LEAP USER GROUP WORKSHOP AS PART OF THE REGIONAL EXCHANGE OF MODELLING EXPERTS IN THE WB6

Workshop

General introduction

Fraunhofer Institute for Systems and Innovation Research ISI Breslauer Strasse 48, 76139 Karlsruhe Viktor Müller Johannes Eckstein

Source: Fraunhofer ISI / Pudlik





BUSINESS UNIT: CLIMATE POLICY

- Questions regarding climate policy developments (part. gas markets, hydrogen) and innovation support policies (EU Innovation Fund, CCfDs)
- Questions related to emission trading systems (EU and other ETS)
- Climate change mitigation strategies and their assessment
- Johannes Eckstein is senior researcher in the business unit Climate Policy in the Competence Center Energy Policy and Energy Markets
- Work focus:
 - energy and climate policy development and evaluation
 - focus on industrial applications and policies
 - scenario-based energy system modelling







BUSINESS UNIT: GLOBAL SUSTAINABLE ENERGY TRANSITIONS

- Support of planning and implementation of sustainable energy and development strategies in emerging and developing countries.
 - assessment of potentials and possible diffusion pathways for renewable energy technologies
 - model-based analyses of energy systems
 - evaluation of local value creation potentials for energy technologies
 - development of policy instruments and strategies supporting sustainable energy transitions.
- Viktor Müller is junior researcher in the business unit Global Sustainable Energy Transitions in the Competence Center Energy Policy and Energy Markets
- Work focus:
 - promotion strategies for renewables energies
 - hydrogen technologies and synthetic fuels
 - modelling of energy systems



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Policies Structuring your LEAP model to reflect policies Fraunhofer Institute for Systems and Innovation Research ISI Breslauer Strasse 48, 76139 Karlsruhe Source: Fraunhofer ISI / Pudlik





STRUCTURING YOUR LEAP MODEL TO REFLECT POLICIES

- How are separate policies reflected in your model currently?
- How to use the functionalities of LEAP to set up policy specific scenarios
- Towards a readable and clearly programmed model!





An "easy option" is to implement all policies in one scenario

- But what is the effect of single policy?
- Effect in terms of emissions, energy use, etc
 - LEAP provides a functionality to disaggregate policies
- And there are very good technical reasons to do so!
 - improves readability of the code
 - improves maintenance
 - helps during model development





Good practice:

- put each policy into one scenario
- set up a meaningful inheritance in the scenario view
- only tick those you are interested in for results
- each scenario ticked for results increases calculation time







Watch out

- check the expression search order to double check
- LEAP reads the inheritance list from top to bottom to find expressions in each branch
- If two scenarios act on the same variable, you need to manually create a combination!

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Results will be calculated for checked scenarios	Expression Search Order: MITsplit, INDfuel, INDeff, RESheat, RESrefu, TRPtech, TRAgrid, RENgen, ALUprod, EAThabi, BAS, CA, Variable Default



Scenario expressions

- Provides an overview of all expressions associated with the scenario
- Mitght get confusing if too many expressions are bundled in one scenario
- Put different policies in different scenarios







- All policies in one scenario
- Many expressions and rather bad readability

- Policies clustered by topic and bundled in one meaningfully named scenario
- Less expressions and better readability

