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ENHANCING POLICY COORDINATION TO EXPAND RURAL ELECTRICITY ACCESS IN MYANMAR

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INTRODUCTION

Myanmar, the largest nation of mainland Southeast Asia, is undergoing a major political and economic transition that has much of the world watching. After over a half-century of military dictatorship, the 2015 national election catapulted Aung Sang Suu Kyi's National League for Democracy (NLD) party into power. This election ushered in a wave of optimism, both inside Myanmar and in the foreign community, that the nation would enter a new era of economic growth and political openness. Although the country's economy has indeed seen significant growth since this election, several areas of development within Myanmar still present substantial challenges that will require a concerted effort by stakeholders to overcome.

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Yi and Collin would like to thank their contributing authors, their professor advisor John Banks, and the numerous experts and professionals who provided their time and insights to make this paper possible.

One of these areas is the provision of electricity. Currently, just 30 percent of households in Myanmar are estimated to be connected to the national grid (Dobozi et al. 2016, 4). Moreover, the power supply is unstable, making blackouts a frequent occurrence. Although the government of Myanmar remains committed to increasing electricity access within the country (Nitta 2017), Myanmar's mountainous geography and low population density complicate expansion of the main electricity grid. For many villages in Myanmar, it costs more to build power infrastructure than the electric utility can make back in sales, prompting underinvestment in many rural communities. Even when the grid is relatively close by, the cost of connecting new households—a cost which is typically borne by the household's residents—is often prohibitive for many rural citizens in Myanmar living on tight incomes.

However, electricity access is also imperative for Myanmar's successful economic development. Recognizing this, Myanmar's government has prioritized upgrading and developing Myanmar's critical infrastructure, including the national power grid. In 2014, the government launched its National Electrification Plan (NEP), which set a goal of achieving 100 percent electrification by 2030 (Dobozi et al. 2016, 2). The plan proposes to use both traditional infrastructure expansion and off-grid technologies such as distributed solar and mini-grids to provide access to Myanmar's citizens as quickly as possible. The international development community is providing assistance, with the World Bank recently allocating \$400 million USD in loans to help implement the NEP.

Despite this high-level focus and international support, there are still numerous challenges for Myanmar to achieve universal electricity access by its proposed deadline. The challenges that Myanmar faces are multifaceted, and exploring all of them in detail would require several articles of this length. Instead, this article will focus on particularly salient obstacles that were highlighted during a field study trip to Myanmar in January 2017. During this trip, the authors interviewed representatives from over 20 different stakeholders in Myanmar's electrification efforts from a number of different sectors, including the government, multilateral development institutions, civil society, and private-sector developers. These interviews, combined with background research and interviews with other experts in this area, brought three obstacles to the fore: coordination issues between government agencies, unclear regulations for investment, and policy uncertainty for off-grid electricity development.

This article first introduces the institutional and legislative structure of Myanmar's electricity sector to set the stage for further analysis. Then

it discusses each of the three obstacles in turn, explaining their significance and the components of the electrification process that they affect. Finally, it proposes several steps to address these obstacles and streamline the development process for Myanmar's power sector. It should be noted that these proposed solutions will not on their own solve the identified challenges; instead, they are envisioned as tools that Myanmar's government can consider adopting to help advance progress in its electrification efforts.

A REVIEW OF RECENT LITERATURE ON ELECTRICITY ACCESS

Ensuring access to affordable, reliable, sustainable, and modern energy for the global population by 2030 is the seventh Sustainable Development Goal (SDG) of the United Nations. According to the Sustainable Energy for All (SE4ALL) Global Tracking Framework, 15 percent of the world's population has (1.06 billion people) still have no access to electricity (*Global Tracking Framework* 2017, 2). Research has shown that electricity access opens the door to economic prosperity, improvement in social conditions, and human development. In particular, providing reliable electricity access has been shown to greatly enhance living conditions for women and children, create more educational opportunities, and improve medical conditions in rural areas (Alstone, Gershenson, and Kammen 2015, 305).

Although traditional grid infrastructure remains a key part of the solution, technological development in distributed renewable energy and batteries has become an increasingly important tool for bringing low-cost electricity to these 1.06 billion people in a short timeframe, particularly in rural areas. Rural areas in low-income countries often face geographic, economic, and political barriers to developing grid-access electricity, creating significant delays in getting electricity to these areas while simultaneously raising its price. SE4ALL estimates that, among the 27 percent of the global rural population that has no access to electricity, only 30 percent will be reached by electric grid, while 70 percent will be electrified through distributed energy sources, including solar home systems, mini-grids, and pico-solar products (Alstone, Gershenson, and Kammen 2015, 307).

