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DOMINICAN REPUBLIC

**NATURE VILLAGE: INNOVATION AND CLEAN TECHNOLOGIES FOR
SUSTAINABLE RURAL DEVELOPMENT**

(DR-T1198)

DONORS MEMORANDUM

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PROJECT SUMMARY
NATURE VILLAGE: INNOVATION AND CLEAN TECHNOLOGIES FOR
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In the Dominican Republic, multidimensional poverty in rural areas affects 37% of the population, compared with 19.5% in urban areas, whereas in communities in the south such as Sabana Yegua Viejo, the percentage of people living in poverty is about 85%. Poverty is also evident in the lack of access to basic services, which exacerbates the vulnerability of these communities, where nearly 90% of households have no access to sources of safe drinking water, improved sanitation, or electricity. This increases the incidence of preventable diseases such as diarrhea and skin diseases that primarily affect women and children. Given these conditions, many families store drinking water in improper containers, contributing to the spread of mosquitos and the increase in related diseases such as dengue. Moreover, already precarious incomes are eroded by the out-of-pocket expenses of families who must allocate an average of US\$40 per month to purchase water for consumption and other items such as candles, batteries, and fuel to provide light or charge a cell phone.

Given the cumulative needs of rural communities, the intervention of local and national governments to bring in basic services is sporadic, disorganized, and without accurate information on the potential demand for services. In combination with limited budgetary appropriations, this has a negative impact on the efficient use of resources, ultimately affecting the population's well-being.

These challenges demonstrate the need to explore initiatives that would allow the use of technology in the delivery of services, while generating information on consumption and changes in patterns of behavior in a more efficient way, in order to support public and private investments in rural communities.

To achieve this, Nature Power Foundation, with the support of IDB Lab, will establish a sustainable community, Nature Village, which will provide access to essential services (water, power, housing, and sanitation) through alternative solutions that protect the environment at a better price than the solutions currently available to families in the area of Sabana Yegua Viejo in the province of Azua. This model of community-managed services will utilize a cloud-based telemetry system, which will help develop an open data platform that will track patterns of behavior, payments for service, and the correlation between service delivery and reduced development gaps. This intervention will not only transform the way of life in the community but also turn it into a valuable source of information that will directly benefit five neighboring communities around Sabana Yegua Viejo. The project's direct beneficiaries will be 1,000 people living in four communities—50% of whom will be women—who will benefit from the investments to be made using the information and tools generated by the project.

The project is aligned with the Bank's country strategy with the Dominican Republic for 2017-2020 in the priority area of basic social infrastructure, "to improve the quality and coverage of basic services," with the action lines that seek private sector participation in the delivery of basic social infrastructure, inasmuch as an improvement in the efficiency of the services is planned. The project also complements the Power Sector Sustainability and Efficiency Program II (DR-L1058), and it is aligned with the Sector Framework Documents for Energy (document GN-2830-5) and for Water and Sanitation (document GN-2781-8). It is also aligned with the Sustainable Development Goals (SDGs), particularly the following: (i) SDG 7, on access to affordable, reliable, sustainable, and

modern energy; (ii) SDG 6, on availability and sustainable management of safe and affordable drinking water and sanitation for all; (iii) SDG 11, on access for all to adequate, safe, and affordable housing; and (iv) SDG 5, on gender equality.

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ABBREVIATIONS

ASOFER	Asociación de Fomento de Empresas de Energía Renovables [Association to Promote Renewable Energy Companies]
FUNDASEP	Fundación para el Desarrollo de Azua, San Juan y Elías Piña [Foundation for the Development of Azua, San Juan and Elías Piña]
GCPS	Gabinete de Coordinación de la Política Social [Social Policy Coordinating Office]
IDB Lab	Multilateral Investment Fund
INAPA	Instituto Nacional de Agua Potable y Alcantarillado [National Water and Sewers Institute]
INDRHI	Instituto Nacional de Recursos Hidráulicos [National Hydraulic Resources Institute]
SISDOM	Sistema de Indicadores Sociales de la República Dominicana [Social Indicators System of the Dominican Republic]
UERS	Unidad de Electrificación Rural y Suburbana [Rural and Suburban Electrification Unit]

