20 Minutes with LEAP

A Tool for Energy Planning and GHG Mitigation Assessment

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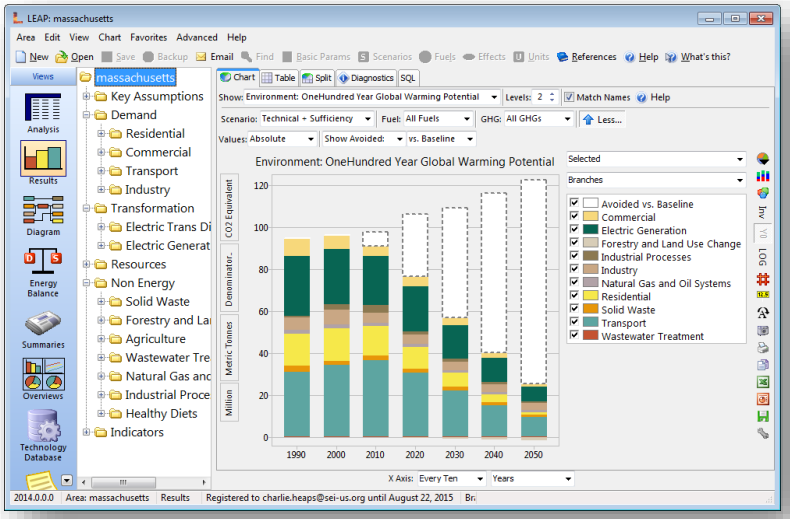
What is LEAP?

- A Windows-based tool for energy planning and GHG mitigation assessment developed by the Stockholm Environment Institute (SEI).
- Applied in over 190 countries. At least 32 used LEAP to help develop their INDCs.
- A scenario-based modeling tool that explores how emissions may change in the future under alternative policy settings (e.g. baselines and low emissions development scenarios).
- Typically used at the national scale but also applicable for cities, regions and multi-country analyses.
- Not just about modeling: also supports data management and documentation, results visualization and communication with stakeholders.
- Examines GHGs, SLCPs and local air pollutant emissions, economic costs, energy security, resource requirements and technology and activity trends.
- Closely follows IPCC GHG Inventory Guidelines. Includes Tier 1 default emissions factors and standard GWP values.



