Hot Topic Brief: Opportunities for Mobilizing Private Sector Investment into Clean Energy in the Dominican Republic

September 2018

The Dominican Republic is looking to leverage its Nationally Determined Contribution (NDC) to mobilize private sector investment in distributed energy resources. To do this, new policies that incentivize private sector investment such as net energy metering (NEM) are being implemented. These policies have a proven track-record elsewhere, but the benefits to multiple stakeholders in the Dominican Republic (including solar energy customers, non-solar customers, the State, and distribution companies) should be considered to ensure a balanced policy that is supportive of all groups. This hot topic brief will first review the current NEM rules and background in the electric sector for the Dominican Republic. Next, the benefits of solar photovoltaics (PV) projects for multiple customers will be examined using Mexico's experience with PV as a case study. Finally, there will be a brief discussion of how the private sector can leverage these policies to inform business decisions.

Policy Background

The Dominican Republic's NDC calls for a "Reduction of 25% of base year (2010) emissions by 2030… conditional upon favorable and predictable support, feasible climate finance mechanisms, and corrections to the failures of existing market mechanisms."[1] Within its NDC, the Dominican Republic identified energy as a key sector for reducing emissions. Currently, the Dominican Republic sources around 12% of electricity from renewables and additional investment must be mobilized to increase this penetration in order to meet the Dominican Republic's renewable energy commitments.

1 Government of the Dominican Republic. "Intended Nationally Determined Contribution." 2015. http://www4.unfccc.int/ndcregistry/PublishedDocuments/Dominican%20Republic%20First/INDC-DR%20August%202015%20(unofficial%20translation).pdf

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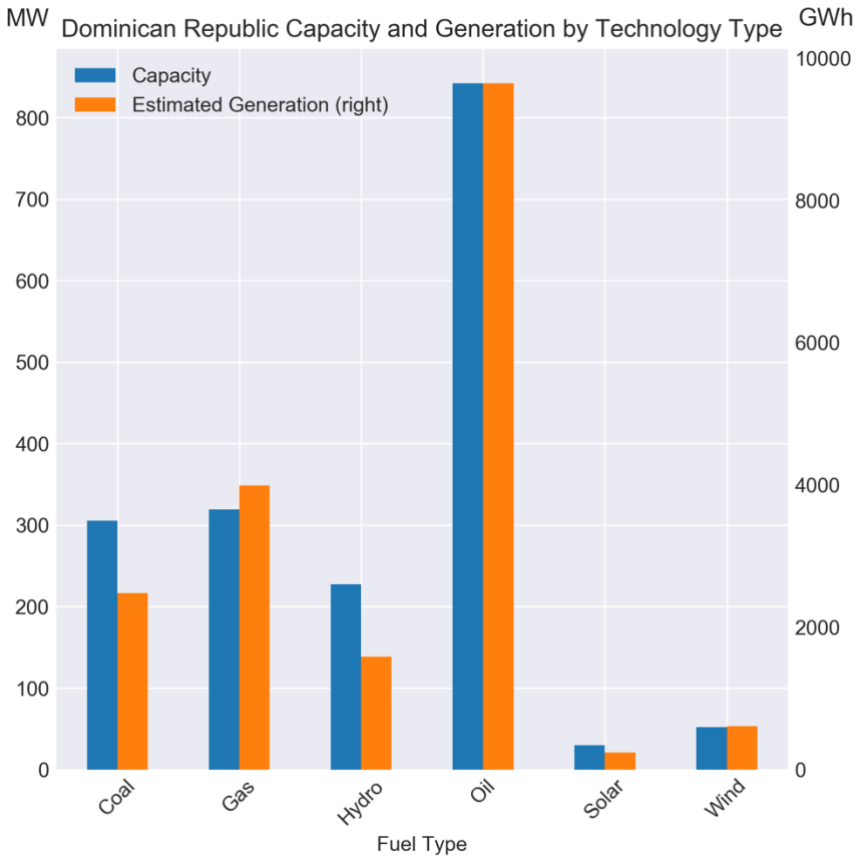
In addition to national targets, the Dominican Republic is also part of the regional energy strategy developed in partnership with the Caribbean Community (CARICOM) that calls for "the establishment of financing mechanisms for renewable energy and energy efficiency projects,"[2] along with other enabling measures. To meet its renewable energy goals, the Dominican Republic will likely need to support a variety of energy efficiency and renewable energy projects, including both larger-scale efforts implemented by utilities as well as smaller projects comprising investments made at the commercial or residential level.