EXECUTIVE SUMMARY
NATURE VILLAGE: INNOVATION AND CLEAN TECHNOLOGIES FOR
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(DR-T1198)

Country and geographic location:	Sabana Yegua Viejo, in the Province of Azua, Dominican Republic		
Executing agency:	Nature Power Foundation (NPF)		
Area of focus:	Inclusive Cities / Essential Services		
Coordination with other donors/Bank operations:	The project complements the Power Sector Sustainability and Efficiency Program II (DR-L1058) and the Energy Sector Framework Document (document GN-2830-5) in the thematic areas of energy access and energy sustainability, inasmuch as it will support initiatives that promote: (i) the delivery of power to rural areas; (ii) sustainable development of the sector; (iii) diversification of the energy matrix; and (iv) the efficient use of energy. The project is aligned with the Bank's country strategy with the Dominican Republic for 2017-2020 in priority area 1, "to improve the quality and coverage of basic services," with the action lines that seek private sector participation in the delivery of basic social infrastructure, inasmuch as an improvement in the efficiency of the services is planned.		
Direct and indirect beneficiaries:	The project's direct beneficiaries will be 1,000 people in four communities, 50% of whom will be women, who will benefit from the investments to be made using the information and tools generated by the project.		
Financing:	Technical Cooperation:	US\$499,609	50%
	Counterpart:	US\$495,064	50%
	Total budget	US\$994,673	100%
Execution and disbursement periods:	24 months of execution and disbursements.		
Special contractual conditions:	Conditions precedent to the first disbursement will be: (i) presentation of the annual work plan (AWP); (ii) formation of the advisory committee; and (iii) selection of the Project Coordinator.		
Environmental and social impact review:	This operation was been evaluated and classified according to the requirements of the IDB Environment and Safeguards Compliance Policy (OP-703). Given the limited impacts and risks, the proposal is to classify the project as a category "C" operation.		

I. THE PROBLEM

A. Diagnostic assessment of the problem to be addressed by the project

- 1.1 **Rural poverty.** Multidimensional poverty in the Dominican Republic is understood to be a phenomenon that goes beyond income in monetary terms; it is understood as a living situation marked by a series of privations (access to water, basic sanitation, housing, power, income, health, education, etc.) that not only restrict the quality of life but opportunities as well. In the Dominican Republic, multidimensional poverty in rural areas affects 37% of the population compared with 19.5% in urban areas. Although not as drastic as in other parts of the world, this percentage reveals the problems of urban bias in the prioritization of development policies and access to services. In terms of territory, multidimensional poverty is a decidedly rural phenomenon. According to data from the Oxford Poverty and Human Development Initiative, in 2017 about 85% of all the multidimensional poor in the world lived in rural areas. In the case of the Dominican Republic, according to the national official measure,² the percentage of people living in general poverty was significantly higher in rural areas (37.9%) than in urban areas (26.6%). In the case of communities in the south such as Sabana Yegua Viejo, the percentage of people living in poverty is about 85%.³
- 1.2 **Cost of access to basic services in rural areas.** The limitations on drinking water, improved sanitation, and energy may extend to 90% of households in rural areas of the Dominican Republic.⁴ These limitations find a geographic expression in the south of the country where already precarious incomes are affected by the out-of-pocket expenses of families who must allocate an average of about US\$20 per month to buy inputs such as candles, batteries, and fuel to provide light or charge a cell phone, while in the case of water, a family may spend about US\$20 per month to purchase water for consumption.
- 1.3 **Incidence of preventable diseases.** In the communities in the south of the country, with a makeup similar to that of Sabana Yegua Viejo, 95% of households have presented at least one case of diarrheal or skin disease in the last six months.⁵ The lack of water and basic sanitation increases the incidence of these diseases primarily affecting women and children, becoming an obstacle to optimal development in early childhood and at school, besides affecting gender equality and women's progress. Given the current situation, many families store drinking water in improper containers, contributing to the spread of mosquitos and the increase in related diseases such as dengue, a situation that could be exacerbated by the impact of climate change on the population. In addition, the lack of properly-sited and suitable water and sanitation facilities exacerbates the vulnerability of women and children to violence and harassment.⁶

² SISDOM 2016.

³ Baseline, Nature Village Project 2019, developed in-house through a socioeconomic survey using as a reference the monetary poverty rate for the Dominican Republic.

