Sustainable Energy For All
COMPRENDIUM OF THE WORK OF UN AGENCIES IN INDIA

JUNE 2014 | INDIA
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Acknowledgements

The Task Team on Sustainable Energy for All (SE4All) is convened by the United Nations Industrial Development Organization (UNIDO) in response to the needs of the UN Country Team in India to address the Secretary General’s initiative. It aims at increasing UN agencies’ engagement by establishing a platform for promoting sustainable energy issues in their collective and strategic work in India.

Discussions around the various possibilities of collaboration among UN agencies provided useful insights and added value, regarding how to link the outcome of UN programmes with the core areas of SE4All. The compendium prepared through this forum will be updated regularly and serve as a reference point to promote joint collaboration and implementation of programme activities among UN agencies in India.

The SE4All Task Team wishes to acknowledge with gratitude the time and effort expended by all the project participants and stakeholders during the course of consultations. In particular, the team wishes to thank all UN agency officials for their informative and engaged inputs.

The team also wishes to express its gratitude to the United Nations Resident Coordinator’s Office in India and UNIDO Regional Office for South Asia for their support in making necessary arrangements and providing guidance for the preparation of this compendium.

The Task Team extend its thanks to Sandeep Tandon, SE4All expert, for his lead in coordinating the activities as well as to Karishma Kashyap, Suliya, Pratibha Rialch, Amshika Amar and Sudhir Singh for their support in preparation of the compendium.

We sincerely hope that collaboration between UN agencies to work on the SE4All initiative will help to increase availability, reliability and access to clean energy, through which we can jointly address the issues of uplifting people’s livelihoods, improving health and preserving the dignity of underserved rural communities in India.

Task Team for Sustainable Energy for All
New Delhi
June 2014
# Table of Contents

Acronyms.................................................................................................................................................................................. 6

Executive Summary........................................................................................................................................................................... 7

1. Introduction .................................................................................................................................................................................. 9

2. Work of UN Agencies ................................................................................................................................................................. 16
   2.1 APCTT ............................................................................................................................................................................ 16
   2.2 FAO .................................................................................................................................................................................. 17
   2.3 IFAD ................................................................................................................................................................................ 18
   2.4 ILO .................................................................................................................................................................................... 19
   2.5 UNDP ................................................................................................................................................................................ 20
   2.6 UNESCO ........................................................................................................................................................................... 21
   2.7 UNFPA .............................................................................................................................................................................. 22
   2.8 UN-HABITAT ................................................................................................................................................................... 23
   2.9 UNICEF ............................................................................................................................................................................. 24
   2.10 UNIDO .............................................................................................................................................................................. 25
   2.11 UN-WOMEN ................................................................................................................................................................... 26
   2.12 WHO ............................................................................................................................................................................... 27

3. Conclusion and Next Steps....................................................................................................................................................... 28

Annex 1: A Case Study ............................................................................................................................................................................. 30

Annex 2: Government of India's Major Missions and SE4All ....................................................................................................... 33
## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE</td>
<td>Access to Clean Energy</td>
</tr>
<tr>
<td>ACI</td>
<td>Areas of Critical Importance</td>
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<tr>
<td>APCTT</td>
<td>Asian and Pacific Centre for Transfer of Technology</td>
</tr>
<tr>
<td>BPL</td>
<td>Below Poverty Line</td>
</tr>
<tr>
<td>BC</td>
<td>Black Carbon</td>
</tr>
<tr>
<td>CO₂</td>
<td>Carbon Dioxide</td>
</tr>
<tr>
<td>COPD</td>
<td>Chronic Obstructive Pulmonary Disease</td>
</tr>
<tr>
<td>EE</td>
<td>Energy Efficiency</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization</td>
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<tr>
<td>GHG</td>
<td>Greenhouse Gas</td>
</tr>
<tr>
<td>GIZ</td>
<td>Gesellschaft für Internationale Zusammenarbeit</td>
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<tr>
<td>GOI</td>
<td>Government of India</td>
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<tr>
<td>GTF</td>
<td>Global Tracking Framework</td>
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<tr>
<td>HDI</td>
<td>Human Development Indicator</td>
</tr>
<tr>
<td>IEA</td>
<td>International Energy Agency</td>
</tr>
<tr>
<td>ILO</td>
<td>International Labor Organization</td>
</tr>
<tr>
<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
</tr>
<tr>
<td>JNNSM</td>
<td>Jawaharlal Nehru National Solar Mission</td>
</tr>
<tr>
<td>MNRE</td>
<td>Ministry of New and Renewable Energy</td>
</tr>
<tr>
<td>MoP</td>
<td>Ministry of Power</td>
</tr>
<tr>
<td>MoPNG</td>
<td>Ministry of Petroleum and Natural Gas</td>
</tr>
<tr>
<td>NABARD</td>
<td>National Bank for Agriculture and Rural Development</td>
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<tr>
<td>NAPCC</td>
<td>National Action Plan for Climate Change</td>
</tr>
<tr>
<td>NGO</td>
<td>Non Governmental Organization</td>
</tr>
<tr>
<td>NSM</td>
<td>National Solar Mission</td>
</tr>
<tr>
<td>PM10</td>
<td>Particulate Matter (suspended particles less than 10 micron in diameter)</td>
</tr>
<tr>
<td>RET</td>
<td>Renewable Energy Technology</td>
</tr>
<tr>
<td>S3IDF</td>
<td>Small Scale Sustainable Infrastructure Development Fund</td>
</tr>
<tr>
<td>SCORE</td>
<td>Sustaining Competitive and Responsible Enterprises</td>
</tr>
<tr>
<td>SE4All</td>
<td>Sustainable Energy for All</td>
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<tr>
<td>SHG</td>
<td>Self Help Group</td>
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<tr>
<td>SME</td>
<td>Small and Medium Enterprises</td>
</tr>
<tr>
<td>SPV</td>
<td>Solar Photovoltaic</td>
</tr>
<tr>
<td>UNCT</td>
<td>United Nations Country Team</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UNDAF</td>
<td>United Nations Development Assistance Framework</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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<tr>
<td>UNIDO</td>
<td>United Nations Industrial Development Organization</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
</tr>
<tr>
<td>WEO</td>
<td>World Energy Outlook</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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</tbody>
</table>
Executive Summary

There is a growing need for cleaner, efficient and more distributed energy solutions that can be provided to millions of people in India; who still lack access to modern energy supplies in the form of electricity and clean cooking facilities. This remains an area of concern as India’s lack of access to modern energy supplies to over 200 million people, mostly in rural areas, has led to the absence of a level playing field for economic opportunities and development. This has led to inequalities in society, and between urban and rural populations. Other developing countries worldwide face similar situations, as a significant population does not have access to modern energy.

In 2011, the UN General Assembly declared the year 2012 as the International Year of Sustainable Energy for All (SE4All) and established three global objectives to be accomplished by 2030. These objectives are:

1. to ensure universal access to modern energy services;
2. to double the global rate of improvement in energy efficiency;
3. to double the share of renewable energy in the global energy mix.

Thus far more than 80 countries have formally endorsed the SE4All initiative, while a growing number of corporations and agencies worldwide have pledged financial support to achieve these objectives. Towards the end of 2012, the UN General Assembly further announced the “Decade of Sustainable Energy for All”, starting from 2014 and continuing till 2024.

To monitor the progress of various countries on the three global objectives, a Global Tracking Framework (GTF) has been developed by the World Bank and the International Energy Agency along with 13 other agencies, using indicators that have been established to track global development progress. Achievement of the global SE4All objectives will depend directly on the efforts of certain high-impact countries that have a particularly large representation in aggregate global performance. GTF has identified two overlapping groups of 20 such countries in Asia and Africa that account for about 67% of the global electrification shortfall and about 80% of the global shortfall in access to clean cooking fuels.

