SUSTAINABLE ENERGY FOR ALL

ENERGY. CLIMATE.
DEVELOPMENT.

Energy systems planning for Global South Energy Transition and Investment

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OUR MISSION

SEforALL operates at the nexus of global energy, climate and development efforts to enable a Just and Equitable Energy Transition

ENERGY ACCESS

As captured by SDG7 targets, aiming to provide universal access, increase in share of renewables, and improved energy efficiency.

CLIMATE & NET-ZERO TRANSITION

As committed to in the Paris Agreement, which aims to keep global warming to ≤1.5°C and reach net zero emissions by 2050.

DEVELOPMENT & LIVELIHOODS

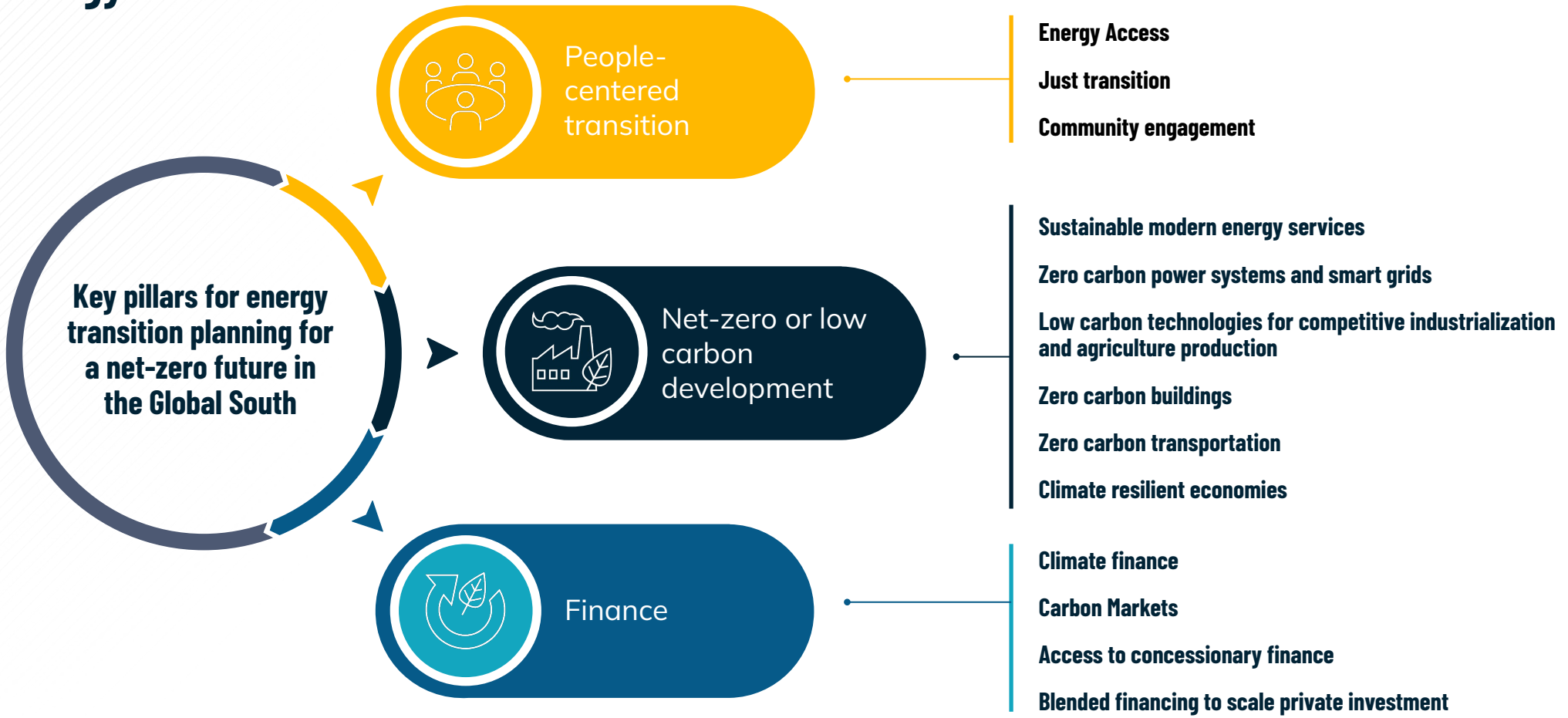
As captured by global SDGs, such as promoting healthy lives and well-being for all, and empowering women and youth.

