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Tracking Progress of the Mitigation Commitments of Nationally Determined Contributions (NDCs)

LEAP tool

Dominic Sheldon

Senior Consultant – Climate Action Planning and Transparency

Ricardo Energy and Environment

UN environment programme | copenhagen climate centre

supported by UNOPS

UN environment programme

gef

Supported by:

Federal Ministry for Economic Affairs and Climate Action | Federal Foreign Office

on the basis of a decision by the German Bundestag

IKI INTERNATIONAL CLIMATE INITIATIVE

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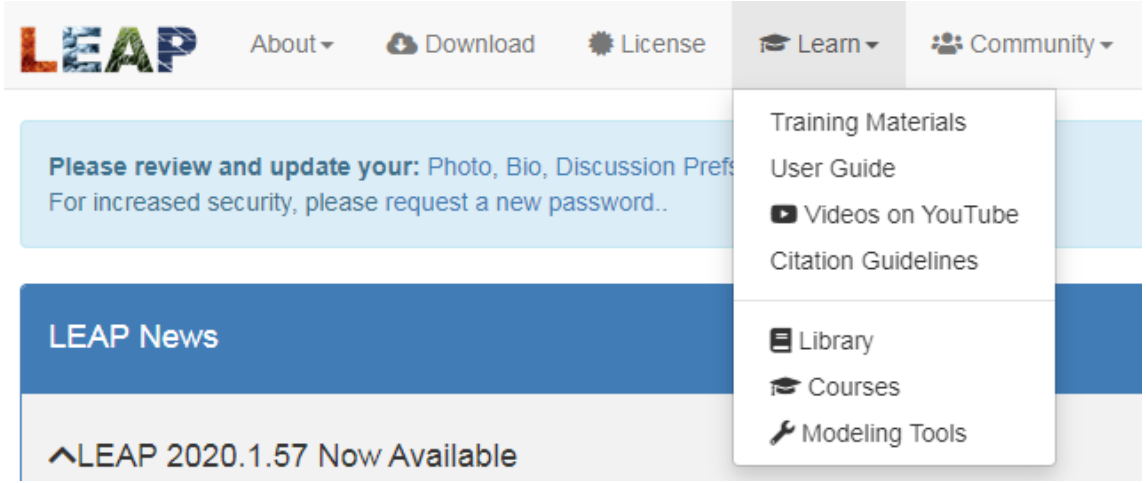
LEAP resources available



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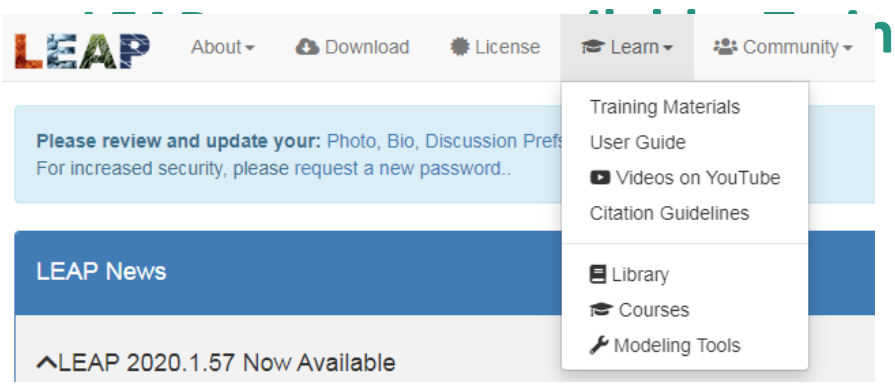

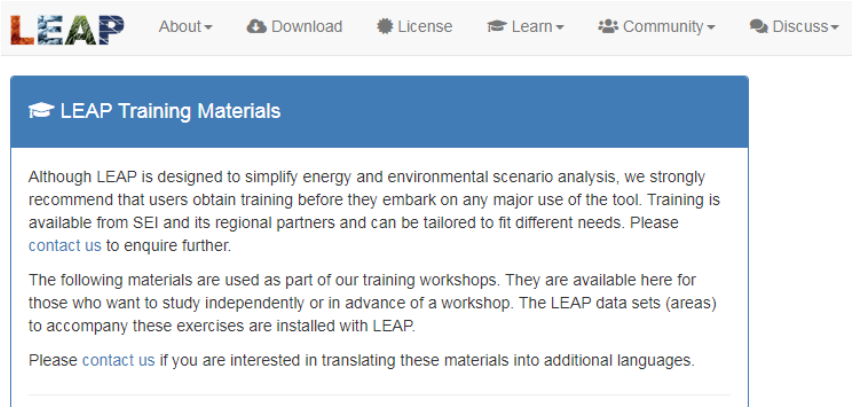

Main Training Exercises

The first four of these exercises teach basic LEAP skills including energy demand modeling, energy supply (Transformation) modeling, electric system simulation modeling, emissions analysis and cost-benefit analysis. The fifth exercise examines modeling of non-energy sector greenhouse gases. The sixth exercise focuses on the transport sector: showing how to create a vehicle stock-turnover model. The seventh exercise demonstrates the use of LEAP's optimization features for least-cost electric generation modeling.

GHG Mitigation Analysis Exercises

These exercises introduce techniques used in a Greenhouse Gas (GHG) Mitigation Assessment. In a first exercise, you use a spreadsheet-based tool to conduct a screening of mitigation options, including analyzing the costs and mitigation potential for each option and displaying these on a standard Marginal Abatement Cost (MAC) curve. In a second exercise, you examine additional important criteria using a multi criteria assessment (MCA) approach. In a third exercise you create a mitigation scenario within LEAP based on your preferred options and compare it to a baseline scenario.

- GHG Training Exercises (English: PDF)
- Excel Screening spreadsheet: Partial, Complete

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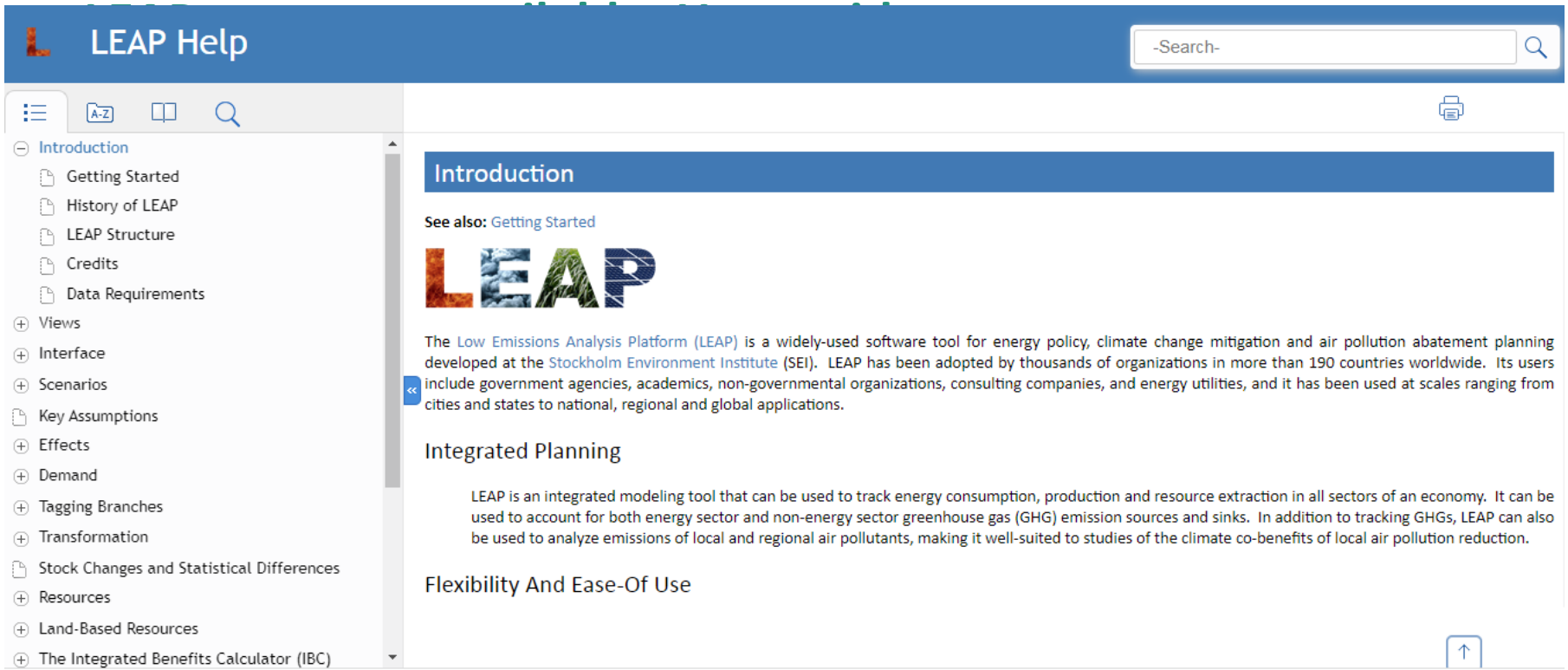

