International Experiences and Frameworks to Support Country-Driven Low-Emissions Development

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1 Introduction

Low-emission development strategies (LEDS) enable countries to advance sustainable, climate-resilient development and private-sector growth while significantly reducing the greenhouse gas emissions traditionally associated with economic growth. Guided by each country's development goals, a LEDS articulates economy-wide development scenarios, and the policies, programs, financing, and implementation plans necessary to achieve those scenarios.

Successful implementation of LEDS is predicated on two factors: the strategy must be country-driven, and it must be built upon robust analyses, ranging from business-as-usual projections to financing plans. This approach often requires a fine balancing of the autonomy of a country's economic planners and the ability of that country to access the resources necessary to conduct analyses. An international support framework would help strike this balance, by allowing countries to conduct their own analyses, but also making available whatever resources a country might need to bolster this effort. Such a framework would draw on the exchange of information and technical support among four parties—*developing and developed country governments, donor assistance programs, networks of experts and investors*—as well as *LEDS coordinating forums*. Such a framework would also foster learning through a virtual "*knowledge platform*" or vehicle for communicating content. A common vision for this framework can help guide efforts to strengthen individual components and to effectively link these elements in achieving common objectives. Figure 1 illustrates the key elements of an international LEDS framework.
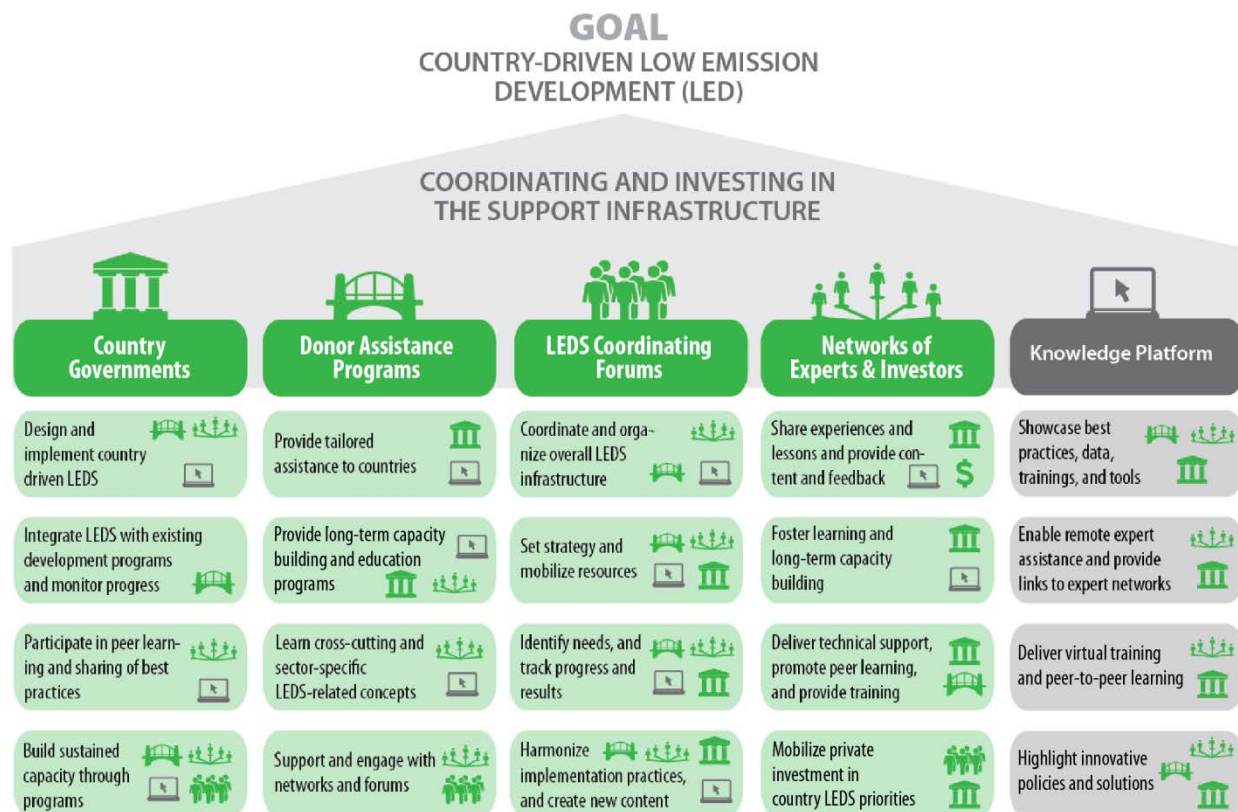
Figure 1. Elements of the framework for international low-emission development strategies

This paper seeks to elaborate on three components of the support infrastructure: LEDS coordinating forums, networks of experts and investors, and knowledge platforms, while also sharing early lessons and experiences with LEDS implementation. Investing in all elements in an integrated fashion will increase the efficacy of support for country-driven LEDS.

Coordinating forums for LEDS can operate at four levels:

1. **High-level forums** to mobilize interest and build and maintain support of leaders from governments, international institutions, industry, and non-governmental organization (NGOs) for low-emission development
2. **Donor program manager networks** to harmonize country assistance, identify gaps in support and coordinate efforts to address gaps, and track and communicate progress and results. The recently established LEDS Collaborative Working Group, with representatives from bilateral and multilateral donor programs and several technical institutions, is an example of such a donor program manager network.
3. **Practitioner networks** to coordinate and harmonize implementation delivery practices, improve tools and capacity building, share best practices and lessons, and maintain the knowledge platforms. The Coordinated Low Emissions Assistance Network (CLEAN),[1] with technical institutes around the world delivering LEDS assistance, is playing such a role in coordinating work and learning across LEDS practitioners.
4. **Developing country coordination** to harmonize support across donor programs in each country; tightly linked with current country-led development programs.