OUR MISSION

To enable a just, equitable and sustainable energy transition that ensures every person, everywhere can live a dignified life on a healthy planet.

Energy Transition Planning

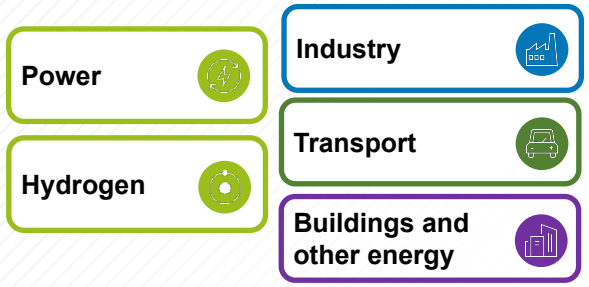
Comprehensive Energy Transition Planning is the foundation for scaling clean energy investments



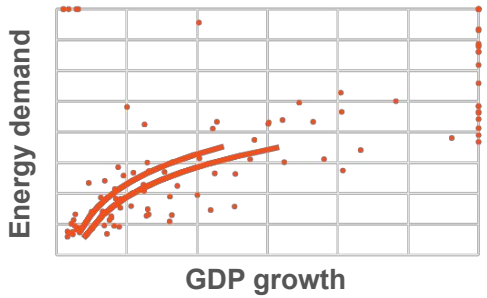
SEforALL Approach How we build an Energy Transition and Investment Plan

Comprehensive modelling and analytics co-created with country representatives for an optimized pathway that delivers a tangible implementation and investment plan

Applies cost-effectiveness analysis to identify the clean tech options across all major demand-supply sectors…

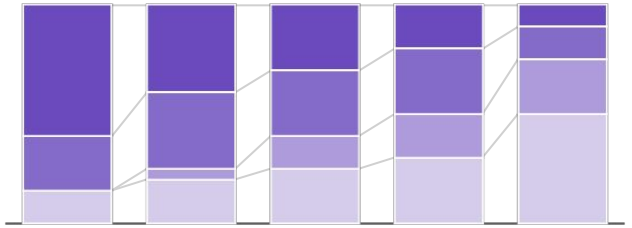


…to lay out how to achieve GDP and population growth in a low-emission way…



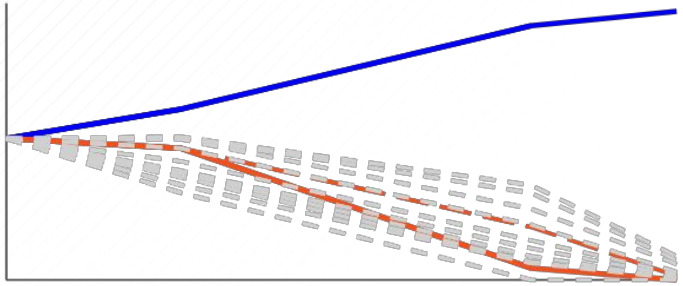
…assessing the implications of rapid innovation in clean tech for optimized adoption rates and technology mix per segment…