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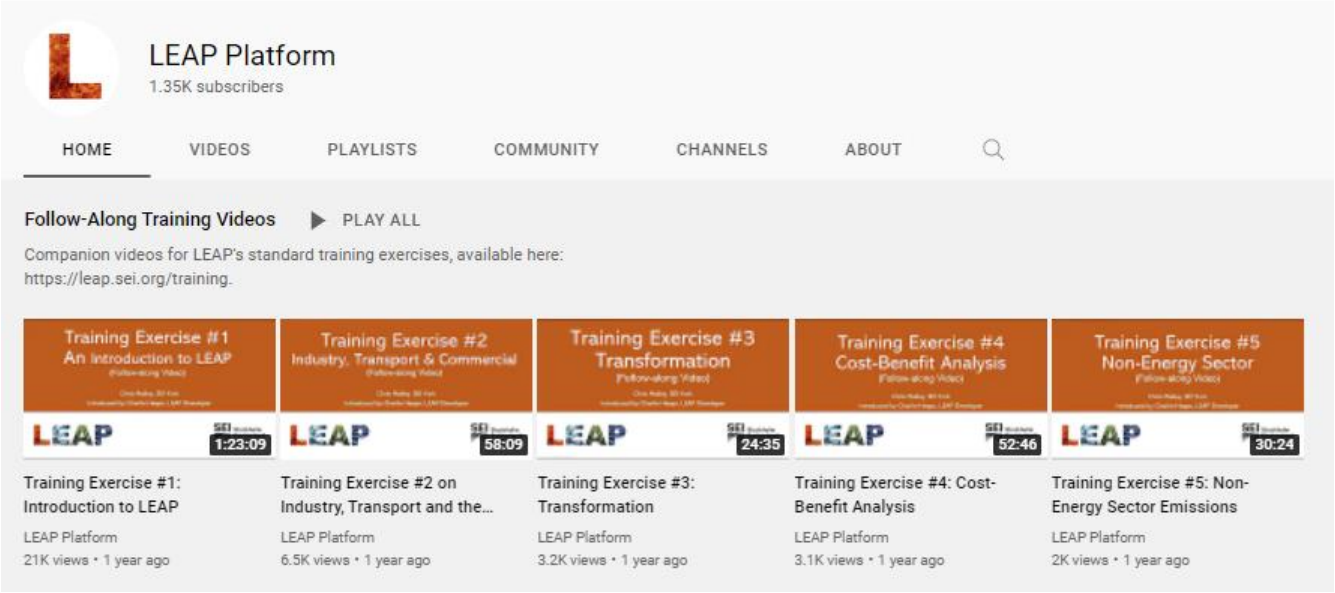
LEAP
The Low Emissions Analysis Platform

SEI Stockholm Environment Institute

LEAP resources available: YouTube training videos

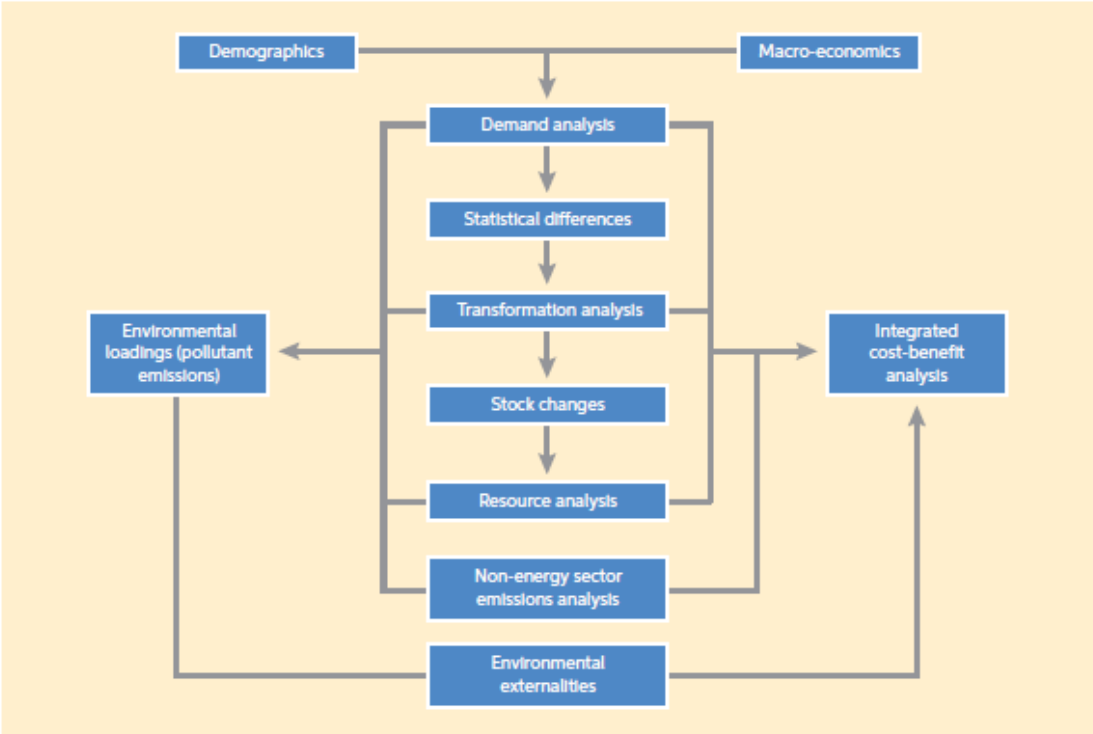


Introduction to LEAP

In order to develop the scenarios described in the previous section, a pre-existing model, the Low Emissions Analysis Platform (LEAP), was used. LEAP is an integrated, scenario-based modelling tool that can be used to track energy consumption, production and resource extraction in all sectors of an economy. The benefits of using LEAP in this project are:

- It is a model that is **familiar to key stakeholders around the world** and has been used for previous modelling exercises, so will allow for greater comparability with previous GHG scenarios.
- The **LEAP model has been used for NDCs and LTSs**
- The model **is relatively simple to use**.
- The **model is free for developing countries to use**
- Its **low initial data requirements** are well suited to a country like Uganda where accessing robust data has been, and will continue to be, a challenge.
- It presents outputs in a **transparent and intuitive** way.

LEAP can b[illegible]



Source: https://leap.sei.org/default.asp?action=introduction;

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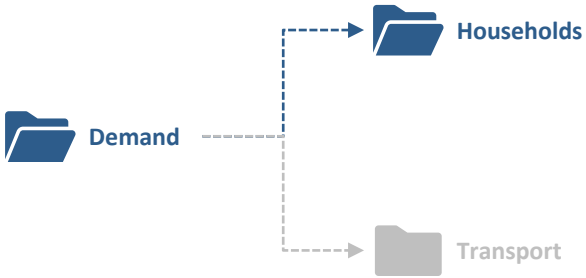
Basic structure of LEAP model: The Tree and its branches



LEAP

- Uganda TraCS

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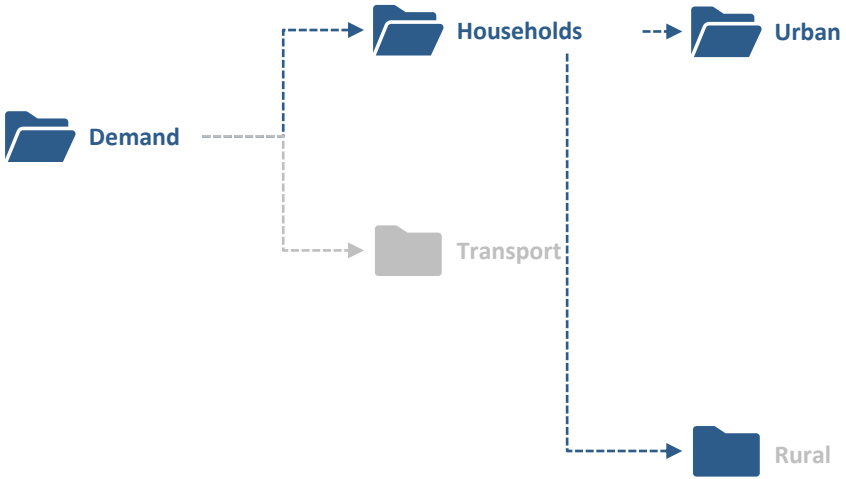

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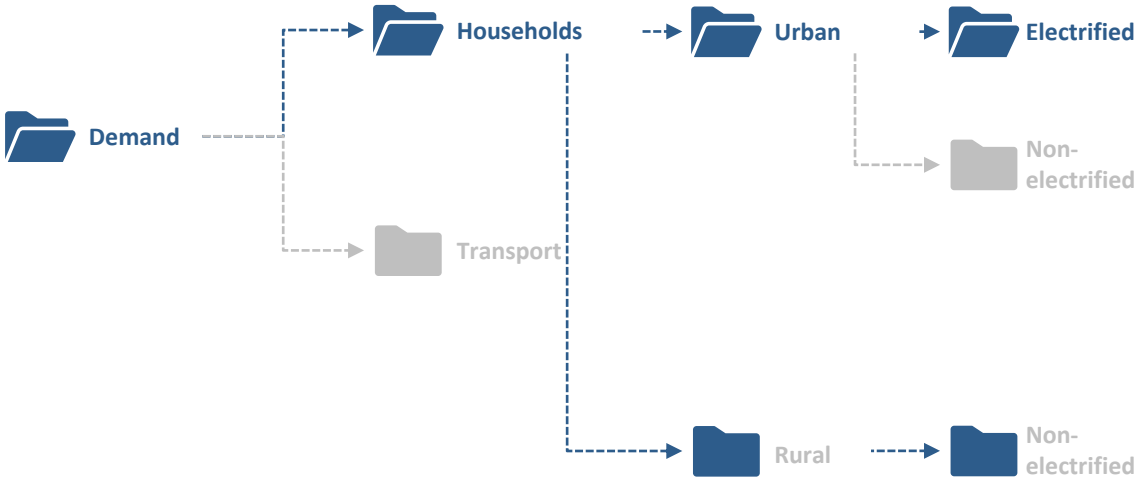

