

Briefing on Myanmar National Electrification Plan toward Universal Access

Key messages

- Myanmar is estimated to have over 7 million households without electricity amidst the other 3 million that do have access. To bring electricity access to all in Myanmar by 2030 is daunting but achievable based on proven experience in neighboring countries such as Thailand, Vietnam, Laos and China.
- Recent experience in countries such as Rwanda shows that the most effective and efficient way to achieving a rapid increase in electrification is through a coordinated sector-wide approach.
- A two-pronged and planned approach is proposed under the Myanmar National Electrification Plan (NEP): an aggressive grid electrification rollout program and an ambitious off-grid program. While in the long term, Myanmar's settlement patterns and demand aspirations suggests that grid provided power would dominate, there is need for a strong mini-grid/off-grid program to bring basic electricity services sooner to a maximum number of households possible.
- The sector-wide approach will require fundamental institutional reforms and comprehensive solutions to the funding and financing constraints facing the sector. Recommended reforms include the creation of an Executive Secretariat for Electrification under the office of the Vice President to manage the national electrification program and a comprehensive reform program to commercialize the electricity enterprises (YESB and ESE). It is also recommended to mobilize financial resources from across the Myanmar society: development partners, central and local governments, consumers, as well as the private sector.

Myanmar is estimated to have over 7 million households without electricity amidst the other 3 million that do have access. The poverty reduction and shared prosperity benefits for electricity access are abundantly clear to all. Yet Neighboring countries such as Thailand, Vietnam, Laos and China have managed to meet the challenge of a similar scale -- from 30% to nearly 100% electricity coverage -- within two decades; so there is reason to believe that Myanmar should be aspired and able to reaching universal access in a similar time frame.

To achieve universal access in Myanmar by 2030 will require an average annual electrification rate that is more than double the current rate. At the same time the investment requirements per household will continue to rise with increasing penetration of electricity towards less populated areas. **Recent experience in countries such as Rwanda shows that the most effective and efficient way to achieving a rapid increase in electrification is through a coordinated sector-**

wide approach. Under this approach, implementation efforts will be channeled to solutions in line with a least cost planning strategy, and both financial and physical resources will be mobilized in a predictable and structured fashion over a number of years.

A two-pronged and planned approach is proposed under the Myanmar National Electrification Plan (NEP): an aggressive grid electrification rollout program and an ambitious off-grid program. The total investment requirements, not including additional generation and transmission capacity needed to support electrification rollout, are estimated to be US\$5.8 billion. The investment requirements for generation and transmission expansion are addressed in the electricity master plan whose development is being led by JICA.

It is evident that even if electrification proceeds according to the initial grid rollout plan and the corresponding coordinated investments in generation and transmission continue apace, there will still be more than one million of households who will not be economically connected to the grid for 10 or more years. Myanmar incidentally has a large populated region in the central plains where the investment requirements per household are modest and the increase in costs as electrification proceeds will not be significant. However, in places such as Shan state and for that matter Kayah or Chin where settlements are sparse, the investment requirements per household are high and will see further sharp rise in wire requirements and hence cost per household, as the electrification proceeds.

While in the long term, Myanmar's settlement patterns and demand aspirations suggests that grid provided power would dominate, there is need for a strong mini-grid/off-grid program to bring basic electricity services sooner to a maximum number of households possible. A systematic off-grid plan that operates concurrently with the grid expansion plan would ensure that basic electricity services are made available at affordable prices. The proposed plan will consist of solar home systems as well as mini-grids. On the basis of the currently available information, the immediate target population for the off-grid program will consist of those that would have to wait an inordinate amount of time for grid expansion plans to roll out. These could also include populations where the cost of expansion is clearly high even though lower than that of an off-grid system that attempts to mimic the functionality of a grid connection with the same power capacity and same energy usage.

In order to expedite the process of access, a service profile that meets the most basic requirements (but does not permit electric cooking or a family refrigerator or a form of air-conditioning or ice making,) could be provided at a cost that is affordable to the consumer and to the government. This off-grid approach nevertheless requires a programmatic approach that can leverage scale and build on the emerging and new service delivery models such as pay-as-you-go.

A phased approach to implementing both grid rollout and off-grid programs under the NEP is recommended to ensure accountability and timeliness. The proposed NEP calls for the following roadmap and intermediate milestones to universal access: 50% in 2020, 75% in 2025 and 100% in 2030. Given that information available for planning the electrification roll-out in Myanmar is limited, the NEP will need to be adjusted dynamically to reflect the emerging information, such as the impending population census, as well as changing population patterns and demands.

The implementation in the near term will be constrained by human capacity and development of supply chain and by the availability of funding and financing. As a result, the proposed investment prospectus for the first five years (FY2015-2020) is expected to reach only about 2 million households with an investment and technical assistance requirement of approximately US\$700 million.

The sector-wide approach will require fundamental institutional reforms and comprehensive solutions to the funding and financing constraints facing the sector. It is unlikely that the existing sector institutions—in their current state—will have the capacity needed to implement the program efficiently or at sufficient speed. As an important first step, the Government of Myanmar has committed to the creation of an Executive Secretariat for Electrification to manage the national electrification program—an executive body under the office of the Vice President with the authority to manage the resources, to serve as the single window point of contact for Myanmar’s international partners and to drive the implementation of needed institutional reforms. The Executive Secretariat will also become the repository of geospatial and financial information prepared for NEP, and will be responsible for maintaining the information base, monitoring implementation and updating the plan.

The Government of Myanmar also indicated that it would commence a comprehensive reform program to commercialize the electricity enterprises (YESB and ESE), to enable competitive procurement of private distribution sub-franchises within the ESE area as well as private provision of mini-grids and household solutions. To enable private sector participation, the Government will also promote the development of the banking system, including provision of two-step loans on-lending financing from the international sources.

To implement such comprehensive reforms and build necessary institutional capacity, the Government will require substantial and sustained technical assistance. The overall technical assistance need for the sector over the next 5 years is estimated in the order of \$30 million.

It is recommended to mobilize financial resources from across the Myanmar society: development partners, central and local governments, consumers, as well as the private sector. Neither the government of Myanmar nor any other development organizations can fund the NEP implementation alone. Concessional

financing and grants from all sources for meeting investment and technical assistance needs are key to the viability and sustainability of the NEP.

A funding gap over the life time (40 years) of the new electrification infrastructure is estimated to be in the order of US\$ 2 billion. Nonetheless, an initial analysis based on the experience comparator countries such as Vietnam suggests that tariffs could be increased to levels that would minimize the funding gap for the electrification program, while remaining affordable. However, such an increase will require careful engagement with the public, including provision of credible information and education about the sector.

Looking forward, it is imperative for the Government to adopt the NEP through a government decree, including the proposed roadmap, institutional implementation arrangements, and funding and financing mechanisms. It is also imperative for the international development partners to commit to contribute to the implementation of the NEP with necessary financial resources and technical expertise.