The networks of experts and investors and knowledge platforms are tightly linked, and they operate at the cross-sectoral and sector-specific levels. Expert networks (creators and users of best practices and tools) are designed to foster peer-to-peer learning, long-term capacity building, and effective LEDS implementation, including investment mobilization. Existing examples include the ClimateWorks Foundation policy networks and the UNEP facilitated Global Network on Energy for Sustainable Development (GNESD). Investor networks seek to assist countries in mobilizing sustained private-sector investment in LEDS priorities, through investment matchmaking, capacity building, and providing advice on policies for attracting capital and private-sector engagement. The Climate Technology Initiative's Private Financing Advisory Network and Sustainable Energy Finance Alliance are examples of such investment networks. The success of LEDS programs depends in large degree on sustained educational and professional training programs on LEDS topics for developed and developing countries and success in mobilizing private investment. *Long-term capacity building support and investor mobilization should be a key objective in strengthening the international LEDS framework.*

Knowledge platforms serve as clearinghouses of technical reports, data, and analysis tools that can be used to support LEDS. Such platforms can compile and present the most relevant technical resources, along with summaries of lessons and applications. They can also offer interactive services such as virtual expert assistance, peer-to-peer learning, and training programs, and they can link users to expert networks for more in-depth support and learning. For example, the Clean Energy Solutions Center offers technical resources and interactive services on clean energy policies and programs.

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[1] For more information, see http://www.OpenEI.org/CLEAN. Members of CLEAN are listed in Appendix A. The uniform resource locators (URLs) or Web addresses for entities referenced in this paper are listed in Appendix B.

Figure 2 provides examples of existing networks of experts and knowledge platforms, at both the cross-sectoral and sectoral levels.
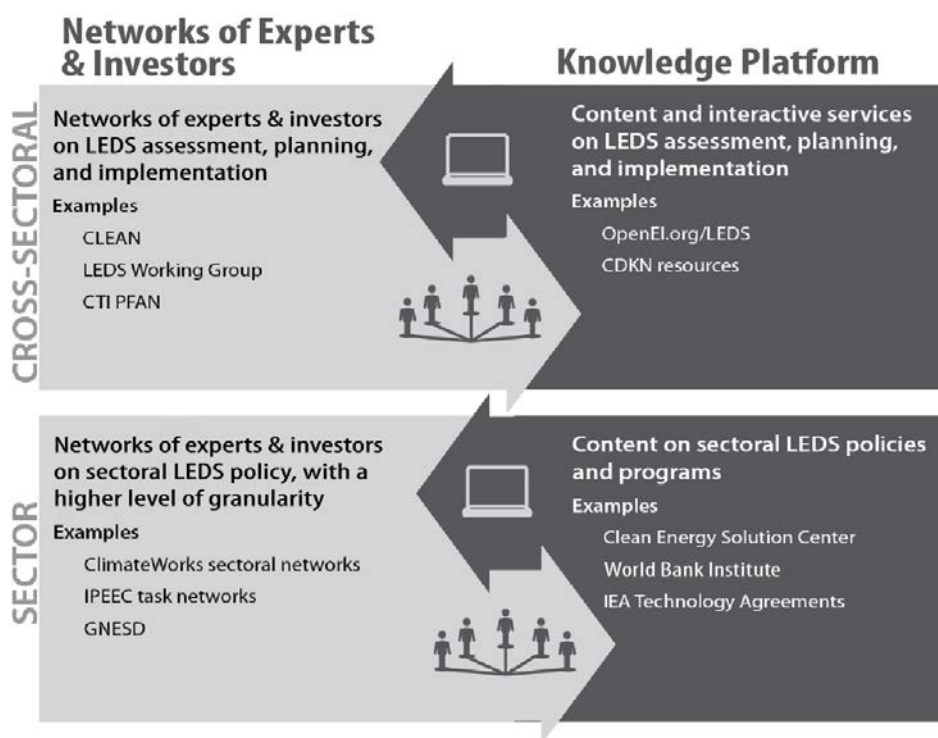
Figure 2. Examples of existing networks of experts & investors and knowledge platforms

2 Context for this Paper

The governments of South Africa and France, UN Energy, the World Bank Group, the Clean Energy Ministerial, and the ClimateWorks Foundation sponsored a high-level event on July 13, 2011. The purpose of the event was to explore opportunities to strengthen the coherence and impacts of international programs assisting countries with low-emission development. The World Bank and Climate Advisers asked the Coordinated Low Emissions Assistance Network (CLEAN) to prepare a paper that summarizes the experiences of CLEAN partners in collaborating with developing countries on low-emission development plans and policies. The World Bank and Climate Advisers posed the following five specific questions for CLEAN partner input:

1. What are the knowledge, capacity and resource gaps that inhibit policy implementation for low-emission growth?

2. What sources of information are countries using when designing low-emission policies?

3. What additional tools are needed to improve the information for decision-making?

4. How can peer-to-peer learning networks be structured and leveraged to promote the rapid transfer of new knowledge and best practices where knowledge and capacity are highly decentralized?

5. How should new solutions relate to ongoing multilateral, governmental and non-governmental initiatives?

This paper provides initial responses to these questions and proposes a framework to enable the rapid transfer of LEDS-related knowledge and technical assistance. The U.S. National Renewable Energy Laboratory (NREL) prepared this paper with extensive input from many CLEAN partners. The paper reflects the diverse experiences of these organizations in implementing LEDS and similar assistance to developing countries.

