



Implications of Fiscal-induced Electro-mobility Transition on Iceland's Energy-economic System

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Transition to Electro-Mobility: *Essentials & Challenges*

● **Electro-mobility transition is of great interest to Iceland:**

- high vehicles-per-capita, rising fleet size, and GHG emissions
- isolated energy-system with abundant renewable resources
- low-cost electricity from renewable resources

● **Transition challenges/consequences:**

- major energy-economic challenges for small economies
- changes in government revenue and consumer costs

● **Essentials and requisites:**

- implications of EV transition for energy-economic system
- efficiency & effectiveness of policies to support EV transition





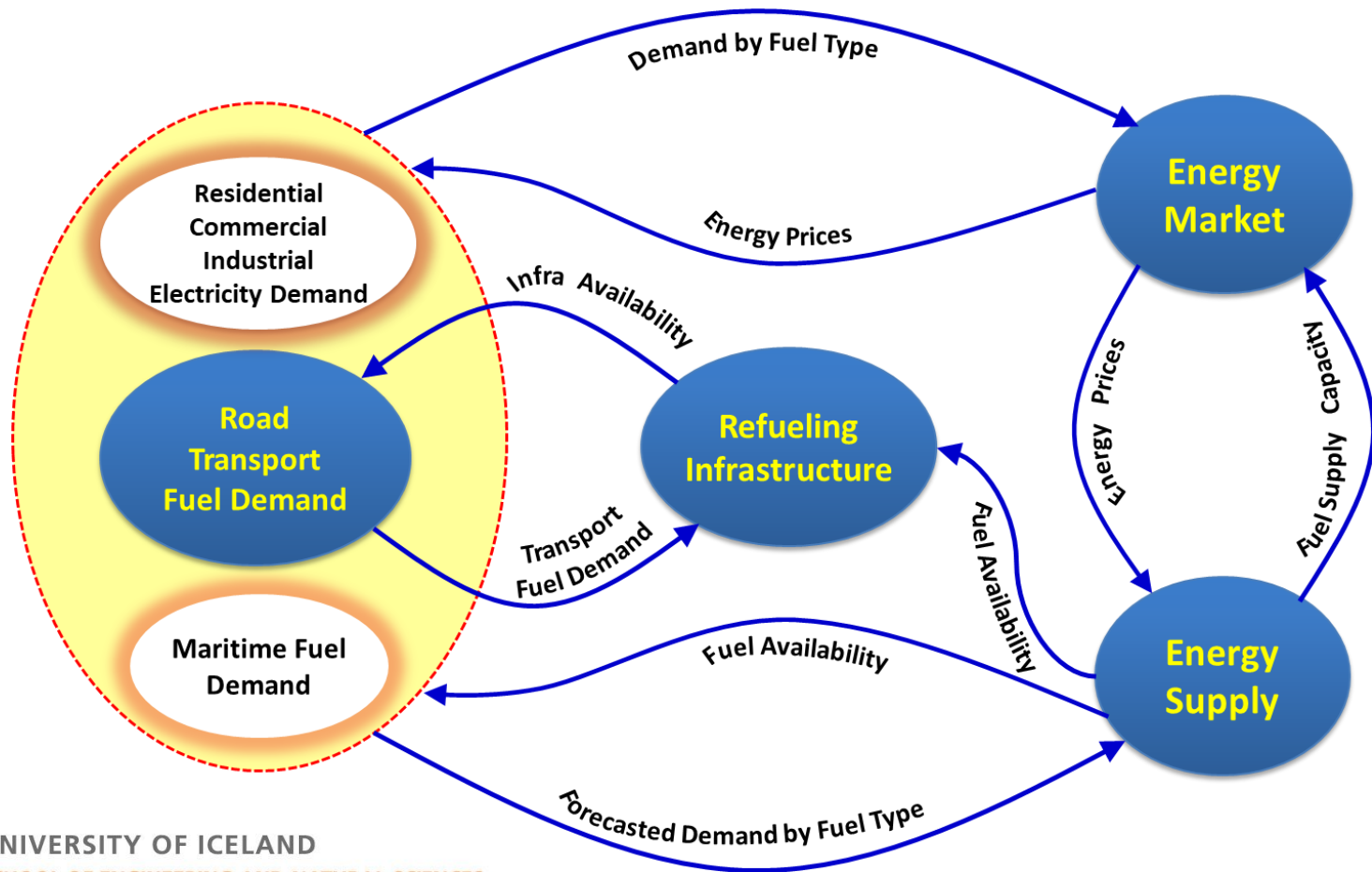
Analytical Tools: Integrated Energy-Transport Model

- A Simulation model based on the **System-Dynamics** approach
- **Partial equilibrium** modelling framework
- Detailed representation of **resources & technologies**
- Incorporating **fuel supply** infrastructure, **fuel prices & consumers**
- Endogenous analysis of **energy market** dynamics
- Energy market sectors: **Electricity, Hydrogen, Biofuels**
- **Yearly** time points with **bi-weekly** steps (~2000 variables)