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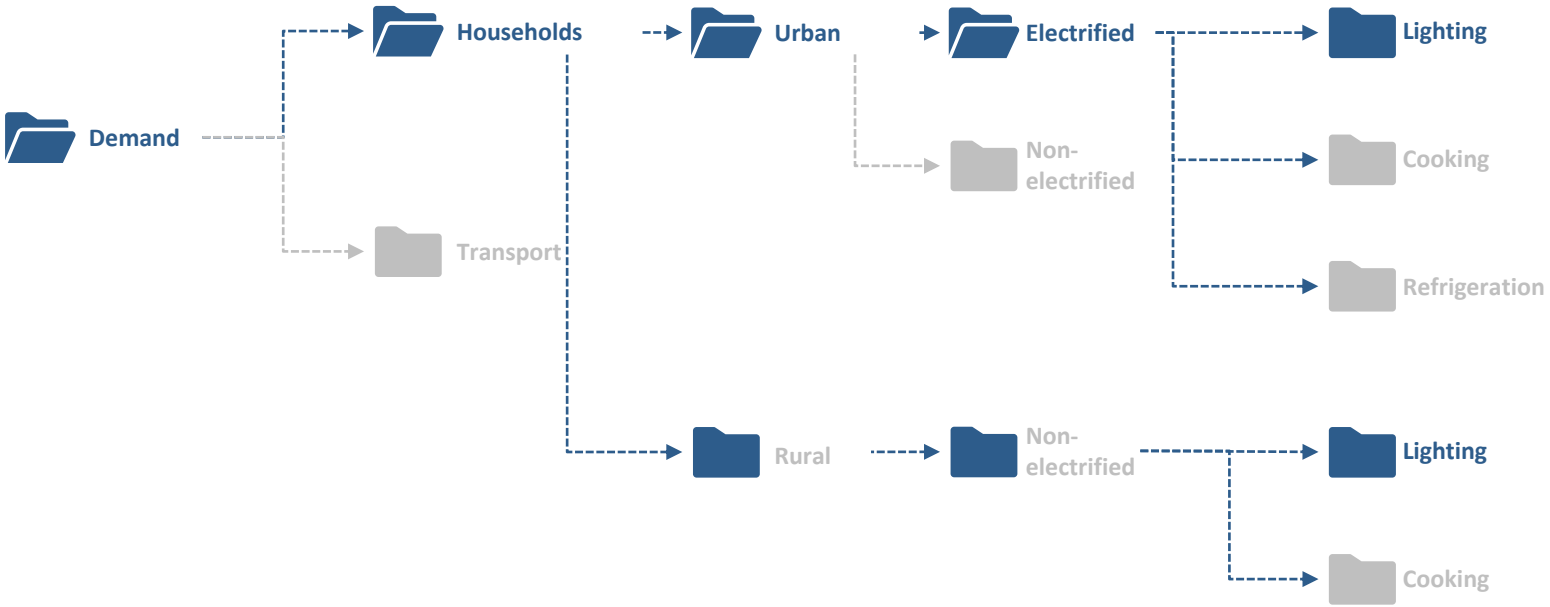

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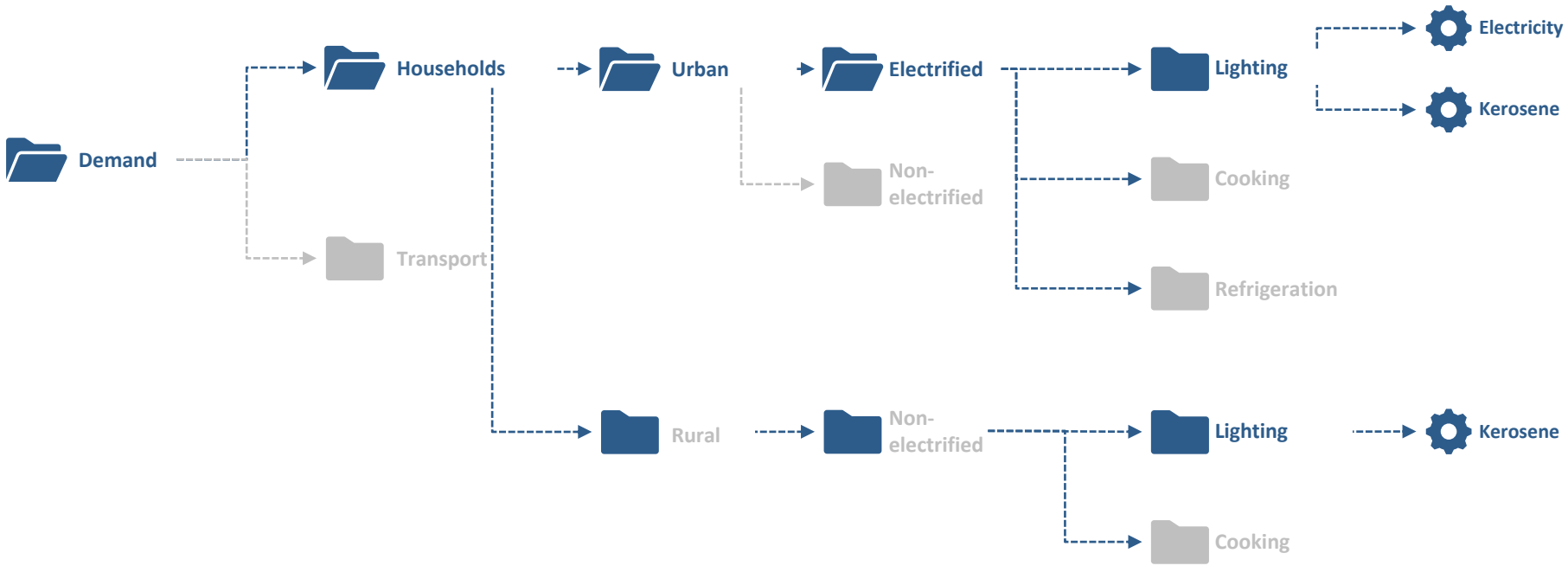

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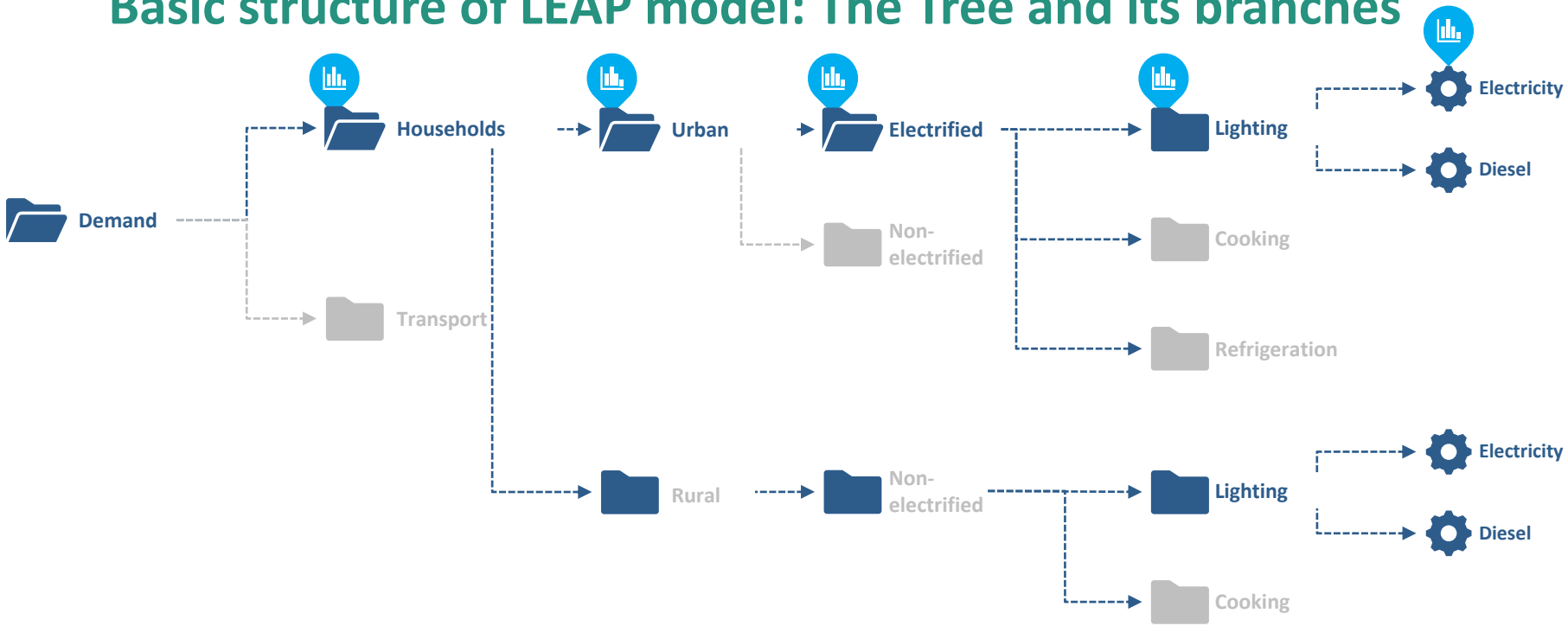

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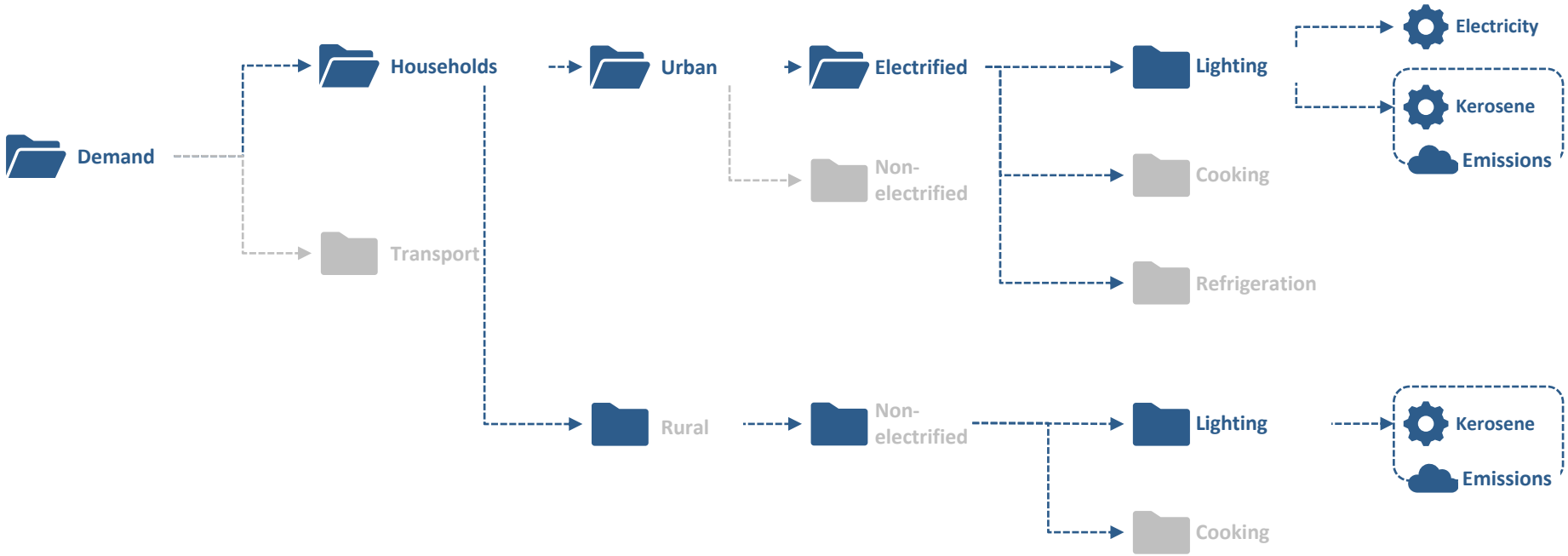