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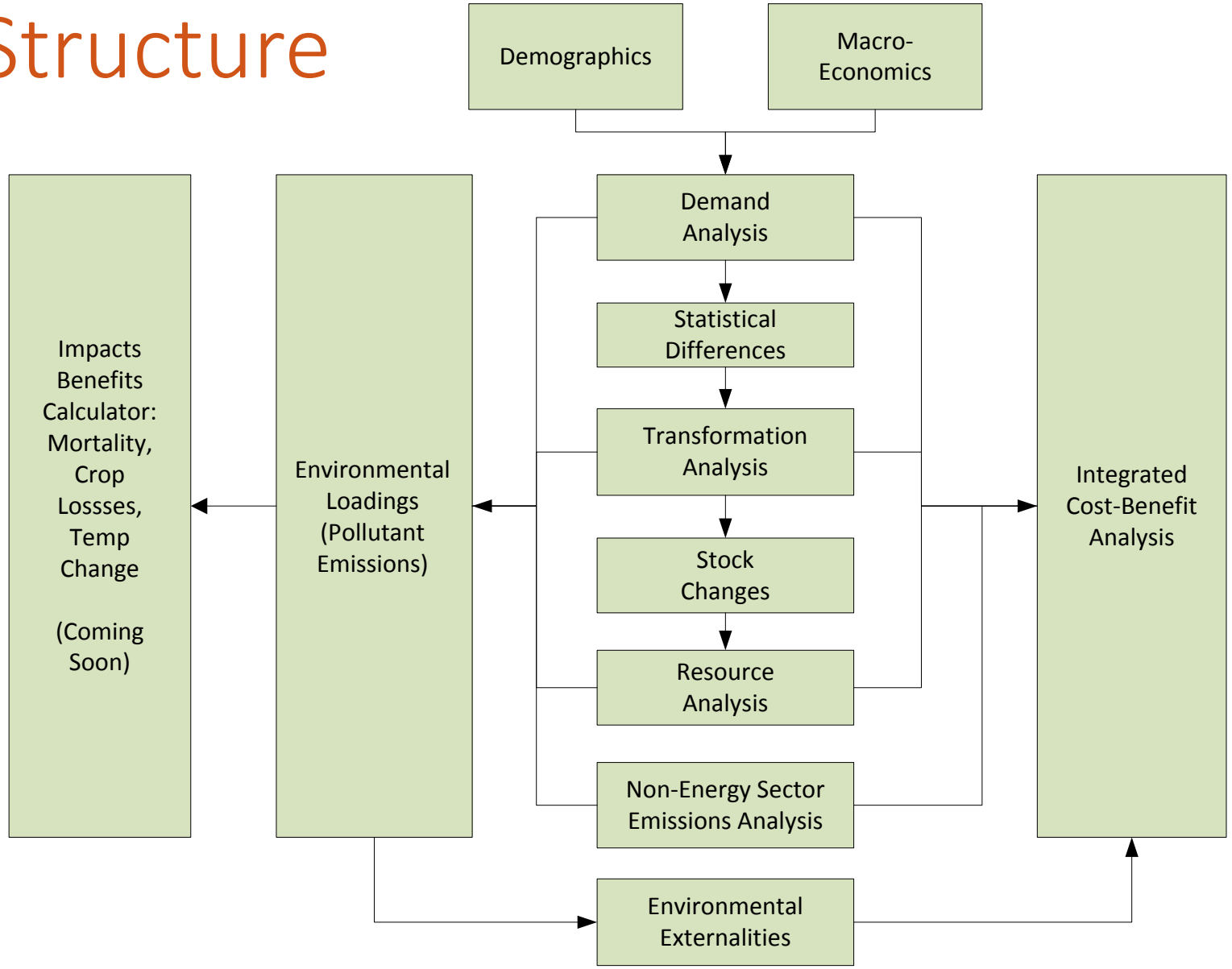
Mitigation Analysis for NDCs

- GHG mitigation analysis is significantly more challenging than GHG Inventories:
  - It considers the future where data is inherently unknowable.
  - It is an inherently political exercise: envisioning alternative energy and development futures.
  - It requires "bottom up" end-use oriented modeling to consider how technology trends may play out under alternative policy scenarios.
- Mitigation analysis ideally requires detailed technology and activity data, much of which are unavailable or of low quality.
- Developing countries face particular challenges since they typically have less data and only limited capacity.
- Countries often outsource their mitigation analyses to consultants. But this leads to less local learning, and helps explain why GHG mitigation plans don't get reflected in national development plans.
- LEAP can help address a few of these issues…

