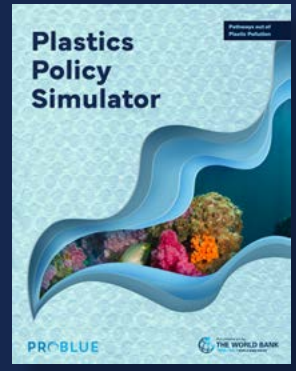




CHOOSING POLICY INSTRUMENTS: Plastics Policy Simulator (PPS)

The Plastics Policy Simulator (PPS) is the first technology-financial model for policy makers to estimate how firms and households will react to various plastic policy instruments and what the costs, revenues, and other impacts of these policies will be before laws are passed or public money is spent. It supports governments, industry, and civil society in search of mutually agreeable policy reforms to enhance plastic circularity and reduce plastic pollution.



? How can policies change the flow of plastic products through the economy and plastic pollution of the environment?

? What are the financial, fiscal and employment impacts on firms, households, and governments?

? Who benefits and who loses from policy reforms?

The PPS simulates the impacts of combinations of 24 plastic policy instruments (figure 1) on the flow of 20 individual plastic product types (figure 2) and on 12 economic actors across the entire plastic value chain (governments, households and 10 types of firms (figure 3). It is applicable in any country at the national or sub-national level and distinguishes between multiple geographic archetypes within a country.

Fig 1: Plastic policy instruments that PPS users can simulate






Policy instruments for system reform	
 Taxes and fees	Mandatory modulated extended producer responsibility fees Virgin plastic excise tax on all packaging Plastic excise tax on all packaging Plastic excise tax on individual products Carbon tax Deposit return schemes Landfill tax Household fees
 Public financing	Alternative materials Reuse systems Formal collection Informal collection Sorting facilities and operations Mechanical recycling Chemical recycling Landfill facilities and operations Incinerators Refuse-derived fuel
 Bans and standards	Plastic labeling Product restrictions / bans Mandatory product design requirements Target reduction in plastic waste imports
 Behavioral change	Consumer education campaigns
 Governance	Improvements in governance system