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DMD/Tansport/Passenger/CNGFue/Share InterpFSV(203)/vlue/2019/0,22) DMD/Tansport/Passenger/DiselFue/Share InterpFSV(203)/vlue/2019/0,52259/vlue/2019/0,22) DMD/Tansport/Passenger/DiselFue/Share InterpFSV(203)/vlue/2019/0,52259/vlue/2019/0,22) DMD/Tansport/Passenger/DiselFue/Share InterpFSV(203)/vlue/2019/0,52259/vlue/2019/0,22) DMD/Tansport/Passenger/DiselFue/Share InterpFSV(203)/vlue/2019/0,52259/vlue/2019/0,2200/vlue/2019/0,52259/vlue/2019/0,2200/vlue/2019/0,52259/vlue/2019/0,2200/vlue/2019/0,52259/vlue/2019/0,2200/vlue/2019/0,52259/vlue/2019/0,2200/vlue/2019/0,52259/vlue/2019/0,2200/vlue/2019/0,52259/vlue/2019/0,2200/vlue/2019/0,52259/vlue/2019/0,2200/vlue/2019/0,52259/vlue/2019/0,2200/vlue/2019/0,2200/vlue/2019/0,52259/vlue/2019/0,2200/vlue/2019/0,2200/vlue/2019/0,52259/vlue/2019/0,2200/vlue/2019/0,2200/vlue/2019/0,52059/vlue/2019/0,2200/vlue/2019/0,2200/vlue/2019/0,52059/vlue/2019/0,2200/vlue/2019/0,52059/vlue/2019/0,52059/vlue/2019/0,2205/0,200/vlue/2019/0,52059/vlue/2019/0,2205/0,200/vlue/2019/0,2205/vlue/2019/0,2205/0,200/vlue/2019/0,2205/0,200/vlue/2019/0,2205/0,200/vlue/2019/0,2205/0,200/vlue/2019/0,2205/0,200/vlue/2019/0,2205/0,200/vlue/2019/0,2205/0,200/vlue/2019/0/201/0/Ulue/2019/0/201/0/Ulue/2019/0/201/0/Ulue/2019/0/2019/0/Ulue/2019/0/201/0/Ulue/2019/0/201/0/Ulue/2019/0/201/0/Ulue/2019/0/201/0/Ulue/2019/0/201/0/Ulue/2019/0/201/0/Ulue/2019/0/201/0/Ulue/2019/0/2019/0/Ulue/2010/	DMD\Transport\Freight\Diesel:Fuel Share	InterpFSY(2030;Value(2018)*0,8;2050;Value(2018)*0,7)		
DMD/Tansport/Pasenger/Golder/Euel Share InterpFSV(2030;Vulue(2018)*0;2;20:Vulue(2018)*0;	DMD\Transport\Passenger\CNG:Fuel Share	InterpFSY(2030;Value(2018)*0,5;2050;Value(2018)*0,2)		
DMD/Tinssport/Passenger(SasolineFuel Share InterpEY(2030/vlue(2018)*0,5:2050/vlue(2018)*0,2) KEY/Agriculture/Livestock/Dairy conduction Growth(-25) KEY/Agriculture/Livestock/Dairy conduction Growth(-25) TRN/Electricity Production HPP KomarnicaExogenous Capacity Step/2030; 293,0) Step/2030; 293,0)	DMD\Transport\Passenger\Diesel:Fuel Share	InterpFSY(2030:Value(2018)*0.5:2050:Value(2018)*0.2)	Ē	
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cenario: Industrial fuel switch 🗸 Variable: < All	Variables> 🗸 Brancl	n Labels: Truncated 🗸 Find:	🔍 Go to Expression 🛔	Delete Duplicates
anch:Variable		Scenario Expression		Duplicate?
MD\Industry\Iron Steel\Coal Lignite:Fuel Share		InterpFSY(2025;Value(2	018);2030;0)	
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MD\Industry\Ore Extraction\Diesel:Fuel Share		InterpFSY(2023;Value(2	018);2030;70;2050;50)	
MD\Industry\Other\Diesel:Fuel Share		InterpFSY(2023;Value(L	astHistoricalYear);2030;50;2050;40)	
MD\Industry\Other\Residual Fuel Oil:Fuel Share		InterpFSY(2023;Value(L	astHistoricalYear);2030;0)	
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LET'S GO TO LEAP

Source: LEAP Handbook





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POLICIES AND SCENARIOS LET'S TAKE A LOOK INTO THE NECP MODEL!

- The NECP model uses many scenarios
- Grouped to build WEM and WAM scenarios