One of these key policies is NEM, which the Dominican government implemented in 2011 to promote clean energy projects. NEM incentivizes smaller renewable energy projects—usually solar photovoltaic (PV)—that are "behind the meter." These distributed energy projects provide power directly to the end user. In some cases, the project is owned by the business or homeowner who also owns the property (e.g., a house, building, or land) on which the renewable energy project is installed. In other cases, the project is owned by a developer who sells power from the project or leases the equipment to the property owner.

Qualifying projects receive a credit for any excess generation sent to the grid, and these credits can be used to offset electricity use at a later time. Excess credits are rolled over month by month until January 31st, when the utility is required to pay 75% of the value of the credits for any unused credits over the year.[3] Project limits to qualify for NEM compensation are 25 kilowatt (kW) or less for residential customers and 1 megawatt (MW) or less for commercial and industrial (C&I) consumers. NEM is in effect a way to receive compensation for providing supply

[2] CARICOM. "Energy Stakeholders to Begin Drafting TAPSEC Operational Plan." 2018. https://today.caricom.org/2018/04/18/energy-stakeholders-to-begin-drafting-tapsec-operational-plan/
[3] Climate Scope. "Dominican Republic Net Metering." http://global-climatescope.org/en/policies/#/policy/1860

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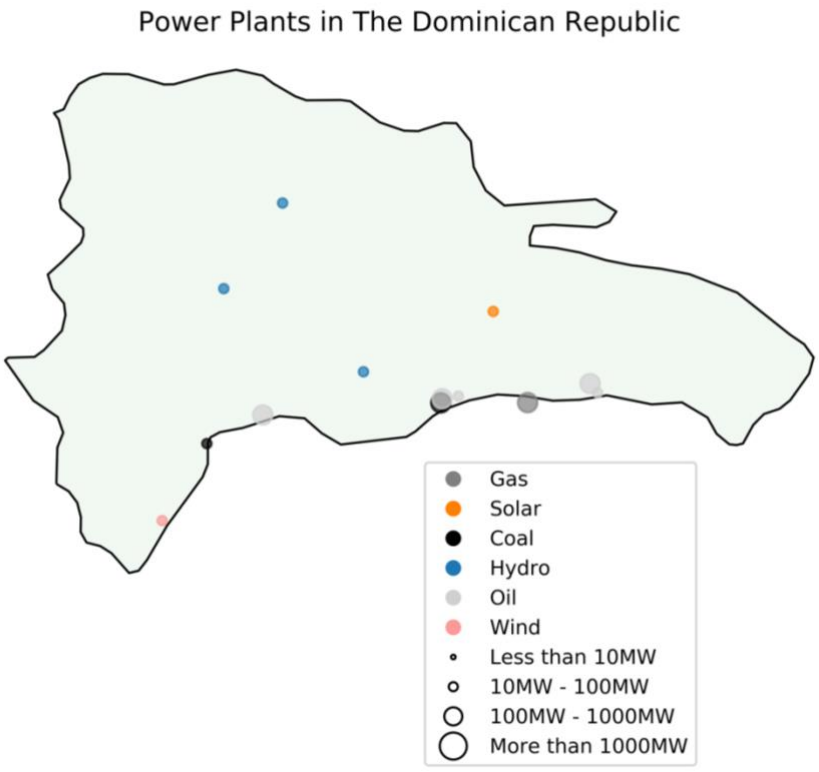
to other customers and can greatly improve the economics of solar energy. Until the prices of batteries and other energy storage technologies drop further, NEM is an important way to incentive projects that utilize maximum available space, especially on rooftops, while also providing a remuneration mechanism to the project owner for any energy that is produced and that goes beyond the end-user's immediate electricity needs.