Figure 2: Plastic products represented in PPS

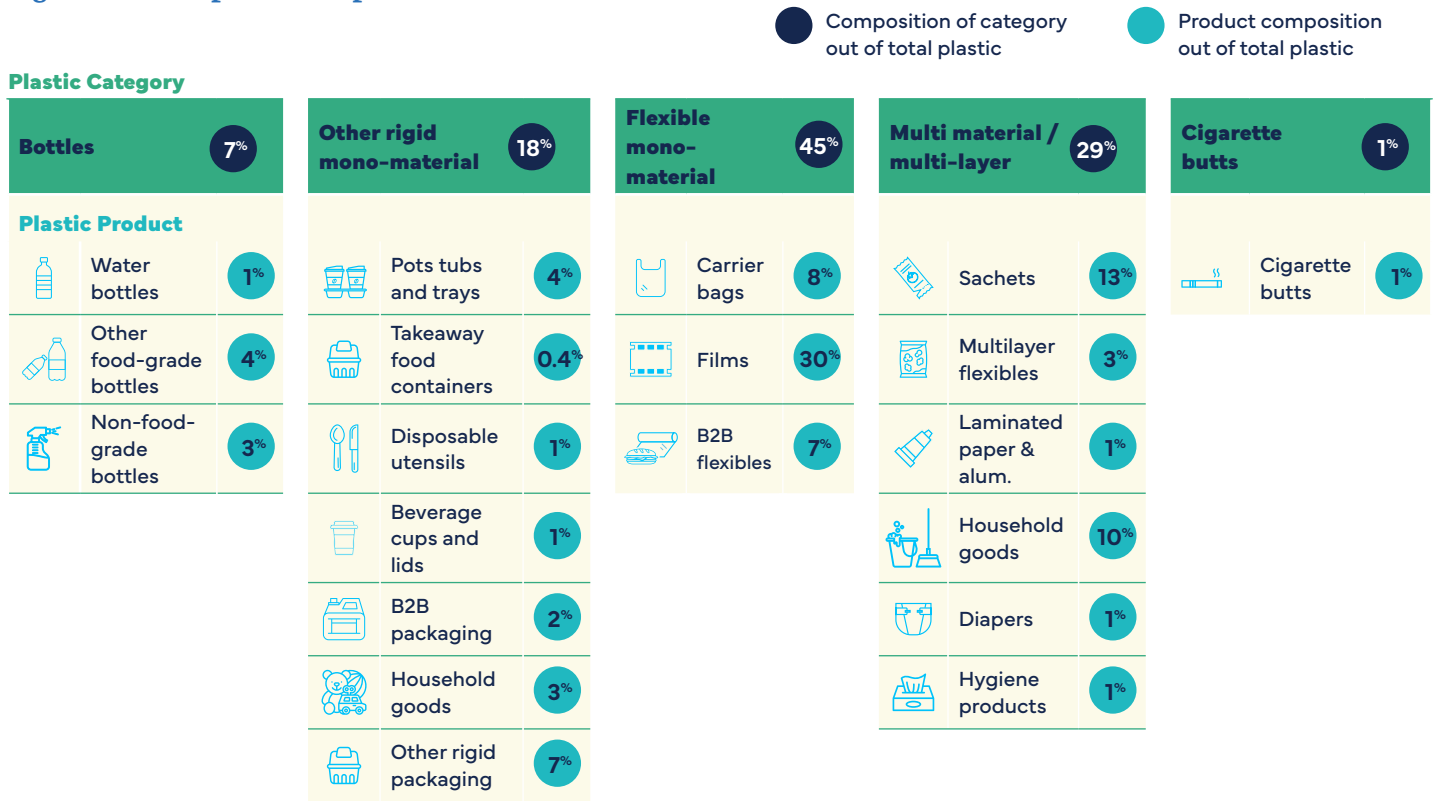
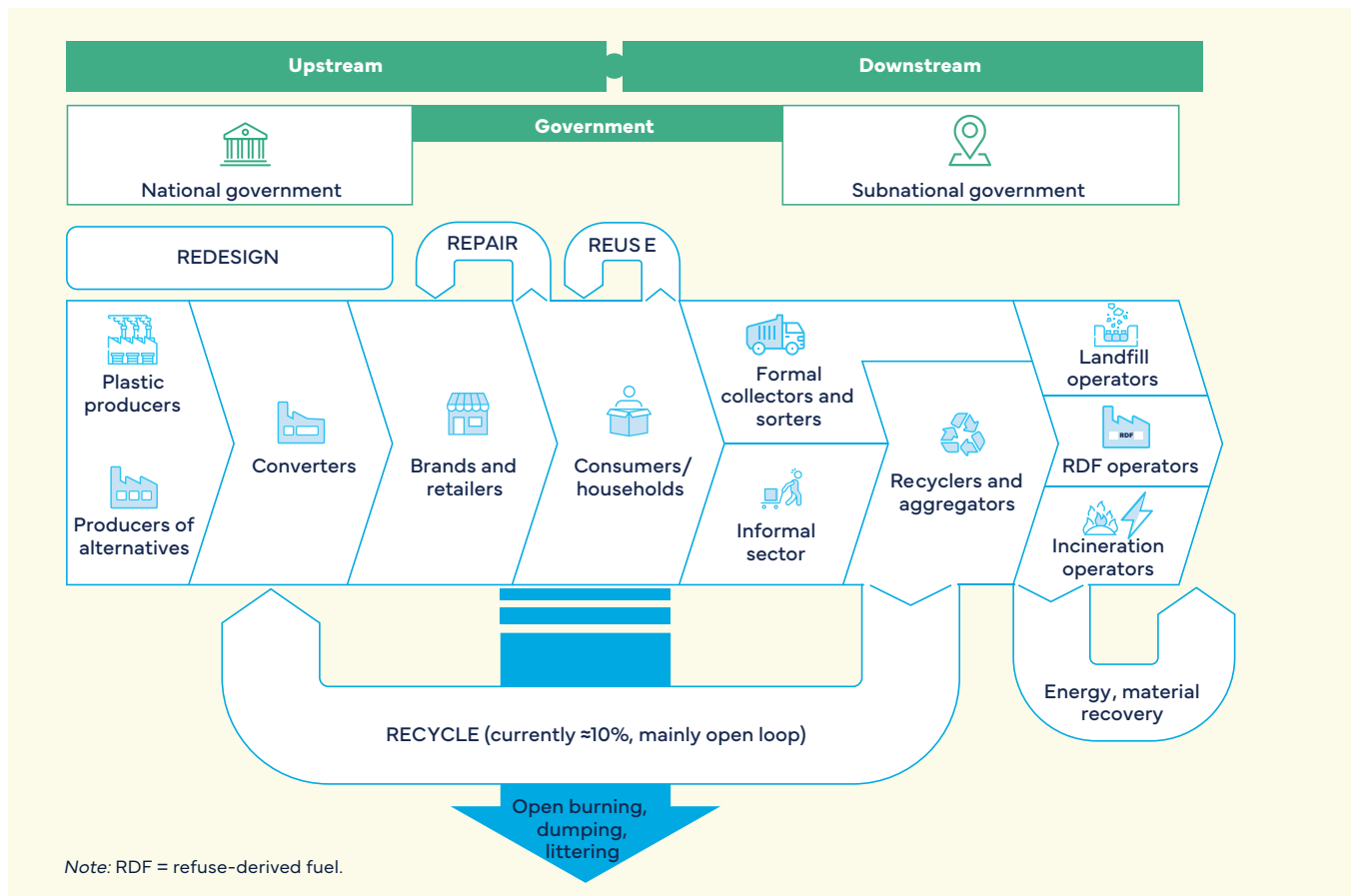


