Development Impact Assessment: Catalyzing Climate Action in Zambia

October 20, 2016
Webinar agenda

- EC-LEDS and LEDS Global Partnership Overview
- DIA framework
  
  *Caroline Uriarte, LEDS Global Partnership Secretariat*
- Zambia case study
  - INDC and NAMA activities – *Nancy Serenje, CEEEZ*
  - Rural electrification projects – *REA*
- Q&A
About EC-LEDS

- EC-LEDS helps countries accelerate their transition to climate-resilient, low-emission, sustainable economic development.
- EC-LEDS provides targeted technical assistance that supports the unique national development goals of each partner.
- EC-LEDS is a flagship U.S. government program that collaborates with more than 25 partner countries.

www.ec-leds.org
LEDS Global Partnership

LEDS GP Catalyzes Action and Collaboration Across more than 220 Countries and International Organizations

REGIONAL PLATFORMS
Define priorities and conduct peer learning and collaboration

GLOBAL WORKING GROUPS
Provide technical support and training

LEDS GP SECRETARIAT AND STEERING COMMITTEE

Planning and Subnational Integration

Analysis Tools – Benefits Assessment and Communications

Finance - Investment instruments, Public funds allocation, Donor financing

Sectors - AFOLU, Energy, Transport, Waste (with CCAC)

http://ledsgp.org/join/
Caroline.Uriarte@nrel.gov
What is Development Impact Assessment (DIA)?
Why is Development Impact Assessment Valuable?

- Supports a **development-focused vision for the future** through explicit consideration of social, environmental, and economic impacts of LEDS and NDC actions -- “well being” is more than just GDP
- Explores linkages across development priorities (e.g., access to electricity, creation of jobs and industries, conserving natural resources, enhancing livelihoods, facilitating gender equality, etc.) and tradeoffs
- Allows for a **simple structure to summarize** and bring together available analytical information, expert opinions, and other data with **clear traceability** back to the information justifying a score
- Brings together **new partners and stakeholders** and supports **cross-sectoral prioritization** of LEDS and NDC actions
- Supports **early establishment of M&E**
- Facilitates **implementation** of actions and **access to finance**
Why was the DIA Framework and Process Developed?

• Over 115 countries developing LEDS around the world; development goals provide the essential foundation for LEDS
• Demand for a simple framework to:
  – assess development impacts of LEDS actions, qualitatively or quantitatively, and through leveraging existing analytical data and information
  – and clearly communicate impacts to inform high level decision-making and policies
• LEDS GP sought to meet this demand through developing the DIA framework and supporting complementary stakeholder processes to populate the tool and communicate impacts
# EC-LEDS: Enhancing Capacity for Low Emission Development Strategies

## Development Impacts

### Abatement potential & costs

<table>
<thead>
<tr>
<th>MAC Curve</th>
<th>Technologies</th>
<th>Social Impacts</th>
<th>Economic Impacts</th>
<th>Environmental Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Health</td>
<td>Education</td>
<td>Gender</td>
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<td>Ease of Implementation</td>
<td>Alignment with Political Priorities</td>
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The randomized data inserted in this table is for purposes of demonstration only.

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Enhancing Capacity for Low Emission Development Strategies

Illustrative DIA Framework

<table>
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<th>Environmental Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Health</td>
<td>Employment</td>
<td>Water</td>
</tr>
<tr>
<td>1. Solar Water Heaters (SWH)</td>
<td><img src="+" alt="Green" /></td>
<td><img src="+" alt="Green" /></td>
<td>N/A</td>
</tr>
<tr>
<td>2. Coal</td>
<td>![Neutral]</td>
<td>![Positive]</td>
<td></td>
</tr>
<tr>
<td>3. Solar PV</td>
<td>![Negative]</td>
<td>![Neutral]</td>
<td></td>
</tr>
<tr>
<td>4. Solar CSP</td>
<td>![Neutral]</td>
<td>![Neutral]</td>
<td>![Neutral]</td>
</tr>
<tr>
<td>5. Wind</td>
<td>![Neutral]</td>
<td>![Neutral]</td>
<td>![Neutral]</td>
</tr>
</tbody>
</table>