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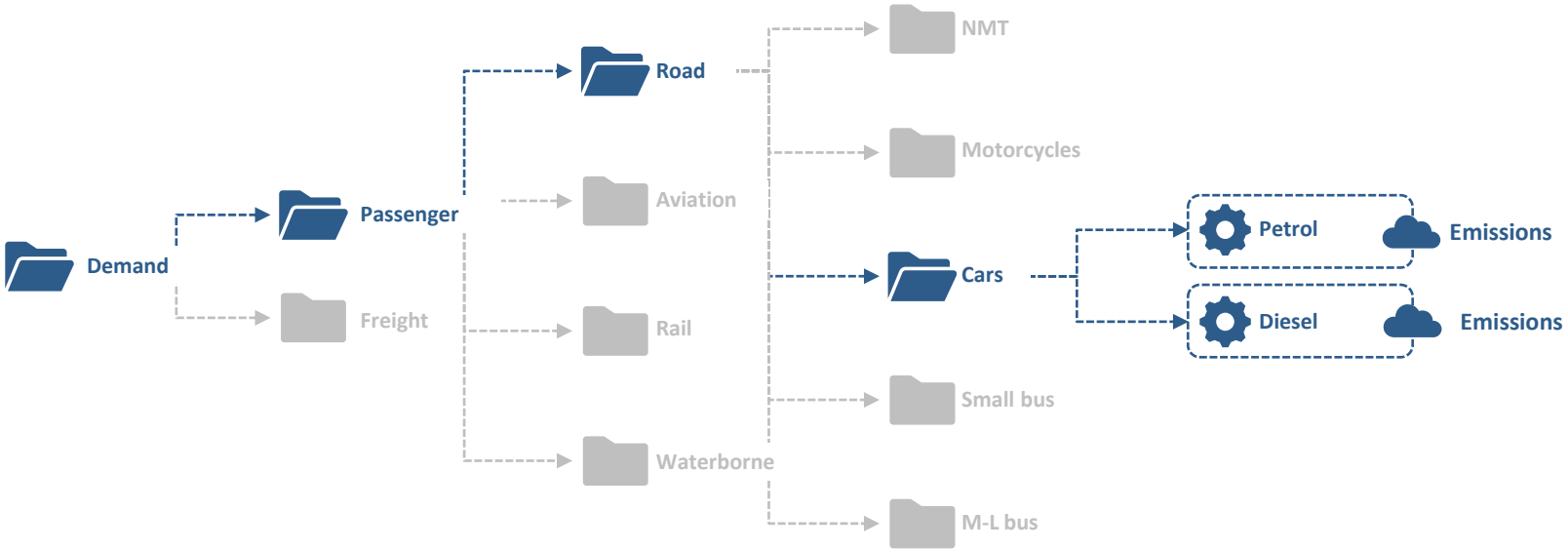

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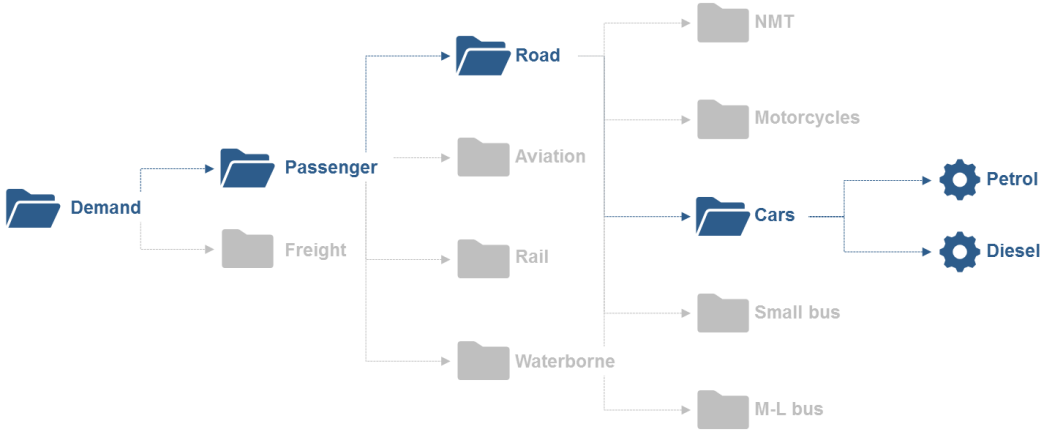

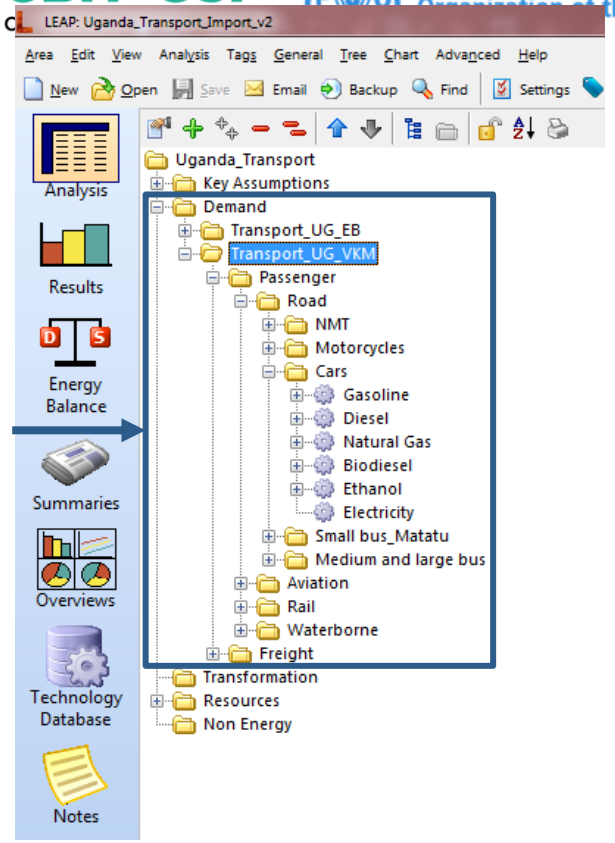

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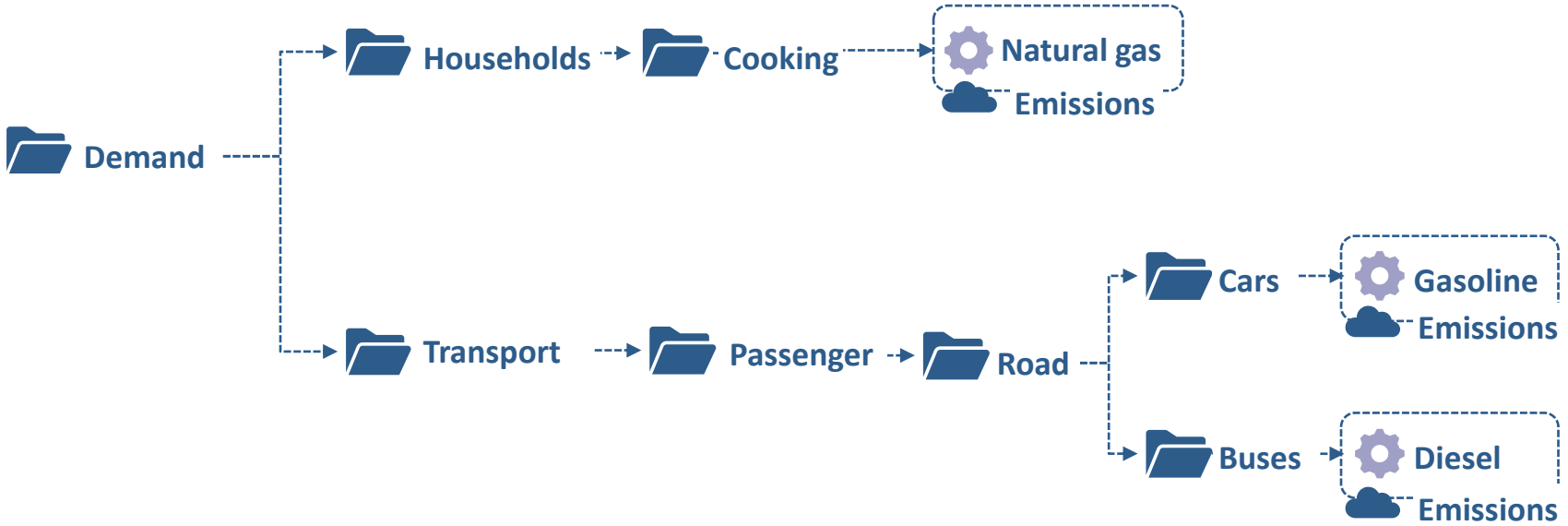