Importantly, India stands at the top position on this list as the country with the highest number of people lacking access to electricity and clean fuels for cooking. The GTF projections for 2030 indicate that in spite of global progress on addressing the barriers to improve access, India will still have a large population without access to electricity.

In response to such an urgent need to address energy issues in India and with a view to supporting the UN Secretary General’s initiative, the United Nations Country Team (UNCT) in India identified SE4All as one of the fast track initiatives. UNIDO was designated to take the lead for the Task Team and to initiate a UN platform for packaging solutions to localised problems on energy access.

In 2013, the Task Team held a series of extensive consultations with UN agencies as well as several bilateral development agencies in India. This process provided a unique opportunity for the UNCT to map the programmes and activities of each of the agencies that directly and indirectly contribute to and/or can benefit from the goals of SE4All. The consultations opened up new ways of identifying localized problems due to the lack of or insufficient energy access, where the UN’s intervention could add value.

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1 World Energy Outlook
The consultations also identified the most viable entry point for the UN agencies under the SE4ALL objectives. While a few agencies have been working directly to address the issues of improving energy efficiency and developing renewable energy solutions (objectives 2 and 3), most of the agencies could find their involvement more pertinent in achieving the objective 1 i.e. universal access to modern energy. So, the Task Team decided to focus on the universal access to energy as a common theme for the joint initiative of UN agencies under SE4All.

It further identified four cross-cutting issues where combined UN efforts can be applied to provide energy and development at household and community levels. These cross cutting issues (described in detail in Section 3) are: (a) livelihood, (b) natural resource management, (c) sanitation, and (d) health.

The combined effort of UN agencies can be formulated through the SE4All platform, showcasing the way to develop and implement projects on a large scale through demonstration and pilot projects for rural communities. In future, the joint activities of UN agencies can also aim at mobilizing a wider participation of important stakeholders, including governments at state and central levels, bilateral development agencies, civil society organizations and private sector. It would be particularly interesting to promote the engagement of both public and private sector organizations and mobilization of funds in order to sustain and upscale the efforts across India.

In 2014, the Task Team will continue consultations with additional UN agencies, bilateral development agencies and the government, carry out advocacy and work towards identifying the most viable models around the four cross-cutting themes to advance the agenda of SE4All in India.
The objective of Sustainable Energy for All (SE4All) is to prioritize energy in the global agenda and to help stakeholders create their own pathways and mobilize action towards achieving the following three objectives by 2030.

- Ensuring universal access to modern energy services.
- Doubling the global rate of improvement in energy efficiency.
- Doubling the share of renewable energy in the global energy mix.

To monitor the progress of various countries on the three global objectives, a Global Tracking Framework (GTF) has been developed by the World Bank and International Energy Agency along with 13 other agencies, using indicators that have been used to track global development progress. The GTF has set starting points against which progress will be measured under the SE4ALL initiative (See table 1).

The achievement of the global SE4ALL objectives will depend on the efforts of the high-impact countries, with their significant role in aggregate global performance. GTF has identified two overlapping groups of 20 such countries in Asia and Africa account for about two-thirds of the global electrification deficit and four-fifths of the global deficit in access to clean cooking fuels. Meeting the universal access objective globally by 2030 will depend critically on the progress that can be made in these countries.

A third group of 20 high income and emerging economies accounts for 80% of global energy consumption. Achievement of the global SE4All objectives for renewable energy and energy efficiency will not be possible without major progress in these high-impact countries. On all three aspects of energy sector development, China and India stand out as being both high-impact and fast-moving countries.

### Table 1
**SE4All Indicators, baseline and targets**

<table>
<thead>
<tr>
<th></th>
<th>Objective 1</th>
<th>Objective 2</th>
<th>Objective 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Universal access to modern energy services</td>
<td>Doubling global rate of improvement of energy efficiency</td>
<td>Doubling share of renewable energy in global energy mix</td>
</tr>
<tr>
<td><strong>Indicators</strong></td>
<td>Percentage of population with electricity access</td>
<td>Percentage of population dependent on non-solid fuels</td>
<td>Rate of improvement in energy intensity</td>
</tr>
<tr>
<td>Historic reference 1990</td>
<td>76</td>
<td>47</td>
<td>-1.3</td>
</tr>
<tr>
<td>Starting point 2010</td>
<td>83</td>
<td>59</td>
<td>-2.6</td>
</tr>
<tr>
<td>Objective for 2030</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Global Tracking Framework*
India and Universal Access to Modern Energy Services

India faces a significant challenge in providing access to adequate, affordable and clean sources of energy that fall under Objective 1 of SE4All. The 2011 population census of India estimates the number of rural households at 167.8 million. Roughly 85% of these rural households are dependent on traditional biomass fuels for their cooking energy requirements and about 45% do not have access to electricity.

Various state and central government schemes on rural electrification have gradually built the required infrastructure for the supply of electricity. While there has been impressive progress in increasing the installed capacity for electricity generation and the extension of the power grid in rural areas, availability of electricity and other modern energy supplies continue to remain an area of concern - particularly in the rural areas, where consumers receive electricity supplies for less than eight hours a day in several states.

Due to perennial demand-supply mismatch in the grid, electricity supply, especially in rural areas, remains erratic and of short duration. For these end-users the reliability and quality of electricity supply remains unaddressed. Investments in building last-mile electricity distribution infrastructure have not yet provided tangible improvements in living conditions. And the per capita consumption of electricity in rural households is only around eight units per month, which is just one-third of the reported consumption in urban areas.

Therefore rural areas, in spite of grid connectivity, continue to remain dependent on the use of kerosene lanterns and simple wick lamps to meet the basic need for lighting in the household. A recent study by multinational research coalition

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Figure 1
Among the 20 countries in Africa and Asia that have deficit in electricity access and clean cooking fuel access, India stands out at the top

<table>
<thead>
<tr>
<th>Country</th>
<th>Electricity access deficit (Millions of People)</th>
<th>Non-solid fuel access deficit (Millions of People)</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>306.2</td>
<td>705</td>
</tr>
<tr>
<td>Nigeria</td>
<td>82.4</td>
<td>612.8</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>66.6</td>
<td></td>
</tr>
<tr>
<td>Ethiopia</td>
<td>63.9</td>
<td></td>
</tr>
<tr>
<td>Congo, DR</td>
<td>55.9</td>
<td></td>
</tr>
<tr>
<td>Tanzania</td>
<td>38.2</td>
<td></td>
</tr>
<tr>
<td>Kenya</td>
<td>31.2</td>
<td></td>
</tr>
<tr>
<td>Sudan</td>
<td>30.9</td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>28.5</td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td>24.6</td>
<td></td>
</tr>
<tr>
<td>Mozambique</td>
<td>19.9</td>
<td></td>
</tr>
<tr>
<td>Afghanistan</td>
<td>18.5</td>
<td></td>
</tr>
<tr>
<td>Korea, DR</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Madagascar</td>
<td>17.8</td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>15.6</td>
<td></td>
</tr>
<tr>
<td>Pakistan</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>14.3</td>
<td></td>
</tr>
<tr>
<td>Niger</td>
<td>14.3</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Malawi</td>
<td>13.6</td>
<td></td>
</tr>
</tbody>
</table>

Source: Global Tracking Framework

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An estimated 143 million households are dependent on firewood for cooking

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An estimated 76 million households are without electricity

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2 Smith Kirk et al: “Household light makes global heat: high black carbon emissions from kerosene wick lamps” – Environmental Health Sciences, University of California, Berkeley
presents laboratory and field measurements that show 7 to 9% of kerosene consumed in this type of wick lamp is converted to black carbon, which is known to warm the earth by absorbing heat and light in the atmosphere. The study cites replacement of kerosene lamps with clean light-emitting alternatives as a viable option for reducing carbon emission and its global warming effect.

