

Does Boond – a for-profit social enterprise – represent a new developmental transition in India?

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Case Brief

# Does Boond – a for-profit social enterprise – represent a new developmental transition in India?

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**Case Teaching Note**

**Case Narrative**

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## **This section contains**

- I. IIHS Case Method
- II. Understanding Disaster Resilience Leadership in India
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# I. IIHS Case Method

The IIHS case is a work-in-progress that represents experiments in different forms of creating interdisciplinary and inter-sectoral cases, as well as a diversity of pedagogical environments to learn and teach with these cases. The opening set of cases is, thus, also in a sense, an experiment in form and teaching modes. Given this, we do not claim a singular 'IIHS Case Method' or any one form or definition of a case. Indeed, one of the explicit aims of case development at IIHS is to challenge conventional ideas of what case-based learning is. How then does a user know how to use cases? Pedagogical transactions will differ from case to case and indeed multiple options will be open within each case. Therefore, in order to aid users, all IIHS cases come with a set of consistent elements that help users navigate through the diversity of form and content.

These are:

- **Preface:** Every case begins with an introduction by the case writer that describes their own approach to the case. How did the case writer frame the case? Why did they choose to structure it as they have? What were their intentions in writing the case?
- **Teaching Note:** The second shared case element is the Teaching Note. Here, the case writer lays out their imagination of how they would teach with the case in its current form. They suggest learning outcomes, pedagogical modes, learning environments and assessment frames. True to the diversity of the cases, each of these is particular to the case.
- **The Main Case:** This is the main body of the case—its core empirics, arguments, discourse and data. Across the cases, these come in different forms: PowerPoint presentations, audio-visual material, web interfaces, written text, and data visualizations.
- **Pedagogical Possibilities:** The next element lays out the case writer's suggestions on other ways in which the case could be taught, including in other disciplines or learning environments. These are not as detailed as the Teaching Note but offer a set of possibilities to the user to imagine other uses of the case than those laid out.
- **Case Archive:** The final element of the case is a library of documents—reports to interview transcripts, unedited footage to visual photo libraries—that act as an archive for the case. This repository allows users to also access a host of background and additional information necessary to navigate the larger contexts in which the case is situated.

Each IIHS case—regardless of the diversity of its form—comes structured with these elements. It is our hope that this recognizable framework will enable users to navigate easily across cases with very diverse elements and forms.

## II. Reimagining disaster resilience leadership in India


India, the second most populous country in the world, is also one of the most disaster-prone owing to its geo-climatic conditions and socio-economic vulnerabilities. Over 58.6 per cent of the Indian landmass is prone to earthquakes: over 40 million hectares (12 per cent) is prone to floods and river erosion; close to 5,700 kilometers out of the 7,516 kilometers long coastline is prone to cyclones and tsunamis; 68 per cent of its cultivable area is vulnerable to droughts; and its hilly areas are at risk from landslides and avalanches (NDMA, n.d.). India ranks second among countries with the highest absolute number of people (819 million) affected by disasters between 1994 and 2013 (Bongo & Manyena, 2015).

It has also been well accepted that while hazards may be natural, the disasters that follow are man-made, caused by poor developmental processes and disaster management practices (United Nations, 2010). By its very nature, a crisis is a 'dynamic and chaotic process' and leadership for effective crisis management may not align with the actual leadership skills required for effective reform strategies (Boin et al., 2003). The importance of good governance during a crisis cannot be emphasized enough, and Ahren et al. (2006) explain the link between disaster and the institutional response by postulating an inherently circular relation between 'underdevelopment' and 'susceptibility to disaster' and therefore an intrinsic link to institutional failure and poor governance. This also highlights the need for preventative action and improvements in development processes, and therefore the need for leadership to build resilience prior to an event of crisis.

Over the last decade, the distinct fields of climate change adaptation, disaster risk management, disaster risk reduction and sustainable development are converging as policymakers and practitioners are increasingly recognizing the inherent interconnection between each of them (Schipper, 2006; Bahadur et al., 2010; Matyas, 2015). In order to address disaster risk and simultaneously tackle sustainable development, the concept of resilience is increasingly being called upon. This includes the growing number of policy initiatives, on-ground projects, and academic studies and developing various methods and metrics for measuring resilience.

In such a scenario, it becomes imperative to strengthen the capacities of the communities and their leaders to address risk and respond to extreme events, to build the resilience of people as well as socio-physical capital. Many interventions have been made in order to mitigate the risks arising from shocks and stresses in India at national, provincial, and sub-provincial levels by the government. Many other autonomous adaptive measures have also been taken by a variety of actors and communities themselves that often go undocumented. Since adaptation in India still remains a local initiative, documentation of such practices could help in identifying the traditional knowledge of the communities for informing effective risk reduction plans and policies. The governance and management of extreme events involves a multitude of actors that lead to collectively binding decisions that are also the result of the distribution of power, leadership, and coordination (CRED, 2015). It is, therefore, necessary to identify the key gaps and innovative practices for building disaster resilience and find approaches to strengthen these practices.