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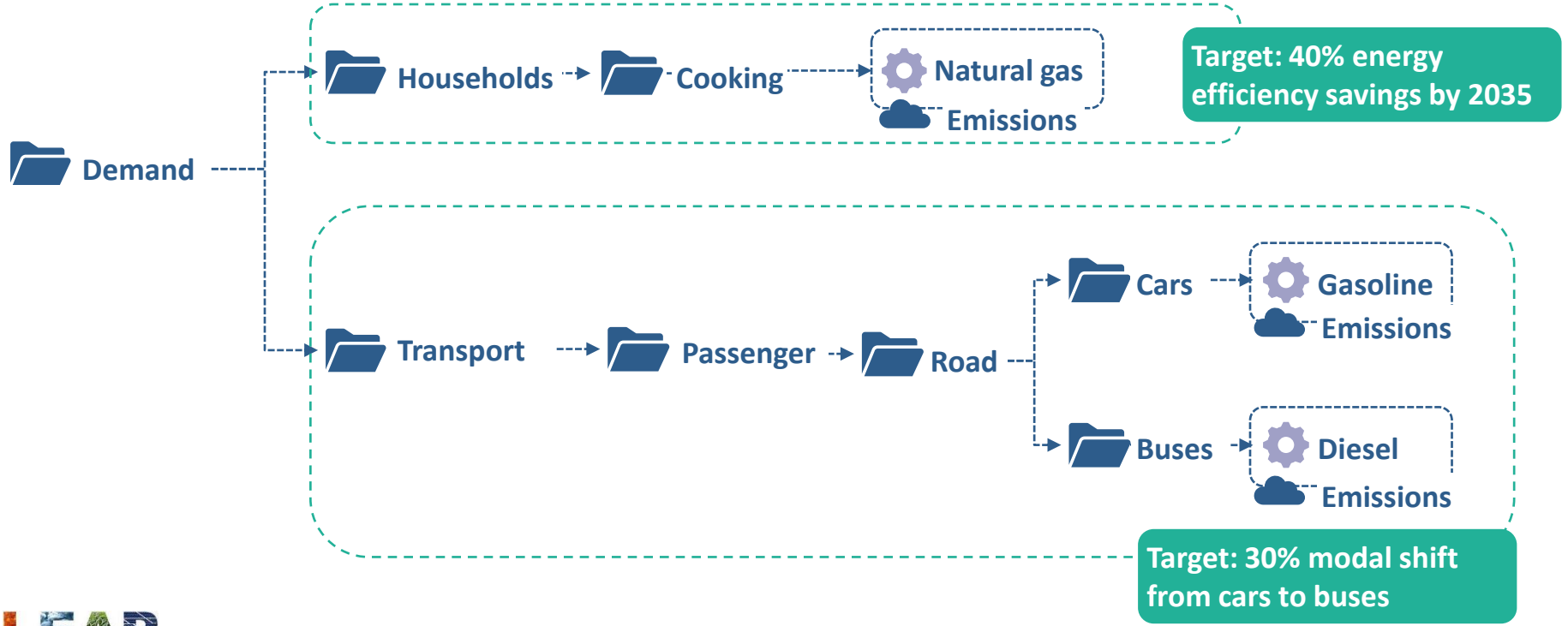

LEAP

LEAP: Pretoria LEAP Exercise

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- Pretoria LEAP Exercise
  - Key Assumptions
  - Demand
    - **Households**
      - Cooking
        - Natural Gas Stoves
    - Transport
      - Passenger
  - Transformation
  - Resources
  - Non Energy

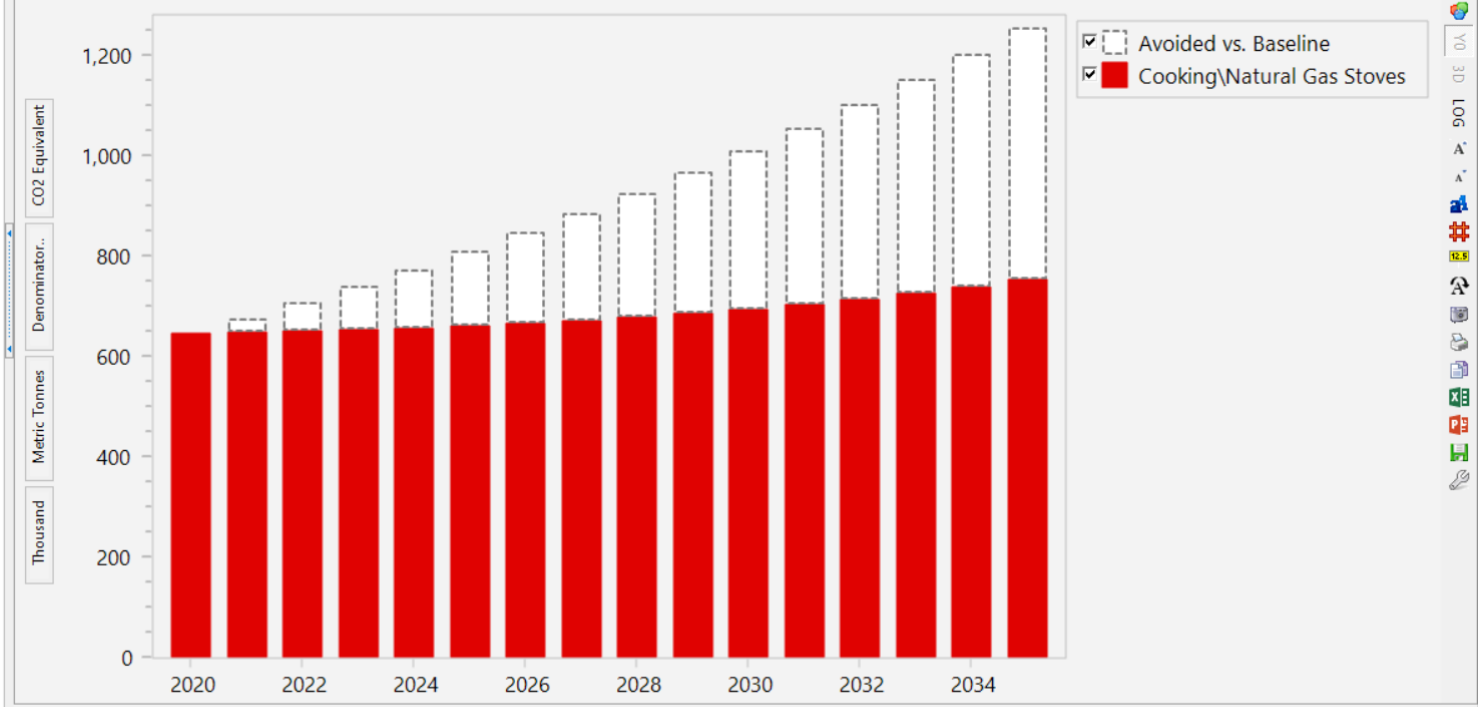
Levels: 2 | Match Names | Subtotals | Scenario: Mitigation | All Fuels | All GHGs | Less...

Absolute Values | Avoided vs. Baseline | Group Small in Legend | Second Variable..

Chart | Table | Split

100-Year GWP: Direct (At Point of Emissions)

All Branches



All Years

2020.1.0.66 (64-Bit) | Area: Pretoria LEAP Exercise | Results | Registered to: "dominic.sheldon@ricardo.com" until August 20, 2023 | Avoided vs. Baseline: 2030: 317.7 Thousand Metric Tonnes CO2 Equivalent

LEAP: Pretoria LEAP Exercise

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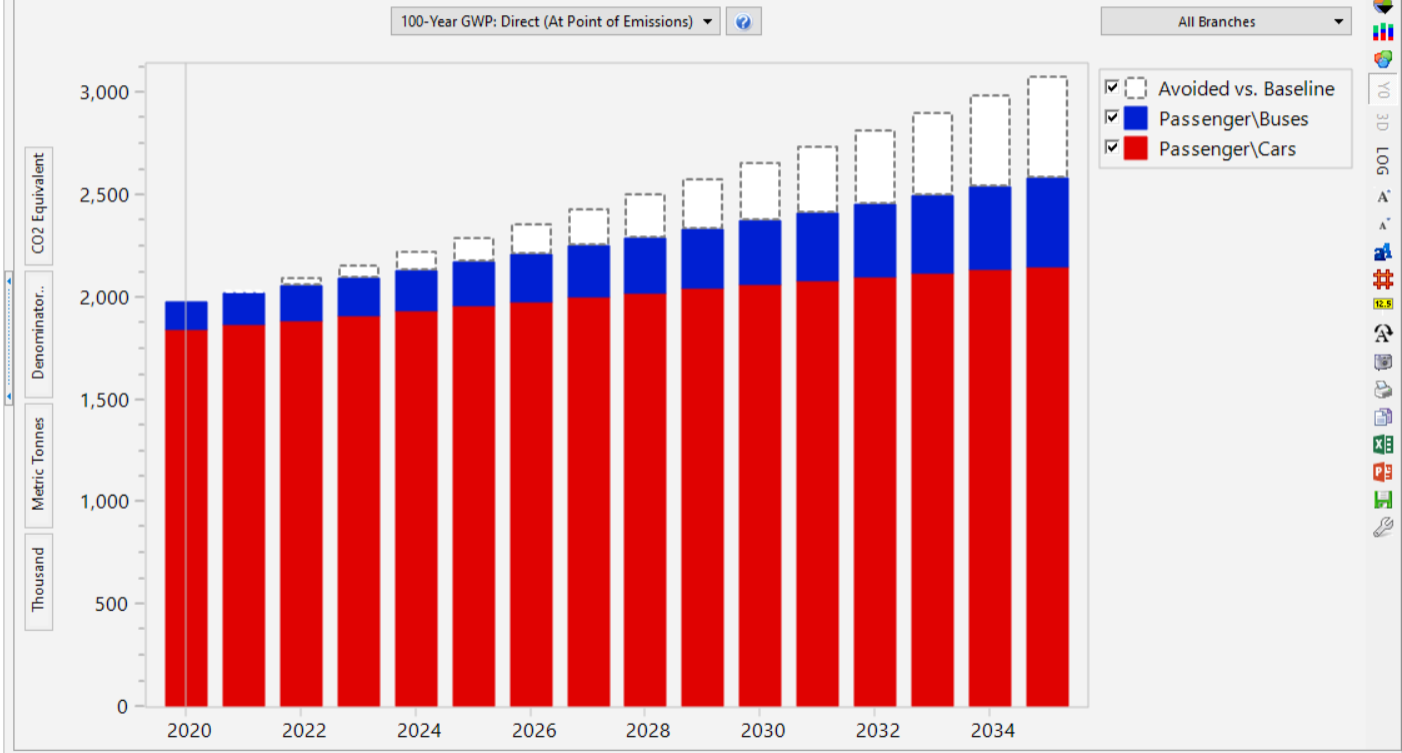
100-Year GWP: Direct (At Point of Emissions)