Kerosene is often advocated as a cleaner alternative to solid fuels, biomass and coal, for cooking. However, some known and documented kerosene hazards are poisonings, fires and explosions. Operation of kerosene lamps and lanterns emits substantial amounts of fine particulates, carbon monoxide, nitric oxides and sulfur dioxide. Studies on kerosene used for cooking or lighting provide some evidence that emissions may also impair lung function and increase infectious illness including tuberculosis and asthma and cancer risks.

In India, 75 million households deprived of electricity use kerosene mainly for lighting purposes. As per the feedback from villagers, about 4 liters are consumed every month (48 litres annually) to meet the needs of a typical rural households. At the all India level this translates into an estimated annual kerosene consumption of 3.6 billion liters.

Since kerosene is categorized as a fuel for people below poverty line, it is sold at a price that is administered by the government. The difference between the cost and sale price of kerosene (roughly Rs 30 per liter) is borne by the central government. The annual consumption of 3.6 billion liters results in recurring kerosene subsidy costs of Rs 108 billion (USD 2.2 billion) annually; these numbers are validated by another recent study which concludes that kerosene subsidies alone cost the Indian government $4 to 6 billion annually (Rao, 2012). Furthermore, the use of kerosene annually adds about 9 million tons of carbon dioxide in the atmosphere.

Clearly there are high financial and environmental costs associated with the current mode of energy

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1 Smith Kirk, Lam NL et al. “Kerosene - A Review of Household Uses and Their Hazard in Low and Middle Income Countries - School of Public Health, University of California, Berkeley

4 Rao, N (2012) “Kerosene Subsidies in India: When energy policy fails as a social policy”; Energy for Sustainable Development
supply to rural households. Better alternatives to kerosene lamps exist in the form of solar lanterns, which are emerging as a viable alternative to fulfill the lighting needs of households and have been demonstrated to work in several states. (refer to Annexure 1).

The second indicator under universal access to clean energy is the deficit of non-solid fuel for cooking. More than half of the global population lacking clean cooking facilities lives in India, China and Bangladesh. Here, India sits at the top of the list as the country with the largest population lacking access to clean fuel for cooking.

Studies carried out by Global Alliance for Clean Cook stove\(^5\) in India found that families spend about 5 to 8 hours or more per week collecting fuel, which often entails carrying loads weighing 20 to 30 kilograms of traditional biofuels, especially firewood, on the head or shoulders.

According to WHO’s report, entitled “Fuel for Life: Household Energy and Health”, inhaling indoor smoke doubles the risk of pneumonia and other acute infections of the lower respiratory tract among children under five years of age. The report states that women exposed to indoor smoke are three times more likely to suffer from chronic obstructive pulmonary disease (COPD), than women who cook with electricity, gas or other cleaner fuels.

Burning solid fuels produces extremely high levels of indoor air pollution. Typically, 24 hour levels of PM10 in a biomass-using home range from 300 to 3,000 micrograms per cubic meter (μg/m\(^3\)). By comparison, the United States Environmental Protection Agency has set the standard for annual mean PM10 levels in outdoor air at 50 μg/m\(^3\); the annual mean PM10 limit agreed on by the European Union is 40 μg/m\(^3\).

As cooking takes place every day of the year, most people using solid fuels are exposed to small smoke particles at a level many times higher than the accepted annual limits for outdoor air pollution. Thus, the health impact of burning biomass fuels is considerable, apart from being an obstacle to achieving a minimum standard of living. Household energy interventions bring about a wide range of benefits: they improve children’s and women’s health, save time and money, promote gender equality and reduce deforestation.

Figure 4
Premature annual deaths from household air pollution and other diseases

![Figure 4](image)

Source: World Energy Outlook-2010

\(^5\) The Global Alliance for Clean Cook stoves is a public-private partnership led by the United Nations Foundation, seeking to save lives, improve livelihoods, empower women and protect the environment by creating a global market for clean and efficient household cooking solutions.
In many poor rural communities, where biomass remains the most practical fuel, improved cook-stoves can cut back indoor smoke levels considerably. These stoves reduce a family’s exposure to harmful pollutants by optimizing combustion, venting smoke through a flue and chimney and in some cases, reducing cooking time.

Often, across the country a large number of families who breathe polluted air inside their homes do not have access to clean drinking water and proper sanitation facilities. The scope of energy interventions therefore needs to be expanded by joint efforts to address the common health issues around diarrhea and respiratory disease in an integrated manner. Exploiting these synergies to tackle two priority public health issues at once has an enormous potential to save lives.

Therefore, India’s progress on the SE4All objective of universal access to clean energy would help to address energy security concerns, loss of income due to health issues and reduced GHG emissions. More importantly it will also help to address health and gender equality issues and bring about all round development and social progress.

**Energy Development Framework**

The perspective on modern energy access varies widely, from the individual user to suppliers at state and national levels. So, an Energy Development Framework possessing the appropriate Energy Development Indicators (EDI) that track energy development alongside - distinguishing between developments at the household and community levels – is necessary.

At households, the focus will be to address two key issues: access to electricity and access to clean cooking fuels. These two directly contribute to the indicators of SE4All’s first objective.

To address energy access at household and community services, four cross cutting themes have been identified that would bring various UN agencies together under one single unifying theme, Energy Development, as seen in the Energy Development Framework in Figure 5.
Although the households and underserved communities remain in focus, the application of modern clean energy also needs to be extended to improve basic services such as sanitation, clean drinking water supply and health care services at primary health centers and clinics.

SE4All provides a platform for consultations among UN agencies where the potential of joint activities and programmes can be discussed and agreed upon. Joint programmes can be formulated through the platform, showcasing the way to develop and, implement demonstration and pilot projects for underserved communities.

During the past few months, UNIDO’s team held consultations with twelve UN agencies and three external bilateral and multi-lateral agencies on the objectives of SE4All and opportunity for collaboration with energy as a common theme. These consultations were productive and helped everybody to look at the program interventions from a new perspective.

Various UN agencies, according to their current mandate, have agreed to jointly work on the following four themes: (a) livelihood, (b) natural resource management, (c) sanitation, and (d) health.

Improving universal access to energy can bring significant improvement to programme impacts benefitting development at households and communities. These four cross cutting themes can help to bring together various UN agencies under one single unifying theme of Energy Development.

Table 2 presents the activities of various agencies against the 11 Action Areas which were a part of the SE4All scoping. These areas make the vision of SE4All actionable as they address issues regarding energy consumption, key components of productive energy use and supporting mechanisms required to overcome common impediments to action. Against these areas the activities of 12 UN agencies are mapped. The areas that emerge as common, where several agencies can make useful contribution are: (a) capacity building and knowledge sharing; (b) distributed electricity solutions; (c) modern cooking appliances and fuels; and (d) business model and technology innovation.

Figure 6
Human Development Index: 20 years Trend
In 2013, India’s Human Development Indicator is lower than World Human Development Indicator of 1980
Capacity building and knowledge sharing cuts across all the UN agencies as each agency could work with their respective counterpart organizations to raise awareness, understanding of issues and help deploy suitable solutions to reduce the deficit of universal access to energy. Thus, it would mitigate direct and indirect consequences.

The domain of SE4All can be later expanded by involving external funding agencies, particularly World Bank, which would complement UN efforts on technical assistance, training and mobilization of support and funds from the private sector. The World Bank can support the initiative by mobilizing financial support of Indian banks, which can greatly help in sustaining after sale support services and scaling up the deployment of renewable energy technologies for rural communities.

Many UN agencies are assisting the Indian government's programme covering health, education and sanitation, and the outcomes of these contribute towards improvement in India's Human Development Index.

SE4All provides a unique opportunity for all UN agencies to work collaboratively to improve the universal access to clean energy.