The map to the right displays the locations of utility-scale power generators in the Dominican Republic. Typically, if a grid relies too heavily on a handful of large generators, it is susceptible to outages in the event of a storm or other disruption bringing even a single power plant offline. By incentivizing distributed energy resources, the Dominican Republic is also improving its resiliency to grid outages as a distributed network of generators more adequately support the grid.



Recently, there has been discussion in the Dominican Republic over reforming the NEM policy, with different stakeholder positions either supporting or resisting change to the policy. Distribution companies feel that full retail NEM (the current policy) is overly generous to consumers and is promoting growth in the PV market too fast for the electric utility distribution companies to integrate. NEM will reduce electricity sales, and therefore revenue, for the distribution companies and potentially lead to higher electricity rates for non-PV customers. On the other hand, developers and PV customers credit the policy with making the Dominican Republic a leader in solar energy development in the Caribbean.[4] For the NEM policy to promote responsible renewable energy development, a balance between these perspectives should be found.

Dominican Republic Electric Sector

4 PV Magazine. "Net Metering in the Dominican Republic Shows Results." 2013. https://www.pv-magazine.com/2013/07/04/net-metering-in-dominican-republic-shows-results_100011922/

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As of 2014, the Dominican Republic had some of the highest electricity rates for industrial customers in the world.[5] High prices, coupled with grid reliability issues lead many C&I customers to install self-contained electric grids and generation resources.[6] These self-supplying customers often rely on inefficient generators to meet load, but many are looking at PV resources to meet their electricity needs during the day. This defection from the electric grid reduces the distribution companies' electricity sales and limits available revenue for grid investments to fix reliability issues.

The NEM policy poses several benefits to both the public sector in meeting RE deployment goals and to the private sector in terms of promoting investments. Guaranteeing long term electricity rates and increasing the value of electricity sent to the grid has shown to reduce risk associated with the development of PV projects and decrease the payback period of investment. This increase in economic viability can contribute to further customers deploying PV resources.

To complicate matters, residential electricity rates in the Dominican Republic are subsidized through charges on the rates paid by C&I customers.[7] Therefore, if C&I customers turn to NEM, residential electricity rates could increase. However, from a technical perspective large NEM customers benefit the grid by providing voltage support on distribution feeders nearby and reducing long-distance transmission losses.

The Mexican government identified a similar issue in their NEM the stakeholder benefits analysis as the Dominican Republic and requested the Mexican energy department (SENER) to analyze the impacts of compensation mechanisms on PV project economics through the lens of different stakeholders. In order to perform this analysis, SENER reached out to the National Renewable Energy Laboratory (NREL). The results from this study can help inform the similar situation in the Dominican Republic.

Stakeholder Benefits Analysis – Mexico Example

NREL studied the benefits of PV to different stakeholders in Mexico including PV customers, the Mexican Treasury, and the environment.[8] NREL used the System Advisor Model (SAM) to analyze PV system performance and payback period for different electric tariff classes. Similar to the Dominican Republic, Mexico's electricity rates for smaller customers are subsidized by larger customers (Mexico applies this rate charge based on volume of consumption which can apply to high consumption residential customers, whereas the Dominican Republic applies it based on sector). Because the electricity rates are higher for larger customers, the payback period for a PV project is typically faster for them than smaller consumers (5 years on average compared to ~20 years on average).