All Branches



All Years

2020.1.0.66 (64-Bit) | Area: Pretoria LEAP Exercise | Results | Registered to: "dingsithole@gmail.com" until October 4, 2023 | Passenger\Cars: 2020: 1,838.4 Thousand Metric Tonnes CO2 Equivalent

LEAP: Pretoria LEAP Exercise

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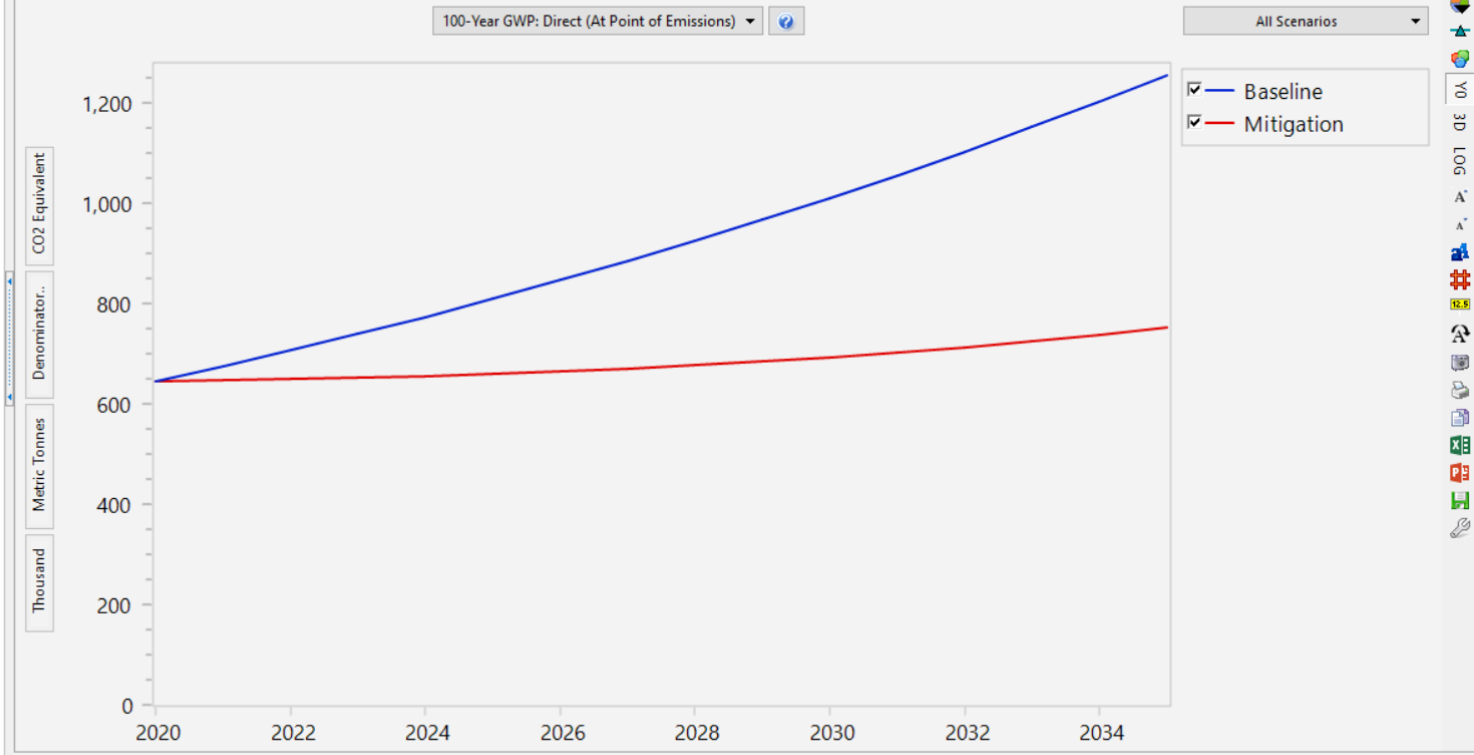
All Fuels | All GHGs | Less...

Absolute Values | No Comparison | Second Variable..

Chart | Table | Split

100-Year GWP: Direct (At Point of Emissions)

All Scenarios



All Years

2020.1.0.66 (64-Bit) | Area: Pretoria LEAP Exercise | Results | Registered to: "dominic.sheldon@ricardo.com" until August 20, 2023

7. Information on projections of greenhouse gas emissions and removals under a 'with measures' scenario[a,b]

	Most recent year in the Party's national inventory report (kt CO2 eq)[c]	*Projections of GHG emissions and removals, (kt CO2 eq)[c]*		
	20XX	*20X(0)(5)*	*20X(0)(5)*	*20X(0)(5)*
Sector[d]				
Energy				
Transport				
Industrial processes and product use				
Agriculture				
LULUCF				
Waste				
Other (specify)				
Gas				
CO2 emissions including net CO2 from LULUCF				
CO2 emissions excluding net CO2 from LULUCF				
CH4 emissions including CH4 from LULUCF				
CH4 emissions excluding CH4 from LULUCF				
N2O emissions including N2O from LULUCF				
N2O emissions excluding N2O from LULUCF				
HFCs				
PFCs				
SF6				
NF3				
Other (specify)				
Total with LULUCF				
Total without LULUCF				

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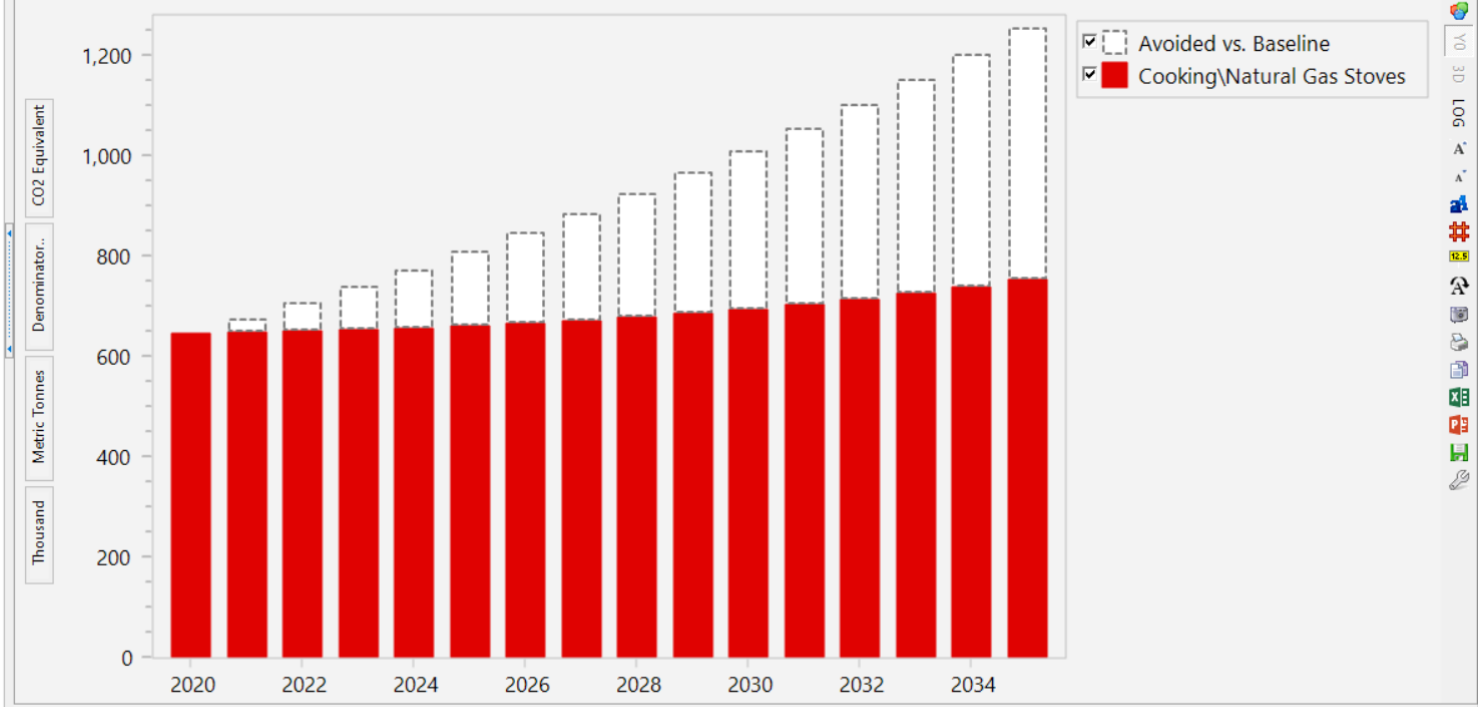
Levels: 2 | Match Names | Subtotals | Scenario: Mitigation | All Fuels | All GHGs | Less...

Absolute Values | Avoided vs. Baseline | Group Small in Legend | Second Variable..