Figure 3: Plastic value chain and its key actors



What results does the PPS estimate?

For each policy scenario the PPS calculates the destination of plastics in a system: volumes avoided, reused, recycled, composted, landfilled, otherwise managed and leaked to environment (figure 4) and several other impacts.

Figure 4: Plastic Flows by Destination

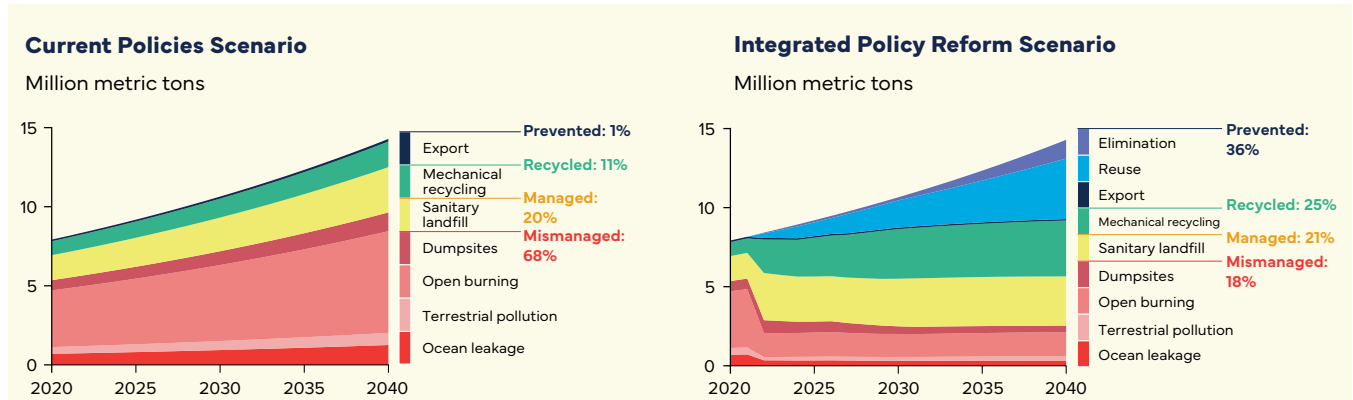