In India, where institutional and regulatory frameworks specific to disaster risk reduction are relatively new, leadership practices have been at play through initiatives undertaken by existing mainstream institutions and other actors aiding in risk management outcomes. In an attempt to understand the past and current practices of leadership for disaster resilience in the Indian context, this study funded by the George Washington University and Bill and Melinda Gates Foundation, is co-led by the Indian Institute for Human Settlements, Bengaluru and Tata Institute of Social Sciences, Mumbai.

The aim of developing this set of teaching learning material is for: (1) understanding leadership in the context of disaster risk and resilience building in India, (2) documenting initiatives undertaken by the formal and informal institutions and individuals that have aided in building resilience of a region and the community against disasters, (3) develop frameworks that can help practitioner and research community to enable and improve these disaster resilience practices in India and beyond.

### III. Case Preface Note

Imagine a nation where hundreds of million people live in darkness. Where they leave for work in the wee hours, and come back way after sunset, only to eat their last meal of the day without as much as seeing it, for they lack access to even one electric light bulb. It is the reality in India, one of the leading emerging economies, even as we write the case in 2018. It was this reality, and the claims of the national government of having electrified the last village in the country<sup>1</sup>, that prompted exploring this case study to recognize the lacunae, as well as practices that could help achieve sustainable development outcomes in the future.

According to the World Bank's State of Energy Access Report 2017 (SEAR 2017), India tops the list of countries with the world's largest electricity access deficit and is alone responsible for a little less than one-third of the global deficit (270 million of the 1.06 billion people)<sup>2</sup>. These households across the country still live without electricity, excluded<sup>3</sup> from the development trajectory that the rest of the country is experiencing. In many cases, it is the basic energy infrastructure that is lacking, or when infrastructure exists, electricity supply is irregular. Due to poor tariff collection systems, the households receiving electricity from the grid are faced with bulk charges which they cannot afford. All leading to one thing--darkness.

The national government continues to see this gap as a service provision challenge, to be dealt with a linear process of production, distribution and consumption<sup>4</sup>. It maintains its international policy stance that India would not achieve its Intended Nationally Determined Contribution (INDC) without huge infusions of financial assistance. Apart from continuing to remain largely fossil fuel dependent, the bulk of investments are being made on large scale energy production systems (both renewable and thermal)<sup>5</sup> feeding into the grid serving populated regions. Meanwhile, the disconnected small hamlets and villages continue to remain outside the view of such provisions, and off-grid renewable energy systems are seen as short-term<sup>6</sup> alternatives for them.

In such a scenario, when the public provisions are failing these people, there are other actors jumping in to fill the gaps. There are many Non-Governmental Organizations (NGOs) as well as CSR-funded private actors aiding the needed energy provisions with one-time grant money,

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<sup>1</sup> <https://indianexpress.com/article/north-east-india/manipur/leisang-indias-last-electrified-village-narendra-modi-5165019/>: Accessed on 10 August, 2018

<https://www.hindustantimes.com/india-news/every-village-in-india-now-has-access-to-electricity-says-pm-modi/story-cTGDwKx9URJJeMlVlPwSsO.html>: Accessed on 10 August, 2018

<https://www.ft.com/content/c455c114-4c5c-11e8-8a8e-22951a2d8493>: Accessed on 10 August, 2018

<http://time.com/5264147/indias-last-village-goes-electric-millions-still-see-dim-returns/>: Accessed on 10 August, 2018

<sup>2</sup> <http://documents.worldbank.org/curated/en/364571494517675149/pdf/114841-REVISED-JUNE12-FINAL-SEAR-web-REV-optimized.pdf>: Accessed on 10 August, 2018

<sup>3</sup> <http://documents.worldbank.org/curated/en/374171468331748897/pdf/WPS6095.pdf>: Accessed on 10 August, 2018

<sup>4</sup> [https://www.brookings.edu/wp-content/uploads/2016/07/india\\_energy\\_climate\\_policy\\_ebinger.pdf](https://www.brookings.edu/wp-content/uploads/2016/07/india_energy_climate_policy_ebinger.pdf): Accessed on 10 August, 2018

<https://www.recindia.nic.in/power-for-all>: Accessed on 06 December, 2018

<sup>5</sup> <http://www.adanisolar.com/power-plant-in-tamil-nadu.html>

<sup>6</sup> [http://niti.gov.in/writereaddata/files/new\\_initiatives/NEP-ID\\_27.06.2017.pdf](http://niti.gov.in/writereaddata/files/new_initiatives/NEP-ID_27.06.2017.pdf): Accessed on 10 August, 2018

but they too fail on the counts of sustainability and long-term operations and management of these provisions.