⁴ Baseline, Nature Village Project 2019, developed in-house by Nature Power Foundation.

⁵ SISDOM 2016.

⁶ House, S., S. Ferron, M. Sommer, and S. Cavill. 2014. Violence, gender & WASH. A practitioner's toolkit. Making water, sanitation and hygiene safer through improved programming and services. London, UK. WaterAid/ Sanitation and Hygiene Applied Research for Equity (SHARE).

- 1.4 **Overcrowding and substandard housing.** According to data from the Social Indicators System of the Dominican Republic (SISDOM), as of 2016 there were 714,932 housing units with medium and high levels of overcrowding. In the case of Sabana Yegua Viejo, overcrowding is a common problem in all households and 95% of families sleep in a single room, affecting the emotional health of children who have to share the same space with adults. Overcrowding is also an obstacle to healthy development of young children, in that it limits study and the leisure inherent to early childhood.⁷ Some 99% of the dwellings in Sabana Yegua Viejo show a qualitative housing deficit,⁸ meaning that they do not have the minimum conditions for acceptable habitability, which is an obstacle to overcoming the structural barriers of poverty.
- 1.5 **Efficiency of public investment.** Given the cumulative needs in rural communities, public investments to bring in basic drinking water, sanitation, and energy services are made using imprecise estimates of the infrastructure needed to meet current and future demand for services. In addition, the budgetary allocation to bring basic services to rural communities is limited. This is the case of the Rural Electrification Unit (UERS), responsible for bringing power to rural areas, which in the year 2019 received 5% less under the heading of works and infrastructure amounting to US\$680,000.⁹ The result is that the intervention of local and national governments is sporadic, disorganized, and without accurate information on the potential demand for services, which limits resource efficiency and ultimately affects the population's well-being.
- 1.6 Thus, the absence of basic services in rural communities with high levels of poverty and its resulting effects on health, education, and the ability to earn an income, combines with the authorities' imprecise knowledge regarding current and future needs for the services that these communities require. This opens up an opportunity to explore initiatives that would allow the use of technology in the delivery of services, while generating information on consumption and changes in patterns of behavior in a more efficient way, enabling local governments to target and increase the efficiency of their interventions in rural communities.

II. THE SOLUTION

A. Description of the project

- 2.1 The project's **final objective** is to target and increase efficiency in public and private investments in rural communities, through data on consumption and changes in behavior that is generated in an open data platform. The **specific objective** is to develop the country's first sustainable community, Nature Village, which will provide access to water, power, improved housing, and sanitation through alternative solutions that protect the environment and cost less than the solutions currently available to these families.

⁷ <http://opsd.gob.do/media/22319/boletin-10-vivienda-y-bienestar-social-en-republica-dominicana.pdf>.

⁸ Qualitative housing deficit, meaning households whose dwellings do not have suitable materiality according to the "minimum standards established for the protection of family life" (materiality of walls, roof, and floor and state of repair of the buildings) as well as dwellings without basic services (drinking water, sewers, electricity) See reference: <https://infoinvi.uchilefau.cl/glosario/deficit-cualitativo/>.

⁹ [UERS - Presupuesto de gastos y aplicaciones financieras para el 2018 y 2019](#).

- 2.2 The proposed intervention model is based on the development and complementarity of three phases: (i) the delivery of power and water through microgrids using solar technology and telemetry to measure per household consumption; (ii) the development of an open data platform that captures consumption and payment for services, information that will be combined with socioeconomic data from other sources; and (iii) the development of the management committee responsible for managing collections and maintenance of the services system.
- 2.3 The incorporation of telemetry and the basic services platform managed with technology will make it possible to demonstrate patterns of consumption and payments for services as well as the correlation between service delivery and reduced development gaps, enabling local and national governments to better target their investments.
- 2.4 **Innovation:** The type of solution is unique in that it proposes to work with populations without access to essential basic services (power, water, and sanitation) to produce a new model of community management while developing an open data platform to support and increase the efficiency of future interventions by the public sector. This technology platform will also include socioeconomic and demographic indicators, images, and maps that will make it possible to visually illustrate the complete intervention model, to make before and after comparisons, and to create scenarios for the future. It will be based on a cloud-based telemetry system that will be accessible to academia, the public sector, and the private sector. This initiative will ultimately make it possible to have better individual and aggregate information on changes in behavior and quality of life in a cost-effective way. This will facilitate analysis of the correlation between the delivery of services and reduced development gaps, which the public sector can use to better target its investments.¹⁰