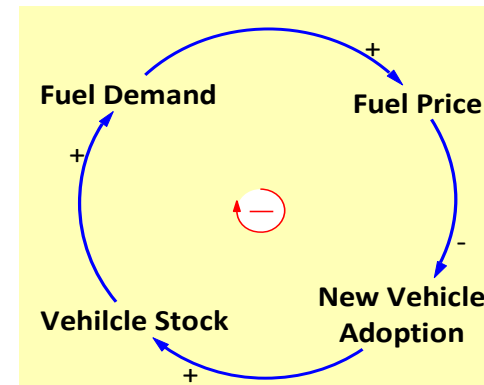
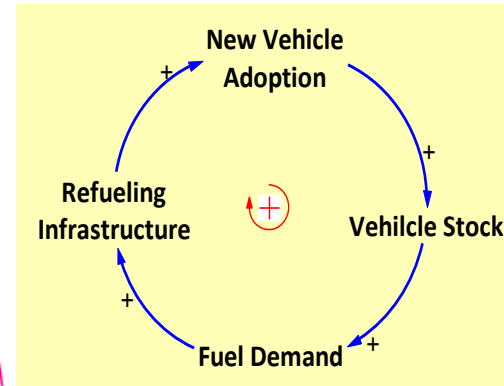
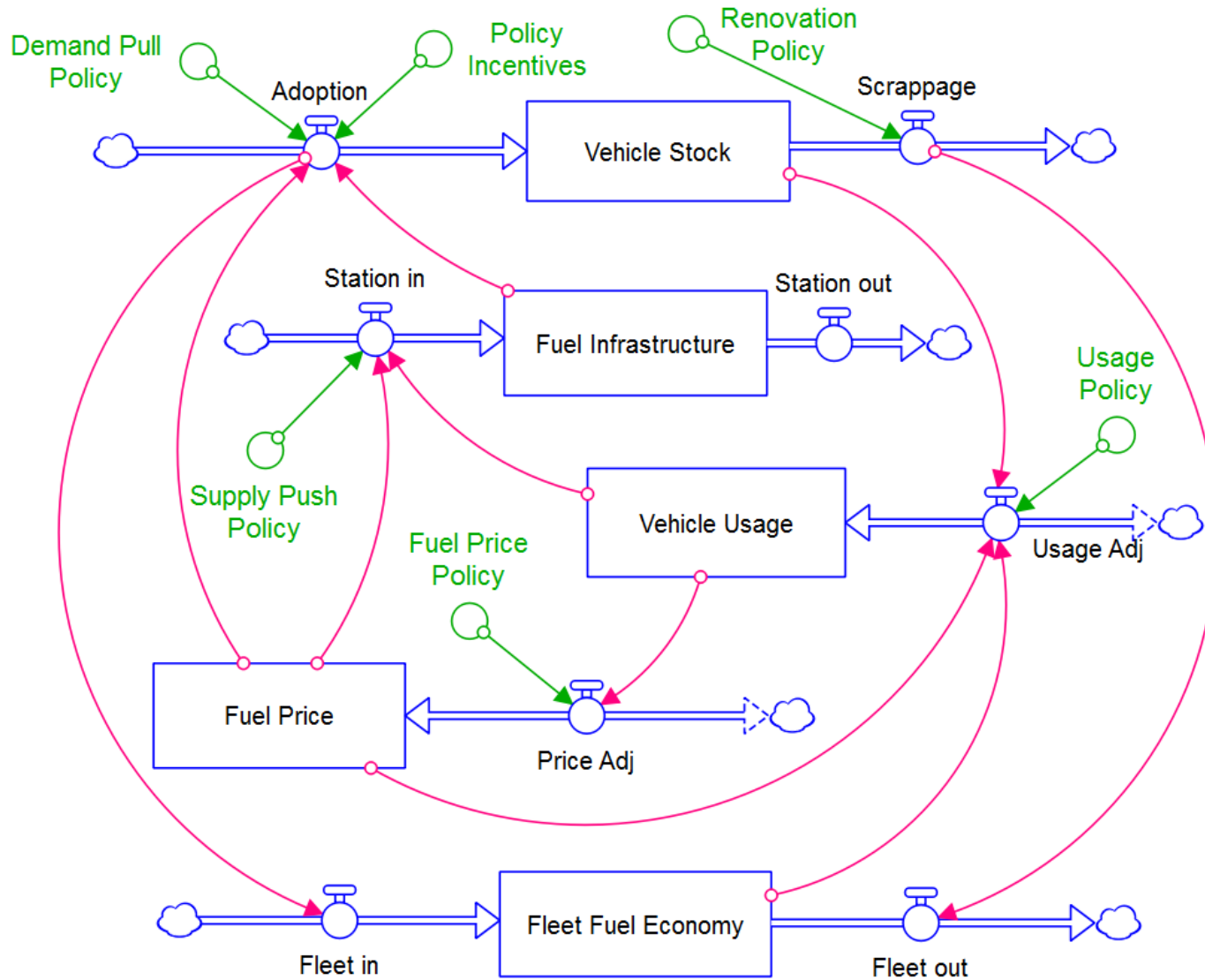