The outcome of such combined efforts will ultimately contribute towards improving India's Human Development Index.
2. Work of UN Agencies

2.1 APCTT

Mandate and Geographical priority

Asian Pacific Centre for Transfer of Technology (APCTT) is a regional institution of the UN Economic and Social Commission for Asia and Pacific (UNESCAP) and covers 62 countries that fall under the mandate of APCTT activities and multilateral engagement. APCTT promotes transfer of technology to and from small and medium-scale enterprises (SMEs) in Asia and the Pacific region. Broadly the activities of APCTT cover three specific areas: Science, Technology and Innovation; Technology Transfer; and Technology Intelligence. Based on the current requirements APCTT has identified three focus areas to assist member countries in addressing the challenges on adoption by strengthening their capacity. The three focus areas include renewable energy, biotechnology and nanotechnology.

APCTT in India: Key priorities

In India, APCTT works with the Ministry of Science and Technology as its focal point. It supports technology transfer by developing innovations and providing an online platform for information sharing. Among developing countries in the region, India is a major driver of the technology and investment in the area of renewable energy. Several countries are interested in replicating India's success in renewable energy to reduce consumption of expensive fossil fuels. To address this demand, APCTT is also working with MNRE to share its success and data with other countries in Asia-Pacific region. To promote renewable energy based solutions, it is also reviewing enabling environments, case studies technologies and business models. In the area of energy efficiency its focus is on building materials and building technologies.

APCTT also undertakes consultancy assignments in various technology transfer related areas such as institution building, human resources development, studies and business partnership development. It provides a platform for sharing lessons learned and deploying renewable technologies in the rural areas for poor and underserved communities. APCTT has prepared several guidebooks and manuals regarding the carrying out of feasibility studies to estimate the potential and size of renewable energy technologies such as micro-hydro, solar photovoltaic and biogas.

Relevance of the organization to SE4All

The guidebooks and manuals prepared by APCTT can be utilized by the stakeholders who are committed to increasing the share of renewable energy. As its programmes in the Asia-Pacific region are inter-country, APCTT is best suited to share success stories in the region which can provide insights and offers solution to address the four cross cutting themes. In particular, the themes of improved livelihood, use of clean fuels in households for cooking, business models and technology packages that are successfully operating in countries covered by APCTT would all be relevant to SE4All.
2.2 FAO

Mandate and Geographical priority

The operations of Food And Agriculture Organisation (FAO) in India began in 1948. FAO plays a catalytic role in a few specific areas: providing technical assistance and capacity building, building innovative approaches in critical areas, multilateral collaborations on trans-boundary problems and harnessing Indian expertise for other developing countries as a policy advocate and a neutral adviser. Water and natural resource management are important activities for which FAO provides expertise and financial resources.

FAO in India: Key priorities

The key focus areas are sustainable food production and technological innovations, which includes FAO’s technical assistance programme to improve productivity, strategy and action plan for animal identification and traceability, technical assistance to strengthen emergency preparedness, post harvest market linkages and institutional development. FAO works with the Ministry of Agriculture and its counterparts in states.

FAO provides technical assistance and capacity building from national and international sources to transfer best practices, learn from success stories from other countries and to build the capacity of government officers. It supports GoI to strengthen the implementation of national missions and specific programmes aimed at reducing poverty and achieving food and nutrition security. FAO also assists in piloting innovative approaches with government, NGO and private sector partners in agricultural and rural development. Successes in ground water and irrigation management are being expanded to include the development of value chains involving small-scale farmers and other areas where new approaches are identified.

Relevance of the organization to SE4All

FAO’s engagement with agricultural institutions, together with the successful outcome of its project in Andhra Pradesh on farmer-managed ground water systems and water efficiency improvement in irrigation, all contribute towards natural resource management of the energy development framework. Improved ground water management and irrigation can contribute towards increased income. Providing capacity building support to farmers to manage water and monitoring climate variables is also an important activity, for which application of clean energy can be explored for sustenance and expansion into other geographies.

FAO’s work also supports the theme of livelihood. Thus FAO, working together with other UN agencies, is positioned to introduce and expand the universal availability of clean energy in the agriculture supply chain which can contribute to improved livelihoods and natural resource management by households and communities in rural areas.
2.3 IFAD

Mandate and Geographical priority

International Fund For Agriculture Development (IFAD) was created primarily to support developing countries to produce more food in rural areas. It is a financing institution with 172 member countries. The members consist of donors, recipients and members that are both donors and recipients of IFAD's highly concessional loan of 40 year tenure with a 10 year moratorium. It also provides grants to member countries.

IFAD in India: Key priorities

IFAD’s strategy in India centers on improving poor rural people’s access to economic and social resources. IFAD focuses on medium-term development and reconstruction needs and it therefore emphasizes the importance of strengthening people's capacities to establish and manage their own institutions.

As a policy, IFAD works with communities in areas that are most poverty stricken, where even minimal government support has not yet reached. In India, IFAD has 11 ongoing programmes that are spread through the states of Assam, Bihar, Jharkhand, Maharashtra, Manipur, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Uttarakhand and Uttar Pradesh. It works with the Ministries of Agriculture, Rural Development, Tribal Affairs, Women and Child Development and Development of North East Region.

IFAD's country programmes are of 9-years duration, are flexible and evolve based on periodic reviews. It employs community-based planning and participatory approaches as the goals of its programme are poverty eradication and management of natural resources. Empowering women and other disadvantaged groups are a strategic priority in its programme.

Relevance of the organization to SE4All

Livelihood generation and natural resource management are two themes that demonstrate energy requirement at the household level, which can be addressed by improving universal access to energy. IFAD has experience in developing family based bio-gas plants, which can be replicated and upscaled under SE4All. With its years of expertise and experience in natural resource management, working with primitive tribal groups where the demand for energy in any form is always needed can become the focal point for supporting the implementation of SE4All. Its attention on building the capacity of local communities also overlaps with the work of other UN agencies - therefore IFAD is identified as one of the principal UN agencies which can contribute to the ground efforts of SE4All.
2.4 ILO

Mandate and Geographical priority

International Labour Organisation (ILO) has implemented a few technical corporation projects and small core projects with a major focus on UNDAF priority states. The priority issues in its Country Programme are: (a) employment, including skills development; (b) social protection covering occupational safety; and (c) working conditions and health. ILO is working on addressing these issues through its three main programme activities described below.

ILO in India: Key priorities

Sustainable Enterprise is one of the eight Areas of Critical Importance and, in India it is one of the outcomes under the Decent Work Country programme. ILO’s global programme - ‘Sustaining Competitive and Responsible Enterprises (SCORE)’ - aims to build the capacity of SMEs to achieve greener workplaces and sustainable enterprises through worker-employer cooperation.

ILO defines SCORE as a practical training and in-factory counseling programme that improves productivity and working conditions in SMEs. SCORE aims to improve productivity and quality among SMEs by building good workplace practices.

Green Jobs is also one of the areas of focus for ILO, focusing on ways to achieve environment sustainability and decent jobs. India is one of the first countries in Asia and the Pacific to collaborate with the ILO on Green Jobs initiative. The main priorities areas of this initiative are analysis of the employment and labour market dimensions; practical approaches to greening enterprises; green jobs in waste management and recycling; renewable energy and energy efficiency; transition towards a green economy and sustainable society; and adaptation to climate change.

Start and Improve Your Business (SIYB) is a management-training programme with an objective to contribute to economic development through the creation of more and better employment in developing economies and economies in transition. With an estimated outreach of 4.5 million trainees and network of more than 17,000 trainers and 200 Master Trainers in 2,500 partner institutions, SIYB is one of the biggest global management training systems used for the support of micro and small enterprises currently on the market.