3 What are the gaps in awareness, data, and capacity that inhibit policy implementation for low-emission growth?

Significant variations in readiness for making or implementing a LEDS occur across countries. Variations in readiness exist within *awareness*, the availability of high quality *data*, and the availability of analytical and institutional *capacity*.

3.1 Gaps in Awareness
Low-emission development is an ambiguous concept. The meaning of low-emission development is neither well understood nor mutually understood among relevant stakeholders, and many stakeholders may not be aware of low-emission development as a concept or guiding principle for planning. Furthermore, the relation between low-emission development and domestic development goals may be unclear, thereby making difficult the formulation of a methodology to prioritize actions.

Political barriers inhibit policy implementation, especially if LEDS are perceived as greenhouse gas (GHG) mitigation programs.[2] Decision makers require tools to illustrate how LEDS achieves national interests, such as energy security and economic growth, and do not retard development. For example, decision makers need to understand the business case for energy efficiency—what energy efficiency programs entail, how energy efficiency benefits governments, people, and industry, what financing mechanisms are available, and what barriers to energy efficiency exist and how solutions are crafted, for example. Similarly, tools that demonstrate development impacts of LEDS would help communicate the purpose of LEDS. For example, visuals that communicate the primacy of development goals to supplement, e.g., the cost and carbon focus of traditional marginal abatement cost curves, will help countries better prioritize policy actions, characterize the development benefits of LEDS, and educate key stakeholders of such benefits.

3.2 Gaps in Data
Data are often insufficiently detailed to demonstrate the opportunities and impacts of LEDS. Gaps in high quality economic and emissions data inhibit policy planning and the ability to communicate and understand the development benefits of low-emission strategies. In many countries, there is a critical need for improved data to support analysis of economic,

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[2] GHG mitigation programs aim for cost-effective GHG mitigation; whereas LEDS are designed to achieve a country's development goals in a manner that reduces long-term GHG emissions compared to business-as-usual. Thus, actions considered for a LEDS cannot be undertaken at the expense of achieving a country's development priorities.

environmental, and social impacts of both low-emission development options and planning more broadly.

3.3 Gaps in Capacity

Knowledge and resource gaps are interlinked. Staff in developed countries have greater opportunities to network and participate in discussions and trainings on policy design. Staff in resource-constrained countries are less likely to participate in global policy information-sharing networks, and they may lack sustained education and workforce training programs at home. As a result of limited participation in global dialogues, policy best practice materials may not offer the details necessary for effective tailoring in developing countries.

Expansive workforce training in each country is necessary to ensure long-term benefits of low-emission development planning. To advance low-emission development, hundreds of staff require training in each country. Countries would benefit from stronger in-country training and education programs—including formal degree programs—that tailor LEDS-related curricula to local workforces and government personnel. This strategy requires trainings for professors, support for curricula development, and the incorporation of LEDS topics into national programs of study. Courses and other materials, such as case studies and data, could broaden their reach using websites, social media, and cell phones. Even if these tools are not tailored to individual countries, these content providers could still partially address knowledge gaps and would not require international travel.

Workforce constraints should be addressed before training programs for government personnel are implemented. A key capacity constraint voiced repeatedly by developing countries is insufficient staffing, especially when donors do not align programs with existing national plans, fund the hiring of local staff, or coordinate with other donors. The consequence is that limited staff are pulled in different directions, especially in the absence of LEDS endorsement by senior leadership. This constraint stresses the (best practice) importance of senior leadership in government, and it suggests the formation of a government core team that leads the strategy process and oversees the implementation.

To make effective use of limited funds, trainings can be prioritized. For example, if a government core team develops the LED strategy and implementation, these personnel could be trained first, followed by decision makers within relevant ministries.

Another workforce constraint lies in provincial and district levels, where government officials are less likely to be aware of policy opportunities or to receive training and assistance. Also, in some countries, government staff are routinely moved within and among ministries, weakening the impact of training provided.

Government Workforce Development - Colombia Case Study

Colombia exemplifies a government overcoming the challenge of an overburdened workforce in the context of LEDS. The Government of Colombia (GOC) is developing a Low Carbon Development Strategy (LCDS) in collaboration with a large number of donors and implementing agencies. While the GOC encourages and welcomes this engagement with the international community, significant staffing constraints limit the government ministries' ability to engage in LCDS activities. One of the first collaborative activities that GOC initiated was to create a core set of staff dedicated to LCDS.

Through the U.S. government's Enhancing Capacity for Low Emissions Development Strategies (EC-LEDS) program, three to six GOC ministry staff are being trained to serve as an LCDS technical support team. The training program encompasses both sectoral and cross-sectoral expertise needed for LCDS development and implementation.

The objective of the technical support team is to ensure that sufficient staff are available to coordinate and provide input to the LCDS process, such as developing sectoral and cross-sectoral baseline scenarios, prioritizing LCDS options, and developing NAMAs. These technical staff will also participate in other relevant trainings provide by the GOC and donor community.

Institutions require flexibility and coordination. Capacity constraints are not limited to individuals; institutional design also constrains the ability of governments to implement effective policy. For example, an official in an energy ministry may not be able to address the barrier of a weak insurance industry for clean energy projects because insurance is outside of his or her portfolio. A second type of institutional-based capacity constraint is lack of coordination among ministries. For example, in many countries the ministry of finance or planning must be included in sector-specific decision-making to ensure long-term commitments to low-emission growth policies. A third type of capacity constraint stems from the segregation of scientific and technical agencies performing analyses from the political decision-making process.