According to the World Bank State of Electricity Access Report, Myanmar is among the top 20 countries worldwide with the highest access deficit in electricity (*State of Electricity Access* 2017, 19), as 22 million people in Myanmar still lack access to the electricity grid (*Energy Access Outlook* 2017, 52). The deficit is especially acute in rural areas; only 12.6 percent of Myanmar's rural population is electrified, compared to 84.5 percent in

urban areas (*An Analysis of Poverty in Myanmar* 2017, 93). Given Myanmar's rural electrification situation, multilateral development banks and international development donors believe that a combination of traditional grid expansion and distributed renewable energy deployment (e.g. solar home systems and mini-grids) is the best solution for Myanmar (Ross 2015, 2).

STRUCTURE OF MYANMAR'S POWER SECTOR AND LEGISLATIVE FRAMEWORK

Myanmar's electricity grid is one of the least developed in Southeast Asia. Annual per capita electricity consumption is 20 times lower than the global average, with electricity primarily accessible only in major cities. This makes Myanmar an outlier in the region; most countries in Southeast Asia had achieved electrification rates of 80 to 90 percent by 2012 (Dobozi et al. 2016, 6). It is worth taking a moment to consider how this situation occurred, as Myanmar's large natural resource endowments and economically beneficial geographic position (it borders India, China, and Thailand, three of the region's largest economies) would not normally correspond to such a low level of development. Indeed, in the 1930s and early 1940s, Myanmar was a leading regional economy (Thein 2004, 2). Political events between that time and today significantly retarded the nation's economic growth; an underdeveloped power sector was just one outcome of this prolonged slump.

When Myanmar gained independence from British colonial rule in 1948, the democratic government embarked on a quasi-socialist reform process that nationalized several major industries in the country. This process was significantly accelerated after 1962, when a military coup made Myanmar a *de facto* authoritarian state. At this point, almost all industries in the country, from banks to mining to hospitals, were placed under government control. Agricultural price controls, coupled with an isolationist approach that hindered exports and general economic mismanagement by the military regime, caused severe stagnation in the economy. A slackening of economic controls in the 1980s improved the situation somewhat, but Myanmar's overall pace of development was much slower than that of its neighbors for most of the 20th century (Thein 2004, 3–5).

Economic development has picked up following Myanmar's political transition and corresponding policy changes. The upturn has translated into higher electricity demand; over the past 5 years, demand for electricity has increased by an average of 14 percent annually (Dobozi et al. 2016, 4). A major objective of the Myanmar government is to match this growth in demand with new

investment in electricity generation and infrastructure to bring electricity to the sizeable portion of the population that still lacks access.

The exact energy mix that will eventually supply power to Myanmar is still a matter of contention. Coal and hydropower, two traditionally low-cost energy resources that developing nations have historically turned to for cheap power generation, are controversial in Myanmar. Past hydropower projects in Myanmar were proposed by the military government with little public buy-in, and Myanmar citizens are still wary of any attempts to develop them today (Ives 2017). Coal plants also face local resistance because of pollution concerns. Although Myanmar does have significant gas resources, most of this is already committed for export to Myanmar's neighbors; changing this arrangement would have a detrimental impact on Myanmar's foreign currency reserves (Thiha 2017). Myanmar is also rich in solar and wind resources and is beginning to explore the potential of using them for energy production, but the government has been slow to embrace these resources because of their perceived higher costs (Nyein 2017). Although Myanmar's final energy mix is an important question, this paper will not address it directly; instead, it will focus on measures that can assist development of the sector regardless of the specific resources used.

The measures Myanmar adopts are intimately connected with the different agencies and stakeholders that influence its power sector, where Myanmar's legacy of heavy state influence in the economy continues to have a significant impact. The nation's transmission network is run by the Myanmar Electric Power Enterprise (MEPE), a ministerial department that buys power from a mix of publicly- and privately-owned generators and transfers it to one of three primary distribution service providers: the Yangon Electricity Supply Corporation (serving the city of Yangon), the Mandalay Electricity Supply Corporation (serving the city of Mandalay), and the Electricity Supply Enterprise (serving the rest of the country) (Nam, Cham, and Halili 2015, 7).

In 2015, the Yangon Electricity Supply Corporation (YESC, previously called the Yangon Electricity Supply Board) was made a state-owned company and is currently financially independent from the Myanmar government. The distribution network serving the centrally-located region of Mandalay was also corporatized around the same time (Thant 2015). However, the Electricity Supply Enterprise (ESE), the primary electric utility serving the country, is still a government entity and thus operates with a government budget (Nam, Cham, and Halili 2015, 7).