Relevance of the organization to SE4All

As the SE4All has the objective of doubling the rate of improvement of energy efficiency and the share of renewable energy in the overall energy mix, the framework of Decent Work Country programme and Green Jobs can be extended to these two areas along with those already planned – in addition to ongoing work in industries and MSME. Also, livelihood is one of ILO’s focuses; this improves the chances of local enterprises turning self-sustaining.
2.5 UNDP

Mandate and Geographical priority

Since 1951, the United Nations Development Programme (UNDP) has been collaborating with the government and civil society to help them find their own solutions to meet global and national development challenges. The goal of the UNDP is to help improve the lives of the poorest women and men, marginalized and the disadvantaged groups in India.

UNDP in India: Key priorities

UNDP India supports more than 15 central ministries and nine of the poorest states during the current 2014-17 country programme cycle. UNDP works intensively with a wide range of partners in all the nine UNDAF states: Assam, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan and Uttar Pradesh. Along with Uttarakhand, these states account for the fact that 64% of the population live below the poverty line.

Over the years, UNDP has ensured that the human development approach has become embedded in policy and planning processes of the GoI, both at the central and state levels. The UNDP has the mandate to work in the states where the needs for development are the highest.

The programme implemented by Energy and Environment unit of UNDP covers the following sectors: (a) commercial buildings, (b) urban transport, (c) railways, (d) industrial sectors, and (e) municipal services for implementing programme on energy efficiency. In the area of renewable energy, the ongoing programme covers: (a) solar concentrator application in industries, (b) clean energy for productive uses, and (c) biomass power generation for off-grid applications. The unit works with Ministries of New and Renewable Energy, Steel, Urban Development, Power and Railways.

Relevance of the organization to SE4All

UNDP’s ongoing programme directly contributes to the second and third objectives of SE4All. It can play an important role to develop and implement a joint programme to support the first objective. UNDP’s experience in the recent past through its programme on “Access to Clean Energy” has provided useful experience which can be applied under SE4All. A success story around increasing the share of renewable energy is included in Annexe 1.

UNDP is starting a new project: promoting livelihoods for increasing Access to Renewable Energy for Micro-enterprises in Rural India, and Scale Up of Access to Clean Energy for Rural Productive and Domestic Uses. Also, UNDP is well positioned to provide technical assistance and training to support the work of other UN agencies on the three SE4All themes. UNDP has experience with implementation of related project activities in the rural areas through partners which focus on building local capacity and providing training and financial support. UNDP’s involvement in SE4All will be important to provide the required technical know-how and capacity building support.
2.6 UNESCO

Mandate and Geographical priority

United Nations Educational, Scientific and Cultural Organization (UNESCO) works to create the conditions for dialogue among civilizations, cultures and peoples, based upon respect for commonly shared values. UNESCO’s mission is to contribute to the building of peace, the eradication of poverty, sustainable development and intercultural dialogue through education, the sciences, culture, communication and information.

UNESCO in India: Key priorities

In India, UNESCO focuses mainly on four sectors: Education, Science, Culture and Communication and Information. It works in these areas along with respective ministries of the GoI, as well as state government agencies.

Services provided by UNESCO include enhancing national capacities and the knowledge base in the energy field, sharing scientific knowledge and best practices, promoting energy policies, supporting pilot initiatives and providing technical assistance.

India has 18 biosphere reserves and several of these experience interference from local communities. Buffer zones have been created around the biosphere reserves for reconsolidation between conservation and development. UNESCO is working in seven bio-sphere reserves through its Man and Biosphere program, which emphasizes eco-developmental activities for the conservation of local natural resources and income generating employment opportunities to support the livelihood of the people living in the immediate vicinity of the biosphere reserve.

Relevance of the organization to SE4All

In its contribution to international efforts, UNESCO places emphasis on the sharing of best practices in renewable and alternative energy and on providing policy advice, especially in developing countries like India.

UNESCO’s programme on biosphere reserve is linked to the two cross cutting themes of livelihood and natural resource management. Therefore, these programmes present the opportunities to explore solutions by providing universal access to energy in these focus areas. For instance, application of solar lights, use of improved cook-stoves and household bio-gas plants can greatly aid the household to learn income generating activities. SE4All can also provide opportunities for introducing pico-hydro power generation in biosphere reserves in the hilly regions, to supply electricity to villages in the buffer and transition zone.
2.7 UNFPA

Mandate and Geographical priority

United Nations Population Fund (UNFPA) is an international development agency that promotes the right of every woman, man and child to enjoy a life of health and equal opportunity. UNFPA supports countries in using population data for policies and programmes to reduce poverty and to ensure that every pregnancy is wanted, every birth is safe, every young person is free of HIV/AIDS, and every girl and woman is treated with dignity and respect.

UNFPA in India: Key priorities

UNFPA has played a critical role in assisting India in redirecting its population efforts away from family planning targets and quotas and focusing instead on providing high-quality services within a comprehensive reproductive health care system. The key to this new approach is empowering women and expanding access to education, employment opportunities and strengthening the healthcare system response. It works with the Ministry of Health and Family Welfare.

Relevance of the organization to SE4All

UNFPA’s strong focus in the current Eighth Country Programme Action Plan is on improving the knowledge level around family planning, especially among the rural and most vulnerable groups of the society. Its function and activities are in line with the cross cutting theme on ‘health’ services. The effort to provide energy access to primary health care centre would benefit UNFPA’s work on the ground. SE4All offers the platform to address the issue by providing a reliable energy supply at the health centers and in support of the training and information dissemination activities can help augment the services being provided by UNFPA.
2.8 UN-HABITAT

Mandate and Geographical priority

United Nations – Habitat (UN Habitat) has the mandate of promoting socially and environmentally sustainable towns and cities with the goal of providing adequate shelter for all.

UN-Habitat in India: Key priorities

The presence of UN Habitat in India is programme based and aligned with the Ministry of Urban Development and the Ministry of Housing and Urban Poverty Alleviation. UN Habitat’s work in India is mostly around demonstration projects and capacity building. Some of the programs which align with the three objectives of SE4All are:

Solar Cities Project: the aim of this project is to consolidate all the efforts of the Ministry of Urban Development and address the energy problem of the urban areas in a holistic manner. A total of 60 cities and towns are to be supported for development as solar cities, at least one in each state. The aim is a minimum of 10% reduction in the projected demand of conventional energy.

Sustainable Cities Programme: This program is currently ongoing in Maharashtra. This program contributes to the overarching goal of sustainable urbanization. The three main pillars of the programme include: building urban safety through urban vulnerability reduction, building urban safety through urban planning and management and lastly, improving the governance of safety.

Support My School (SMS) Campaign: In 2011, UN-Habitat and Coca-Cola India, in association with NDTV embarked on a unique public service initiative called the “Support My School” campaign. The project was designed around the finding of several studies that revealed that a lack of basic amenities like toilet, access to water and basic infrastructure lead to a higher rate of absenteeism, especially among girls, finally resulting in dropouts. The campaign was launched with an initial corpus of $ 600,000, aiming to revitalize over 100 schools in the rural and semi-urban towns of 10 states across the country. Its second phase was launched in August 2012 and succeeded in raising INR Rs 13.5 crore with the aim of reaching out to 272 schools. The target of the campaign is to provide sanitation, separate toilets for girls and boys, drinking water, libraries, sports and recreation facilities along with improvement in overall infrastructure. Also in a few remote schools, a demonstration unit of solar power plants has been established for lighting, pumping of water and computer operation.

Relevance of the organization to SE4All

Most UN Habitat projects are reaching a mature state. It is well positioned to support the SE4All initiative by offering its linkages at the central and state government levels, particularly implementing agencies at the state level. It can offer solutions to improve the supply of clean drinking water and sanitation, the two cross-cuttings that affect the communities directly. Its SMS campaign, involving private sector organizations, serves as a model and can be utilized to mobilize private sector support to improve community services in rural areas.
2.9 UNICEF

Mandate and Geographical priority

The United Nations Children’s Fund (UNICEF) is active in more than 190 countries through country programmes and national committees. Globally, UNICEF is working to support children's right to protection, education, health care, shelter, and nutrition. With a presence in 13 states including high-priority and states in transition, UNICEF is working with GoI to ensure that each child gets the best start in life and develops to their full potential.