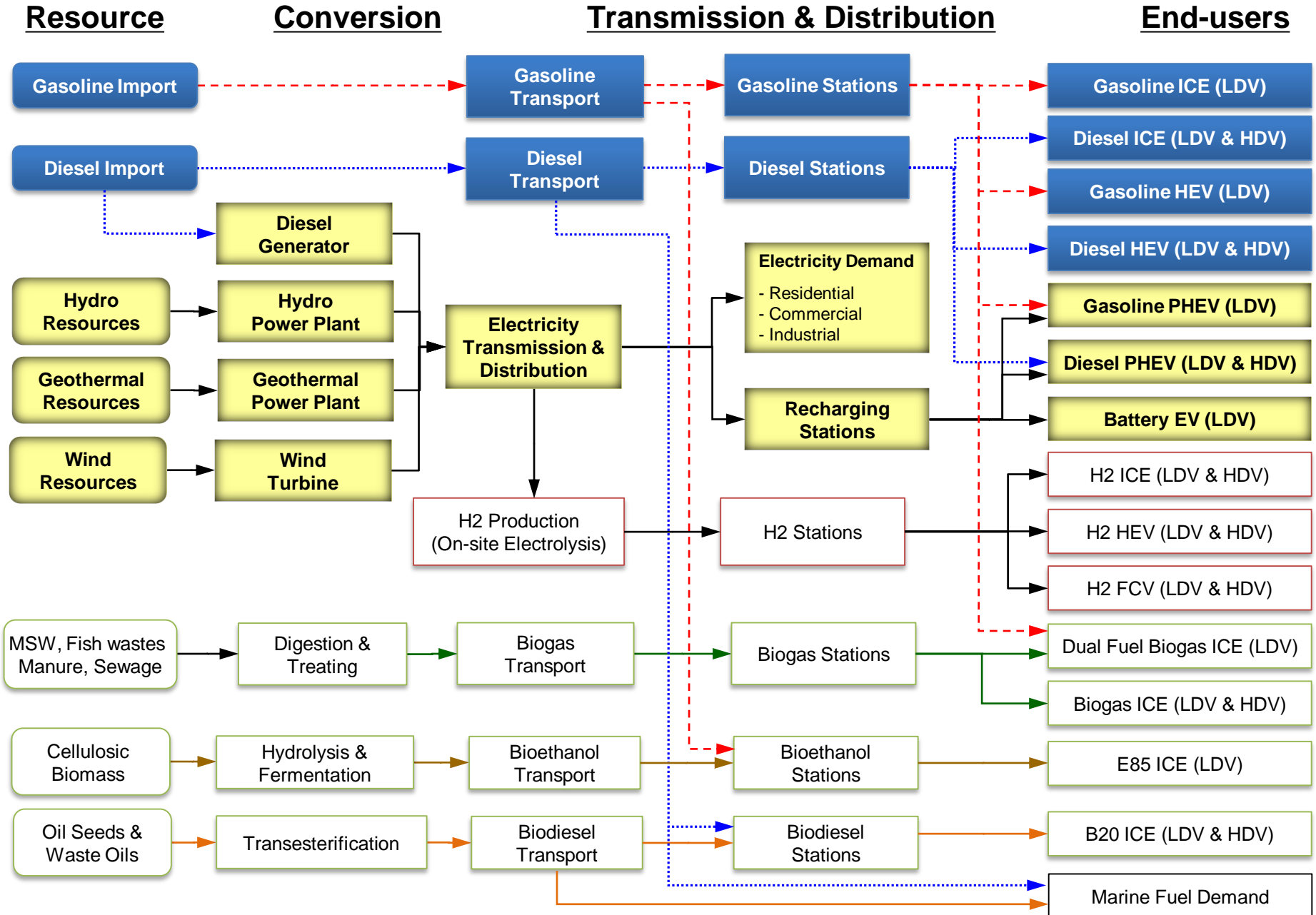
System-Dynamics Model of Energy-Transport System (UniSyD_IS)