The government entity responsible for overall energy policy is the Min-

istry of Energy and Electricity (MOEE), which was established in April 2016 through the merger of the Ministry of Electric Power and the Ministry of Energy. This ministry and its sub-departments are responsible for almost all aspects of Myanmar's energy policy, including not just electricity but also oil, gas, and hydropower development. MEPE is a department under MOEE, as is the distribution entity ESE (Nam, Cham, and Halili 2015, 8). The two state-owned distribution corporations, YESC and the Mandalay Electricity Supply Corporation (MESOC) also report to MOEE (Dobozi et al. 2016, 6). Thus, state policy and Myanmar's power sector development are deeply intertwined, making effective government action especially important for the sector to develop.

Another ministry with an important position in Myanmar's electrification efforts is the Ministry of Agriculture, Livestock, and Irrigation (MOALI), which was created by merging the Ministry of Agriculture and Irrigation and the Ministry of Livestock, Fisheries, and Rural Development. MOALI has purview over the Department of Rural Development (DRD), which plays a key role in implementing Myanmar's rural electrification strategy by overseeing off-grid electrification projects utilizing technologies such as solar photovoltaic (PV) and micro-hydro (Dobozi et al. 2016, 7). To further help with coordination, the Myanmar government also established the National Energy Management Committee (NEMC) and Energy Development Committee (EDC) in 2013. The NEMC is a ministerial-level body tasked with formulating energy policy in coordination with other energy-related ministries; the EDC sits under the NEMC and is charged with implementing the policy set by the NEMC (Nam, Cham, and Halili 2015).

The legal framework governing Myanmar's power sector is structured around three primary pieces of legislation: the Electricity Law (passed in 2014), the Rural Electrification Law (a draft of which was developed in 2016), and the Myanmar Investment Law (passed in 2016). The Electricity Law established an Electricity Regulatory Commission (ERC) to assist with power sector development. However, unlike most other electricity markets where the regulatory commission is closely involved with setting pricing and policy in the sector, the ERC in Myanmar has a more muted role. For example, the ERC plays only an advisory role in tariff-setting, the process of determining prices for electricity (*Electricity Law* 2014).

The Rural Electrification Law was a piece of draft legislation developed to address rural electricity access specifically, and the Myanmar government provided the authors of this article access to a draft of the law for the purposes of this analysis. The government later decided that this draft

would not be introduced to Myanmar's Parliament and was eventually dropped as a legislative priority. Instead, the government is developing a set of high-level rules to govern rural electrification activity in Myanmar (Lee 2018). As a copy of these rules is not publicly available, the authors have decided to continue using the draft Rural Electrification Law for the purposes of this analysis, as it can be assumed the upcoming rules will attempt to address many of the same issues and could run into some of the same challenges as those identified in the Rural Electrification Law. This draft law addresses a number of elements of rural electrification, including issuing permits for off-grid projects and setting electricity tariff in rural areas. It would also create a Rural Energy Development Committee (REDC) that focuses on expanding electricity access in rural areas specifically (*Rural Electrification Law 2017 draft*).

The third piece of relevant legislation, the Myanmar Investment Law, addresses investment policy in several sectors, including electricity—an issue also touched on by both the Electricity Law and the Rural Electrification Law. It also established the Myanmar Investment Commission (MIC) to facilitate investment in Myanmar by issuing policy guidelines and coordinating with investors (*Myanmar Investment Law 2016*).

Although Myanmar has made significant progress in developing the administrative and legislative tools to move its power sector forward, there are still areas where ambiguity over the roles of different government laws and institutions threatens to hinder progress towards electrification. An extensive review of the sector's legal framework, combined with interviews with over two dozen stakeholders and experts, revealed several areas in which a lack of clarity may pose an obstacle for future progress. The following section identifies three key areas of potential conflict and discusses parts of the reform process where the jurisdiction of the laws and institutions discussed above could overlap.

POTENTIAL CONFLICT AND UNCERTAINTY IN MYANMAR'S ADMINISTRATIVE AND LEGISLATIVE FRAMEWORK

1. Limited coordination and unclear division of responsibility between government agencies

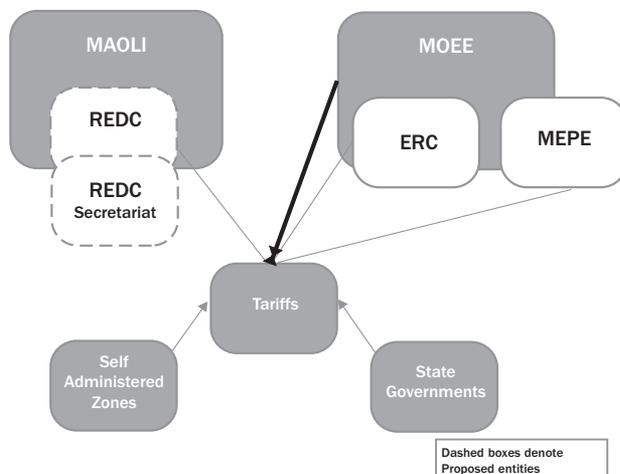
As Myanmar's new government works to increase electricity access among its citizens, it must strengthen coordination and collaboration among different government agencies. Unlike other countries that incorporated all components of rural electrification under a single government agency, Myanmar's electrification efforts involve several different government