B. Project beneficiaries

- 2.5 The project's beneficiaries are located in the rural community of Sabana Yegua Viejo in the province of Azua, beyond the power, water, and sanitation grid. These families fall below the Dominican Republic's poverty line (income at or below US\$10 per day) and extreme poverty line (income at or below US\$4 per day). Although the community's inhabitants qualify to be recipients of the government's conditional transfers program, less than half of them actually receive the benefit.¹¹
- 2.6 The project's direct beneficiaries are 250 people from 50 households without access to basic services such as drinking water, sanitation, and electricity; 134 of them are women.
- 2.7 In addition, since women bear a large part of the burden of collecting and treating water, they will benefit from being relieved of the time they spend on these tasks each day, on waste disposal, and on attending to families affected by diseases related to the lack of water or the consumption of unsafe water. In addition, the lack of safe and hygienic sanitation facilities in the home exposes them to diseases,

¹⁰ The baseline used for this will be data on the population's socioeconomic conditions already collected by the Executing Agency through its monitoring system.

¹¹ In the area of Sabana Yegua Viejo in the province of Azua, 46% of households receive some benefit from the government's social programs; these data were compiled by Nature Power Foundation through a socioeconomic survey to establish its baseline during the month of August 2019.

- harassment, and violence, hampering their ability to learn, to earn an income, and to move about freely.¹²
- 2.8 The indirect beneficiaries are approximately 1,000 people in five neighboring communities who will benefit from the aquaculture venture that will be used as an additional channel for providing food to communities surrounding the area of intervention, and to the extent that local governments use the project's tools in making their investment decisions.
- C. Project components**
- 2.9 **Component I: Sustainable community-based model for access to essential services (IDB Lab: US\$121,589; Counterpart: US\$415,864).** The objective of this component is to test the sustainable community-based model for access to essential services in the community of Sabana Yegua Viejo in the province of Azua, through clean energies and low-cost community solutions.
- 2.10 The following activities will be financed under this component: (i) construction of a community aqueduct to carry drinking water to each household; (ii) installation of a solar micro-grid to provide access to power for households and community public spaces such as schools, parks, and sports facilities; (iii) the rehabilitation of substandard housing;¹³ (iv) improvement of the basic sanitation system in households and solid waste management, through an ecological biodigestion sanitation system that utilizes organic waste to generate biogas for cooking and natural fertilizer for the community's orchards;¹⁴ (v) construction of two tanks for a rural aquaculture venture to generate additional income for the community, which will operate with the excess energy generated in the solar micro-grid, as well as allow for cold storage of production prior to sale; (vi) creation of a management committee able to administer the community services system and maintain the equipment (including training in planning, administrative management, etc.); and (vii) training of beneficiaries in the installation of equipment and operation of public utilities.
- 2.11 As a result, it is expected that: (i) 250 people in the 50 beneficiary households will have access to water, sanitation, and power services; (ii) an energy-generating micro-grid will be installed; (iii) 42 dwellings will be improved; and (iv) a sustainable aquaculture venture; (v) a management committee that has been organized and is recognized by the community; (vi) a protocol for performing infrastructure maintenance; and (vii) a fund established for the sustainability of the infrastructure.¹⁵

¹² Women and girls are responsible for water collection in 80% of households without access to water on premises, according to data from 61 developing countries. Progress on the Sustainable Development Goals: The gender snapshot 2019. UN Women.

¹³ A model house that meets the needs of the area will be developed, measuring 36 square meters and featuring two bedrooms, one bathroom, a living/dining area, and a kitchen.

¹⁴ <https://www.homebiogas.com/>.

¹⁵ The community members will pay a monthly fee of US\$10 per household to the fund to provide sustainability for the infrastructure. The monthly fee per household has been set at US\$10 considering estimated maintenance costs based on the executing agency's experience with the installation of similar equipment in neighboring communities, average family incomes, and what families currently spend to light their homes, cook, and have water for consumption.