Basic Stock-Flow Model Structure

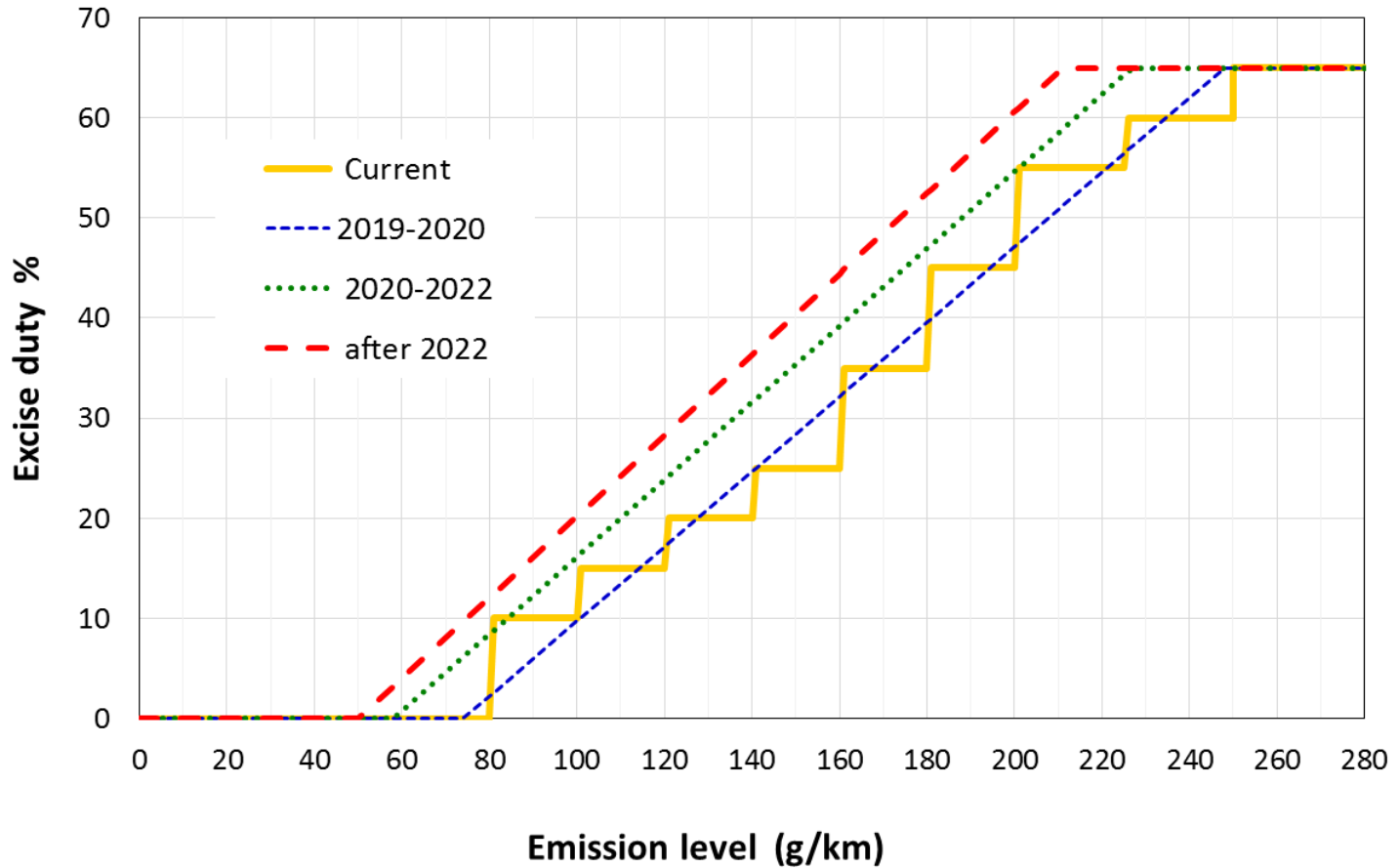


Model Implementation





Assumptions on Excise Duty Tax on Vehicles





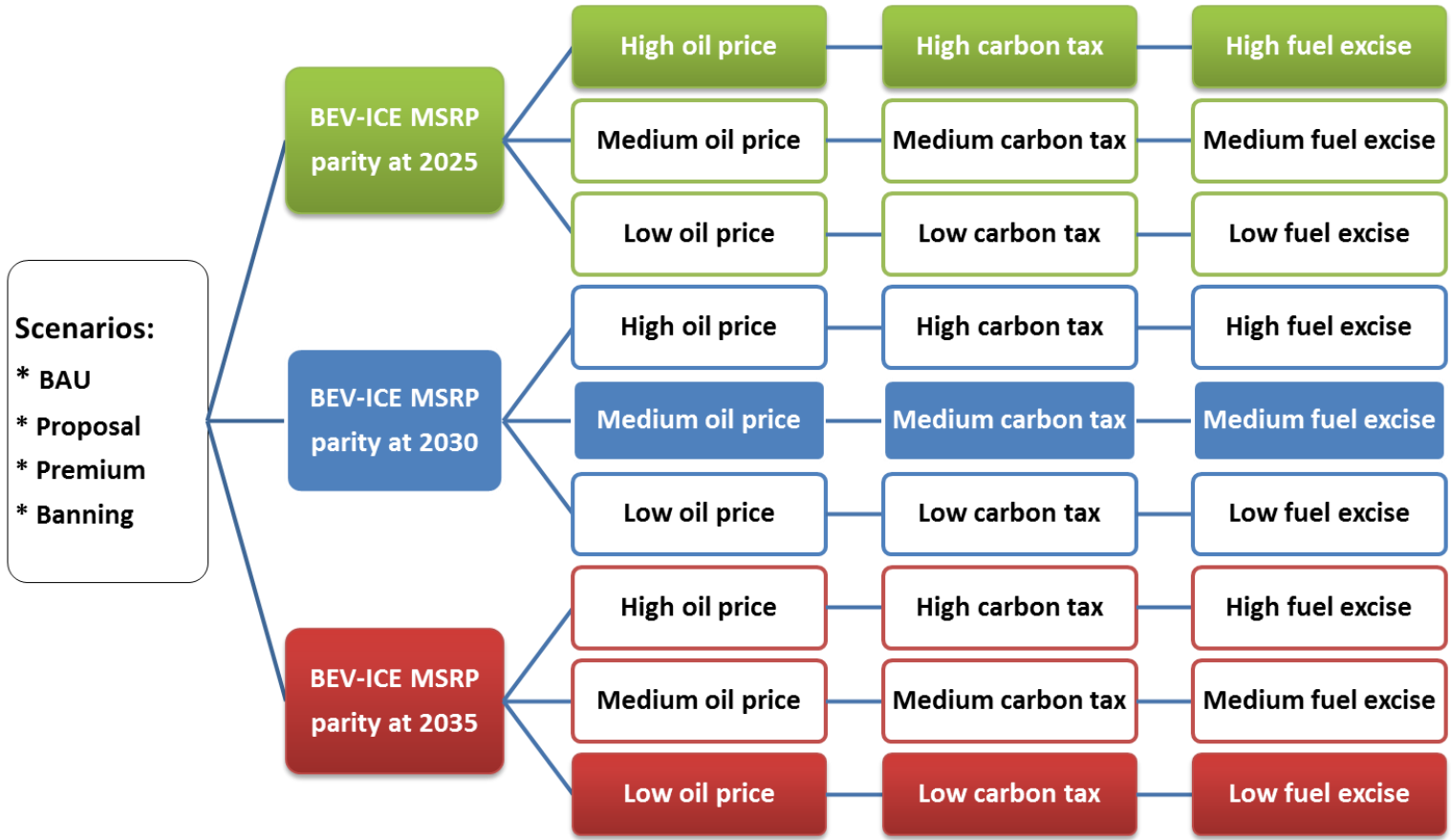
Scenarios

Scenarios	Tax on fuels & vehicle use	Tax on vehicle purchase
BAU	Current fuel & vehicle usage tax	Equal VAT rates + current excise duty
Proposal	New tax proposal assumptions	New tax proposal assumptions
Premium	New tax proposal assumptions	New tax proposal assumptions + VAT exemption for BEVs
Banning	New tax proposal assumptions	Ban on the new ICE and HEV from 2030