ministries and departments, each with their own specializations and proficiencies (*Myanmar National Electricity Program* 2014, 44). This approach draws more skill and expertise into reforming the sector, but it also heightens the importance of coordination to ensure all departments are moving in the same direction.

The government has already begun taking steps toward this goal, as demonstrated by the merger of separate ministries into MOEE and MOALI and by the creation of the NEMC as a coordinating body. Integrating agencies allows the government to pool resources and share expertise. However, there are still areas where a clearer division of responsibility would be valuable. For example, it will be important to clearly delineate which responsibilities for rural electrification fall under the purview of the DRD and which fall under that of the MOEE. One important question is whether the expansion of the existing grid will fall under the DRD's responsibility for rural infrastructure, or within the MOEE's responsibility for provision of electricity.

There is also some uncertainty over which institutions will be in charge of setting electricity prices, a topic that is addressed in both the Electricity Law and the Rural Electrification Law. Each law allows for multiple government entities either to set tariffs or to give advice for tariff-setting. These entities include the ERC and the REDC, as well as certain sub-national government units (Figure 2). Coordination may be needed to streamline tariff-setting among different government institutions (*Electricity Law* 2014; *Rural Electrification Law* 2017 draft).

Figure 2: Entities involved in tariff-setting in Myanmar's power sector



Source: Original content

Improving coordination with stakeholders outside the government is another area that could be improved. NGOs that operate in rural areas have valuable contributions to make regarding national electrification policy because of their local knowledge of individual communities. This information-sharing would allow for greater satisfaction with the government's programs. In response, stakeholders would be more likely to support other government initiatives affecting their communities. Moreover, involving outside stakeholders in the process of developing policy bolsters the government's own planning processes.

2. Unclear regulatory environment for private sector involvement

The World Bank has estimated the total costs of expanding Myanmar's electricity grid over the NEP's 16-year timeline at \$5.9 billion USD, not including additional investment in generation and low- and medium-voltage networks (*Myanmar National Electrification Program* 2014,²). Stakeholders we spoke with pointed out that, given the substantial amount of capital necessary to meet the goals put forth by Myanmar's NEP, relying only on public finance would place an unsustainable financial burden on the government (Pellmar 2017). Expanding the power sector in time to meet growing demand and bring electricity to the broader population will require the private sector to play a role in financing the necessary infrastructure.

Myanmar's government recognizes the importance of this issue as well and has taken steps to increase private sector involvement in its power sector. Myanmar's Directorate of Investment and Company Administration (DICA) lists the power sector as an area of opportunity for private-sector investors. According to DICA, the government's goal of reaching universal electricity access by 2030 will require generation and transmission capacity in the power sector to be expanded significantly; this is an area where the private sector could help the sector scale up (Directorate of Investment and Company Administration 2017). Developing an appropriate regulatory and legal framework will be key to attracting this type of investment.

However, there are still a number of regulatory, bureaucratic, and logistical barriers hindering investment from moving into this sector. For example, the current regulatory framework makes it unclear which government bodies should take the lead in promoting and handling investment from the private sector. The ERC and the MIC are both tasked with communicating and coordinating with investors (*Electricity Law* 2014; *Myanmar Investment Law* 2016), creating potential overlap in institutional responsibilities that may confuse private companies. These overlapping roles should be

clarified to ensure that the process for companies to invest in Myanmar's power sector is clear.

There is also some uncertainty regarding licensing requirements, which play an important role in determining an investment environment's convenience and cost-effectiveness. Currently, Myanmar's licensing process largely depends on the scale and the connectivity of the project. For all generation or distribution facilities connected to the national grid, regardless of their scale, MOEE has the authority to grant permits. However, the Investment Law also grants the MIC jurisdiction over permitting for major investments (*Myanmar Investment Law 2016*), while the Rural Electricity Law indicates that projects under a certain size can apply for permits from state and regional government authorities (*Rural Electrification Law 2017 draft*). Licensing and permitting are important components of any major investment, so it is important that the process for obtaining these permits is clear.