UNICEF in India: Key priorities

The overall goal of the UNICEF Country Programme is to advance the fulfillment of the rights of women and children in India to survival, development, participation and protection; by reducing social inequalities based on gender, caste, ethnicity or region.

UNICEF works upstream and does not implement programs. UNICEF follows a lifecycle approach and uses indicators such as child survival, education, and maternal health. The current priority areas are improving quality education, reducing maternal mortality and improving health and hygiene.

Relevance of the organization to SE4All

UNICEF has a keen interest in the SE4All focus on rural areas in India, where health concerns are the highest. It agrees that there are several activities which are unable to achieve potential success due to a lack of energy. Since their sole concern is development in the most needed area, any initiative under the SE4All will be taken up within the 13 priority states specifically in 200 districts, prioritized within each of the states.

Water, Environment and Sanitation (WASH) and Health covers the three cross-cutting themes where SE4All could be directly applied. In the area of Water and Sanitation UNICEF is focusing on improving safe water supply and reducing open defecation. The application of clean energy and increasing the universal access to energy to address these two issues is a useful possibility, and needs to be studied closely. A study to provide hard evidence of triggers for people to consume safe drinking water and use toilet facilities will be needed first, and must be widely disseminated among decision makers before launching any sort of intervention.

UNICEF’s support in the health sector is towards improving immunization to reduce children and maternal mortality rates. The work is being carried out jointly with the Ministry of Health and Family Welfare and its state counterparts, to improve the infrastructure and facilities of primary health care centre under the National Rural Health Mission. SE4All can provide the required technical assistance to improve availability of electricity using clean energy to enhance the functioning of the primary health centers, round the clock.
2.10 UNIDO

Mandate and Geographical priority

In line with its mandate to promote inclusive and sustainable industrial development, United Nations Industrial Development Organization (UNIDO) draws on four mutually reinforcing categories of services: technical cooperation, analytical and policy advisory services, standard setting and compliance and a convening function for knowledge transfer and networking. UNIDO supports implementation of energy strategies that include adoption of renewable energy, energy efficiency and low carbon technologies, which are keys to facilitating the economies onto a lower carbon path.

UNIDO in India: Key priorities

In India, the majority of projects are focused on energy and environment thematic areas. UNIDO works closely with Department of Industrial Policy Promotion (DIPP), Ministry of New and Renewable Energy, Ministry of Medium, Small and Micro Enterprises (SME), Ministry of Environment and Forests, the Bureau of Energy Efficiency and key stakeholders including industrial associations and resource institutions. It also works with the SMEs aiming to mainstream renewable energy and energy efficiency components within their industrial systems. To increase the contribution of renewable energy, UNIDO has projects (a) aiming at application of micro-hydro projects in Uttarakhand; (b) increasing the penetration of solar thermal energy, and (c) conversion of waste to energy for application in industries. The target group of UNIDO’s activities is wide-ranging, from large, energy intensive industries to small scale and village level industrial and artisan groups.

Relevance of the organization to SE4All

Sustainable industrialization and greening of industrial development are both key elements of UNIDO’s mandate. UNIDO’s contribution to SE4All goals is focused on aligning the global sustainable energy objectives with the sustainable industrial development agenda; through scaling up the deployment of RETs and energy efficiency in the manufacturing sectors. UNIDO is committed to ensure that the three objectives (energy access, energy efficiency and renewable energy) that support the goal of the universal access to energy by 2030 are fully integrated in the design and implementation of its projects.

Through the SE4All initiative, UNIDO would be able to assist in projects aiming at other development concerns, such as health and agriculture. These activities align with the objectives of SE4All and can provide solutions to address localized problems emerging from non availability of modern energy services in rural areas. The solutions can be provided either through advisory services to state governments or implementation of models which are demonstrated and validated, to build the capacity of state government agencies for state-wide replication. UNIDO will work with other UN agencies to provide technical assistance and training support to increase the universal access to energy in support of all four cross-cutting themes identified under the energy development framework.
2.11 UN-WOMEN

**Mandate and Geographical priority**

UN Women is the youngest UN agency. It started working on girls and women issues globally on January 1, 2011. UN Women supports social change to allow women’s greater participation in all aspects of life by focusing on these priority areas: (a) ending violence against women; (b) planning and budgeting; (c) economic empowerment, and (d) promoting political participation. The New Delhi office of UN Women also covers Bhutan, the Maldives and Sri Lanka.

**UN Women in India: Key priorities**

In India, the organization is working closely with GoI and civil society to set national standards for establishing gender equality. The nodal ministries on this programme are Ministry of Women and Child; Ministry of Panchayati Raj; Ministry of Rural Development and Ministry of Labour. It strives to ensure the creation and implementation of pro-women laws, policies and programmes which translate into real opportunities for women and girls to exercise their rights as equal citizens of India. The ongoing programmes, spread out over 16 states and concentrated in two districts in each state, cover the areas of skills training for women, economic and political empowerment, planning and budgeting for gender responsive budgeting.

**Relevance of the organization to SE4All**

Three activities carried out by UN Women could come under SE4All. First, is the skill training of women, which was carried out with the help of SEWA (Self Employed Women Associations). Here, the application of renewable energy can assist in improving the productivity of artisans and increasing income generation. Second, the work being carried out for economic and social empowerment of women farmers in Maharashtra can look at introducing awareness and training for the use of improved cook stoves, to reduce the fuel wood usage. Third, the replicating and scaling up of a women’s door-to-door energy auditor program.

Additionally, UN Women has developed modules for the measurement of baseline conditions and monitoring and evaluation of implementation programs, all around women specific issues. These templates can be utilized at various other locations where SE4All activities are being undertaken.

As SE4All looks at addressing the energy related issues among underserved communities, women in most cases are directly affected in more than one way. Therefore, UN Women with its ongoing program and experience can be one of the key UN agencies in this initiative. It can provide technical assistance, training and a template for conducting baseline studies, monitoring and evaluation of the program impact, especially as we look at how the intervention of clean energy options have impacted women in the target areas. The outcome from monitoring and evaluation could be further utilized by UN Women for its programs on economic empowerment, planning and budgeting.
2.12 WHO

Mandate and Geographical priority

World Health Organisation (WHO) is the directing and coordinating authority for health within the United Nations. It is responsible for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends.

WHO in India: Key priorities

The WHO priorities in India are part of the latest Country Cooperation Strategy (2013), where work is carried out under the following strategic priorities:

Strategic Priority 1- Supporting an improved role of the Government of India in global health.

Strategic priority 2: Promoting access to and utilization of affordable, efficiently networked and sustainable quality services by the entire population

Strategic Priority 3: Helping to confront the new epidemiological reality

Since the eradication of polio, WHO is focusing on AIDS and TB programmes and transitioning WHO service delivery components in them to regular government structures run by district, state and central authorities, as the public health system of India now has more than sufficient knowledge, organizational capacity, resources and service delivery mechanisms.

Both the GoI and WHO are placing an emphasis on augmenting the public policy on health along with the required services for tackling diseases by augmenting and investing in health care facilities such as preventative primary health care interventions, combined in turn with effective emergency and other services as well as individual/personal services.