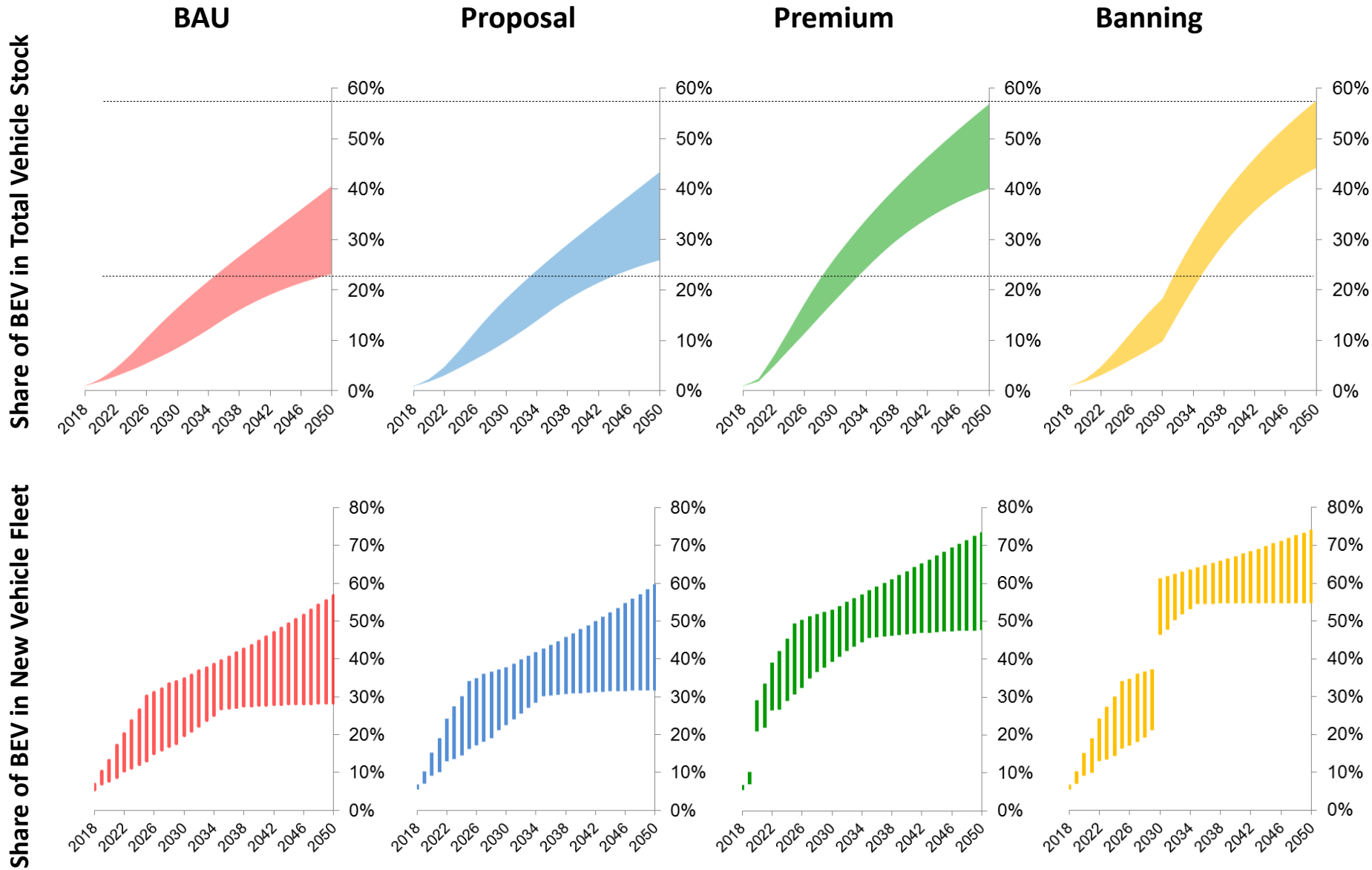




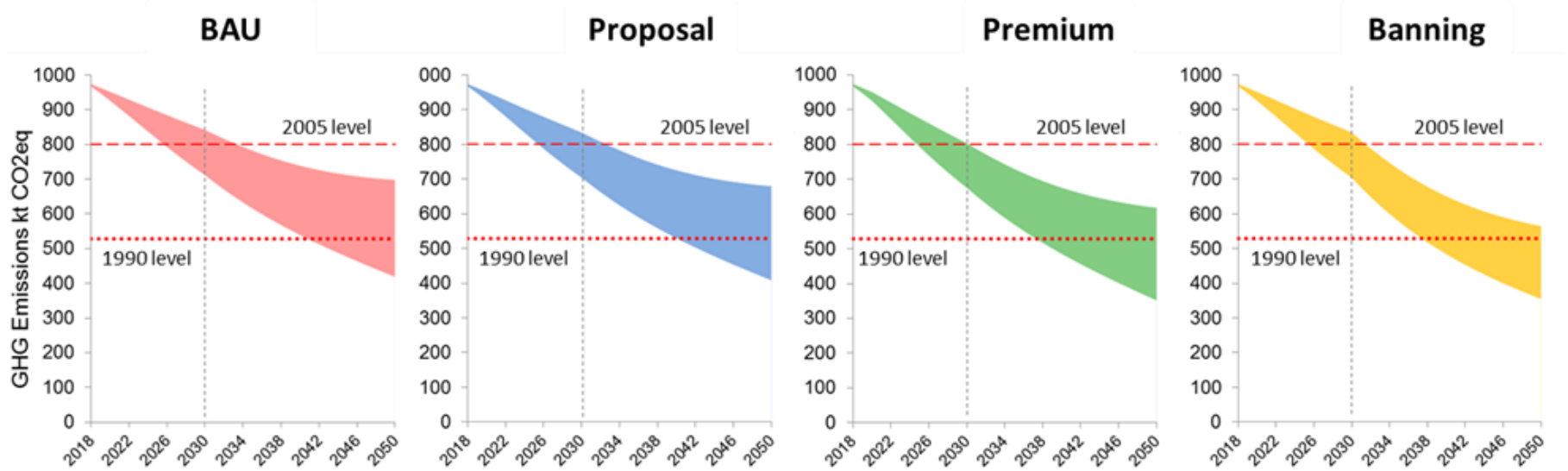
Scenario Tree Generation