Finally, legacies of Myanmar's recently-ended military rule still have an impact on the investment climate in the country. The military still owns a substantial amount of land in Myanmar, and one stakeholder consulted for this paper referred to instances where power projects that would otherwise have been built were shelved because the military refused to sign the land over to the current government (Energy Generation Infrastructure Developer 2017). This is reflective of a larger issue in Myanmar related to the military's continued presence in the background of government operations, one that is tragically also evident outside the economic sphere in the ethnic persecution of the Rohingya minority group on Myanmar's western border. Several stakeholders mentioned that although the military has officially ceded power to the NLD, there are no checks in place preventing it from wresting back control of the government in the future.

Although the stakeholders we spoke with did not expect such a military re-takeover to happen, political uncertainty is never a boon to investment decisions. Before the government transition, Myanmar's military regime signed several memoranda of understanding (MOUs) for new power projects whose fate is now ambiguous. Although many of these projects likely will not be developed now, uncertainty about which ones will be canceled has caused confusion among investors about how much new capacity will actually be needed in the country.

Meanwhile, lack of clarity and policy shifts from the top levels of Myanmar's new government have caused some recent MOUs for electricity generation projects to stall (Thiha 2017). This is compounded by the Myanmar government's refusal to grant sovereign guarantees to energy

projects (Energy Generation Infrastructure Developer 2017). Without such guarantees in place, it is particularly important for Myanmar to develop a stable policy environment to convince investors that any projects being developed will not be at risk from future policy shifts.

3. Uncertainty concerning plans for on- versus off-grid development

Although Myanmar's government has acknowledged the role that distributed renewable energy technologies will play in reaching 100 percent electricity access, there is currently a lack of communication regarding government plans to extend the national grid. This includes implementation plans identifying when different areas will be electrified. This presents a problem for off-grid project developers, who need to know where the grid will be extended in the near term so that they can focus their services on areas that will continue to be without grid access in the longer term.

In interviews, both potential investors and project developers noted that the lack of concrete timelines and implementation plans for Myanmar's grid expansion were an obstacle to moving forward on projects (Frederick 2017). Although implementation plans exist, they are not finalized and changes to them are not reliably communicated to stakeholders or to the public. This uncertainty disincentivizes investment in off-grid projects, as investors are concerned that grid extension will render their projects obsolete before they can realize a return on investment. Local communities may also be unwilling to pay for off-grid electricity services if they are under the impression that the grid will reach their village soon (Scandling 2017).

The legislative framework contains some worrying ambiguity over which government institutions are in charge of these expansion plans. Currently, both ERC and REDC have a mandate to plan and implement rural electrification. Advice given by the ERC on the systematic development of the electricity sector could overlap with the Annual National Rural Electrification Master Plan that is developed each year by the REDC. Furthermore, the ERC is coordinating with state governments through its local branches, which may overlap or conflict with the REDC's role in coordinating with state governments. In addition, it does not appear that representatives of the ERC are on the board of the proposed REDC (*Electricity Law* 2014; *Rural Electrification Law* 2017 draft).

There is also a lack of clarity regarding two key components of the regulatory framework that governs mini-grid systems: interconnection standards and compensation mechanisms for when off-grid projects become

grid-connected. Developers need to know that they will be adequately compensated for the electricity their systems provide not only while the mini-grid operates as a stand-alone grid, but also if and when it is eventually integrated into the expanded national grid. If the national grid fully absorbs the mini-grids, there needs to be a system in place to value the infrastructure investment and services the mini-grids provide, including the ability to operate in the case of national grid blackouts. Moreover, developers need clear guidance on what kinds of systems would or would not receive approval from the national government for interconnection with the national grid (Tiedemann 2017).

Resolving this issue will require further clarification regarding permitting procedures. The Rural Electrification Law and the Electricity Law both specify that generation or distribution facilities not connected to the national grid are authorized and managed by regional and state governments if they are medium-sized (between 10 and 30 megawatts) or small-sized (less than 10 megawatts) projects (*Rural Electrification Law* 2017 draft; *Electricity Law* 2014). Multiple levels of government—national, regional, and local—may issue permits to any local or foreign individual or organization wishing to invest in the power sector. Since no specific clauses on interconnection are presented under these laws, when projects of small or medium size are eventually connected to the national grid, the project owners may encounter different licensing criteria from different authorities, leading to confusion and added costs.