4   What sources of information are countries using when designing low-emission policies?

Understanding policy drivers (e.g., jobs and political interests) that can inhibit the transmission of LEDS-related information is critical to assimilating information. Given that policies likely cannot be tailored in an ideal sense, governments require information to evaluate political compromises. For example, governments need to know what areas of compromise would lead to perverse impacts and how policies can be designed, legislated, and implemented to reduce political polarization.

When designing policies, governments begin from existing policies and then look to examples in other countries for inspiration. For example, governments study how other countries address problems similar to their own, and how they use feedback received from stakeholders. Countries also look at opportunities for policy innovation and experimentation, with climate change presenting an opportunity for new approaches and solutions that may not have been considered previously. Many sources provide information on policy experiences and information from other countries and on policy innovation opportunities. Table 1 lists some of the sources that provide information on policy experiences as well as information on policy innovation opportunities.

Table 1. Sources of Information on Policy Experiences on Policy Innovation Opportunities

Sources of Information	Descriptions and Examples
Conferences and workshops	Conferences and workshops about policy barriers and solutions, from policy selection to design and implementation
Sectoral networks	• Collaborative Labeling and Appliance Standards Program (CLASP), which provides guidance on standards and labeling • Food and Agriculture Organization (FAO) knowledge networks
Bilateral and regional meetings	Bilateral and regional meetings in which government officials share policy experiences; For example, bilateral and multilateral LEDS support programs bring technical experts together to share policy experiences and advice.
Publications	Publications that highlight best practices and guidance for policy design and policy use around the world: • Technology needs assessment (TNA) sectoral handbooks and country technological fact sheets • REN21 Global Renewable Energy Status Reports • International Energy Agency (IEA) reports on policy best practices ClimateWorks Foundation policy reports • International Food Policy Research Institute best practices
Workshops and trainings	Workshops and trainings that disseminate policy information face-to-face and promote peer-to -peer learning, e.g., the capacity building workshops of the International Partnership for Energy Efficiency Cooperation
Virtual policy learning platforms	Webinars and on-line training provided by the Clean Energy Solutions Center, the Regulatory Assistance Project
Websites	Websites that offer policy examples and data: • Clean Energy Solutions Center

Sources of Information	Descriptions and Examples
	• IEA's policy policies and measures databases • Database of State Incentives for Renewable Energy (DSIRE, USA)
Expert assistance with policy design	Bilateral and multilateral country assistance programs that provide targeted expert policy assistance
	Clean Energy Solutions Center, which provides remote assistance on a broad range of policy topics
	IRENA, which is planning renewable energy expert assistance
	U.S. Department of Energy's Technical Assistance Project Grant Program, which supports state and local governments

Across these mechanisms, governments require information to evaluate how context shapes the effectiveness and design of policy options. Specificity of details—what works, when it works, and why it works—allows countries to better tailor policies. For example, differences between the small-island and large-country levels must be considered for LEDS policy making; small economies of scale hamper technology deployment, market conditions may not be comparable, and an island nation may not have either an overarching policy framework for LEDS or a national energy policy.

Gaps in primary data collection suggest the need for guidance on how to find, collect, verify, and analyze data, including how to reconcile and manage contradictory information. Better data collection and management is critical to future monitoring, reporting, and verification (MRV) and to ensuring that a LEDS is a dynamic document, available for on-going refinement. Similarly, the source of information is significant—for example, internal information from analyses performed by local institutions or external information produced by a global consulting firm such as McKinsey & Company. Even tools that are nominally transparent may not be easy to build upon if the methods and assumptions are not clearly outlined. Strengthened internal capacity to generate information allows a country to understand and revise information over time.

5   What additional tools are needed to improve the information used for decision-making?

Many tools already support LEDS decision-making. Therefore, the first step may be to pose the following questions to developing country decision makers before developing additional tools:

5.1   Why are certain available tools not being widely used?
Answers might include tool accessibility, complexity, transparency of results, cost, difficultly in understanding selection criteria, and lack of clear LEDS methodology. Developing country decision makers might also have a different point of view of what tools are useful.

5.2   Do we need more tools, or would improved guidance on which tools are most appropriate in different country circumstances be sufficient?
A starting point to address the potential need for guidance on tool selection is a paper developed by the Institute of Development Studies (IDS) and Ecofys in partnership with CLEAN and

funded by the Climate and Development Knowledge Network (CDKN). That paper serves as a user guide for choosing climate compatible development tools.

In addition to guidance on tool selection, other gaps constrain the effective use of tools. The following capabilities are needed by LEDS countries but inadequately supported by currently available tools:

- Facilitating a participatory process, with the aim to validate and improve data, identify barriers, and secure "buy-in"

- Quantifying the link between LEDS and development impacts, particularly using visualization tools

- Presenting results of tools in a manner that can be easily communicated to decision-makers and the public

- Packaging complementary tools in a user-friendly manner (suites of tools)

- More widely disseminating country and regional examples to allow tool customization

- Providing qualitative alternatives to data-intensive models

- Better demonstrating the business case for LEDS policies

- Improving the integration of sectoral laws and regulations under an overarching cross-sector framework

The next sections present examples of how these needs might be addressed.