Figure 5: Fiscal revenues and expenditures at national and subnational levels

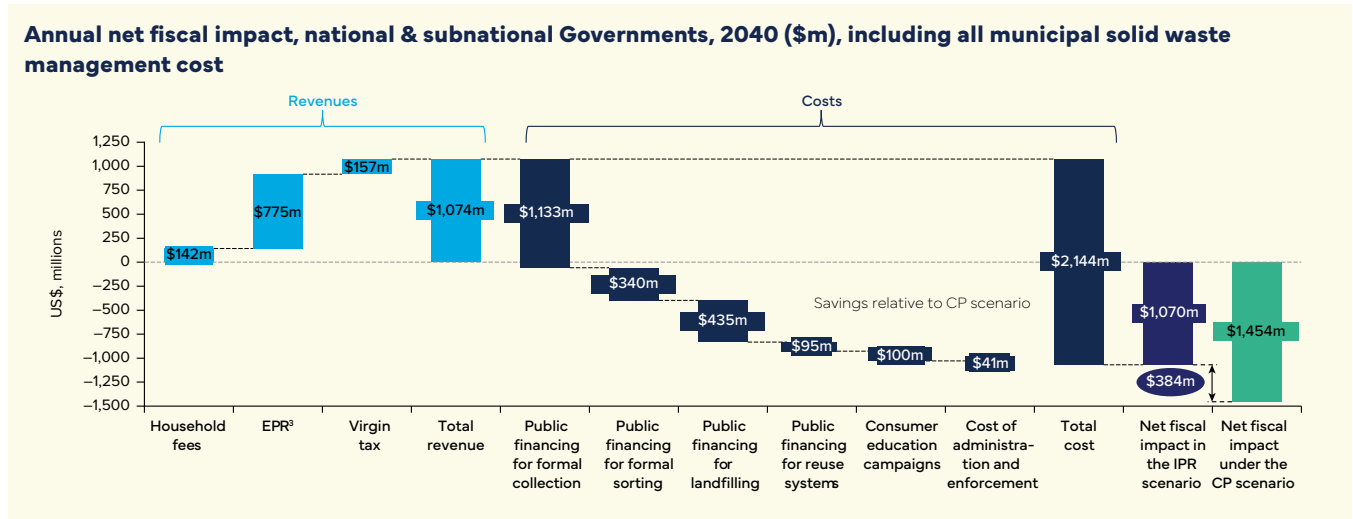


Figure 6: Private financing leveraged by policy reform

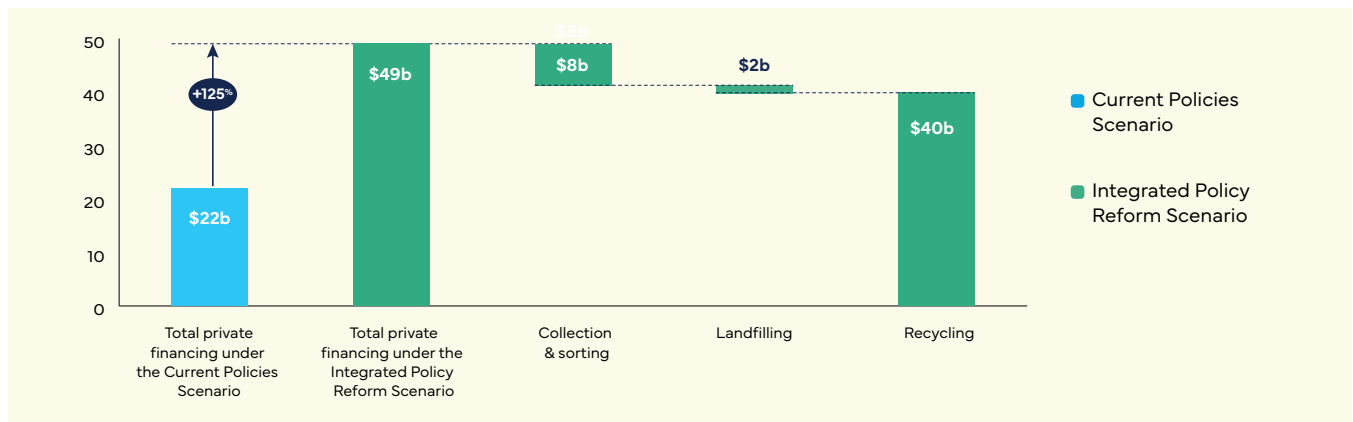


Figure 7: Change in firms' shares in the plastic profit pool

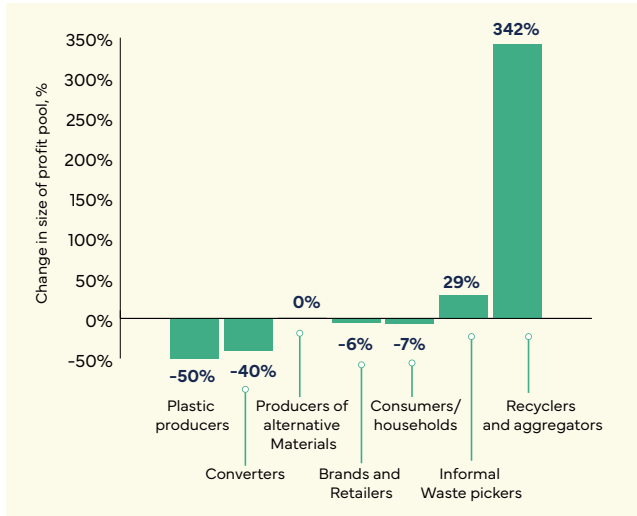


Figure 8: Households' expenditures on plastic services, their substitutes and waste management fees