Technology penetration over time, per segment



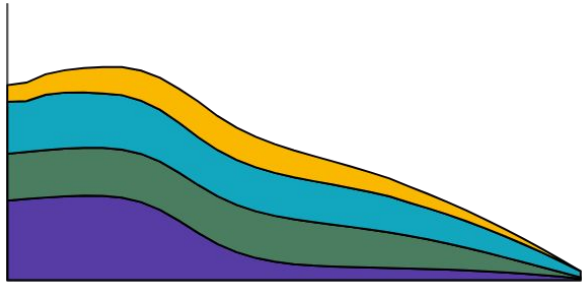
…and testing alternative scenarios to explore more rapid climate action…

Emissions, per scenario



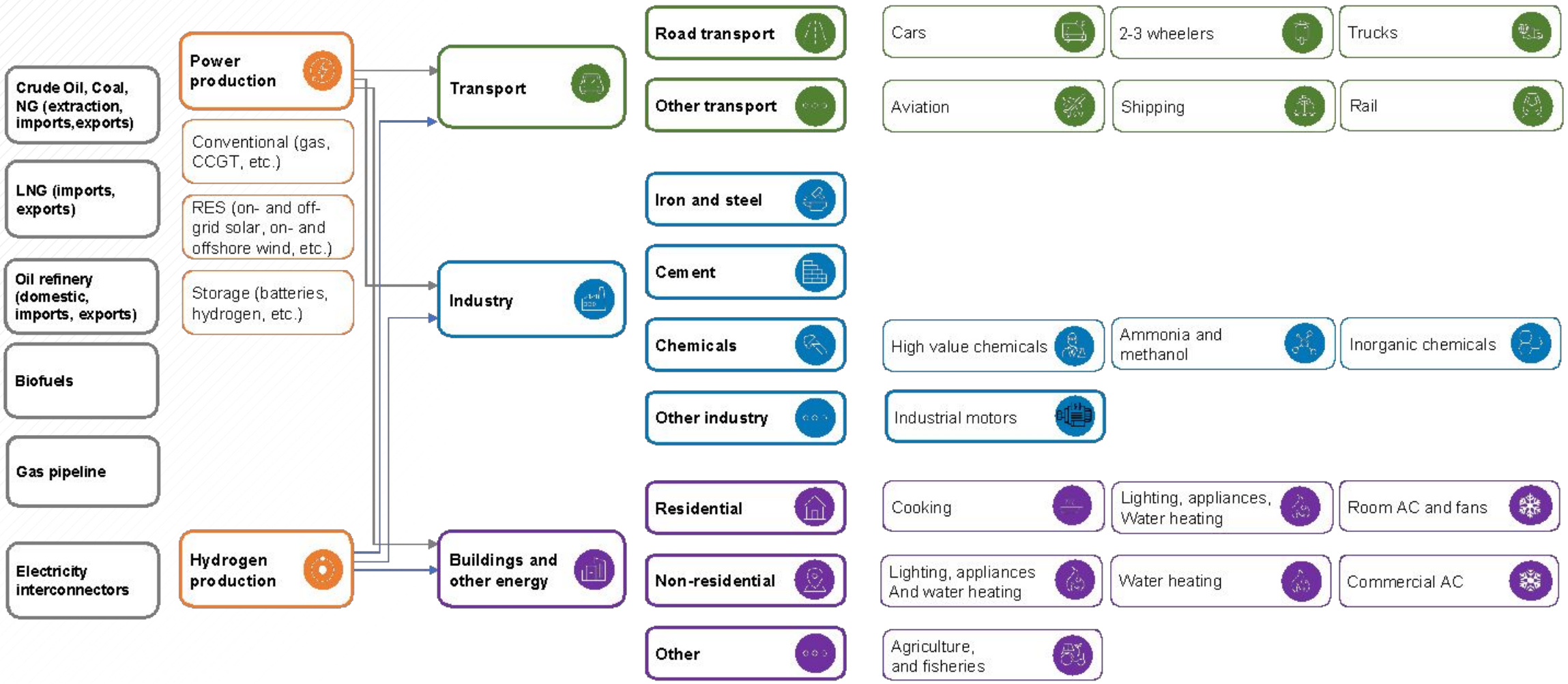
…to output the total GHG emissions and fuel demand of the optimized pathway…

