POSITION PAPER

Synergizing the global SDG 7 Roadmap in the backdrop of CCC Crisis

This brief draws its discussion and recommendations from EnerTracks Alumni meetings conducted from November 7-11 at Sharm Al- Sheikh, Egypt.

December 2022
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This position paper is based on EnerTracks Alumni activity on “Synergizing global SDG 7 roadmap” conducted from November 8-11, 2022 at Sharm Al Sheikh in Egypt. The lead author of this paper is Mr. Ubaid ur Rehman Zia, Sustainable Development Policy Institute (SDPI) while significant contributions were made by:

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ENERTRACKS
ALUMNI NETWORK

December 2022
SECTION-1: Introduction

Background

Over the past two years (FY 2020-22), the world has experienced an economic recession and adverse social impacts of three main challenges i.e., *Climate change, COVID-19, and Conflict caused by Russia’s invasion of Ukraine (also called a CCC-threat)*. Due to resulting disrupted supply chains, countries have transitioned back towards fossil fuels while not realizing that investing in new fossil fuel infrastructure will only lock-in uneconomic practices, perpetuate existing risks and increase the threats of climate change. Further, this has derailed many economies from the Paris Agreement Goals.

To address this challenge, the energy sector plays an immensely critical role given its strong nexus with other Sustainable Development Goals (SDGs). The CCC crisis has a variety of effects on the demand for energy services, primarily because of the associated containment measures initially implemented during COVID-19 and later due to either unavailability or extremely high cost of energy prices. Through limitations on travel, work and study from home policies, the closure of public places, and access restrictions to facilities and services, people’s activities were constrained to the local level. Globally, the energy demand in 2020 fell by 4% as compared to pre-pandemic level (International Energy Agency, 2021). Although in 2021, many countries witnessed demand recovery (global demand projected to increase at 4.6% in 2021), the energy supply chain was immensely disrupted in the backdrop of Russia’s invasion of Ukraine— and the sudden competition in second quarter of 2022 pushed the prices of coal, oil and gas to record highs for most countries. For developing countries, these challenges were further exacerbated due to climate induced disasters and only in 2021, the cost of natural disasters resulting from climate change was evaluated at more than $170 billion ($20 billion more than in 2020) in damages, loss of lives, and displacement of around 1.3 million people from their homes (Shepherd, 2021).

While the nature of each challenge differs, they have all pointed to a common solution i.e., the *inclusion of environmental considerations, resource efficiency and indigenization, and Sustainable Development in the political discourse and actions*. The way forward for most countries now lies in the “Energy-Climate” nexus driven by their Nationally Determined Contributions and Energy policy targets.

A key intervention in this regard through the Global SDG Agenda of “Transforming the World” back in 2015 when most countries adopted them as a part of their National Development Agendas. However, as of now, the progress of most countries in their SDG targets is well behind the required values in 2030. A
main underlying reason behind this is the lack of technical and regulatory knowledge, capacity, and a framework (roadmap) on which countries must act.

Given the above-mentioned challenges and the existing global energy crisis, significant attention is drawn towards the SDG-7 i.e., Access to Reliable, Affordable, and Clean Energy. Key targets and linked indicators for SDG-7 are mentioned in Figure 1.

![Figure 1: Key Indicators of SDG 7](image)

**Global Progress on SDG 7**

As of 2021, global electricity access has reached approximately 91% [TrackingSDG7, 2022], ranging from the lowest value of 48% in Sub-Saharan Africa to the highest of 100% in North America and Europe. For clean cooking fuels and technologies, the values are comparatively much lower with the global average still estimated to be slightly below 70%. In the Sub-Saharan region, only 17% of people have access to clean technologies while the rest still rely on traditional and inefficient use of biomass for their heating and cooking usage. This in turn also drives the variation in their renewable energy share in total final energy consumption. Quantifying biomass use as a renewable source, the agriculture-based economies have a substantially high share as compared to the global average of almost 17.7% [Sub-Saharan region has a 68% share while most Asian countries have a share increasing beyond 25%]. Energy efficiency, as a measure to address the access to electricity challenge, is still an ignored indicator in most countries. The average energy intensity global value is still around 4.7 MJ/per 2017 USD. The Global trend of SDG 7 indicators in the 21st century is further described in detail in Annexure 1.

**Scope and objectives of the brief**

While most countries have made substantial progress in achieving their SDG7 targets, their growth appears to have been hampered due to CCC-crisis. This brief would aim to build a consensus around those potential opportunities
and action plans that can be implemented to address the existing crisis. By addressing the challenges and potential way forward, the key debate would revolve around i) analyzing the technological and regulatory measures taken by different countries in achieving the targets of SDG-7 goals, and ii) performing a comparative assessment of country readiness to identify key areas for technology transfer and knowledge/data sharing for increased compliance with SDG-7.