## Illustrative Scoring Methodology Table

<table>
<thead>
<tr>
<th>National Development Priority</th>
<th>Unit of Measurement</th>
<th>Scoring</th>
<th>Data Source for Prioritization Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>Gross jobs per MW (construction and O&amp;M phases)</td>
<td>Positive: 1-15</td>
<td>ERC 2010</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High Positive: 16-31</td>
<td></td>
</tr>
<tr>
<td>Water use</td>
<td>Gallons of water saver/MWh from coal power substitution</td>
<td>Positive: 26-439</td>
<td>Wassung</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High Positive: &gt;439</td>
<td></td>
</tr>
</tbody>
</table>
| Health                       | Qualitative improvement in health from coal power substitution                        | • Technologies that can offset coal power production are assumed to have a positive impact on health  
• SWHs are assumed to have a positive impact on health | NOTE: To err on the conservative side, qualitative health impacts were scored positive, rather than high positive, as further analysis of the literature would be needed to make the distinction between positive and high positive. | Spalding-Fecher and Matibe 2003 and “Impact and validation” 2014 |

Complementary Quantitative Tools to Assess Impacts within the Framework

www.ledsgp.org/development-impact-assessments-tools

**Development Impacts Assessment (DIA) Toolkit**

The Development Impacts Assessment (DIA) tool search helps country, regional, and local policymakers find tools and resources to assess the impacts of and links between national development priorities and low emission development strategies. This toolkit equips decision makers with information to explore policy options and build consensus with stakeholders to achieve low-emission development that supports national development objectives.

For more information see [how to assess development impacts](http://www.ledsgp.org/development-impact-assessments-tools) and [ways to use the Development Impacts Assessment tool search](http://www.ledsgp.org/development-impact-assessments-tools).

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**WorldScan**

WorldScan is a recursively dynamic general equilibrium model for the world economy, developed for the analysis of long-term issues in international economics. The model is used both as a tool [more]...

posted: 11am, October 2, 2015

**Threshold 21 (T21)**

Threshold 21 (T21) is a dynamic simulation tool designed to support comprehensive, integrated long-term national development planning by comparing different policy options across a wide range of sectors and identifying [more]...

posted: 9am, October 2, 2015

**Regional Economic Models, Inc. (REMI) model**

The REMI model is a dynamic forecasting and policy analysis tool that can be variously referred to as an econometric model, an input-output model, or even a computable general equilibrium [more]...

posted: 9am, October 2, 2015

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**Filter By**

- **Regions**
  - Select options
- **Sectors of Focus**
  - Select options
- **Geographic Scope**
  - Select options
- **Activity Scale**
  - Select options
- **Impacts Assessed: Social**
  - Select options
- **Impacts Assessed: Environmental**
  - Select options
Stakeholder Processes to Assess Impacts within the Framework

- Under a more qualitative approach, the DIA visual tool can also be populated through stakeholder and expert-led discussions on potential impacts of LEDS actions.

- Country partners may also choose to use some combination of qualitative stakeholder input and quantitative analysis tools to populate the DIA framework.

Photo: Zambian woman describes benefits of solar electrification of her home to inform development impact assessment. Photo by CEEEZ.
Support Resources for Development Impact Assessment

• EC-LEDS website – Download the visual tool and find further resources on the DIA process at www.ec-leds.org/DIA

• LEDS GP Remote Expert Assistance for LEDS – Receive up to 40 hours of no-cost remote support for development impact assessment at http://ledsgp.org/assistance

• LEDS GP DIA toolkit – Search a user-friendly database of tools to assess specific development impacts that can feed into DIA processes - http://ledsgp.org/development-impact-assessments-tools

• For more information on the DIA framework and process, please contact: Sadie.Cox@nrel.gov
DIA to Support Zambia’s Climate and Development Goals

Zambia’s Intended Nationally Determined Contribution

Photo: Electrification of a school in Zambia to support energy access; a key national development goal.
Zambia’s DIA Approach for INDC and NAMA Development – Part I

- Partnership established between Gov’t of Zambia and local technical institution (CEEEZ) to lead analysis to inform climate action
- GoZ prioritizes three key impacts for assessment based on national development goals: health, education and food security
- Capacity built within CEEEZ to lead the DIA framework development and process and to use other supporting analytical tools
- CEEEZ performs initial impact analysis using available literature and drafts “concept notes” describing potential impacts

Key Stakeholders
MLNREP • Department of Energy • Ministry of Agriculture • Ministry of Local Government • UNZA • Lusaka University • ZEMA • Lunsemfwa Hydro Power • REA • Metro Consultants • Zambia Climate Change Association of Zambia • National Secretariat on Climate Change