Development Impact Assessment Tool Suite and Unique Output Visualization

Many tools assess different development impacts of programs and policies related to LEDS (e.g., health, energy security, and macroeconomic impacts). However, there are needs for 1) suites of tools (data-intensive and non-data-intensive) to assess multiple impacts and for 2) visuals to present these impacts in a way that decision makers and the public can easily understand them. Tool suites and visualization of impacts would help ensure alignment and integration of LEDS with national development plans and with increased political and public support. The World Bank has started to address these needs by better linking LEDS with macroeconomic impacts and by developing a suite of tools to accomplish this. Several CLEAN partners are also conducting a review of existing development impact assessment tools and are developing recommendations for improved tools and model visualization frameworks. Expanded donor and practitioner coordination on similar activities can facilitate improvement and creation of new and innovative tools to assess LEDS development impacts.

Tools to Learn from other Developing Countries
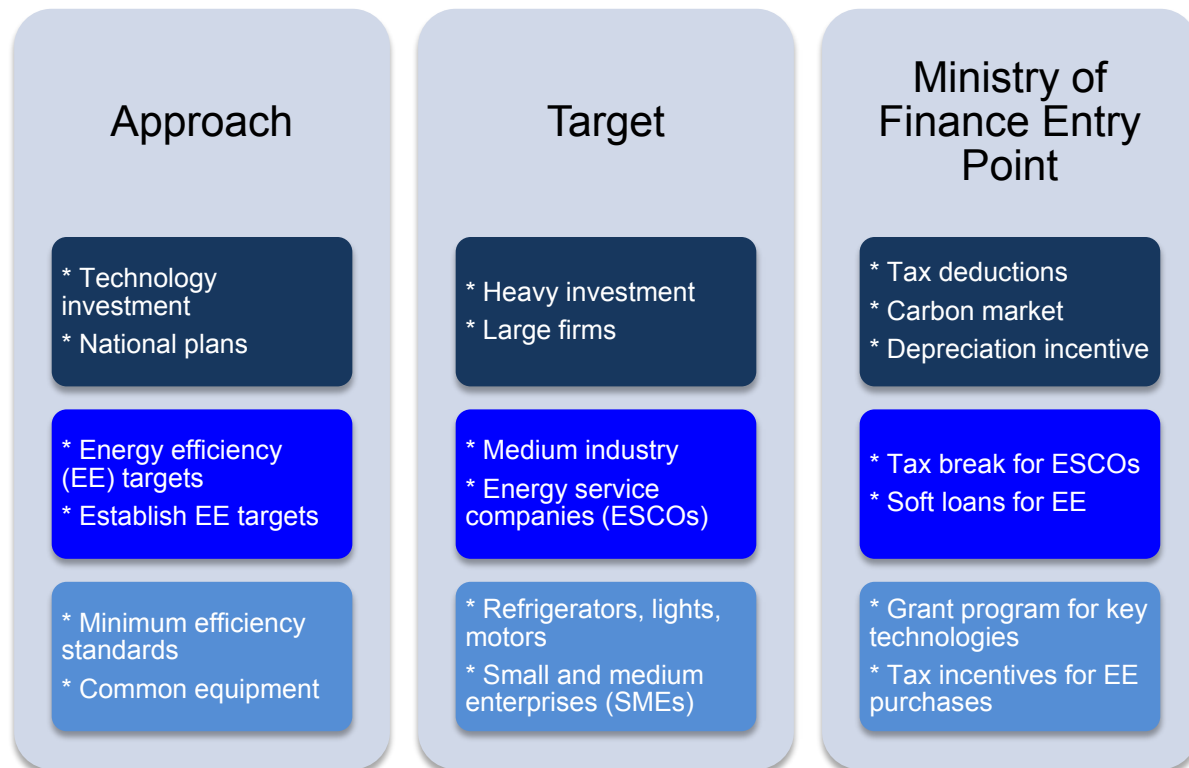
While examples and implementation templates exist that are specific to individual developing countries, these resources are not yet widely disseminated among similar countries. Developing countries could further contribute to an emerging catalogue of policy best practices that offer models that are more relevant than best practices based on developed country contexts. Below

are specific examples of these types of resources that could be compiled and more widely disseminated.

Entry Point Maps for LEDS Policy Ministries
Templates and case studies could be provided to countries to better understand ministry entry points for sectoral policy-making. The policy options shown in Figure 3 could be expanded to include all ministries.

Approach	Target	Ministry of Finance Entry Point
* Technology investment * National plans	* Heavy investment * Large firms	* Tax deductions * Carbon market * Depreciation incentive
* Energy efficiency (EE) targets * Establish EE targets	* Medium industry * Energy service companies (ESCOs)	* Tax break for ESCOs * Soft loans for EE
* Minimum efficiency standards * Common equipment	* Refrigerators, lights, motors * Small and medium enterprises (SMEs)	* Grant program for key technologies * Tax incentives for EE purchases

Figure 3. Policy options to reduce emissions in manufacturing in Indonesia
Source: Adapted from ESMAP 2009, p. 19

Examples of Stakeholder Engagement Models
Certain country plans, such as South Africa's Long Term Mitigation Scenarios, provide very strong examples of stakeholder engagement for low-emission development planning. Such examples could be compiled and more widely disseminated to developed and developing countries that are beginning to design LEDS.

Tools to Support Qualitative Analysis of Policy Solutions
More qualitative tools are needed to support policy decision making in countries with lower levels of data availability. A decision tool that leads users through a process to identify barriers to implementing LEDS and then matches them to policy solutions would address this need. Improved tools for multi-criteria policy analysis are also needed, such as the work that United Nations Development Programme (UNDP) and United Nations Environment Programme

(UNEP)[3] are undertaking on multi-criteria decision analysis as part of the technology needs assessment support to countries.

6   How can peer-to-peer learning networks be structured and leveraged to promote the rapid transfer of new knowledge and best practices where knowledge and capacity are highly decentralized?