Relevance of the organization to SE4All

As mentioned in detail in the introduction section, the prevailing use of biomass based fuels for cooking create high pollution level that affect the health of women and children. An earlier report of WHO (Fuel for Life: Household Energy and Health) has identified these issues as affecting the health of a vast majority of the population. WHO’s continuing engagement with GoI and the state counterparts can help to address the high prevalence of TB and help define the requirement and service offerings of primary healthcare units. The energy related solutions for these two issues can be provided by other UN agencies under the SE4All platform. WHO can play an important role in SE4All in directly addressing the issue of health, and indirectly contributing to the use of clean fuel for cooking; thus addressing the household and community related issues as identified in the Energy Development Framework.
3. Conclusion and Next Steps

The task team held consultations with 12 UN agencies and six bi-lateral and multi-lateral agencies on the objectives of SE4All and possible opportunities for collaboration. These consultations were productive and helped to look at program interventions from a new perspective. The team found several UN agencies willing to be part of this initiative in India as well as several development agencies that are already working on the themes of renewable energy and energy efficiency.

There are several demonstration projects in India as well as other developing countries that illustrate the vast possibilities and positive contribution renewable energy solutions can make to people’s lives. These success stories also indicate the acceptance and adoption of these interventions at individual households, the village council and within the private sector by using their own financial resources. (A case study is included in Annex 1 to highlight the impact renewable energy can make in improving the livelihood opportunities).

These success stories provide important leads. First, the use of solar photovoltaic based lighting products can reduce and even eliminate the demand of kerosene for lighting. Second, the introduction of clean cook-stoves at households, small restaurants and eateries require wider publicity, and awareness creation for replication and up-scaling. Third, these interventions call for investing the project resources on local entrepreneurs and banks to offer necessary support to provide the energy solutions, after sale service and necessary technical and financial support for replication.

The issue of universal access to energy affects a large population and hinders India’s aspirations for a better Human Development Index. SE4All provides a platform for a multi-pronged joint effort that cuts across sectors and will work with the government’s scheme and program to address the issue of the availability of clean energy.

The task team’s consultations with the UN agencies helped to narrow down the main focus of a joint effort on rural communities where the deficit in modern energy supply services is the most. Experiences in India and elsewhere have demonstrated that addressing the issue of energy is imperative for the development of communities and the sector. Improving the Universal Access to Modern Energy service can also bring about desired tangible benefits to households and communities. Therefore, the UN agencies have agreed to jointly work to support the first objective of the SE4All campaign through the following four thematic areas:

- livelihood
- natural resource management
- sanitation
- health

In table 2, activities of 12 UN agencies are mapped against the four cross-cutting themes and also against the 11 Action Areas of SE4All. These areas make the vision of SE4All actionable as they address issues surrounding energy consumption, productive energy use, and the supporting mechanisms needed to overcome the most common impediments to action.

The areas that emerge as common where several UN agencies can make useful contribution are:

- capacity building and knowledge sharing
- distributed electricity solutions
- modern cooking appliances and fuels
- business model and technology innovation

The areas of capacity building and knowledge sharing are common to all the UN agencies and each agency can work with its respective government counterparts to raise the awareness and understanding of issues, help to deploy suitable solutions to reduce the deficit of universal access to energy and, lastly, mitigate its direct and indirect consequences.
Table 2 presents the four cross-cutting themes identified in the Energy Development Framework against which UN agencies are mapped according to their mandates and activities. The agencies identified in this particular matrix are those that can jointly work to support interventions of clean energy and fulfill the first objective of SE4All.

### Next Steps

Based on the consultations and meetings held by the task team, some UN agencies have come together to work on a part of the joint initiative covering the cross-cutting theme of “livelihood” and “health”: Starting in 2014, over the next three years –

- UNDP and IFAD will provide technical assistance to introduce renewable energy solutions for community enterprises in the states of Assam and Odisha
- UNICEF and UNIDO will provide technical advice to Ministry of Health and Family Welfare and state governments to integrate renewable energy supply systems to augment functioning of Primary Health Centers in remote rural areas

UNIDO, as a convener of SE4All initiative, will hold regular consultation through the Task Team meetings on each cross-cutting theme, with the lead agencies and participating agencies identified under each theme. The meetings will serve to discuss the modalities and plan for collaboration among the agencies, which will culminate in an action plan with implementation time frame and outputs.

Parallel to the development of an action plan, the UN will organize a series of events in June on SE4All. An announcement on the SE4All decade was made at Delhi Sustainable Development Summit in February 2014. The UN would also hold a dialogue with the Government of India on this initiative, as India’s role is pivotal to the overall success of SE4All.
Annex 1: A Case Study

Small Scale Sustainable Infrastructure Development Fund (S3IDF)
Ananthpur, Andhra Pradesh

The story presented below is for enhancing livelihood opportunities in villages through the engagement of local youth and banks in rural areas. This is one of several success stories that demonstrate significant value addition by renewable energy technologies, particularly small solar photovoltaic systems. The case of S3IDF also presents the unique effort and innovation involved in integrating the technical and financials of technology to local needs.

**S3 IDF’s Business Model**

Each project of S3IDF demonstrates deployment of a new Renewable Energy Technology (RET) based equipment by selecting and adopting a cluster of villages especially in the most backward and remote areas. It then spends considerable time with the local communities educating and preparing them to receive and adopt the new systems and devices. The innovativeness of the project lies in its ability for commercial deployment of the RET and in improving working of existing local institutions to build a relationship with the government and non-government agencies working in the same policy space, and finally in trying out diverse governance structures to identify the best methods and procedures for the specified clusters of rural habitation.

Experience shows that renewable energy systems and equipment supplied to the rural poor fall into neglect after a short period as the users of such technology and equipment are not adequately informed of the benefits to the household and saving of cost, time, and pollution reduction in the local community.

**“Silent Solar Revolution” in Ananthapur**

On the basis of experience in some places of Andhra Pradesh the S3IDF team identified the backward areas of Ananthapur district, for adopting a cluster of villages.

The team started its social mobilization and awareness camp in Kondapur village of Kalyandurg block about 54 Kms away from Ananthapur. Meetings were conducted to create awareness among people through the demonstration of PV home lighting system of varying capacities. The villagers paid attention to the different choices presented and selected solar PV systems which can support four lights for four hours; one fan for two hours and one computer for one hour. They realized that such a system would meet the immediate demand for electricity during the morning hours, and that the device producing clean energy would also help in improving their livelihood activities.

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6 The success story presented here is produced with permission of S3IDF, Hyderabad.
Initially, 35 people deposited 10% beneficiary contribution in the bank for installation of 100, 150 and 200 Watts equipment, which attracts 40% subsidy from MNRE through NABARD. This small social mobilization effort at Kondapur resulted in a “Silent Solar Revolution”, which very quickly spread to neighboring villages and blocks. The contribution of the Regional Manager, Andhra Pradesh Grameen Bank to the popularizing and financing of the solar PV systems was met with appreciation without bounds. In 18 months, the district saw more than 7,000 households installing solar lighting systems with a capital investment credit of Rs. 200 million from bank finance.

The local bank played an important role by making available a loan facility with affordable monthly installments. As a result, a number of villagers started approaching Andhra Pradesh Grameen Bank branches for financial assistance in installing solar home lighting system for their houses.

**Promotion of Livelihoods**

The “Solar technical knowhow” made its inroads in the promotion of livelihoods besides lighting. Solar power was provided from the plug to device a small electric motor to serve several productive needs such as powering sewing machines, improving the illumination level on working tables, adding comfort in the form of fans and TVs at weaving points and increasing their productivity during power cuts, perhaps for 4 to 5 hours. This has helped augment their incomes and standard of living.

Electronic milk testing equipment in the milk procurement centre are also powered by solar panels, which gives accurate computerized statements of litres of milk, fat content and price to the best satisfaction of milk vendors. The offices and other institutions which needed to use power driven equipments during the morning hours now realize that they could directly tap the sun for diverse productive uses. The fact that the grid power, wherever it was available in the rural areas, was unreliable led to the popularity of the scheme; to use larger capacity solar panels for deriving adequate power for basic comfort as well as commercial and livelihood uses.