Emissions, per sector



… as well as a tangible implementation and investment plan, compared with investment needs under business-as-usual

Insights through SEforALL Energy Systems Model (SEM) which is robust, has a fast-learning curve, and is based on open-source approach and technology mapping tuned to global south



SEM is developed based on OSeMOSYS (open-source energy systems model) to cover all main sectors where energy is used and produced, tuned to global south context

Energy Transition & Investment Plans Impacts

				
2.8 Gt (CO2 avoided 2020-2060)	**2 Gt** (CO2 avoided 2020-2060)	**998 Mt** (CO2 avoided 2020-2050)	**24.5 Mt** (CO2 avoided 2020-2050)	**1.4 Mt** (CO2 avoided 2020-2035)
840,000 new jobs by 2050	**400,000** new jobs by 2060	**500,000** new jobs by 2050 & beyond	**29,117** new jobs by 2050	**1,500** new jobs by 2035
594 bn USD investment by 2060	**206 bn USD** investment by 2060	**251 bn USD** investment by 2050 & beyond	**15.9 bn USD** investment by 2050	**3.67 bn USD** investment by 2040
687 bn USD energy cost savings by 2060	**182 bn USD** energy cost savings by 2060	**160 bn USD** energy cost savings by 2050 & beyond	**4.80 bn USD** energy cost savings by 2050	**7.8 bn USD** energy cost savings by 2040
100 mn people to be lifted out of poverty by 2060	Plan for developing into a middle-income country GDP **by 2060**	Plan for developing into a middle-income country GDP **by 2050**	**11 mn people** to be provided with electricity and **440 MW** of mini-grids & grid expansion by 2040	

Barbados Energy Transition and Investment Plan

- Barbados, a Small Island Developing State highly vulnerable to climate impacts, targets net-zero emissions by 2035 through a transition driven primarily by renewable energy expansion and electrification of transport, achieving a 67% emissions reduction by 2030.
- The energy transition will diversify the power mix with **45%** onshore wind, **24%** solar PV, and **29%** hydrogen by 2040 while reducing overall energy demand by **30%** through energy efficiency measures, notably in buildings and transport sectors.
- Implementing this pathway requires cumulative investments of **BBD 19 billion** (2020–2040), predominantly in transport (91%), yet yields **15% lower** total system costs compared to business-as-usual, driven by **BBD 15.6 billion** in fuel savings.
- The transition is expected to generate a **55% increase** in jobs, fostering new opportunities in renewable energy, electric vehicle infrastructure, and clean technology, with strategic emphasis on empowering women and youth through targeted education and skills development.
- Realizing the plan requires robust policy frameworks, stable investment environments, innovative financing mechanisms, and institutional coordination to mobilize capital, ensure progress monitoring, and secure Barbados's sustainable, climate-resilient future.

Integrated Energy Planning & Clean Cooking

SEforALL's Clean Cooking Programme: Filling the missing links within the sector to achieve SDG7

By developing the thriving global market for clean cooking, we can transform the way the world cooks, saving lives, improving livelihoods, empowering women and protecting the environment, while accelerating economic growth simultaneously.

	PROGRAMME PILLARS		
	 **Global Advocacy and Knowledge Dissemination**	 **Scalable Solutions and Platforms**	 **Tailored Country Support**
Objectives	Rally political momentum, create awareness, and **drive decision making** on an international stage	Unlock **financial flows**, foster **enabling business and policy environments**, and test implementation models	Build **system capacity** and advise around national **planning and implementation**
Opportunities	Build the action base through high-level agenda settings, partnerships and convenings; Raise awareness and accelerated adoption through innovative communications strategies.	Leverage on innovative financing mechanisms to scale finance towards the sector; Seek opportunities to engage women and youth in the sector.	Elevate the importance of clean cooking as part of national energy planning, and improve data and evidence bases to accelerate decision making within the sector.