The brief however draws its recommendations from a consultative workshop of EnerTracks Alumni on “Synergizing the ambitions to achieve SDG7”. A set of questionnaires for each activity was distributed and representatives from present countries provided their interventions on each aspect of SDG7, while also rating their key interventions in terms of their importance/effectiveness and ease of implementation in their own country.
SECTION-2: Synergized Challenges and Opportunities for achieving SDG 7

This section describes the common opportunities and challenges faced by the energy sector across the world in its sustainable development discourse. The technology rank and their effectiveness matrix designed during the consultation process is further attached in Annexure B & Annexure C.

<table>
<thead>
<tr>
<th>SDG-7 Target</th>
<th>SDG Indicator</th>
<th>Opportunities for Interventions</th>
<th>Existing Challenges</th>
</tr>
</thead>
</table>
| 7.1. By 2030, ensure Universal Access to affordable Reliable, and Modern energy services | 7.1.1. Population with Electricity Access | • Large scale adoption of off-grid solutions (mini/micro grids) particularly through solar and mini-micro hydro power plants (MHPPs). This is broadly being proposed to the developing countries, particularly in their far-fetched areas.  
• From a policy angle, off-grid generation to be made a part of country’s capacity expansion plans.  
• Ease of regulatory environment for private sector financing and public partnership models.  
• Improved demand side management. | • Lack of financing and fiscal Mobility to expand national grid.  
• Dominated focus only on the power sector plans and regulations, while transmission expansion plans across the world are limited.  
• Access to regions with scattered population where expanding grids are economically infeasible.  
• Limited power evacuation capacity of existing infrastructure.  
• High Line losses leading to inefficiency and power thefts.  
• No Consolidated plan for off-grid solutions.  
• Outdated technology being used by community driven plants. |
| 7.1.2. Population with Clean Fuel Access | • Existing technology gap between developed and developing countries to be reduced through technology transfer programs.  
• Demand for clean energy technologies to be further utilized.  
• Social Empowerment  
• Local job creation.  
• Indigenization of Industry. | • High reliance of the rural sector on traditional use of biomass.  
• Lack of awareness of the harmful effects of inefficient burning.  
• Low willingness of people to adopt alternatives brings challenges for new technology penetration.  
• Fluctuation in fuel prices.  
• Unavailability of Specialized equipment used in clean cooking technologies.  
• Financing constraints on the consumer end.  
• No incentives for rolling out new technologies. |
7.2: By 2030, increase substantially the share of renewable energy in the global energy mix

| 7.2.1: Renewable energy share in the total final energy consumption | • With time, renewables’ costs are constantly dropping, thus making a better economic case for power tariffs and higher purchasing power for consumers.  
• Indigenization of energy.  
• Decarbonization of the energy sector.  
• Compliance with international environment and climate goals.  
• Clean energy investments will foster economy recovery by creating more jobs over the longer run than backing fossil fuels\(^1\) (Global Citizen, 2021) | • Committed power projects.  
• Outdated grid infrastructure.  
• Base load constraints and issues.  
• Lack of financing and corporate involvement.  
• Low-capacity building on off-grid technologies.  
• Non-compliance of multilaterals with SBP green financing guidelines.  
• RE limited to just the power sector.  
• Use of renewables in demand sectors is entirely missing.  
• Single buyer model being used in many countries. |

\(^2\)Modern use of biomass

| • Production of sugar products in local industries.  
• Bagasse in CHP plants is comparatively treated more efficiently and contributes to waste management.  
• Using livestock waste to initially produce biogas.  
• Biofuels production\(^3\) | • Lack of alternatives in rural areas.  
• Inefficient burning leading to environmental hazards  
Health hazards due to open and inefficient burning of waste products (Mehmood et al., 2022). |

7.3: By 2030, double the global rate of improvement in energy efficiency

| 7.3.1: Energy intensity measured in terms of primary energy by GDP | • Better Standards of Living.  
• Local industry improvements.  
• Better health facilities.  
• Lower Electricity bills.  
• Cheaper technology [Upfront cost is higher in some cases]  
• Increased Productivity  
• Carbon Emission reductions.  
• Overall GHG emission reductions. | • Lack of policies and supporting documents.  
• Major focus has been on the power sector.  
• Lower consumer awareness. |

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1. World Resource Institute also indicated that $1 million green investments would create more near-term jobs than same amount invested in fossil fuels.

