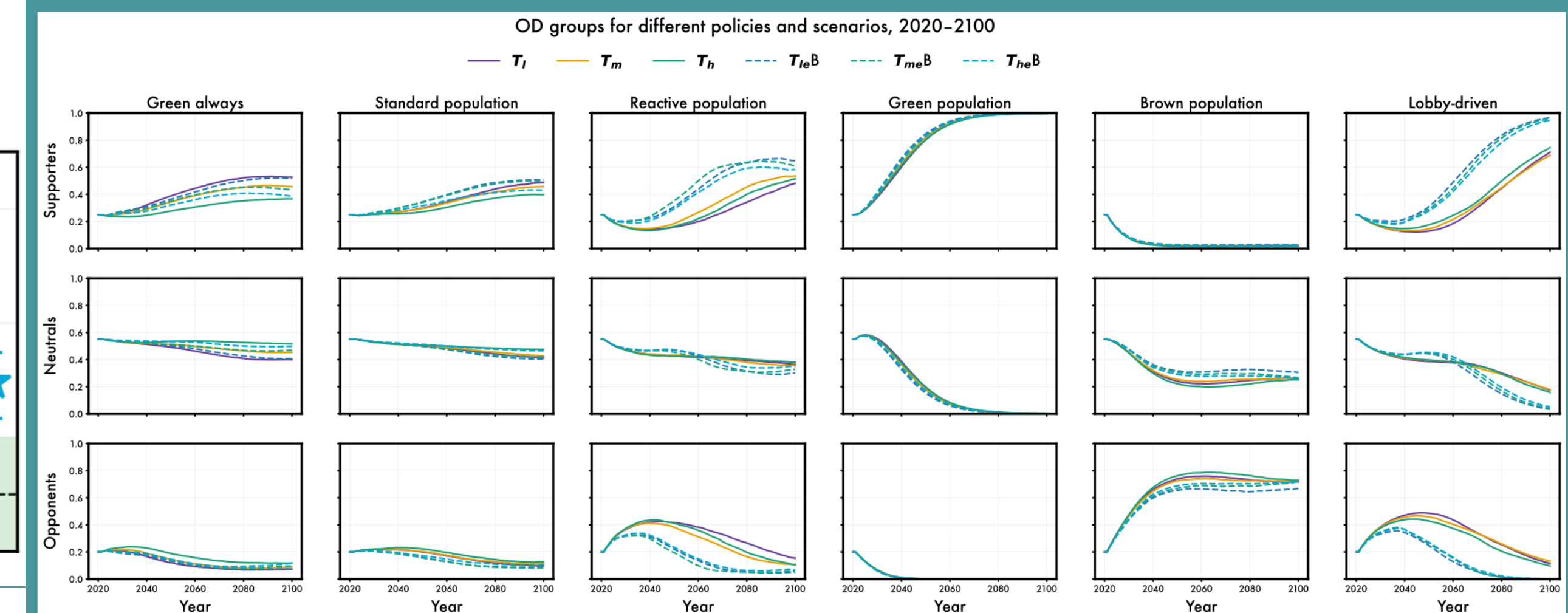


Figure 3

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