Chart | Table | Split

100-Year GWP: Direct (At Point of Emissions)

All Branches



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100-Year GWP: Direct (At Point of Emissions)

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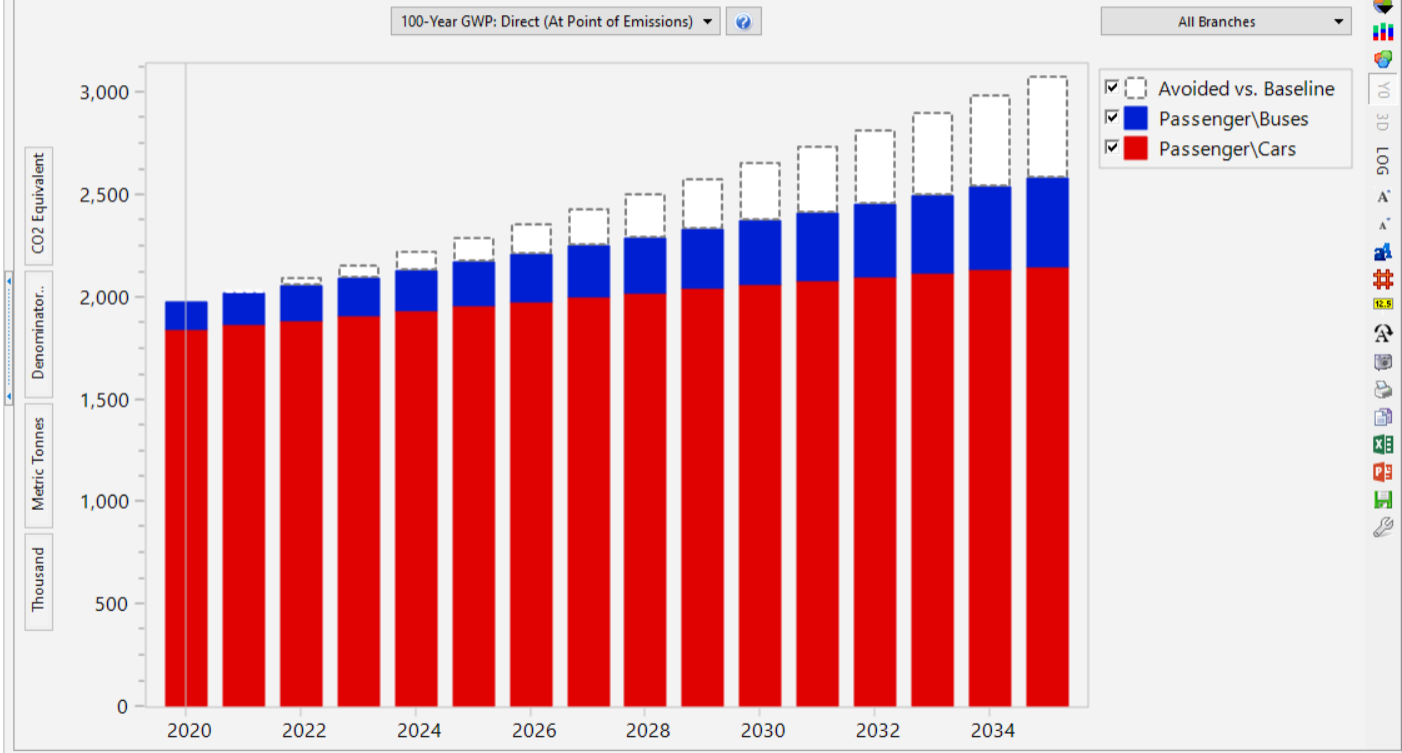

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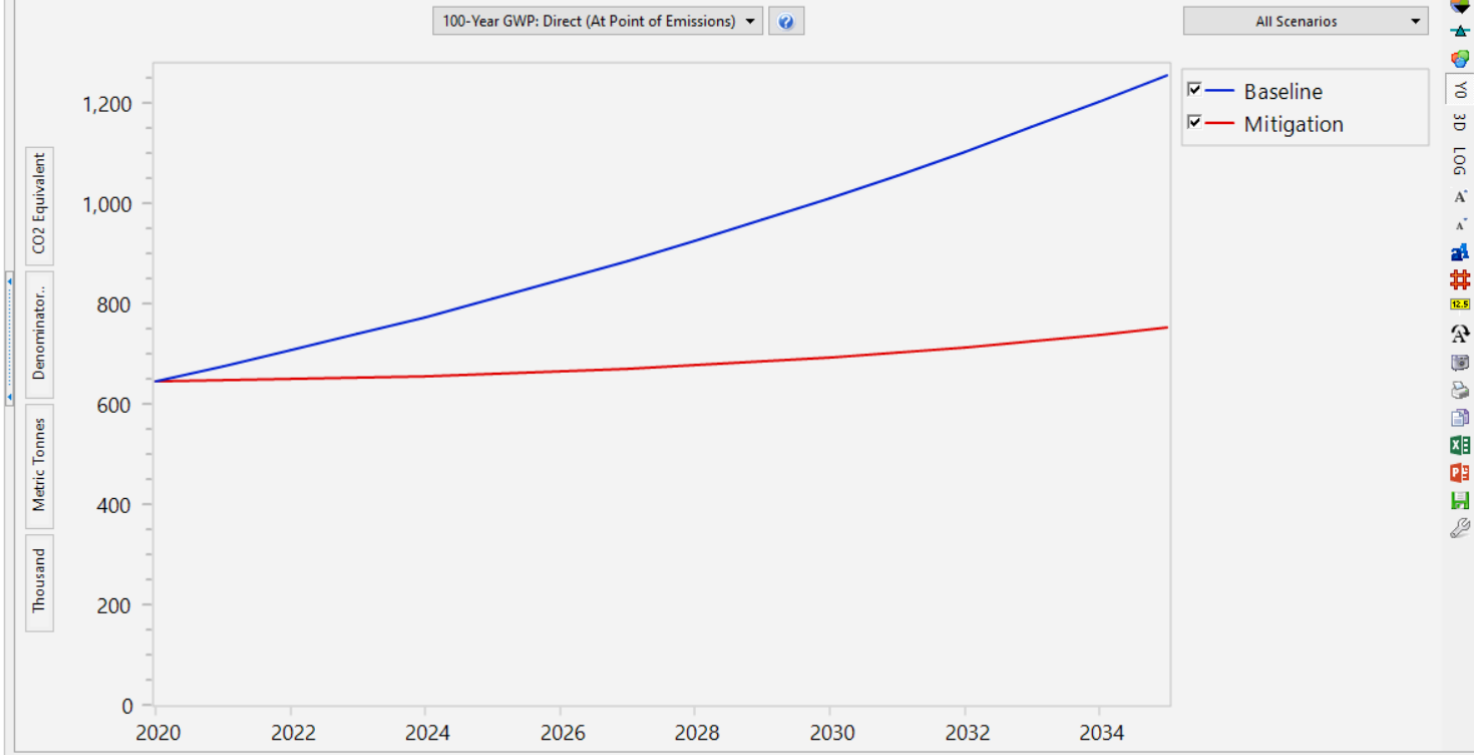
All Fuels | All GHGs | Less...

Absolute Values | No Comparison | Second Variable..

Chart | Table | Split

100-Year GWP: Direct (At Point of Emissions)

All Scenarios



All Years

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All Fuels | All GHGs | Less...

Absolute Values | No Comparison | Second Variable..

Chart | Table | Split

100-Year GWP: Direct (At Point of Emissions) | All Scenarios

CO2 Equivalent | Denominator.. | Metric Tonnes | Thousand

Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Baseline	2,621.8	2,711.5	2,804.2	2,900.1	2,999.2	3,101.6	3,207.5	3,316.9	3,430.1	3,547.0	3,667.8	34,307.7
Mitigation	2,621.8	2,661.1	2,701.4	2,742.6	2,784.9	2,828.2	2,872.6	2,918.2	2,965.0	3,013.1	3,062.7	31,171.5
Total	5,243.5	5,372.6	5,505.6	5,642.7	5,784.1	5,929.8	6,080.1	6,235.1	6,395.1	6,560.1	6,730.5	65,479.2

Every Twenty Years

2020.1.0.66 (64-Bit) | Area: Pretoria LEAP Exercise | Results | Registered to: "dingsithole@gmail.com" until October 4, 2023

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11. Key underlying assumptions and parameters used for projections[a,b]

Key underlying assumptions and parameters:[c]	Unit, as applicable	*Most recent year in the Party's national inventory report, or the most recent year for which data is available*	*Projections of key underlying assumptions and parameters*[d]		
		20XX	*20X(0)(5)*	*20X(0)(5)*	*20X(0)(5)*
{Key underlying assumption/parameter}					

LEAP: Pretoria LEAP Exercise

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        - Natural Gas Stoves
    - Transport
      - Passenger
  - Transformation
  - Resources
  - Non Energy

Tags: Settings

Branch: Demand\Households\...

Branch: All Branches | Variable: Activity Level | Scenario: BAS: Baseline

Activity Level

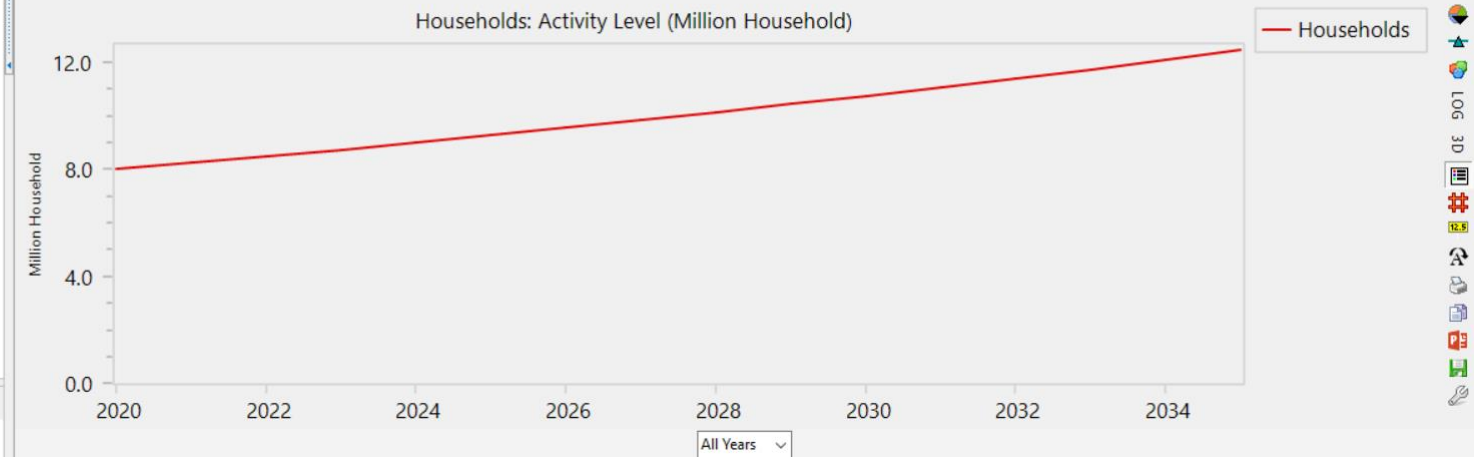
Activity Level: A measure of the social or economic activity for which energy is consumed. [Default="0"]