- 2.12 **Component II: Implementation of technology for telemetry and the generation of open data (IDB Lab: US\$182,780; Counterpart: US\$2,400).** The objective of this component is to develop an open data platform that will be fed by data to be generated by household microsensors using IoT (Internet of things) technology that will measure the use of services in households and consumption in public spaces. This information will provide valuable insights regarding the beneficiary population's habits so as to improve the public sector's replication of the model. To this end, the information will be available to universities, the public sector, and the private sector in order to correlate use and behavior with social and other variables.
- 2.13 This component will support the following main activities: (i) installation and configuration of telemetry-capable sensors in the aqueduct, the solar micro-grid, and the households receiving the public utilities; (ii) the installation of WiFi equipment for connectivity with the open data platform; (iii) development and integration of the open data platform with its web portal for public access; and (iv) security protocols to guarantee the privacy of the community's inhabitants. These developments will be carried out in accordance with the principles for digital development.¹⁶
- 2.14 The expected result is an open data platform fed by sensors connected by the internet of things (IoT) generating information in real time on use and consumption of basic services for improving decisions in the area of public and private investment, as well as support for in-depth study in academic and scientific works that could create solutions for economic, social, and environmental development.
- 2.15 **Component III: Innovation lab for services for rural communities (IDB Lab: US\$95,040; Counterpart: US\$6,000).** The objective of this component is to make full use of information generated in the community of Sabana Yegua Viejo to develop service innovations for rural communities.
- 2.16 This component will finance the following activities: (i) implementation of an online program for training on the use of and access to the data generated in the context of the operation; (ii) theoretical and practical workshops for public servants, the academic sector, and private sector on the subjects of open data for public utilities and use of the Nature Village platform; (iii) ideathons/hackathons on open data for innovation;¹⁷ (iv) documentation of the Nature Village experience, including the costs, in order to allow decision makers in the public sector to replicate the model; (v) case studies capable of producing evidence on the utility of open data in closing social gaps, economic development, and environmental protection; (vi) events to publicize the initiative, including the participation of experts in the area of telemetry; and (vii) interagency cooperation agreements in order to replicate the model.
- 2.17 Implementation of these activities is expected to produce: (i) six training workshops for public officials, entrepreneurs, academics, and researchers capable of building solutions and innovations based on the analysis of open data; (ii) one case study analyzing the closing of social gaps, economic development, and environmental protection based on the use of open data; (iii) four ideathons/hackathons using

¹⁶ The principles for digital development can be consulted at <https://digitalprinciples.org>.

¹⁷ The experience of CUUSOO Systems, experts in crowd-sourced solution for the development of new B2B and B2C solutions and services, will be explored. For example, an innovation hackaton on the correlation between access to services and socioeconomic indicators and on the subject of infrastructure planning for the installation of open systems, etc.

open data to close social gaps in rural communities; and (iv) 150 households with new or improved access to essential services as a result of the tools generated by the project.

D. Project results, impact, monitoring, and evaluation

- 2.18 The main results of the project are: (i) 200 households have access to improved housing and power, water, and sanitation services (corresponding to 1,000 people with access to services as a result of investments made using information and tools generated by the project); (ii) 475 tons of greenhouse gases not emitted thanks to the implementation of panels and waste biodigesters; (iii) 10 key public and private actors adopt new practices and technologies for scaling up or replicating the project's model through the open data platform; (iv) a 50% reduction in diseases due to preventable conditions;¹⁸ (v) 50% of direct beneficiaries are women; and (vi) an open data platform is established and made available to the public sector, private sector, and academia that generates knowledge, systematizing information for designing policies or formulating investment programs.
- 2.19 For project monitoring and tracking, the executing agency will develop a monitoring and evaluation plan capable of capturing socioeconomic information on the community before and after implementation of the program, establishing a starting point or baseline with indicators; a final evaluation will produce evidence to validate the program's hypothesis (that it is possible to supply essential services to the rural population living in extreme poverty with alternative and sustainable sources under a community-based management model). The information will be disaggregated by household, number of members, gender, etc. The open data platform will be used as input and as a means of verification. The knowledge outputs generated on the project's results should answer the following questions: What is the correlation between the delivery of basic services and improved socioeconomic indicators in rural areas? What factors have produced a change in behavior with respect to payment for basic services? How can open data on consumption of basic services in rural communities have an impact on improving the infrastructure designs for bringing services to similar communities? How is information generated and available on the open data platform utilized to make investment decisions, creating innovations in public policies and solutions for the private sector and academia? How has the use of time changed in terms of housekeeping tasks, which will make it possible to improve information on gender roles in the delivery of basic services?
- 2.20 It should be noted that NPF's monitoring and tracking system will be adapted to capture sufficient information for monitoring households and community members so that a determination can be made on whether there is actually a change in behavior in their productive processes.