**Solar power sewing machines in Mamidipalli Village**

The village of Mamidipalli, through the last several years, has become a nodal point for the stitching of clothes. At their request, S3IDF through its technical partners developed a small motor which could operate the sewing machine. This has led to a large number of beneficiaries adopting this system in this particular village. The motorized sewing machines enabled operators, both women and men, to increase their productivity by over 50%. The additional facilities of fan, light and TV have provided them the means of working in comfortable conditions.

**Weaving – Vadiampet Village**

In Vadiampet village, there are large numbers of weavers who use the traditional manual weaving equipment which is set up in the basement of a house. The lighting is usually poor and inadequate ventilation creates working conditions that are uncomfortable for weavers, forcing them to halt work frequently and step out for fresh air.

Equipped with solar home systems which supply power for two fans and two lights, the improved conditions increased the comfort of the weavers and the extended working hours helped to increase earnings. Many of these weavers have now scaled up their solar home lighting systems to accommodate a television too. The weaver sitting in the comfort of a fan, light and a TV has become a role model for others who are aspiring to have such system in each house in this village.
Solar lighting for diversified livelihoods at Mamillapalli:

The special efforts of the Manager of Andhra Pradesh Grameena Bank, serving Mamillapalli to promote solar photo-voltaic products, led to many of the small business enterprises in this big village - shops, tea stalls, eateries, fruit vendors, electrical repair shops - to adopt solar home lighting systems of varying sizes to provide them with light and comfort throughout the day.

This was made possible with the support of a local bank, making a special provision to include the solar photo-voltaic based products as part of the productive loan advanced by the bank. The ownership of dependable sources for power has raised people's aspirations and future hopes to enjoy an increased standard of living due to increased productive hours and augmented incomes.

Training to SHGs and Youth

S3 IDF firmly believes in the concept of imparting technical training to Self Help Group women members and youth in villages on solar equipment, who act as “Barefoot Service Providers” in rural villages who can earn an income of Rs. 1,500 to 2,000 per month while attending to small repairs and providing after sale service. Generally they will be in charge of 75 to 100 households in the villages.

The experience of Ananthapur is just the beginning of a silent revolution which is expected to sweep through neighbouring villages and districts. Renewable energy solutions are not only good for the environment. If done well, they can pay for themselves and help to reduce poverty.
### Annex 2: Government of India’s Major Missions and SE4ALL

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<th>Mission</th>
<th>Goal</th>
<th>Status of the Mission</th>
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<tr>
<td>Mahatma Gandhi National Rural Employment Guarantee Act</td>
<td>The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is an Indian law that aims to guarantee the ‘right to work’ and ensure livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work.</td>
<td>Since it became a law in September 2005, MGNREGA has made tangible achievements which include 12 billion person-days of employment generation. On an average, 50 million households have been provided employment since 2008. Eighty per cent of households are being paid directly through bank/post office accounts, and 100 million new bank/post office accounts have been opened. Average wage per person-day has gone up by 81 per cent since the scheme’s inception.</td>
<td>Livelihood</td>
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<tr>
<td>National Mission for Empowerment of Women</td>
<td>The National Mission for Empowerment of Women was launched to strengthen overall processes that promote all-round well being of women. The mission focuses on: a) Poverty Alleviation and Economic Empowerment of Women; b) Social Empowerment and Education; c) Health and Nutrition; d) Gender Rights, Gender Based Violence and Law Enforcement; and e) Empowerment of Vulnerable and Marginalized Groups and Women in Difficult Circumstances.</td>
<td>The goals of the mission for Empowerment of Women were defined in the Eleventh Five Year Plan. It reiterates Indian government’s commitment to gender budgeting and mentions that gender equity requires adequate provisions to be made in policies and schemes across Ministries and Departments. The main impact of the mission is the concept of gender mainstreaming of governmental programmes and policies. The efforts on gender mainstreaming have resulted in setting up of as many as 56 Gender Budget Cells by various Ministries and Departments. The focus of the mission is on planning, implementation and reviews of policies and programmes to universalize the concept.</td>
<td>Livelihood</td>
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<td>Providing Urban Amenities to Rural Areas (PUA)</td>
<td>PURA is a strategy for rural development by providing urban infrastructure and services in rural hubs to create economic opportunities outside of cities. The Indian government aims at developing of compact areas around a potential growth centre in a Village Council with Public Private Partnership.</td>
<td>This mission was launched on 2004 and various schemes under it were initiated at different point in time. The deliveries of these schemes were not simultaneous and although funds were earmarked for capital expenditure, very little resources were spent on the operation and maintenance of the assets. The schemes operated autonomously and the standards set for infrastructure services delivery in the rural areas were not at par with those set for the urban population7.</td>
<td>Livelihood</td>
</tr>
<tr>
<td>Total Sanitation Campaign (Nirmal Bharat Abhiyan)</td>
<td>Total Sanitation Campaign (TSC) is a community-led total sanitation program initiated by GoI in 1999. It is a demand-driven and people-centered sanitation program that evolved from the limited achievements of the first programme for rural sanitation. The main goal of Total Sanitation Campaign is to eradicate the practice of open defecation by 2017.</td>
<td>The original period set by the government for the mission was until 2007. The implantation of TSC thus far has followed traditional delivery model which stresses creating toilet facilities, but sustenance and ecological safety aspects are ignored and solid and liquid waste management is still to be undertaken in many districts. A need is being felt to develop an alternative delivery system which ensures affordable, accessible and locally suitable sanitary facilities and works under the local government control and support⁸</td>
<td>Sanitation</td>
</tr>
<tr>
<td>National Rural Health Mission</td>
<td>It is an initiative undertaken to address the health needs of underserved rural areas.</td>
<td>Initiated in April 2005, the program initiatives and enhanced outreach of health services on obstetric care, child immunization, family planning and chronic disease control has been significant. The role of Accredited Social Health Activists has been extremely important in promoting the utilization of public health care facilities for maternal and child healthcare, family planning and treatment of chronic diseases.</td>
<td>Health</td>
</tr>
</tbody>
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⁷ http://planningcommission.nic.in/aboutus/committee/wrkgrp12/rd/wgrep_pura.pdf  
⁸ http://planningcommission.nic.in/reports/peoreport/peo/rep_tscv1_2205.pdf
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<td>National Mission on Enhanced Energy Efficiency (NMEEE)</td>
<td>The mission was introduced to deal with the challenges of climate change. The focus of this mission is on promoting understanding of climate change, adaptation and mitigation, energy efficiency and natural resource conservation.</td>
<td>NMEEE seeks to strengthen the market for energy efficiency by creating a conducive regulatory and policy regime. The mission spelt out initiatives to enhance energy efficiency across industrial sectors and in white-goods. The flagship of the mission is Perform Achieve and Trade Scheme: a market-based mechanism to enhance cost effectiveness of improvements in energy efficiency in large industries. This initiative on Market Transformation for Energy Efficiency aims at accelerating the shift to energy efficient appliances.</td>
<td>Doubling the global rate of improvement in energy efficiency</td>
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<tr>
<td>Jawaharlal Nehru National Solar Mission (JNNSM)</td>
<td>The mission, launched in 2010, has set a target of deploying 20,000 MW of grid-connect solar power by 2022 and aims at reducing the cost of solar power generation through long term policy, large scale deployment of grid connect solar farms across the country and promotion of off-grid solar power.</td>
<td>In addition to the Ministry of New and Renewable Energy’s JNNSM, several states have also issued policy guidelines for grid connected solar power and announced Renewable Purchase Obligations and guidelines for roof-top solar. As a result of joint efforts of central and state governments, public-sector and private sector companies 2,632MW⁹ of grid-connected solar power projects had been commissioned by 31st March 2014.</td>
<td>Doubling the share of renewable energy in the global energy mix</td>
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