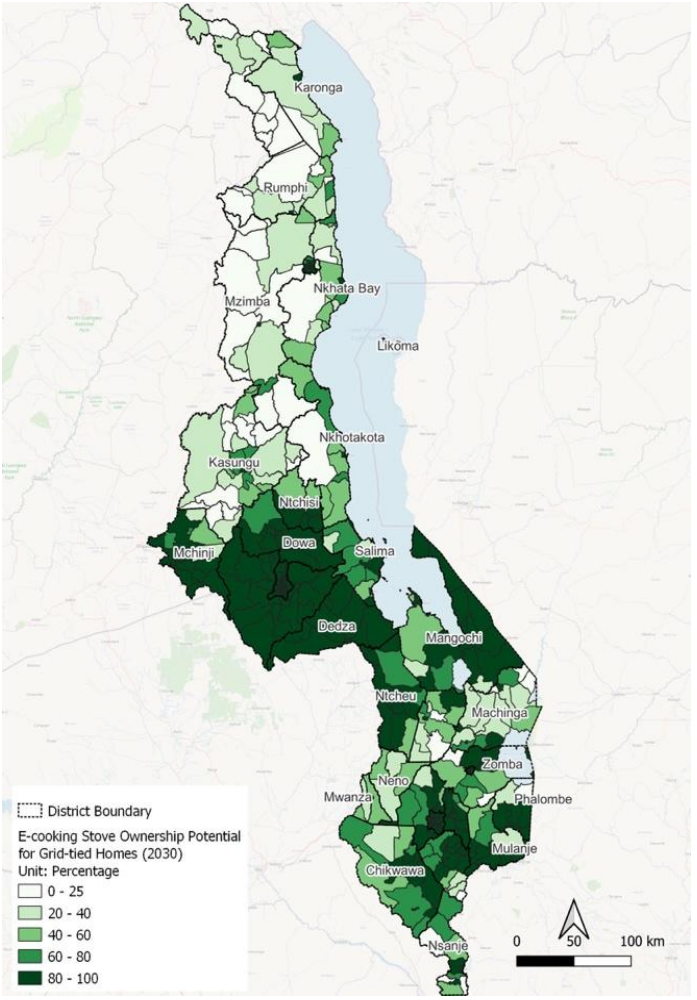
Integrated Energy Planning and Clean Cooking

Visual Representation of Clean Cooking Opportunities

Integrated Energy Planning makes use of IT, digital tools (e.g., GIS), satellite imagery, and machine learning to give **policymakers an easier, relatively low-cost, and visually powerful way of identifying** the optimal mix of technologies to achieve universal energy access.

- Least-cost technology mix to electrify households and social infrastructure
- Integrating electrification, medical and agricultural cold-chains and access to clean cooking analysis with geospatial components
- Associated costs, budget implications and prioritization of sites for each technology type

Impact example: eCooking potential reaches **73.1% of all households** in Malawi under the IEP universal electrification plan.



