

# ENERGY POLICY SIMULATOR

J-Carlos Altamirano, WRI

November 2019

## BACKGROUND

- Often energy policies are evaluated in isolation
- Complex interactions and feedbacks (not sum of individual effects)
- Analysis of policy arrays
  - Sector specific technologies (e.g. LDV fuel economy standards)
  - Economy wide policies (e.g. carbon tax)
  - Framework  $\rightarrow$  Energy Policy Simulator

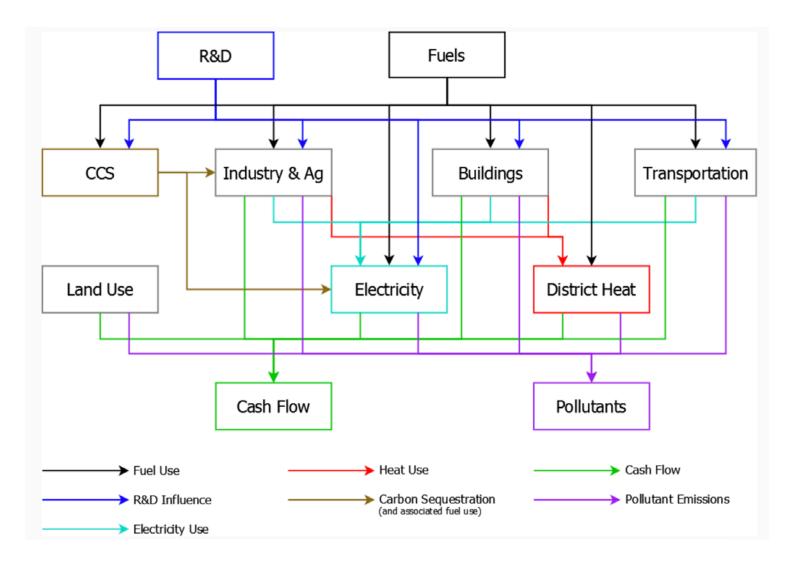


## **ENERGY POLICY SIMULATOR (EPS)**

- System dynamics approach
- EPS include
  - Stocks (e.g. installed wind capacity)
  - Flows (e.g. energy generated by wind)
- Model function along two dimensions
  - Equations defining variables (fuel economy standards)
  - Data arrays/matrices (kilometers traveled by a passenger)



## **EPS STRUCTURE**





## NATIONAL ANALYSIS

- Mix of 21 policy levers (out of 58) to achieve Mexico's NDC
- Model outputs
  - emissions of 12 pollutants, use of fuels
  - cash flow changes
  - electricity generation mix
  - lives saved from avoided particulatecaused mortality

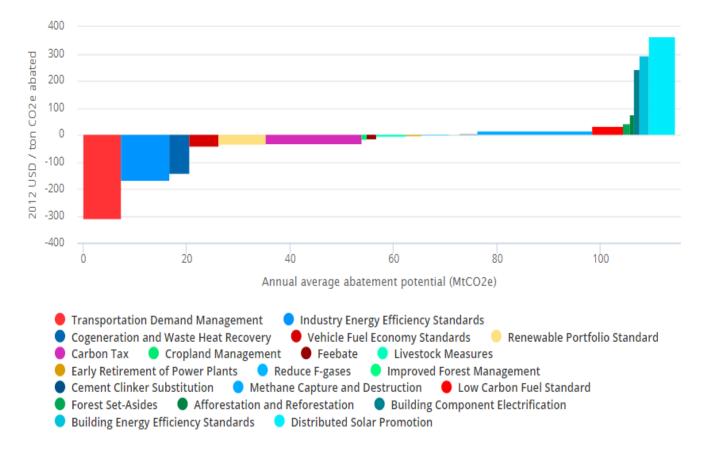


#### https://www.wri.org/publication/choosingright-path



## **MEXICO: LOW-COST CLIMATE POLICIES**

#### **Conditional NDC Scenario-Marginal abatement cost curves through 2030**



## Climate policies promote gains to the economy (*benefits of <u>at least</u> \$105 billion*) and social benefits (<u>more than 25,000 lives saved by 2030</u>)



## **EPS WEB INTERPHASE**

#### POLICY SOLUTIONS

USE SIMULATOR

ABOUT US ENERGY

#### ENERGY POLICY SIMULATOR

The free, open-source EPS computer model can help you design packages of policies to reduce pollution. You can visualize policies' effects on emissions, cash flows, power plants, electric vehicles, and more. To start, select a region.

SELECT A REGION

#### POLICY DESIGN GUIDE

Policymakers must focus on the handful of policies that are most effective at reducing emissions, and a small set of design principles can make all the difference.

ENTER POLICY DESIGN GUIDE

https://www.energypolicy.solutions/





WORLD Resources Institute

## Thank you

JCAltamirano@wri.org