Branch	2020 Value	Expression	Scale	Units	Per
Households	8.00	Growth(3%)	Million	Household	
Cooking	100.00	100	Percent	Share	of Household

Expression OK | Check as You Type

Chart Table Builder Notes Elaboration Help

Show: Activity Level



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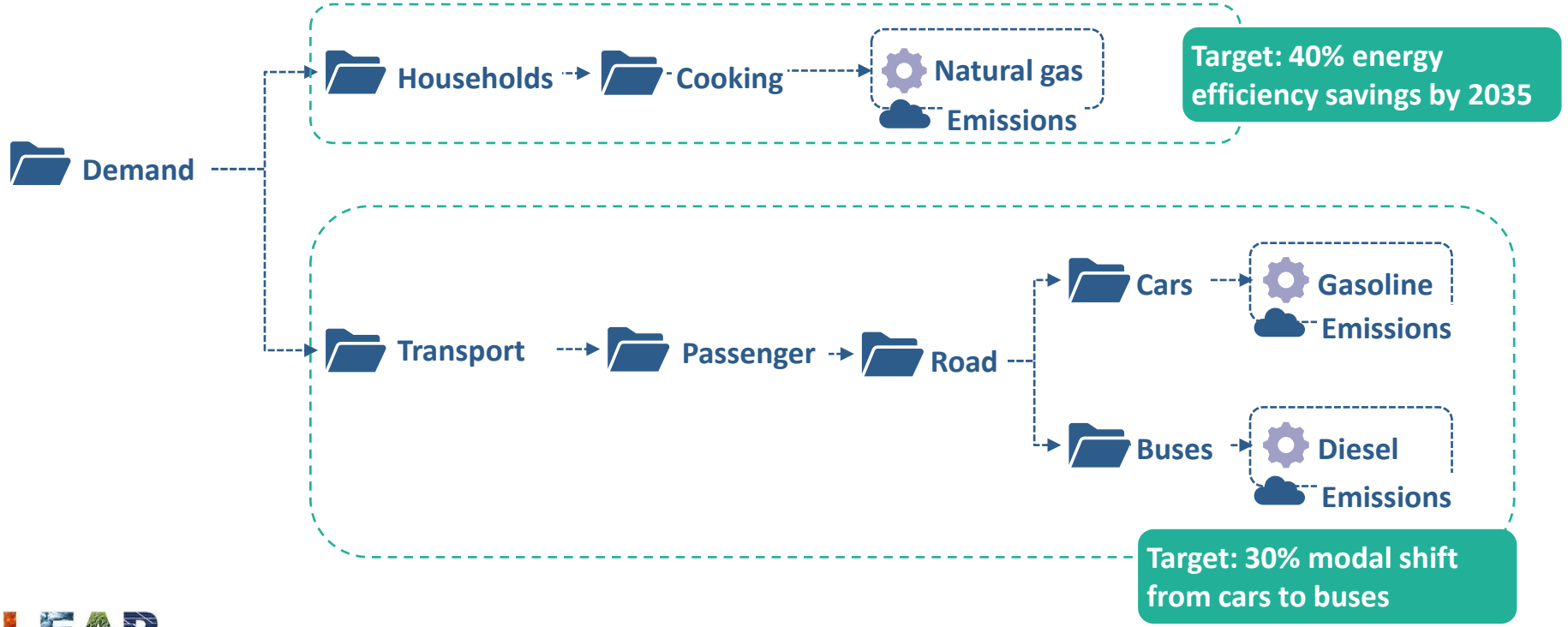
10. Projections of key indicators[a,b]

Key indicator(s):[c]	Unit, as applicable	*Most recent year in the Party's national inventory report, or the most recent year for which data is available*	*Projections of key indicators* [d]		
		20XX	*20X(0)(5)*	*20X(0)(5)*	*20X(0)(5)*
{Key indicator}					

Basic structure of LEAP model: The Tree and its branches



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Pretoria LEAP Exercise
- Key Assumptions
- Demand
  - Households
    - Cooking
      - Natural Gas Stoves
        - Carbon Dioxide
        - Carbon Monoxide
        - Methane
        - Non Methane Volatile Organic
        - Nitrogen Oxides
        - Nitrous Oxide
        - Sulfur Dioxide
  - Transport
    - Passenger
- Transformation
- Resources
- Non Energy

Tags: Settings

Branch: Demand\Households\Cooking\Natural Gas Stoves\...

Branch: All Branches Variable: Final Energy Intensity Scenario: BAS: Baseline

Activity Level | Final Energy Intensity | Avg Environmental Loading | All Variables

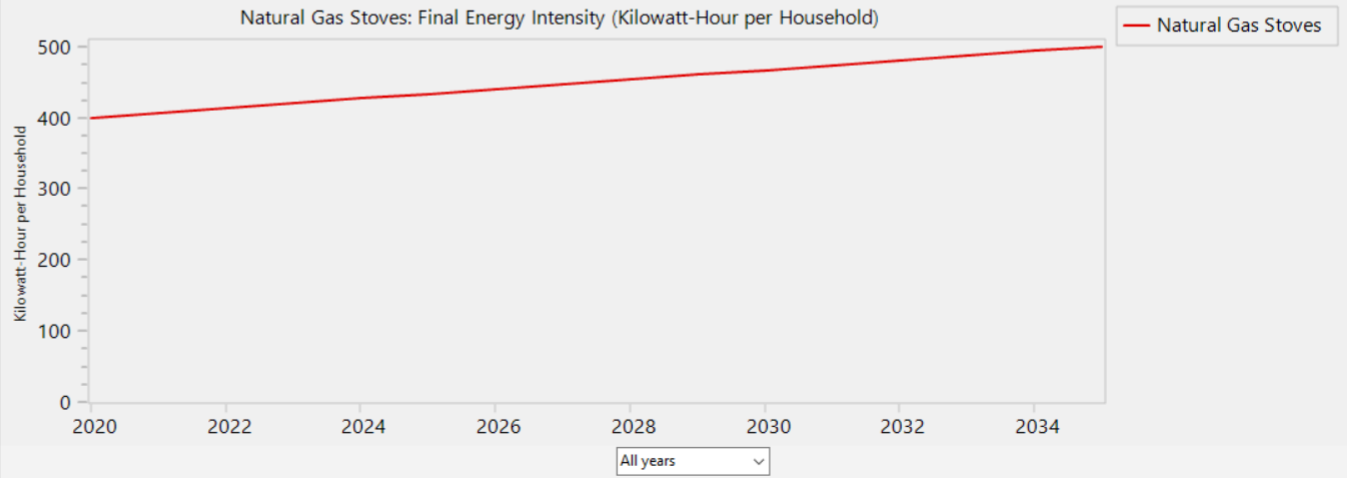
Final Energy Intensity: Annual final consumption of energy per unit of activity level. [Default="0"]

Branch	Fuel	2020 Value	Expression	Scale	Units	Per
Natural Gas Stoves	Natural Gas	400.00	Interp(2035,500)		Kilowatt-Hour	per Household

Expression OK | Check as You Type

Chart | Table | Builder | Notes | Elaboration | Help

Show: Final Energy Intensity Units: Kilowatt-Hour per Household



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LEAP: Pretoria LEAP Exercise

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Tags: Settings

Branch: Demand\Households\Cooking\Natural Gas Stoves\...

Branch: All Branches | Variable: Final Energy Ir | Scenario: MIT: Mitigation

Activity Level | Final Energy Intensity | Avg Environmental Loading | All Variables

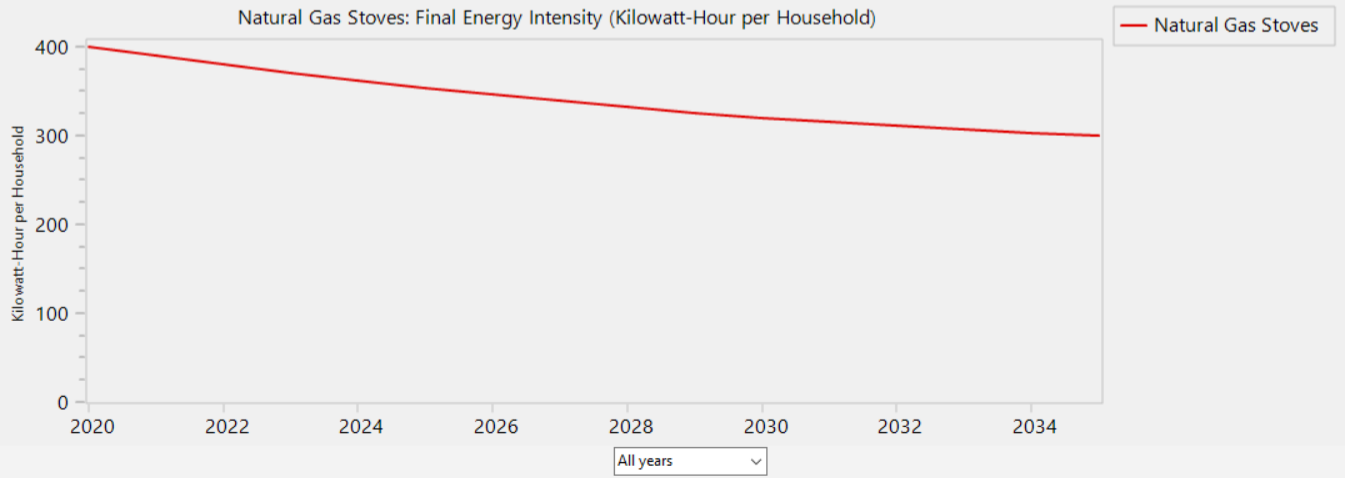
Final Energy Intensity: Annual final consumption of energy per unit of activity level. [Default="0"]

Branch	Fuel	2020 Value	Expression	Scale	Units	Per
Natural Gas Stoves	Natural Gas	400.00	Interp(2035,BaselineValue*0.6)		Kilowatt-Hour	per Household

Expression OK | Check as You Type

Chart | Table | Builder | Notes | Elaboration | Help

Show: Final Energy Intensity | Units: Kilowatt-Hour per Household



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