5 Diario Libre. "The Dominican Republic has the Second Most Expensive Energy in the World." 2014. https://www.diariolibre.com/noticias/dominican-republic-has-the-second-most-expensive-energy-in-the-world-EHDL699591

6 Energy Transition Initiative. "Energy Snapshot: Dominican Republic." 2015. https://www.nrel.gov/docs/fy15osti/64125.pdf

7 Superintendencia de Electricidad. "SIE-005-2018-TF." 2018. http://sie.gob.do/images/sie-documentos-pdf/marco-legal/resoluciones-sie/2018/SIE-005-2018-TF_-_FIJACION_TF_UR_EDES_FEBRERO_2018.pdf

8 Greening the Grid. "Informing Mexico's Distributed Generation Policy with System Advisory Model (SAM) Analysis." 2018. https://www.nrel.gov/docs/fy18osti/71038.pdf

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From different stakeholders' viewpoints, the analysis found the following conclusions:

- Low electricity consumption residential customers: Currently, there is not the economic incentive to install solar PV due to low electricity prices.
- High electricity consumption residential customers: The payback period (average of 5 years) is short enough to promote PV growth within this group.
- Mexican Treasury: Increased PV deployment decreased electricity sales, which decreased taxes collected through the value added tax on electricity sales. However, this loss in tax revenue was much less than the amount of money required for subsidizing low consumers. This means that the Mexican Treasury will benefit more if low consumption users adopt PV.

This analysis found a disconnect between benefits for installing PV in Mexico for different users. High consumption customers presented a better economic case for installing PV than low consumption customers. However, the Mexican Treasury benefited much more from decreased subsidy payments if low consumption customers adopted solar. The Mexican energy regulator concluded that a policy intervention is needed to promote more solar adoption among low consumption users to balance the benefits of distribution electricity generation systems to various stakeholders.[9]

The findings from the Mexico benefits study can inform the policy making process in the Dominican Republic. Because C&I customers in the Dominican Republic subsidize residential users, the similar disparity between the payback period for C&I and residential customers will exist. This data is backed up by observations that most of the distributed PV projects have been installed on C&I customers rooftops. However, this means that a large market (residential customers) is currently not able to leverage private sector investment.

Expanding PV Markets

There are several ways to expand PV markets to residential customers. These include, but are not limited to:

Adjusting NEM Policies

Compensation for excess generation can be modified to further incentivize specific customers. A multiplier can be applied to credits received during NEM to decrease the payback period for certain customers. Depending on the policy design, the Dominican Republic could reduce the payback period of PV systems for residential users and make an economic case for more private sector investment. This would complement the current PV market in the Dominican Republic and provide a different revenue source for developers.

Building Community Solar Projects

9 Government of Mexico. "Beneficios de la Generación Limpia Distribuida y la Eficiencia Energética en México ." 2017. https://www.gob.mx/sener/documentos/beneficios-de-la-generacion-limpia-distribuida-y-la-eficiencia-energetica-en-mexico

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Customers can purchase the rights to generation from large scale PV plants that are shared by numerous customers and can provide electricity offsets through virtual NEM. Community solar projects can allow further investment in the residential in two ways. First, because many customers can share the infrastructure investment the price of solar can be reduced, which will decrease the payback period. Second, many customers are unable to install solar panels on their roofs or are located in areas non-conducive to PV installation; community solar is an option to allow these customers to purchase solar power.

Expanding Solar Leasing Options

Developers and/or the utility can install PV systems on customers roofs for no upfront cash and then sell generation to the customer. Excess generation can still be covered under NEM policies but the benefit would go to the developer to pay off the PV system. Private industry and residential consumers can share the benefits of PV installation in a

leasing scenario. Private industry can get access to new markets and a rate of return on the PV investment and residential customers can get access to low, guaranteed electricity prices over the lifetime of the project. A new policy in the Dominican Republic would have to be created to allow this type of investment to occur.

Aggregating purchases

Developers can combine numerous small projects into one big project that reduces the upfront cost and possibly streamline the permitting process. This method provides benefits to developers from increased business and returns and to the customer by lowering the upfront cost. For the Dominican Republic, aggregation schemes can reduce the financial risk of investment and guarantee a large overall project size for many, small system customers. Policy intervention would likely be needed for this type of schemes to be implemented.

Conclusion

While there are many paths for new investment in the PV industry in the Dominican Republic, policy interventions are likely needed to open up new markets for PV installation. When the Dominican government is crafting these policies, the benefits of all the stakeholders involved should be examined to ensure sustainable policies that meet the goals of the government.

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