III. ALIGNMENT WITH THE IDB GROUP, SCALABILITY, AND RISKS

A. Alignment with the IDB Group

- 3.1 The project is aligned with the **Second Update to the Institutional Strategy** (document GN-2933-5) that reinforces the IDB Group's emphasis on promoting social inclusion and equality by promoting the adoption of technology and innovation

¹⁸ Gastrointestinal and skin diseases.

and incorporating the crosscutting themes of gender equality and diversity and climate change and environmental sustainability.

- 3.2 It is also framed by the **IDB Group Country Strategy with the Dominican Republic 2017-2020** (document GN-2908) in priority area 1, “to improve the quality and coverage of basic services,” in that it complements action lines that seek to increase access to improved sources of water and private sector participation in the provision of basic social infrastructure, generation of renewable energy, and rural electrification, inasmuch as an improvement in the efficiency of services is planned.
- 3.3 The operation is included in the IDB Lab’s thematic area of **Inclusive Cities** (document MIF/GN-238), as it is consistent with its objective of testing innovative and scalable solutions enabling the inhabitants of urban and periurban areas or informal settlements to enjoy a better quality of life.
- 3.4 The project is consistent with the **Power Sector Sustainability and Efficiency Program II (DR-L1058)**, specifically the institutional strengthening objective to develop rural electrification in the country. The proposed project will strengthen the trigger mechanisms for the third loan operation under the programmatic policy-based loan inasmuch as the energy-use information on the beneficiaries will enable the Rural Electrification Unit to better assess the type of infrastructure that is needed to deliver power to rural communities. This will make the Unit’s investments more efficient, strengthening planning, programs, and rural and urban electrification plans. The project also complements the **Energy Sector Framework Document** (document GN-2830-5) in the thematic areas of accessibility and sustainability of energy by supporting the provision of energy with quality, reliability, and affordability in a rural area based on nonconventional renewable sources.
- 3.5 The project aligns with the **Water and Sanitation Sector Framework Document** (document GN-2781-8) in that it promotes the universal delivery of basic water and sanitation services in efficient and sustainable ways, developing innovative financing mechanisms and promoting private sector participation.
- 3.6 It is also aligned with the Sustainable Development Goals (SDGs), particularly the following: (i) SDG 7, on access to affordable, reliable, sustainable, and modern energy; (ii) SDG 6, on availability and sustainable management of safe and affordable drinking water and sanitation for all; (iii) SDG 11, on access to adequate, safe, and affordable housing; and (iv) SDG 5, on gender equality.
- 3.7 The initiative will strive to complement the open data operation being conducted by **IDB Lab and the Santo Domingo Institute of Technology (INTEC) (DR-T1160)** so that entrepreneurs and students participating in ideathons/hackathons will have access to this information for presenting service delivery solutions.

B. Sustainability and scalability

- 3.8 A key element for the project’s sustainability is the generation of a community fund to maintain the infrastructure and a community governance mechanism for that fund, namely the management committee.
- 3.9 The proposed project will generate lessons enabling both the public and private sectors to scale the initiative. NPF is considering the establishment of agreements with the National District’s City Council to replicate the model in periurban communities in Santo Domingo. Work will also be done in conjunction with the

National Water and Sewers Institute (INAPA) to use the data generated to improve peak flow designs when bringing water services to rural communities. In addition, the Rural Electrification Unit will sign a collaboration agreement under which it will use the information to improve the theoretical calculations of power load and demand in rural communities. The quantitative data will provide evidence to support replication of the model by the public sector, also relying on the aggregate information that will be available from the private sector and academia and that can be used to incorporate new services or develop innovations in beneficiary communities. Validation of the model will be supplemented by the results of open innovation activities, which will offer solutions that can be piloted by the public and private sector.