OnStove Methodology

OnStove – Open-source spatial cooking tool

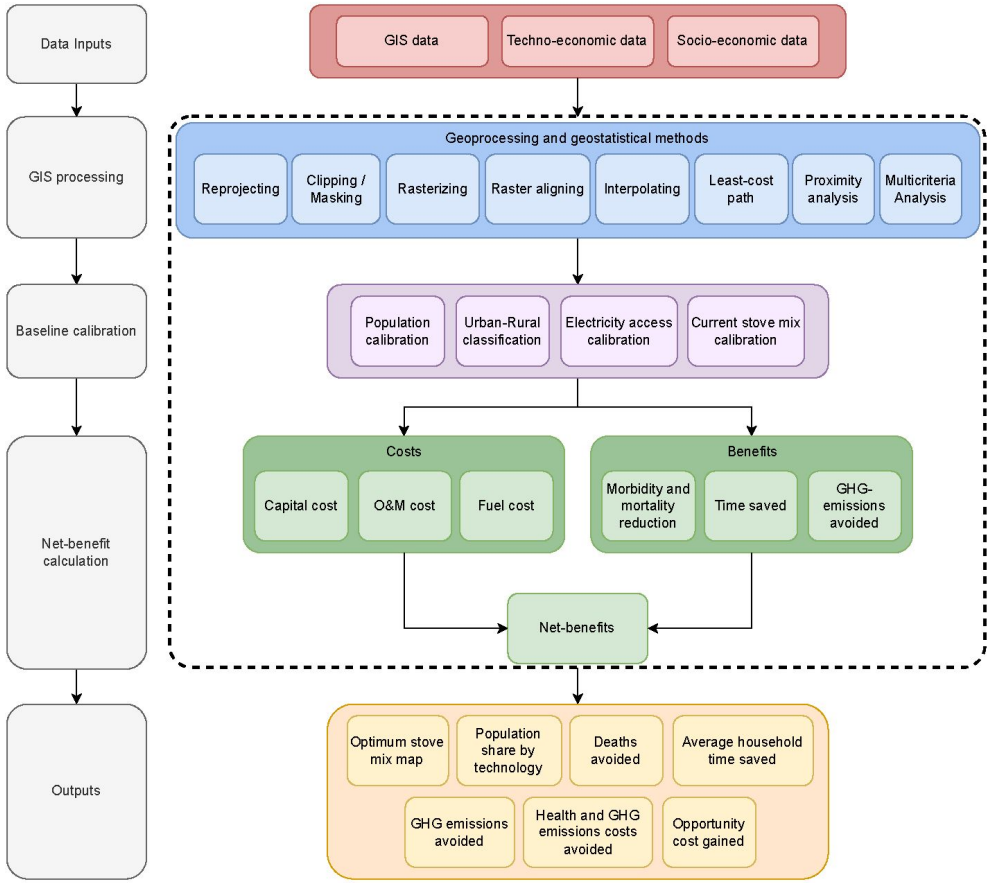
A geospatial clean cooking tool, determining the **net-benefit of cooking with different stoves** across an area

- Morbidity and Mortality reductions
- Emission reduction
- Time saved
- Capital investments
- O&M costs
- Fuel costs

Selects **the stove with the highest net-benefit** in each settlement.

Why Geospatial?

- Ability to tailor solution
- Ability to diversify supply mixes (costs & resource availability changes with location)
- GIS can be used to illustrate results in interactive maps – results easily understood