RECOMMENDATIONS FOR STREAMLINING POWER SECTOR EXPANSION

The Myanmar government should work to clarify the potential conflicts identified above in order to streamline the development of its power sector. Adjustments to pending, and potentially to existing, legislation would be one effective way to smooth out ambiguities. Improving governing capacity is another important step; many of Myanmar's current officials were only recently elected and thus do not have substantial experience in government operations, a point that stakeholders from a number of different sectors emphasized. However, governing capacity is also a much larger issue that affects every aspect of governance in Myanmar, and finding a comprehensive solution to it is beyond the scope of this article.

Nevertheless, there are several operational tools available to the Myanmar government that could help mitigate the issues outlined above. Some of these tools have been employed successfully in other countries, while others are uniquely appropriate to Myanmar's situation. The following

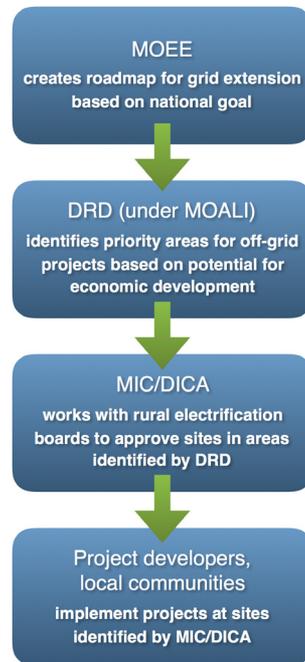
section proposes three operational tools that the Myanmar government could consider adopting to help streamline operations and increase the pace of the country's electrification. Each tool is meant to address more than one of the three challenges discussed in the previous section, making them particularly impactful (Figure 4).

1. Establish a process for drafting inter-agency memoranda of understanding

The government should establish a process for drafting memoranda of understanding (MOUs) among the key agencies and institutions involved in expanding electricity access. The intent of these MOUs is to cultivate communication both within the government and with external actors about current issues in electricity sector development. The drafting process will allow agencies to identify key challenges facing the sector and will highlight opportunities for collaboration among agencies and institutions. MOUs would also provide a window into the policymaking process for external actors, specifically private investors and community development organizations.

For example, an inter-agency MOU process could help to minimize the uncertainty related to grid expansion versus off-grid development by outlining the connections among all involved agencies and laying out their intentions. MOEE could start this process by describing the goals of the national Electricity Law that pertains to grid extension and rural electrification. This information would then be passed to MOALI, specifically DRD, which would use the plans to identify priority areas for off-grid projects. Guidance for the implementation of these off-grid projects would then be provided by the MIC/DICA and the proposed rural electrification boards (Figure 3). Ultimately, the MOU would paint a clear picture of how agencies plan to coordinate grid expansion

Figure 3: Example of MOU process flowchart



Source: Original content

and off-grid projects; making that picture available to the public would both solidify agencies' actions and allow non-governmental actors to plan around stated government priorities.

The coordination challenge between different ministries working on electricity access is not unique to Myanmar, but Myanmar's government is uniquely positioned to address it through the MOU process because of the consistency of intent across agencies. Each agency has a particular strength or competence, but each agency also has a commitment to meeting Myanmar's electricity access goals by 2030 (*Myanmar National Electricity Program* 2014, 44). Creating a single entity to take charge of the entire process can be ineffective if that entity's goals are not openly aligned with other stakeholders' or if the entity does not adequately understand its partners' intent. Other developing countries have not yet adopted a process similar to the one proposed here, which affords Myanmar an opportunity to model the benefits of open inter-agency communication to the rest of the developing world.

The main challenge is that this recommendation relies heavily on coordination among disparate agencies, which can be a difficult process. In addition, publicly releasing a definitive statement of goals and intentions will naturally lock each participating agency into its stated objectives. Although creating consistency for each agency's goals is one of the benefits of MOUs, the system should still maintain enough flexibility that agencies can adjust their roles and objectives if conditions on the ground change. Striking the right balance between consistency and flexibility can be a challenge, especially for relatively new governments. However, the benefit of allowing each agency or institution to maintain its core competency while expressing its commitment to meeting national goals stands to outweigh these potential difficulties.

2. Utilize the Myanmar Investment Commission (MIC) as a “one-stop shop” for the electricity sector

One-stop shops, or one-stop services, are centralized institutions that consolidate required procedures for investment or business operation while also providing a variety of services to meet these objectives. These services can include processing approvals, business registrations, and information and data services. When effective, one-stop services can lessen the transaction costs of doing business. Overall, countries that institute one-stop shop services show fewer procedures, shorter waiting periods, and higher performance on the Doing Business Index (*How Many Stops In A One-Stop Shop?* 2017). This was the case in Egypt, where the establishment of a

one-stop shop entity streamlined investment and corresponded to increases in foreign direct investment and economic growth (Stone 2006, 9).