Distinguishing themselves from these actors are other private players, such as Boond, who have innovated ways to bring electricity to these communities, in a way that it is sustainable: economically, financially, environmentally, and socially. The work Boond is doing may not be unique, or at a scale that can affect the outcomes at the national level, at least not yet. But its focus on (1) innovation, (2) people-driven governance, (3) tech-adoption, (4) commitment to sustainable outcomes, and (5) bringing new processes of management, seems to offer a way to fill the gaps in the traditional public sector approaches and imaginations for service delivery in the country. This case was built to explore emerging alternate forms of governance, such as those practiced by Boond that could potentially indicate an ongoing transformational change in the development trajectory for the country.

The case attempts to illustrate the challenges faced and the strategic choices made by self-sustainable social enterprises targeting the needs of the low-income households living in geographically disconnected locations. Although this case is primarily developed for shaping the ideas on resilience leadership, efforts are taken to ensure that the content and form of the material generated is diverse and provides opportunities to be used across a variety of perspectives, including but not limited to energy poverty, participatory governance, and social entrepreneurship.

The case was developed based on in-depth interviews with Boond's founder, members of the management and staff, and community members from villages where Boond has been working. It also incorporates reviews of Boond's annual reports, other national and international policy documents and news articles on the issue of energy access. The case archive includes relevant news articles, policy notes, baseline studies, and additional interviews undertaken through the process.

This teaching case offers the opportunity to be used within an existing framework of graduate and undergraduate courses on public policy, governance, rural development, and sustainable development. This content could also be used for capacity building/training programmes for working professionals, especially social entrepreneurs across a range of sectors.

## IV. List of Case Contents

1. Case introduction and teaching note
2. Case write-up titled 'Does Boond—A For-profit Social Enterprise—Represent a New
3. Developmental Transition in India?'
4. Case film titled 'The Last Mile'
5. Suggested readings
6. Case archive

# V. Teaching Note

**Case Title:** Does Boond – a for-profit social enterprise – represent a new developmental transition in India?

**Case Trigger:** Lack of access to energy in rural areas excluding them from developmental gains experienced by the rest of the country

## A. Learning Outcomes of the case

Using the written case, the AV material and the case archive, the expected learning outcomes with a focus on resilience-building leadership are:

1. To explore an alternate form of governance that could address the developmental needs unfulfilled by the traditional formal approaches and recognize the value of innovation in:
  - i. Tech adoption in service delivery and management;
  - ii. Financing a for-profit social enterprise;
  - iii. Scaling deep vs. scaling wide;
  - iv. Commitment to sustainable outcomes.
2. To understand the characteristics of leadership, recognize the form (operational/empowering/multi-level etc.) practiced within Boond, and in doing so, understand the processes practiced for:
  - i. Setting institutional ethos;
  - ii. Enabling ownership, trust and people-driven approaches;
  - iii. Achieving sustainability of the institution and outcomes.
3. To appreciate the role of developmental outcomes as co-benefits for enhancing community resilience to risks.

## B. Suggested Audience

The case material can be used for students undertaking their undergraduate or master's programs in disaster management, infrastructure development, public policy/administration/finance, economic or sustainable development, governance, or social entrepreneurship. This case can also be used for training working professionals, drawn from the public/private sectors or the civil society, working in the fields of disaster management, rural or urban development, or public finance.

## C. Pedagogic trajectory

The learners must first be taken through the basic understanding of 'risks' and 'resilience', as well as the common frameworks of leadership. These should be discussed in the context of the changing climate.

The learners can then discuss the institutional and regulatory context within the country with respect to the major developmental and service delivery policies, and the existing gaps/limitations in achieving developmental goals. This could be done using the context of any internationally accepted and nationally committed development goals (e.g. Sustainable Development Goals (SDG) for Energy (SDG 7)). Further, various forms of leadership can be discussed in the class with the focus on this case and drawing from the other case studies in this series.

#### **D. Learning Environment**

The AV material is a valuable input for engaging learners with real problems and difficulties faced by the people as well as the insights offered by practitioners as they attempt to ameliorate them. The film works to tie in the developmental debates with risk reduction, which is expected to be part of the personal learning trajectory. To this end, it is important that at least part of the training is conducted indoors with suitable AV equipment.

The other alternative of teaching using multimedia outputs could be through self-paced/instructor-paced blended learning models, where this material is offered to learners to get familiarized with before or after the class. The in-class face time can then be used primarily for discussion and analysis.

If the training is being conducted at sites close to implementation areas, or case study sites, a day visit is highly recommended.