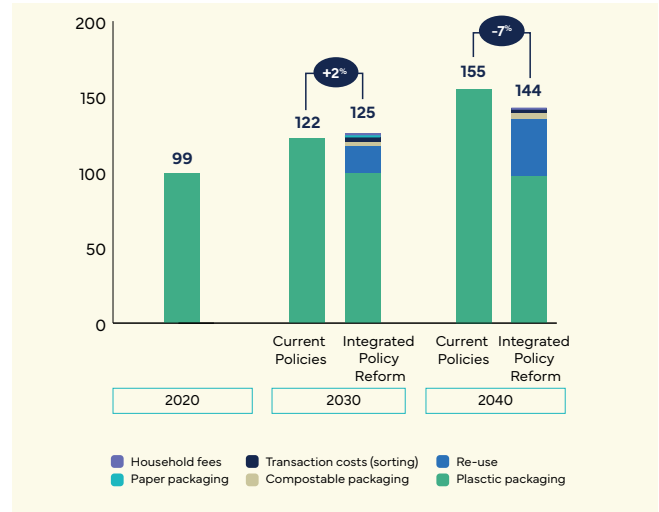
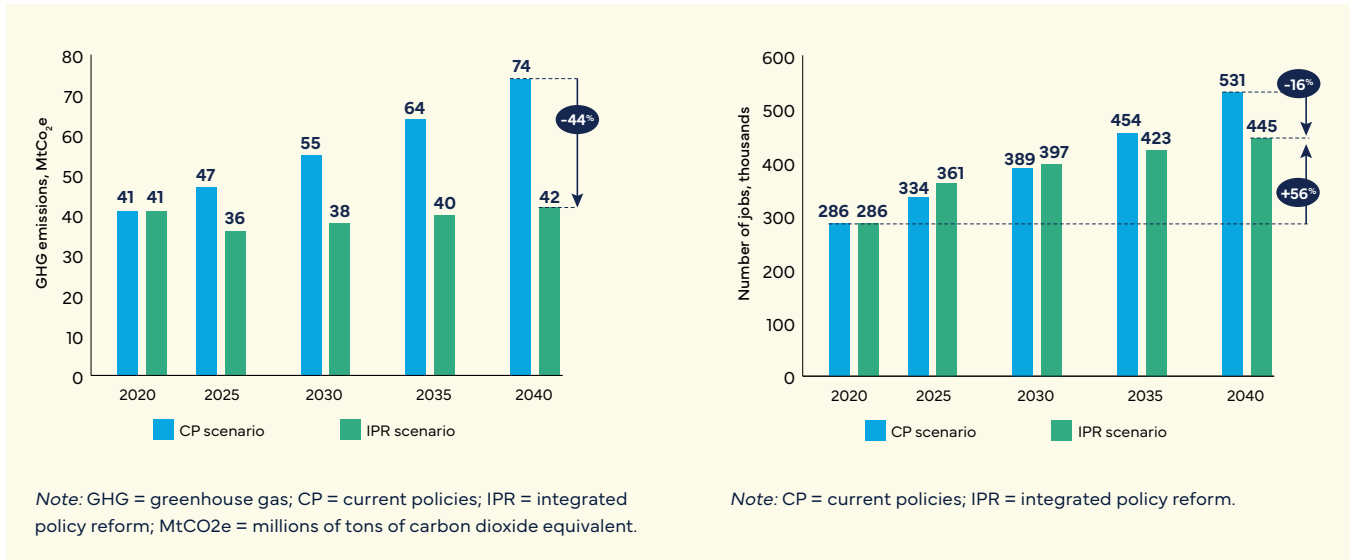


Figure 9: Carbon emissions and direct (formal and informal) jobs by sector in the value chain



What data is needed to run the PPS?

The model requires data (or estimates of) volumes of plastic materials and plastic products that go through each segment of the system, as well as the annual capital expenditures, operational expenditures of plastic management options, and transaction costs, in addition to market prices and revenues after taxes and subsidies. Default values are available for different types of countries and can be adjusted by users.

Geographical Archetypes

The PPS model works with different geographic archetypes, such as large and small cities, suburban and rural areas if they differ in patterns of production and consumption of plastics and waste management. The archetypes can be defined flexibly for each country.