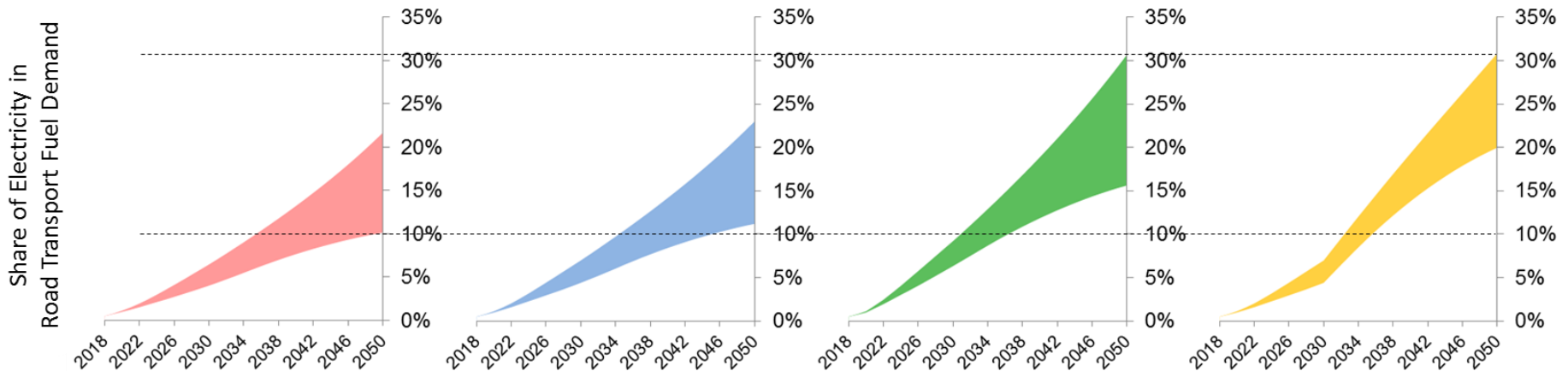
Share of BEVs within Light-duty Vehicle Fleet