- 3.10 In addition to the scale-up potential in the same country, the model could be scalable in other places where there is a high rate of extreme poverty in a rural or low-density context and where commercial models for access to services have not penetrated.

C. Project risks

- 3.11 **Lack of capabilities for community management of the services.** To mitigate this risk, the Foundation for the Development of Azua, San Juan and Elias Piña (FUNDASEP), which has a presence in the project's area of influence, will support the process of community organization, dialogue, and joint planning with the community. In addition to working on managing the change that the project entails, the project will implement a robust training program so that a management committee can be instructed and trained to efficiently administer and maintain the new basic community services infrastructure. The development of these key activities for sustainability has taken into account the experience of other IDB Lab projects that have left the management of services to the beneficiary community itself.
- 3.12 **Lack of coordination between partners involved in the project.** To mitigate this risk, an implementation committee will be set up with the partners of Nature Village. That committee will do joint planning so that responsibilities and roles can be defined for each stage of the project and provide an implementation schedule based on consensus and validated by each partner. Also under consideration is the organization of monthly meetings with the partners to report on progress made and challenges faced in implementation and take the actions needed to achieve the objectives established in the work plan and schedule.
- 3.13 **Sustainability of installed technology in water and sanitation systems and solar farms.** To mitigate this risk, a sustainability committee will be created. Using service fees, the committee will establish a maintenance fund for repairs and replacement of equipment as needed. Similarly, a solar cooperative/association will be formed that will be able to sell its surplus power to support the sustainability of the project over the medium- and long-term.
- 3.14 **Mismanagement of personal data.** There is a risk of hacking and improper use of data. Given the scope of this project, the risk would be minimal inasmuch as the identity of beneficiaries and households will be protected using encryption and anonymization techniques when the open database is set up and based on how consumption per household is transmitted.

IV. COST AND FINANCING

- 4.1 The project has a total cost of US\$994,673, of which US\$499,609 (50%) will be provided by IDB Lab as a nonreimbursable contribution and US\$495,064 (50%) will be the local counterpart contribution.

Project components	IDB Lab	Counterpart	Total
Component I: Sustainable community-based model for access to essential services	121,589	415,864	537,453
Component II: Implementation of technology for telemetry and the generation of open data	180,380	2,400	182,780
Component III: Innovation lab for services for rural communities	95,040	6,000	101,040
Program executing unit	74,600	70,800	145,400
Evaluations, audits, and contingencies	28,000		18,000
Total	499,609	495,064	994,673

- 4.2 Items reported as from August 2019, which is when infrastructure work under the project begins, will be recognized against the local counterpart contribution.

V. PROJECT PARTNERS AND IMPLEMENTATION STRUCTURE

A. Description of executing agency

- 5.1 **Nature Power Foundation (NPF)** is a non-profit organization that emerged as a social innovation in 2017 with the goal of improving living conditions and contributing to the sustainable development of vulnerable communities in the Dominican Republic and the Caribbean, facilitating access to basic power and water services through alternative sources that protect the environment, promoting sustainable ventures capable of generating income and developing the human capital of communities living in poverty. To date, eight innovative projects have been developed in the area of access to basic services such as drinking water and power using solar panels, incorporating on a crosscutting basis the component of sustainable ventures to generate income for the communities. These projects are being executed in the southern area of the Dominican Republic, specifically in the provinces of Azua and San Juan. The proposed project goes beyond those earlier experiences to generate a greater impact on the beneficiaries by incorporating the collection of data on consumption and other data for the benefit of future investment decisions or public programs.
- 5.2 To execute this project, NPF has established partnerships with different public and private sector organizations, as well as arranging contributions from international donors:
- 5.3 **Organizations/private sector:** The Embassy of the Federal Republic of Germany in the Dominican Republic will donate funds to bring electricity to some of the households benefitting from the project using solar panels; the Embassy of Canada in the Dominican Republic will donate funds for development of a sustainable venture; FUNDASEP, which has a presence in the project's area of influence, will

support the process of community organization, dialogue, and joint planning with the community; the Association to Promote Renewable Energy Companies (ASOFER), which brings together all private companies providing new solar power technologies, will participate through its partners in delivering and transferring knowledge to the community during the process of installing the solar solutions.