Based on experiences[4] of existing peer-to-peer networks, the following principles can help guide the structure of global and regional networks to support LEDS development and implementation, especially where knowledge and capacity are decentralized.

1. **Narrowly Defined Scope Reflecting Common Interests**. Peer networks are most effective when all participants share mutual interests in learning about specific topics and the scope of the network is well defined and not too broad. Networks should devote effort to defining and continually updating common topics of interest.

2. **Networks Coupled with Virtual Clearinghouses and Learning Platforms**. Expert networks should be coupled with virtual information and learning clearinghouses that offer both state-of-the art information and tools as well as interactive services (e.g., expert assistance and training) and which can serve as the knowledge management system for the networks.

3. **Frequent Direct Peer Interaction**. Networks thrive where peers have multiple opportunities to interact directly with their counterparts through webinars, in-person meetings, moderated peer-to-peer knowledge sharing, and related forums.

4. **Establishment of Global and Regional Forums**. Global peer forums should be combined with regional forums because, for many topics, approaches and contents need to be tailored to regional needs and circumstances and learning occurs best at the regional level.

5. **Learning from Leading Innovators**. Much learning and motivation occurs through exposure to innovative programs and successes achieved by peers. Networks should identify such champions and create multiple opportunities for learning from their experiences.

6. **Tailoring of Services to Country and Regional Needs**. Effective dissemination of knowledge in countries requires dedicated efforts to tailor and deliver resources (e.g., data systems, training resources and webinars, education and outreach activities) to meet country and regional circumstances. This customization requires resources devoted to supporting country specific (and regional) products and outreach.

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[3] MCA4Climate - http://www.mca4climate.info/ and TNAssess http://content.undp.org/go/cms-service/stream/asset/?asset_id=2972062 (Pg. 20)
[4] This includes feedback from user participating in the networks, reviews of network performance by managers, and informal comments from network managers and participants

7. **Long-Term Commitment to Capacity Building in Developing Countries**. Network sponsors will need to make multi-year investments in building institutional and human capacity at the regional and country levels to ensure that these countries have the sustained expertise needed to participate in knowledge sharing. This includes support for professional training and academic education programs in developing countries.

8. **Robust Partnerships and Integration**. Networks should closely integrate with the broad portfolio of existing networks and clearinghouses to tap into the knowledge and resources of these initiatives instead of creating duplicative or competing sites. This approach includes clearly defining and communicating the unique niche for each network and developing integrated information platforms to use common databases.

9. **Multiple Languages.** Knowledge will be most effectively disseminated if resources are presented in multiple languages and not just in English.

7   How should new solutions relate to ongoing multilateral, governmental, and non-governmental initiatives?

Any new solutions should build upon the large number of existing knowledge and learning platforms and peer networks that already exist. Once a decision is made to establish a more complete international LEDS infrastructure, the following steps could be followed to strengthen the scope of current programs to achieve this broader vision:

- **Needs Assessment**. Further characterize country needs, especially developing countries, for LEDS assistance and knowledge sharing

- **Review of Existing Programs**. Review existing LEDS-related country assistance programs, knowledge platforms, and peer networks and assess their ability to meet country needs and gaps in support.

- **Preparation of Strategy for Enhanced Infrastructure**. Based on the needs assessment and review of current programs, prepare a strategy for a more complete international LEDS infrastructure. Such a strategy would seek to build upon current programs whenever possible.

- **Development of Budget for Implementing Strategy.** Develop a financial plan to secure and leverage the required resources for implementation of LEDS, including support from the private and public sectors as well as the international donor community.

- **Development of Partnerships with Current Programs**. Establish plans for collaborative work with existing programs to expand the infrastructure to ensure complementarity and leveraging with current programs.

7.1   Framework Proposed to Support Country-driven LEDS

Support for country-driven LEDS builds on the coordinated and effective exchange of information and technical assistance among four types of agents, supported by a virtual platform for knowledge sharing (Figure 1). The framework shown in Table 2 would enable a rapid exchange of knowledge and best practices.

Table 2. Framework to Support Country-driven LEDS, Showing Agents and Their Roles

Responsible Agent	Role in Supporting Country-driven LEDS
Country governments	Design and implement country-driven LEDS, drawing on support from *donor assistance programs*, *experts*, and *knowledge platforms*
	Integrate LEDS with existing development programs and monitor progress
	Provide content and feedback to all the above parties, including peers, and to the *knowledge platforms*
	Build sustained capacity through programs offered by the above parties and the *knowledge platforms*
Bilateral and multilateral assistance programs for developing countries	Deliver tailored technical and financial support to *country governments*, including assisting countries to partner with the private sector and international finance programs to mobilize sustained investment
	Provide long-term capacity building and education programs to *country governments, technical institutes, and the private sector*, drawing on *expert networks* and the *knowledge platform*
	Learn crosscutting and sector-specific LEDS-related concepts (e.g., best practices, models, data, and finance opportunities) from *knowledge platforms* and *expert networks*
	Based on experience with the *country governments*, communicate to *expert networks* both the priority needs for LEDS and user feedback on the LEDS-related concepts and tools
	Communicate with *LEDS coordinating forums* on priority needs of *country governments* to develop and implement LEDS, in order to help the coordinating forums and donor assistance programs each identify priority areas for support
LEDS coordinating forums	Communicate with each party to coordinate and organize overall LEDS infrastructure and ensure gaps are being addressed
	Coordination will occur at four levels:
	1. **High-level forums** to mobilize interest and build and maintain support of leaders from governments, international institutions, industry, and NGOs for low-emission development
	2. **Donor program manager networks** to harmonize country assistance, identify gaps in support and coordinate efforts to address gaps, and track and communicate progress and results; the recently established LEDS Collaborative Working Group, with representatives from bilateral and multilateral donor programs and several technical institutions, is an example of such a donor program manager network.
	3. **Practitioner networks** to coordinate and harmonize implementation delivery practices, improve tools and capacity building, share best practices and lessons, and maintain the knowledge platforms; CLEAN,

comprising around 40 technical institutes engaged in LEDS assistance, is currently playing such a role in coordinating work and learning across LEDS practitioners. LEDS coordinating forums help capture available best practices in one network (e.g., a regional network), and share this with others.