In Myanmar, the MIC would be the natural entity to take on this role. The MIC is tasked with coordinating with potential investors, streamlining the proposal process, and ensuring that investments meet certain standards. As part of their efforts to accomplish this task, the MIC is developing the idea of offering one-stop services; the Myanmar Investment Rules, released by the Ministry of Planning and Finance in 2017, identify one-stop services as a function of the MIC. These one-stop services primarily include responding to information requests, accepting applications and submissions as may be applicable, providing guidance to investors, supporting the Investment Monitoring Committee, and assisting investors. These services are to be carried out by several different departments under the direction of the MIC, rather than by the MIC specifically; any information requests submitted to the MIC will be forwarded to the relevant government ministry, who then responds within 15 days (Myanmar Investment Rules 2017).

This is a sensible approach to streamlining investment, but issues can arise if the exact role of the MIC's one-stop service as it relates to other government departments and agencies is not kept clear. Especially in the context of the Myanmar government's capacity challenges, a one-stop shop runs the risk of becoming an additional institutional and regulatory impediment, particularly when clear lines of authority are not drawn and respected. Therefore, several recommendations can be drawn to assist the MIC's aim to become a true one-stop shop that stimulates investment into Myanmar's electricity and power sectors:

- Having appropriate representation from departments and ministries working on electrification on the MIC would be crucial to ensuring that the MIC would effectively support investment into the electricity sector and would reconfirm the government's commitment to provide electricity services to rural areas.
- There need to be clear distinctions between the roles, duties, and authorities of institutions (both within and outside of the MIC) that are involved with the investment promotion process. In particular, the relationship between the Investor Assistance Committee—a new committee created by the Myanmar Investor Rules as a resource for investors—and the MIC one-stop services should be clarified to avoid institutional overlap and to ensure their respective responsibilities are met.

- Data should be entered into a centralized electronic database that is accessible to all relevant authorities. When the one-stop service sends requests to ministries, they should be able to access project and investment documents to facilitate quicker decision-making.
- The MIC staff interfaces with companies, and their work should be recognized through performance incentives including merit-based promotions, uniforms, and skill-building courses.

3. Create standardized contracts for investment in the power sector

Lack of standardized power purchase agreements (PPAs) is another obstacle to power-sector development that is directly linked to the challenge of incentivizing private investment. This slows down the development of Myanmar's power sector by requiring each generation project to negotiate a new contract from scratch, a time-consuming process that hinders private sector participation. Streamlining this process with standardized PPAs would minimize transaction costs and thus promote additional private investment.

The use of standardized PPAs has many precedents, and there are numerous examples of PPA templates available for reference (World Bank Group, 2017). Myanmar has also recently developed a potential PPA model with the signing of the Myingyan independent power project (IPP), a 225-megawatt combined cycle gas plant to be developed by MOEE and Sembcorp Industries (*Myanmar IPP* 2016). Several stakeholders expressed hope that this project could serve as a new standard agreement that future IPPs could be based on, with some adjustments for different power sources.

However, even if the Myingyan PPA is established as a benchmark, there is value in creating additional standardized PPAs for different types of projects, particularly small power projects (i.e. small-power PPAs, or SPPAs)². Since small power projects generally have smaller environmental and social

impacts than larger IPPs, creating a separate “tier” of contracts for small power projects would allow these projects to move forward more quickly

Potential Tiers for Standardized PPAs

Tier 1: Large Projects (separated into coal, natural gas, large hydro, etc.)

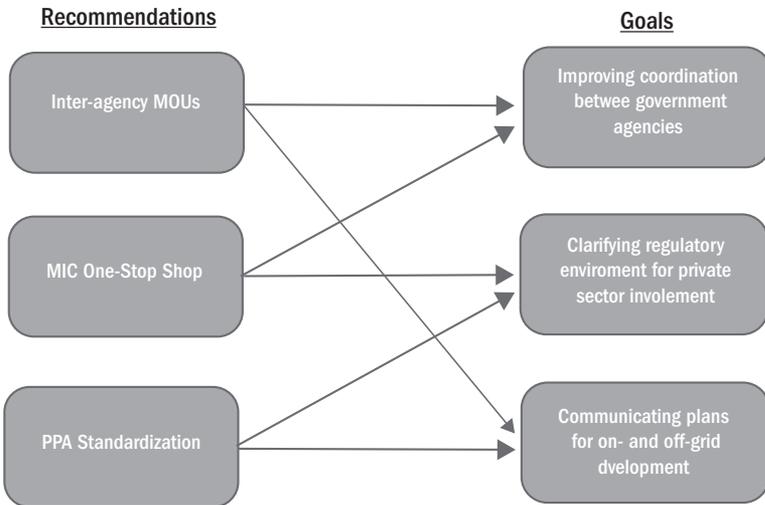
Tier 2: On-grid Small Projects (e.g. mini-hydro, distributed solar, biomass)

Tier 3: Off-grid Small Projects (e.g. mini-hydro, solar micro-grids)

than if they were required to meet the same conditions as a project like Myingyan. In addition, small power producers often have fewer resources than larger ones and thus would gain more from the reduced transaction costs provided by a standardized contract.