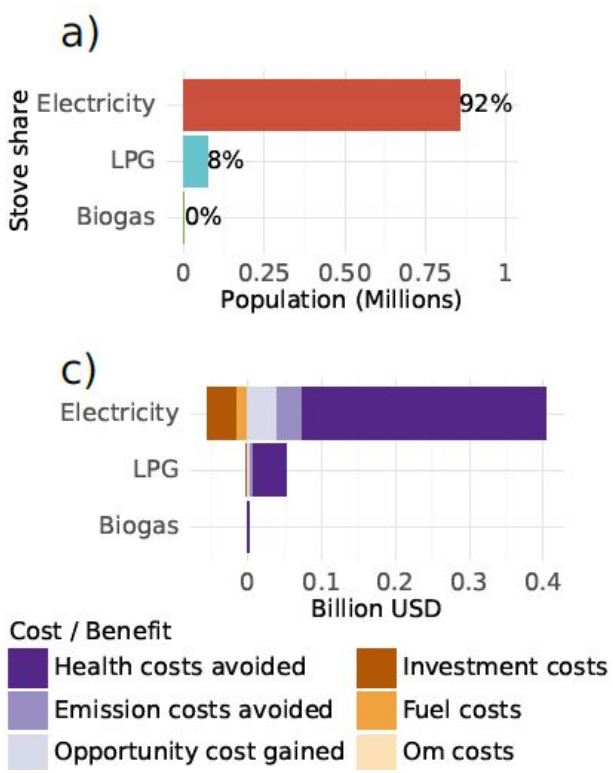
OnStove Methodology – Fiji Example

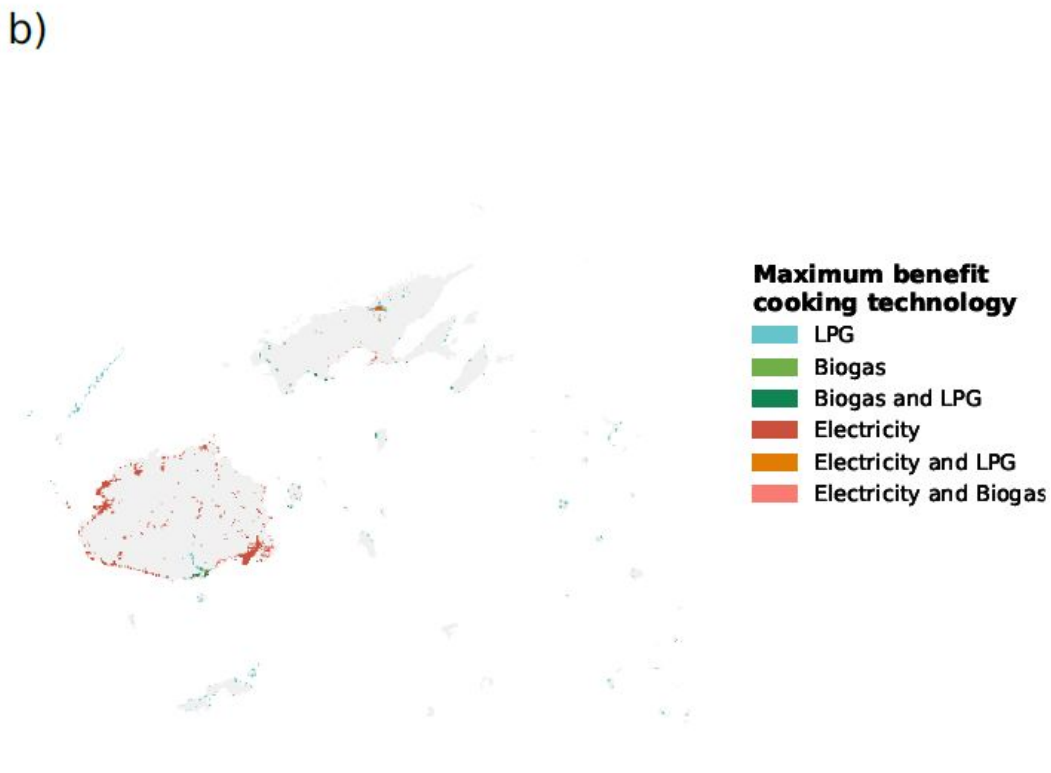
Main Result Example - Fiji

a) OnStove determines and visualizes the stove split for the given study area. The graph displays both shares and absolute numbers of each stove type.

b) Main result map of the OnStove analysis, showing the spatial distribution of the maximized net-benefit technology mix

c) OnStove calculates the costs and benefits of transitioning to clean cooking alternatives relative to a baseline, i.e. the current cooking technologies used over the study area.