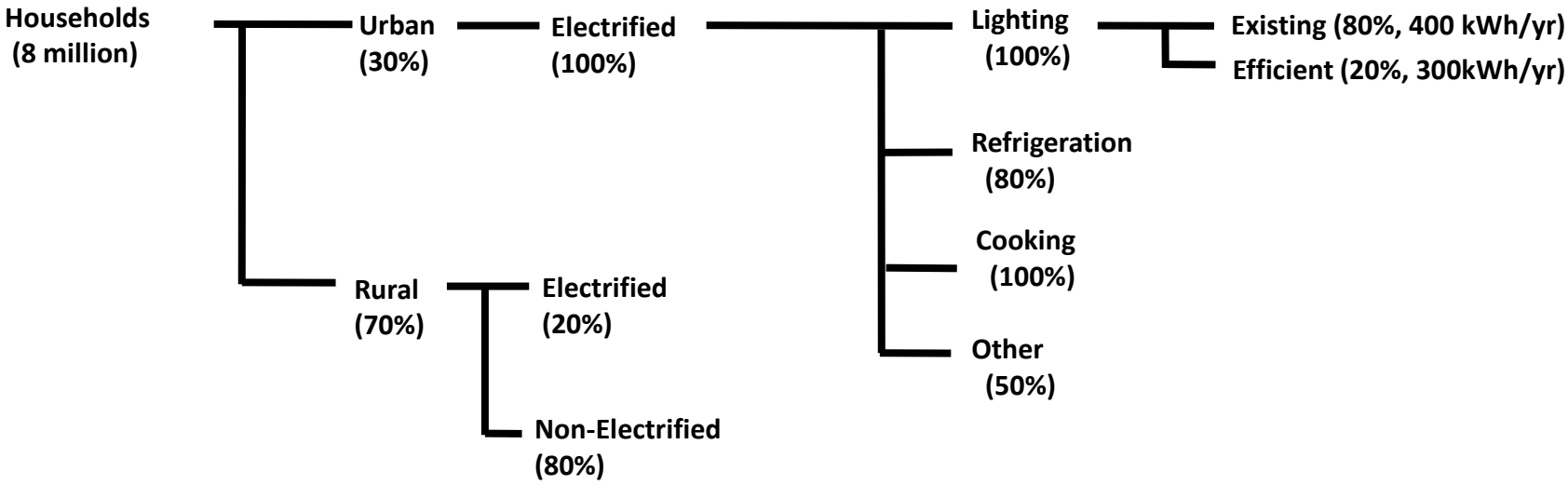
LEAP for NDC Mitigation Analysis

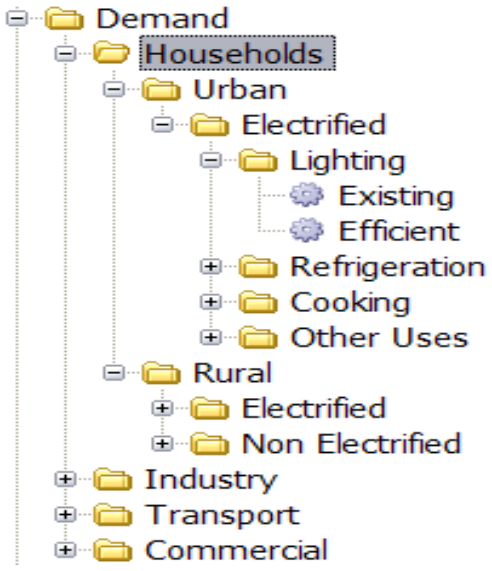
- Its low initial data requirements make it usable in situations where good data is in short supply and expertise is limited.
- Its user-friendly design and emphasis on results communication helps make NDC analyses more broadly accessible: to planners, decision makers and other stakeholders (not just modelers).
- Its demand-first, end-use oriented structure helps frame mitigation analysis within broader development goals.
- Fast interactive calculations encourage users to take an iterative “build simple and refine” approach to mitigation modeling.
- Its bottom-up approach is well suited for exploring technology-oriented energy and climate policies.