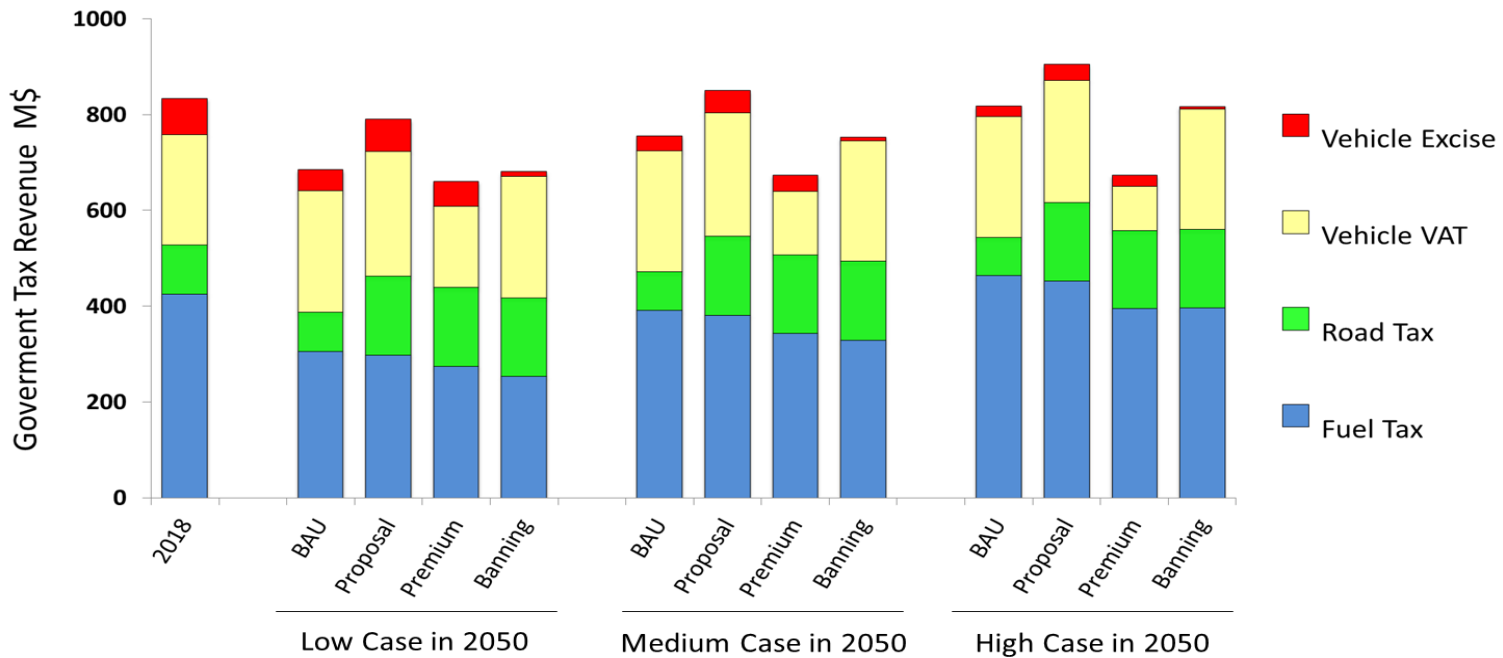
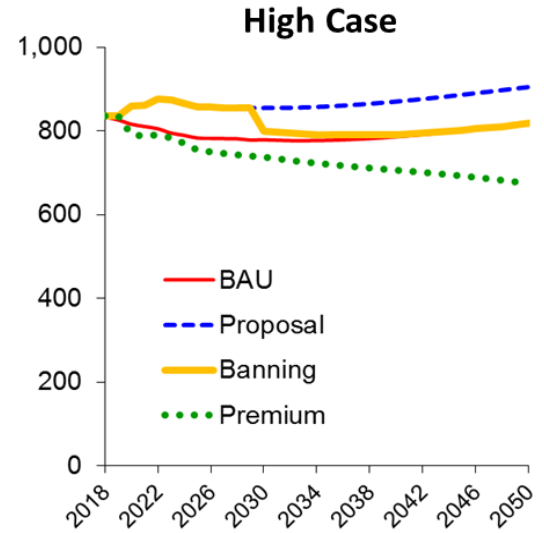
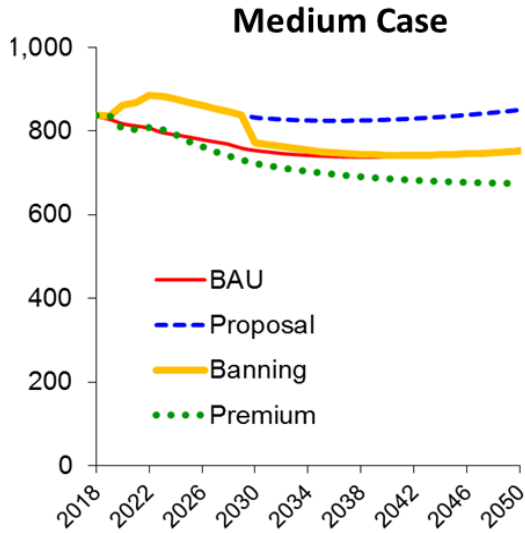
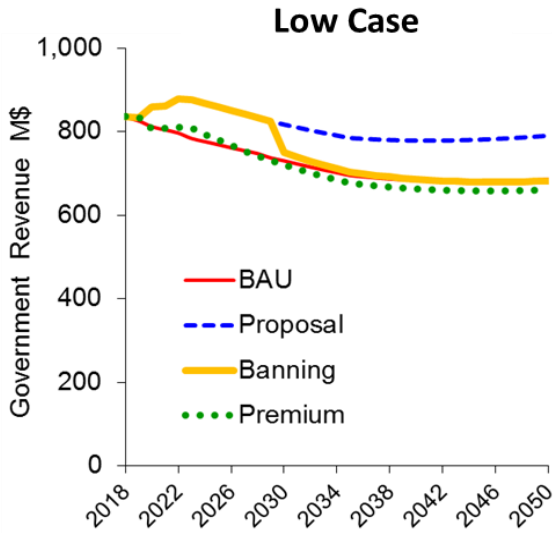
GHG Emissions Reduction