Tailored Country Support

eCooking Opportunities Example: Clean Cooking Transition in Schools in Tanzania

Sustainable Energy For All (SEforALL) and the World Food Programme (WFP) have partnered to address the clean cooking challenge in schools globally.
The first implementation country: **Tanzania**

Transitioning schools to clean, affordable and reliable, cooking solutions:

- Improves the **health** of students, teachers, and cooks by reducing their exposure to air pollution generated in school kitchens.
- Supports school feeding that leads to improved **education** and **nutrition**
- Reduces **deforestation**
- Reduces **carbon emissions**
- **Schools as agents of change**

Objectives

1. Deploy electric cooking solutions to up to 50 grid-connected government primary schools with existing school feeding programs, reaching over 25,000 students and contributing to social, health, education and social economic development benefits across schools and communities
2. Deliver substantial reduction in emissions and an estimated 40,000 tonnes of biomass saved
3. Implement carbon finance to ensure sustainability and support scale up

SEforALL

WFP World Food Programme

Sustainable Cooling

ACCESS TO COOLING | POPULATIONS AT RISK

RURAL POOR

- Likely to be subsistence farmers without access to an intact cold chain;
- may lack access to electricity and properly stored vaccines.

URBAN POOR

- May have some access to electricity, but live in housing of poor quality;
- may have a refrigerator, but food often spoils due to intermittent power

LOWER-MIDDLE INCOME

- May purchase an affordable thus likely inefficient air conditioner or refrigerator that raises energy consumption and GHG emissions.

MIDDLE INCOME

- May be able to afford a more efficient air conditioner or minimize its use;
- may move to energy efficient housing and working environments.

HIGH RISK

MEDIUM RISK

LOW RISK

Sustainable Cooling

INTERVENTIONS

Global Advocacy and Strategic Communications

Catalyze new commitments for sustainable cooling, whilst championing access to cooling as an issue of equity and justice

Tailored country support to unlock investment in sustainable cooling and cold chains

Support governments with technical assistance to integrate sustainable cooling into evidence-based policies, plans, and strategies—focusing on agricultural and vaccine cold chains, and passive or nature-based solutions for cities and buildings

Catalyzing Solution Deployment, Incubation & Replication

Increase financing for sustainable cooling and help build lasting markets by providing investors, companies, and development partners with expert support, data, and partnerships to de-risk investments and scale up funding in supported countries

OUTCOMES

ACCELERATED PROGRESS ON SDG7 WITH BROADER SDG IMPACT

1. Greater political momentum and public awareness for sustainable cooling as a development and climate priority
2. Sustainable cooling recognized in global and national agendas, contributing to SDG7 and the 2030 agenda
3. Evidence-based policies and plans adopted to expand access to sustainable cooling for vulnerable populations
4. More finance mobilized and investment risks reduced
5. Growing markets for affordable and sustainable cooling solutions

SEforALL Sample Activities in Cooling

Global Advocacy and Strategic Communications

- SEforALL's global advocacy efforts resulted in over **60 countries signing the Global Cooling Pledge at COP28**, including Kenya, Ghana, the United States, Brazil, and Nigeria.The Chilling Prospects series identifies every year the population at risk due to the lack of cooling
- The **Chilling Prospects** series identifies every year the population at risk due to the lack of cooling
- In collaboration with ESMAP, we've highlighted the **nexus between energy access and clean cooling** solutions

Tailored country support to unlock investment in sustainable cooling and cold chains

- Partnered with countries including Ghana, South Africa, Sri Lanka, Bangladesh, Cambodia and Kenya to improved their policy and regulatory frameworks through **National Cooling Action Plans**
- Ongoing Support to ten Kenyan county governments to develop **Heat Action Plans**

Catalyzing Solution Deployment, Incubation & Replication

- Unlocked **+USD 300 million investment for sustainable cooling**, which further **leveraged an estimated USD 1.4 billion**

Driven by SEforALL and partners, the Global Cooling Pledge was launched at COP28 and has seen over 60 countries commit to reducing emissions and safeguarding communities.

Thank you for your attention

Sustainable Energy for All is an independent organization, hosted by UNOPS, with a global mandate to accelerate progress on the energy transition in emerging and developing countries. We work at the intersection of energy, climate, and development.

We collaborate with governments and partners worldwide to end energy poverty, accelerate the deployment of renewable energy solutions, and combat climate change.

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