LEAP Structure



Demand Analysis in LEAP

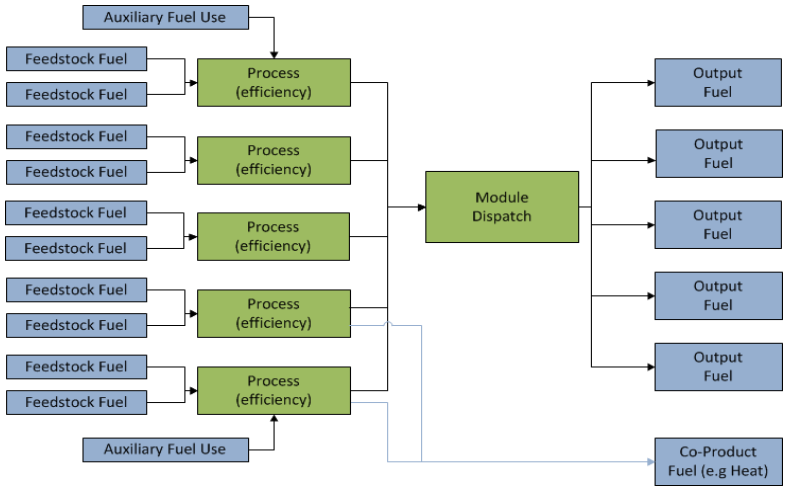


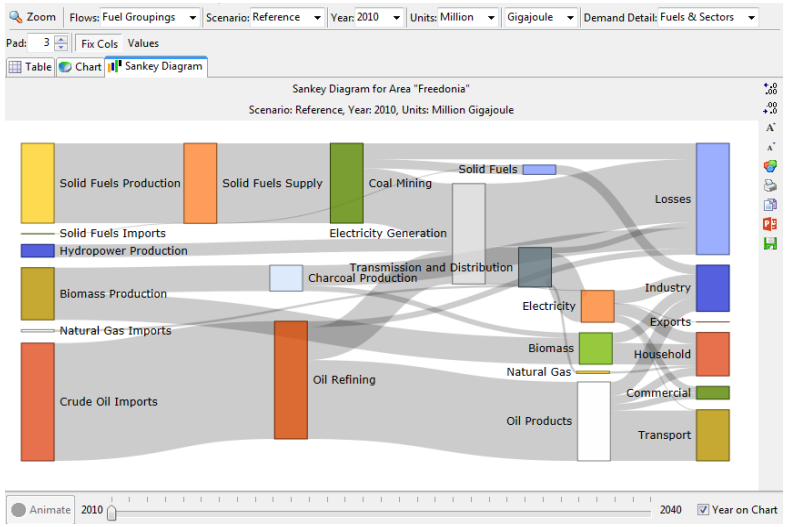


- The tree is the main data structure used for organizing data and models, and for reviewing results.
- Icons indicate the types of data (e.g., categories, technologies, fuels and environmental effects).
- Users can edit the tree on-screen using standard editing functions (copy, paste, drag & drop)
- Structure can be detailed and end-use oriented, or highly aggregate (e.g. sector by fuel).
- Detail can be varied from sector to sector.

Transformation Analysis in LEAP

- Demand-driven engineering-based analysis of energy conversion, transmission and distribution, and resource extraction.
- Transformation "modules" contain one or more "processes". Each can have one or more feedstock fuels and one or more auxiliary fuels.
- Choice of two solution methodologies: **simulation** or **optimization**.
- Each year divided into "time slices" to represent seasonal and time of day variations.
- Calculates process capacity expansion and operation, emissions, costs/ benefits, imports, exports, etc.
- Produces detailed results as well as standard format reports such as energy balances and Sankey diagrams.





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How Do You Get LEAP?

- Download LEAP from: www.energycommunity.org
- User name and password required to fully enable downloaded software. Provided on completion of license agreement.
- Licenses available at no charge to non-profit, academic and governmental institutions based in single developing countries. Other organizations required to purchase a license.
- Licenses are for two years/renewable.
- Technical support from web site or leap@sei-us.org
- Most users will need training: available through SEI or regional partner organizations.
- Check LEAP web site for news of training workshops.

Coming Soon in LEAP

- New Integrated Benefits Calculator (LEAP-IBC): Calculates avoided health (mortality), ecosystem (crop loss) and climate (radiative forcing) impacts: particular focus on Short Lived Climate Pollutants (SLCPs).
- Land-based modeling of distributed resources including wind, solar and biomass (traditional and modern).
- New cloud-based environmental technology database.
- Improved modeling of storage
- Updated platform (64 bit for larger models)
- Smart templates to ease LEAP model development.
- User interface improvements to make common task easier.