4. **Developing country coordination** to harmonize support across donor programs in each country; tightly linked with current country led development programs.

Networks of experts and investors, regionally and globally, from governments, technical institutes, private sector, and NGOs across countries	Share experiences and lessons with *country governments* and *donor assistance programs*, and provide content and feedback to the *knowledge platform*
	Foster learning and long-term capacity building to *country governments* through the *knowledge platform*
	Support countries in mobilizing sustained private-sector investment in LEDS priorities through investment matchmaking, capacity building, and providing advice on policies for attracting capital and private-sector engagement
	Learn LEDS-related concepts from the *knowledge platform*
	In response to requests by *donor assistance programs*, deliver technical support to *country governments*
	Promote peer learning among *country governments* across all segments of society, including learning from experiences of NGOs and private sector
	Provide sustained capacity building for *country governments* and other in-country experts (e.g., educational programs, training, and peer exchanges)
	Communicate with *LEDS coordinating forums* on priority needs of *country governments* to develop and implement LEDS, in order to help each other identify areas for support
Knowledge platforms that serve as information clearinghouses and interactive services, organized by sector and integrated platforms for LEDS	Showcase content on best practices, data, trainings, and other LEDS tools for *country governments*, *experts, donor assistance programs*, and others
	Serve as forums for locating and receiving remote assistance from technical *experts*
	Serve as the medium for peer learning and sharing of best practices and on-line training programs
	Serve as a clearinghouse for experiences, progress, and results of each country's efforts to develop and implement LEDS

7.2 Potential Structure of LEDS-related Networks of Experts Coupled with Knowledge Platforms

LEDS-related networks of experts should be established in tandem with knowledge platforms—both should be organized around key two broad LEDS themes:

- **Cross-sectoral LEDS Assessment, Planning, and Implementation**. The overarching vision and process for LEDS includes scenario and options analysis, development assessment and planning integration, strategy development, and such crosscutting implementation topics as financing and monitoring and review.

- **Sectoral LEDS Policies and Programs**. LEDS fine-tuned to sectoral issues—networks and platforms would share best practices, lessons, tools, and services associated with energy, land-use, and waste and industry green growth policies and programs.

In many cases, these networks should operate at both global and regional levels. A potential portfolio of such networks and platforms is depicted in Figure 4. This figure illustrates the operation of the networks and platforms at both cross-sectoral and sectoral levels as well as the types of content covered by each. The expert networks can provide content for the platforms, incorporate content from the platform, and communicate user feedback about the content. The platforms can 1) maintain and disseminate technical resources and knowledge developed through the networks, 2) link users to expert networks, and 3) deliver interactive services such as remote expert assistance, peer learning, and training. Table 3 presents examples of existing networks and platforms for each of these categories.
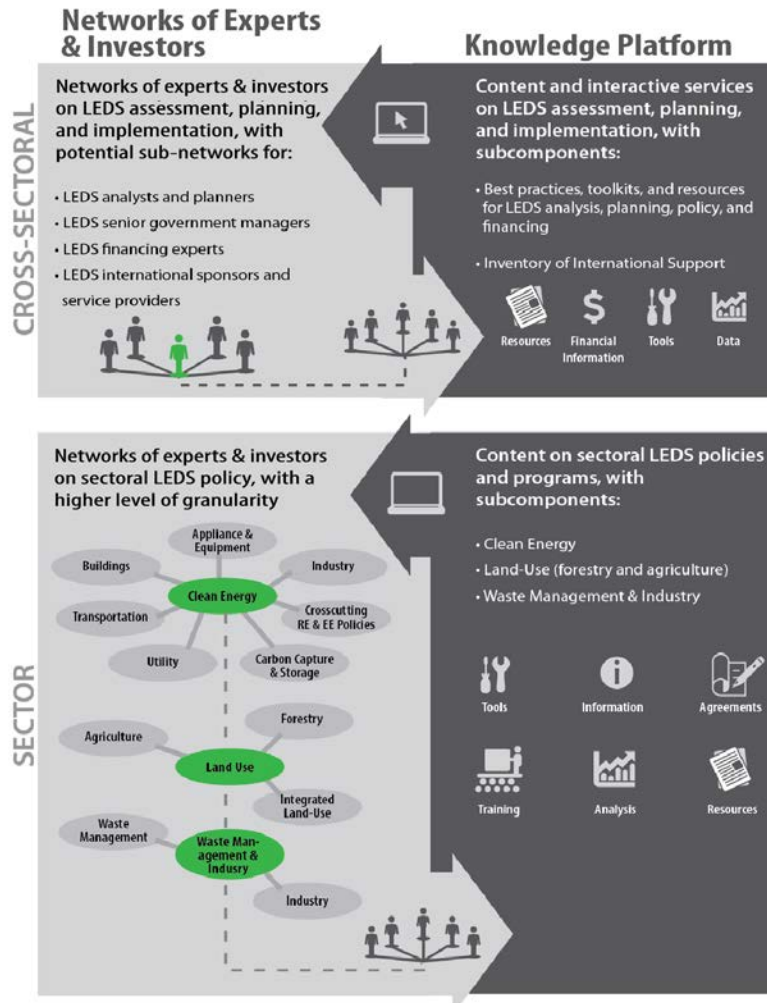
Figure 4. Operation of networks and platforms at the cross-sectoral and sectoral levels