2. Modern use of biomass is not a key indicator; however, it was among the key discussion areas.

3. Although biofuels provide an opportunity to reduce emissions in some hard to abate sectors, the existing costs are still high and unfeasible for rural residencies.
SECTION-3: Clean Energy Transition: The forward in Uncertain Times

Progress on global SDG7 targets requires a multi-stakeholder approach with a prioritized action plan to be taken by relevant departments and institutions. Along with addressing national targets, this must identify the regional opportunities and actions for vulnerable countries. This would lead to improved coordination across different regions while reducing duplication and enhancing synergies. Based on consultative discussions as explained previously, the following challenges and recommendations have been provided in this paper.

Addressing the cross-country implementation plan for clean fuels and technologies

Issue 1: Clean cooking across the world has not been a priority either in policy or regulatory framework of the countries. This has led to low technology transfer, technology innovation, and fiscal support for its development.

Issue 2: Capacity and awareness of stakeholders dealing with non-commercial use of biomass (rural residency) is limited leading to lack of willingness to transition.

Issue 3: Capital cost of renewable based solutions for clean cooking (solar drying, solar heating, etc.) are not economically feasible for large farmer groups. Limited countries have announced any fiscal or economic plans for them.

Issue 4: Since the clean cooking challenge is mainly associated with rural residencies, access to reliable and affordable data for any evidence-driven policy making is limited.

Policy Recommendations

- All government initiatives in the short or long-run to address the energy crisis must not impact the creditworthiness of energy companies or utilities in the longer run.
- To develop human and institutional capacities for the clean cooking sector, there is a need for capacity building programs with cross-sectoral approaches. Dedicated regional and global institutions must be mobilized to deliver training and facilitate the needed assessment.
- Financing Institutions (especially Multilateral Development Banks [MDBs] and Development Financing Institutions [DFIs]) must invest in data collection and analysis to provide national governments with reliable technical data and policy indicators for their decision making.
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Policy Recommendations

- By mobilizing finance through increased international cooperation and involvement of the private sector, countries must invest in R&D and innovate their design of energy systems, especially the end use technologies such as in residential, transport, or informal industrial sectors.
- Clean fuel and technologies (non-electricity) needs to be equally prioritized by energy sector policy makers for putting in place the sector-specific policies, plans, public investments, and support a multi-stakeholder partnership.

Synergizing the linkages between SDG7 and socio-economic development

Issue 1: In most rural residencies of developing and under-developed economies, despite contributing more to food security, women have a comparatively lower participation in energy sector planning as well as household decision making.

Issue 2: National stakeholders and policy makers have a comparatively low capacity of socio-economic benefits offered by renewable energy and clean energy solutions, and more importantly its nexus with the water and food sector.

Policy Recommendations

- For building capacity and awareness around RE-based agro-food sector, international development finance (IDFs) must be mobilized to bridge the funding gap and technology transfer. For private and local finance, first loss and partial credit schemes may be used to raise awareness and create experience within the sector.
- Clean energy must be advocated by policy makers as the enabler for national sustainable energy development with a special focus on addressing its interlinkages with poverty reduction, gender equality, food security, climate change, education, water, and sustainable infrastructure development.
- For advancing SDG7 targets, gender equality must be integrated into energy sector development plans by enabling women, through financing their capacity building programs, gender-specific financing schemes, regulations for prioritized women’s access to capital, and developing gender-responsive policies.
- On the technology front, the clean cooking gap must be addressed through the penetration of energy efficient technologies such as electric stoves. This would however require financial backing through national or regional subsidies that could cover the high upfront technology cost.
Addressing Energy Efficiency and Conservation

**Issue 1:** Most agriculture-based economies across the world are heavily relying on non-commercial burning of biomass for energy generation, which is not only energy intensive but it also poses a serious threat to human health and environmental degradation.

**Issue 2:** As compared to the power sector, energy efficiency and conservation has been missing from the landscape of energy planning in most of the under-developed economies, and very limited in developing countries.

**Issue 3:** Lack of regional technology and knowledge transfer programs to address technological inefficiencies.

**Policy Recommendations**

- For addressing short-term solutions to energy deficiency, consumption can be reduced through demand response schemes such as issuing calls for load reduction from large consumers, shifting to off-peak power, on-site generation, and shift from peak-hour consumption.
- To address the gas crisis resulting from global conflicts, governments must develop sustainable heating programs and plans that shift them from use of gas, coal, and other fossil fuels to low carbon heating fuels such as sustainable biomass, geothermal, industrial waste heat, and solar heating.
- National and provincial governments must implement energy efficiency policies and their implementation plans as “Minimum Energy Performance Standards (MEPs), building codes, zero emission standards, and other sectoral policy approaches that can recognize the multiple benefits of energy efficiency”.
- For informed policy decisions, an energy efficiency action plan must be backed by robust data containing energy efficiency indicators and clearly defined metrics, especially in the informal sector.
- Mainstreaming energy efficiency procurement and facilitation of the private sector for mobilizing their investments through capacity building and knowledge sharing around the best practices and financial models.
- Introduce National and Regional capacity building programs to transform human behavior from an energy-intensive lifestyle to sustainable energy patterns.
Achieving Universal Access to Electricity

**Issue 1:** Expanding national grids is not financially viable in regions with dispersed populations or mountainous areas with inadequate road infrastructure. Even beyond these specific regions, financing grid expansion is a major challenge for countries with limited fiscal space.