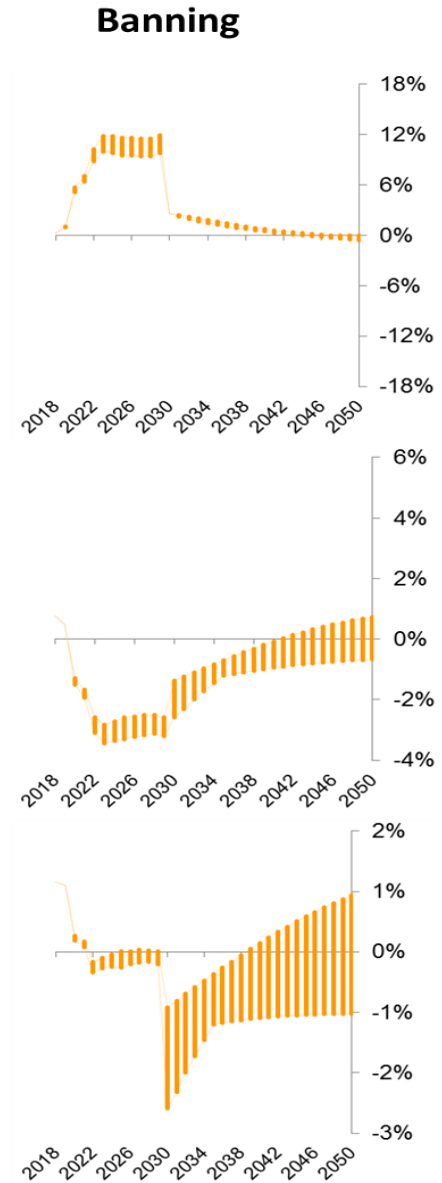
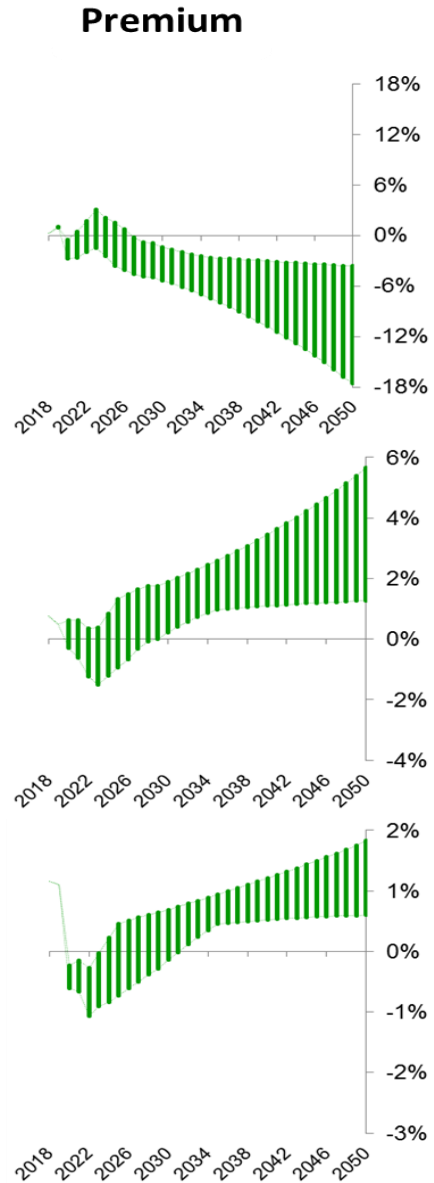
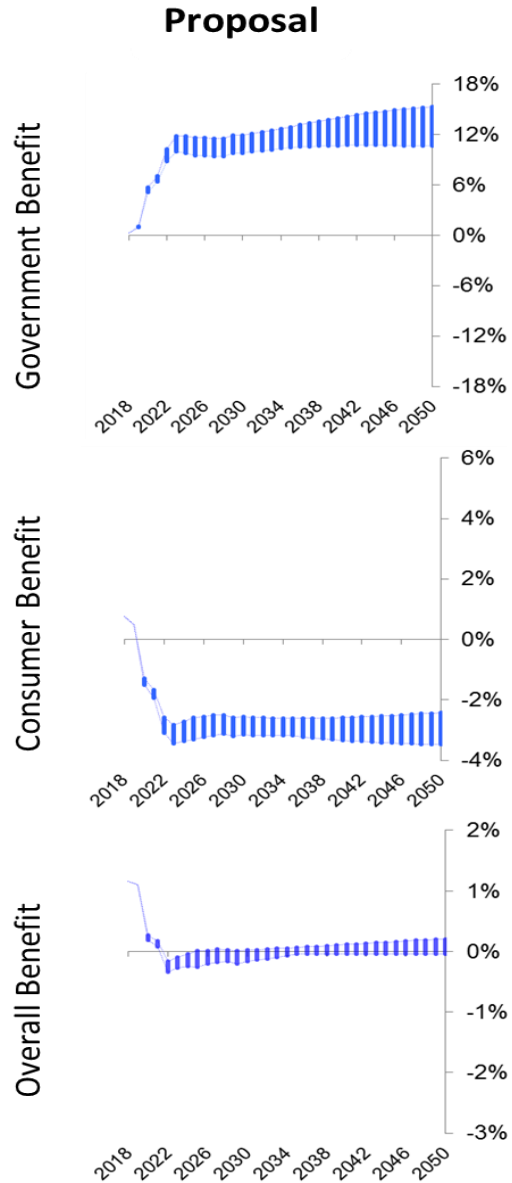
Share of Electricity in Transport Fuel Demand



Government Tax Revenue



Transition Cost/Benefit





Conclusions

- The more the electrification, the more will be the long-term benefit
- Tax-induced policies will not be sufficient to achieve short-term climate targets
- Deeper electrification (or other measures) are required to meet Paris agreement objectives