EC-LEDS | Enhancing Capacity for Low Emission Development Strategies
Zambia’s DIA Approach for INDC and NAMA Development – Part II

- Concept notes shared with key experts and stakeholders to inform stakeholder discussions
- CEEEZ builds capacity of key stakeholders on use of the DIA framework and process
- DIA stakeholder workshops held to receive expert and stakeholder input to inform prioritization
- Prioritized actions validated during broader stakeholder workshops
- Prioritized actions and impacts included in Zambia’s INDC and 4 NAMAs
- Prioritized actions and impacts presented to Ministry of Environment for approval
### Application of DIA framework and process to inform sustainable agriculture practices included in INDC

<table>
<thead>
<tr>
<th>Name of Programme</th>
<th>Description</th>
<th>Objectives of the Programme</th>
<th>Co-benefits</th>
</tr>
</thead>
</table>
| Sustainable Forest Management    | Program involves implementing  
- Forest enhancement including natural regeneration and afforestation/reforestation  
- Sustainable charcoal production to include improved kilns  
- Improved cooking devices to include improved biomass stoves, use of ethanol and LPG stoves, and switch to electric stoves  
- Participatory forest management (CFM, JFM, PFM)  
- Forest fire management | To promote natural regeneration, afforestation/reforestation, sustainable charcoal production and utilization practices, and generation of electricity from forest waste and residues. | - Creation of job opportunities and alternative livelihoods contributing to rural poverty reduction  
- Enhanced information awareness on forest management  
- Increased biodiversity preservation  
- Restored hydrological balance in the river basin  
- Increased resource productivity leading to watershed services, and ecosystem protection restoration of natural habitats  
- Increased rural household incomes from SMEs  
- Local community empowerment and capacity building,  
- Reduced GHG emissions  
- Improved air quality |
| Renewable Energy and Energy Efficiency | Program involves implementing  
- Fuel switch (diesel/HFO to biodiesel)  
- Fuel switch (coal to biomass)  
- Switch from existing isolated diesel to mini-hydro  
- Introduce and increase blending of bio-fuels with fossil fuels and where possible substitution with bio-fuels  
- Off grid RE to non-electrified rural – P.V and wind  
- On grid expansion program to support economic growth and grid extension through inter-basin water transfer  
- Grid extension to non-electrified rural areas | To promote the switching from conventional and traditional energy sources to sustainable and renewable energy sources and practices, and use of off grid renewable energy technologies for rural electrification as decentralized systems. | - Improved health impacts due to child and maternal mortality and retention of medical personnel  
- Improved education impacts due to longer hours of study and advanced teaching methods, safety, creation of opportunity for girls child and women’s education  
- Improved food security due to increased agriculture production resulting from use of irrigation especially for women  
- Increased rural development impacts due to increased economic activities through SMEs  
- Reduced indoor air pollution and load shedding  
- Reduced GHG impacts and improved air quality  
- Reduced energy deficits |
## Application of DIA Framework and Process to Assess Mini-Hydro

<table>
<thead>
<tr>
<th>Sector</th>
<th>Technology</th>
<th>Impact</th>
<th>Score (#s in parentheses correspond to reference list at end of references/rationale document)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Category</td>
<td>Description</td>
</tr>
<tr>
<td>ENERGY</td>
<td>Mini Hydro</td>
<td>Social</td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social</td>
<td>Energy Access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Economic</td>
<td>Employment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environment</td>
<td>GHG Emissions</td>
</tr>
</tbody>
</table>

Application of a specific quantitative tool, “IJEDI”, to support analysis within the DIA process.
Good Practices and Lessons Learned to Support Successful DIA Processes

- Ensure strong government buy-in and participation across ministries
- Customize the DIA framework and process to specific circumstances (e.g., in relation to national development priorities, key technologies/actions/sectors, and data availability)
- Engage stakeholders across sectors early and regularly to ensure value of the process is understood, ownership is created, and silos are broken down
  - Build strong capacity of lead institutions and stakeholders
  - Identify a champion technical institution to lead the analysis and process through a “train the trainer” approach
  - Support lead institution in providing robust and targeted training to key stakeholders and experts to provide input to the framework and process
  - Provide key resources and information to stakeholders throughout DIA process (e.g., primers, summaries, and background information on each type of impact and technology)
- Support iterative and sustained engagement with the process
  - Ensure DIA framework is a “living framework” that can change as data is made available and/or goals and priorities shift
THANK YOU!