**Issue 2:** In developing countries, there is a lack of technical capacity to install mini/micro grids particularly across community-based organizations and other relevant stakeholders in rural residencies.

**Policy Recommendations**

- Decentralized energy systems and mini/micro grids must be supported by innovative solutions such as community-based financial models, smart-metering, electronic communications, and mobile payments.
- Planning for electrification must incorporate the integrated and dynamic nature of energy storage technologies such as batteries and ensure that the efficiency standards are implemented in energy systems.
- To address financial constraints, national governments must provide targeted finance and subsidies for new and existing businesses providing clean energy solutions. This may include “Pay-as-you go” models, installation of decentralized systems, and use of efficient appliances.
References


Annexures

Annexure A: Global Trend of SDG 7 Indicators

A1: Access to Electricity

A2: Access to Clean Fuel and Technologies
Annexure B: Technology rank for electricity access and clean cooking fuel access in relation to effectiveness

### B1: Electricity Access

<table>
<thead>
<tr>
<th>Technologies/ interventions</th>
<th>Resources availability</th>
<th>Cost-effectiveness</th>
<th>Environmental sustainability</th>
<th>Social benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extending grid network</td>
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<tr>
<td>Fossil fuel-based mini/micro grid</td>
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<tr>
<td>Standalone solar home systems</td>
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<tr>
<td>RE-based mini/micro grid</td>
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<tr>
<td>Grid-connected PV</td>
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<tr>
<td>Grid-connected wind</td>
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<tr>
<td>Biomass gasifier</td>
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<td>Large hydro</td>
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<tr>
<td>Micro/Pico hydro</td>
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<tr>
<td>Others (pls specify)</td>
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<tr>
<td>Deregulated Market</td>
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### B2: Clean Cooking Fuel Access

<table>
<thead>
<tr>
<th>Technologies/ interventions</th>
<th>Resources availability</th>
<th>Cost-effectiveness</th>
<th>Environmental sustainability</th>
<th>Cultural acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved cook stove (ICS)</td>
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<tr>
<td>Biogas (using animal/human waste)</td>
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<tr>
<td>Biogas (using crop waste)</td>
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<tr>
<td>LPG cookstove</td>
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<tr>
<td>Electric cookstove</td>
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<td>Others (pls specify)</td>
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<tr>
<td>Incentives</td>
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<tr>
<td>Communication</td>
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<tr>
<td>Planning for the added load, e.g., for electric stoves</td>
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</tbody>
</table>
### C1: Stakeholder Ratings for Energy Efficiency Interventions in Industrial Sector

<table>
<thead>
<tr>
<th>Measures/ interventions</th>
<th>Importance/effectiveness</th>
<th>Ease of Implementation</th>
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</thead>
<tbody>
<tr>
<td>Mandating energy audit and management system</td>
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<td>Energy use benchmarking and regulations</td>
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<td>Heat or steam recovery</td>
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<tr>
<td>Replace conventional chillers with absorption chillers</td>
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<tr>
<td>Use variable speed drive (VFD) for pump motors</td>
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</table>

### C2: Stakeholder Ratings for Energy Efficiency Interventions in Building Sector

<table>
<thead>
<tr>
<th>Measures/ interventions</th>
<th>Importance/effectiveness</th>
<th>Ease of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labelling and standards</td>
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<tr>
<td>Mandatory energy performance standards (MEPS)</td>
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<tr>
<td>Appliance/lighting replacement programme</td>
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<td>Others</td>
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<tr>
<td>Building codes and standards</td>
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<tr>
<td>Energy audit and management system for buildings</td>
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<tr>
<td>Others</td>
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</tbody>
</table>
### C3: Stakeholder Ratings for Energy Efficiency Interventions in Transport Sector

<table>
<thead>
<tr>
<th>Measures/ interventions</th>
<th>Importance/effectiveness</th>
<th>Ease of Implementation</th>
</tr>
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<tbody>
<tr>
<td>Electric vehicle for passenger transport</td>
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<td>Mass rapid transit system</td>
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<td>Minimum vehicle efficiency standards for passenger transport vehicles</td>
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<tr>
<td>Non-motorised transport, i.e. cycling and walking</td>
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<tr>
<td>Electric vehicle for freight transport</td>
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<td>Minimum vehicle efficiency standards for freight transport vehicles</td>
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