Table 3. Existing Expert Networks and Knowledge Platforms[a]

Topic	Networks of Experts	Knowledge Platforms
LEDS Assessment, Planning, and Implementation	CLEAN	OpenEI–LEDS Gateway
	LEDS Collaborative Working Group (donors, service providers, and developing countries)	CDKN resources
		CLEAN website and learning programs
	Climate Technology Initiative-Private Financing Advisory Network (CTI PFAN)	
Sectoral LEDS Policies and Programs – Energy Examples Only	ClimateWorks Foundation best practice networks–utilities, appliances, buildings, industry, transport	Clean Energy Solutions Center
	REN21	IRENA Knowledge Platform (under development)
	Clean Energy Ministerial Initiatives	IPEEC Web platform (under development)
	International Partnership for Energy Efficiency Cooperation (IPEEC) Task Networks	Leonardo ENERGY portal
	International Institute for Sustainable Development (IISD) Energy-L network	IEA Low Carbon Platform and Technology Agreements
	Global Network on Energy for Sustainable Development (GNESD)	REN21

[a] The table does not list all programs operating in this space.

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Appendix A. Members of the Coordinated Low Emissions Assistance Network (CLEAN)

Center for Environment and National Security, Scripps Institution of Oceanography
Centro de Energías Renovables (CER)
The Children's Investment Fund Foundation (CIFF)
Climate and Development Knowledge Network (CDKN)
Climate Technology Initiative (CTI)
ClimateWorks Foundation
Coalition for Rainforest Nations (CfRN)
Ecofys
Energy Research Centre of the Netherlands (ECN)
The Energy and Resources Institute (TERI)
Energy Sector Management Assistance Program, World Bank (ESMAP)
Environment and Development Action in the Third World (ENDA-TM)
German Aerospace Center (DLR)
German Agency for International Cooperation (GIZ)
Global Village Energy Partnership (GVEP)
Information for Development Program (infoDev)
International Atomic Energy Agency (IAEA)
International Energy Agency (IEA)
International Institute for Sustainable Development (IISD)
International Renewable Energy Agency (IRENA)
Joint Implementation Network (JIN)
Kumasi Institute of Technology and Environment (KITE)
Latin American Energy Organization (OLADE)
Mitigation Action Implementation Network (MAIN)
Netherlands Development Organisation (SNV)
Organisation for Economic Co-operation and Development (OECD)
Organization of American States (OAS)
Regional Centre for Renewable Energy and Energy Efficiency (ECREEE)
Renewable Energy and Energy Efficiency Partnership (REEEP)
Research Centre for Sustainable Development (RCSD), Chinese Academy of Social Sciences (CASS)
Third Generation Environmentalism (E3G)
UK Institute of Development Studies (IDS)
U.S. Lawrence Berkeley National Laboratory (LBNL)
U.S. National Renewable Energy Laboratory (NREL)
U.S. Savannah River National Laboratory (SRNL)
UNEP-Risoe Centre on Energy, Climate and Sustainable Development
United Nations Environment Programme (UNEP)
United Nations Foundation
United Nations Industrial Development Organization (UNIDO)
World Resources Institute (WRI)
Worldwatch Institute

Appendix B. Websites of Referenced Entities

Clean Energy Solutions Center
http://cleanenergysolutions.org/

Climate Advisors
http://www.climateadvisers.com/

Climate and Development Knowledge Network
http://cdkn.org/

Climate Technology Initiative Private Financing Advisory Network
http://www.cti-pfan.net/

ClimateWorks Climate Policy Networks
http://www.climateworks.org/network/

Collaborative Labeling and Appliance Standards Program
http://www.clasponline.org/

Coordinated Low Emissions Assistance Network
http://openei.org/CLEAN/

Database of State Incentives for Renewable Energy
http://www.dsireusa.org/

Ecofys
http://www.ecofys.com/

The Energy and Climate Change Partnership of the Americas
http://www.ecpamericas.org/

Global Environment Facility
http://www.thegef.org/gef/

Global Network on Energy for Sustainable Development
http://www.gnesd.org/

International Energy Agency (IEA)
http://www.iea.org/

IEA's Policies and Measures Databases
http://www.iea.org/textbase/pm/

International Partnership for Energy Efficiency Cooperation
http://www.ipeec.org/

International Renewable Energy Agency
http://www.irena.org/

OpenEI
http://en.openei.org/wiki/Main_Page

Regulatory Assistance Project
http://www.raponline.org/

Renewable Energy and Energy Efficiency Partnership
http://www.reeep.org/

Renewable Energy Network for the 21st Century (REN21)
http://www.ren21.org/

Sustainable Energy Finance Alliance
http://www.sefalliance.org/

UN Energy
http://www.un-energy.org/

United Nations Framework Convention on Climate Change
http://unfccc.int/

U.S. Department of Energy Technical Assistance Project
http://en.openei.org/wiki/U.S._DOE_Technical_Assistance_Project

U.S. National Renewable Energy Laboratory
http://www.nrel.gov/

World Bank Institute
http://www.wbi.worldbank.org/