- 5.4 **Public sector.** Local participants will include the City Council of Padre las Casas in the province of Azua as well as the local offices of the National Hydraulic Resources Institute (INDRHI), the National Water and Sewers Institute (INAPA), and the social programs attached at the territorial level to the Social Policy Coordinating Office (GCPS) presided by the Office of the Vice President of the Republic. Similarly, the UERS will participate by validating the model through the management of open data to improve the design of future implementations in rural areas.
- 5.5 **Academia.** The Pontificia Universidad Católica Madre y Maestra (PUCMM) and its School of Engineering Sciences will provide technical assistance for the design and rollout of a system of telemetry sensors to measure the performance of public utilities and for the creation of an open data platform. This collaboration is part of a technical cooperation program executed under an agreement that will be formalized in November 2019, which calls for the technical support of the teaching staff and the lead engineers specializing in telemetry and open data.

B. Implementation structure and mechanism

- 5.6 A project coordination unit will be set up within the NPF consisting of: (i) a project coordinator; and (ii) an administrator/accountant. The project coordinator will report directly to the NPF's Executive and Projects Directorate. The NPF will support by providing the physical and logistical structure needed to execute the operation effectively and efficiently. It will also be responsible for the counterpart contribution needed to supplement the funds contributed in the execution of activities. The NPF will also be responsible for submitting reports on project implementation through IDB Lab's project management platforms every six months. As part of project governance, an advisory committee will be set up made up of representatives from the following: the Water and Sanitation Institute, the Rural Electrification Unit, the Ministry of the Environment, academia, and local authorities. The advisory committee will meet every three months and its functions will include verifying progress made in the project and making relevant suggestions to promote the delivery of basic services in rural areas. Both IDB Lab and the project coordinator will participate in the meetings of the advisory committee as observers. The NPF will appoint someone to act as secretary of the advisory committee.
- 5.7 Periodic coordination meetings will be held to determine action and implementation strategies. IDB Lab will support the executing agency in its implementation of the project and will participate in its strategic decisions.

VI. FULFILLMENT OF MILESTONES AND SPECIAL FIDUCIARY ARRANGEMENTS

- 6.1 The executing agency will adhere to the standard IDB Lab arrangements related to disbursements by results, procurement, and financial management policies applicable to the private sector, consistent with the provisions of the 12 June 2019 version of the Financial Management Guidelines for IDB-financed Projects (document OP-273-12) and the specifications of the "Guidelines on Management

- by Milestones and Financial Supervision for Technical Cooperation of IDB Lab and the SEP.”
- 6.2 The risk level resulting from the Diagnostic Assessment of Institutional Capacity and Integrity was low, indicating that the NPF has a financial management system acceptable to IDB Lab and has a monitoring and accountability structure for the delivery of institutional financial statements to the Bank. Project disbursements will be contingent on verification of fulfillment of milestones, in accordance with the verification methods agreed upon between the executing agency and IDB Lab. Achievement of the milestones does not relieve the executing agency of its responsibility to achieve the agreed-upon results.
- 6.3 Unless the Bank determines otherwise during project execution, the executing agency’s policies will be used for procurement. An annual procurement plan on what is needed to execute the project and fulfill the milestones will be presented, together with the annual work plan. IDB Lab will review on an ex ante basis the technical aspects of procurement as required at its discretion, particularly items considered critical.
- 6.4 The executing agency will prepare its annual financial statements and make them available to the Bank. Using funds from the contribution, the Bank may review the financial statements and make revisions to the use of funds applied to the project, verifying financial practices and procurement.

VII. ACCESS TO INFORMATION AND INTELLECTUAL PROPERTY

- 7.1 **Access to information.** The information contained in this document is classified as public upon approval, pursuant to the Bank’s Access to Information Policy.²⁰
- 7.2 **Intellectual property.** The technology platform developed in Component II will remain in the hands of the executing agency. Otherwise, all the products, methodologies, and knowledge obtained as a result of the project will belong to the Bank. The Bank may give the public free access to the information it deems relevant by granting the Creative Commons IGO 3.0 BY-NY-ND license.

²⁰ Link to the Bank’s [Access to Information Policy](#).