SPPAs for off-grid projects have the same benefits as on-grid SPPAs in their ability to create stable investment landscapes by establishing set standards and tariff levels, often by establishing a methodology by which tariffs would be calculated. This is usually based on the avoided cost from replacing other off-grid fuels like diesel or biomass³ (Mwenechanya 2013). Some off-grid SPPAs pioneered in other countries also aided on- and off-grid integration by specifying the conditions and process by which these off-grid projects could be connected to the grid (Mwenechanya 2013). In short, standardized SPPAs (and standardized PPAs more generally) have proved an effective step in facilitating rural electrification and are a tool that could help Myanmar's National Electrification Plan succeed.

Figure 4: Overview of challenges targeted by recommendations



Source: Original content

CONCLUSION

Myanmar's 2015 election was accompanied by a wave of optimism both domestically and abroad, representing a new chapter in the country's political and economic development. Expanding electricity access will be one of the fundamental ways that Myanmar's National League of Democracy can demonstrate progress toward its development goals. Providing the entire population with electricity services will foster immediate improvement in quality of life for Myanmar's citizens and facilitate economic growth that is both comprehensive and inclusive. It will also create a foundation for further investment in Myanmar's economy.

The government's decision to adopt a 100 percent electrification goal in its National Electrification Plan signals its commitment to this task. However, it is an ambitious target that will require a focused and coordinated effort to achieve. Through background research and in-country interviews, this article's authors sought to elucidate several of the more pressing obstacles to success and outline possible steps to address these obstacles. Specifically, we identified inter-governmental coordination, private sector investment, and the integration of on- and off-grid electrification measures as areas of particular importance for the effective roll-out of Myanmar's electrification goals.

Our analysis of Myanmar's existing policy framework and proposed plans relevant to the electricity sector revealed a wealth of legislation and plans designed to address these issues, but it also brought to light areas of overlapping responsibilities that could be streamlined to facilitate implementation. Roles connected to rural electrification, tariff-setting, private-sector involvement, interconnection policy, and licensing and permitting all suffered a certain degree of overlap or ambiguity within Myanmar's institutional framework; clarifying each government department's relationship to these areas will be beneficial to the development of Myanmar's electricity sector as a whole.

In addition, these recommendations to Myanmar's power sector can potentially be adopted by other countries lacking universal access, such as in sub-Saharan Africa. According to the International Energy Agency, sub-Saharan Africa faces more challenges in achieving universal access by 2030 (IEA, 2017) than any other region in the world. Due to low population density and lack of government capacity—issues very similar to those encountered in Myanmar—off-grid solutions are being proposed as critical components of least-cost electrification plans for sub-Saharan African countries. In countries like Kenya and Ethiopia, where the government

also lacks sufficient capacity and experience in managing private sector participants (USAID, 2016), establishing one-stop shops and implementing standardized PPAs could not only help better coordinate on- and off-grid electrification development strategies, but also establish a sustainable business environment to accelerate progress towards universal access to electricity.

The recommendations put forth in this report are meant to provide further support toward the Myanmar government's electrification goals. Our proposed measures—establishing a process for inter-agency MoUs, implementing one-stop shop services to support investment, and creating standardized contracts in the electricity sector—each address at least one of the three challenges we identified. Although these are not the only steps the Myanmar government will need to take to ensure the success of the National Electrification Project, we believe they will make national solutions easier to identify and implement. Achieving universal electricity access in Myanmar will require careful planning and the implementation of supportive policies, and we believe the conclusions and measures outlined in this report can assist in this effort.

NOTES

- ¹ Contributing authors on this paper were Kerry Read, Samantha Power, Tisura Gamage, Fujia Zhang, Lisa Jenkins, Sara Eisemann, Ashley Thomson, Grace Hearty, and Keji Mao.
- ² Standards for what qualify as a “small power project” are flexible and tend to vary by country. Currently, Myanmar's defines medium-sized projects as 10-30 MW and small projects as under 10 MW.
- ³ One prerequisite for the development of this type of tariff would be greater transparency in how electricity prices are calculated in rural areas, in order to determine a true avoided cost on which to base tariffs.

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