#### **E. Discussion prompts:**

Apart from using some relevant prompts from the study's 'Questions of Enquiry', the faculty is encouraged to use the following prompts in the classroom to achieve the set-out learning objectives.

##### ***I. On forms of governance:***

1. How does the public sector currently approach energy provision in India? Can public institutions approach service delivery differently? If yes, what would be the aspects that they can learn from organizations, albeit small and private, such as Boond?
2. What parallels can you draw between Boond and micro Home Solutions (also a private sector social enterprise in the field of housing) or other sectoral comparisons? What lessons could they share with each other, and with formal public sector institutions working in their respective sectors?

##### ***II. On leadership***

1. How are the entrenched vulnerabilities understood, and how does that understanding help inform objective setting?

2. How are the value-systems communicated to the members of the organization? How does that affect their sense of ownership? How is flexibility enabled within the institution?
3. What were the key enablers without which this initiative would not have functioned/would have been significantly different from what it is at the moment?

### **III. On building resilience:**

1. If you were to compare the 'place-based' approach taken by Timbaktu Collective in Andhra Pradesh or the NGO Coordination and Resource Center (NCRC) in Tamil Nadu, how is the scaling approach taken by Boond similar or different? What are the pros and cons of these different approaches?
2. How does raising the developmental base affect the overall resilience to risk for the communities and regions? What are the co-benefits of action for one or the other?

### **F. Suggested Readings**

1. Aligned with alternate governance learning outcome: Ebinger, Charles K. (2016), "India's Energy and Climate Policy Can India Meet the Challenge of Industrialization and Climate Change?", Brookings Policy Brief 16-01. [https://www.brookings.edu/wp-content/uploads/2016/07/india\\_energy\\_climate\\_policy\\_ebinger.pdf](https://www.brookings.edu/wp-content/uploads/2016/07/india_energy_climate_policy_ebinger.pdf)
2. Aligned with leadership learning outcome: Nathan, Archana (February 13, 2018), "Behind that viral video of a vada maker is a common sense idea and a determined Indian", in Scroll.in. <https://scroll.in/magazine/866941/behind-that-viral-video-of-a-vada-maker-is-a-common-sense-idea-and-a-determined-indian>
3. Aligned with resilience and development learning outcome: Khandker, S, H, Samad, R. Ali, and D. Barnes (2012) Who Benefits Most from Rural Electrification Evidence in India", World Bank Development Research Group Agriculture and Rural Development Team, Policy Research Working Paper 6095
4. <http://documents.worldbank.org/curated/en/374171468331748897/pdf/WPS6095.pdf>

### **G. Case Archive**

1. Full interviews with the Boond management and staff including Rustam Sengupta, Bhaskar Palit, Kunal Amitabh, Vipin Tripathi, technical and other field staff.
2. Select news articles
3. National Wind-Solar hybrid policy
4. Jawaharlal Nehru National Solar Mission
5. Draft National Energy Policy 2017
6. Baseline Study Report of Solar2Go Smart Microgrid Project in Unnao, Uttar Pradesh setup by Fortum, Futurice and Boond
7. Care ratings professional risk opinion grade book for Boond
8. Inception report extract on leadership forms

## VI. Pedagogic Possibilities

This case can be taught on its own, or in combination with other cases from this Disaster Resilience Leadership Case Study Series. This section gives some suggestions for teaching the case, along with some class exercises although, the teaching faculty is free to design the case conduct based on the larger learning objectives of the learners.

### ***Very short version***

The case could be taught over a single session of 1.5 hours. This would have to be part of a longer course on leadership/disaster resilience/social entrepreneurship/governance and service delivery in order to ensure that the learners are aware of the basic vocabulary required to understand the case and get benefits from it to the fullest. It would also be required for the learners to watch the AV material as well as read the case material and associated readings prior to the class. The case session could then focus on any or all of the following three aspects in class, using the provided discussion prompts:

1. On alternate forms of governance in service delivery
2. On innovative and enabling leadership
3. On development outcomes as, co-benefits for building resilience

### ***Short version***

The case could be taught over two sessions of 1.5 hour each or three sessions of 1 hour each. The following could be the suggested breakup and focus of each hour:

**Hour 1:** The faculty could start with a discussion on the context and the need for innovative service delivery. The focus could also be on the relationship between development outcomes and building resilience.

**Hour 2:** The second hour could focus on the workings of Boond and use some prompts from the AV material and the written case. This could highlight the leadership framework adopted by the organization and the processes of value communications, flexibility, tech adoption, tech commitment etc.

**Hour 3:** The final hour could focus on distinguishing the work being done by Boond as compared to other traditional/public sector actors. The faculty must make sure that the discussion is not limited to the energy sector, by bringing in case examples from other sectors such as housing, sewage, solid waste management etc. and let the learners pull lessons from Boond's work for larger governance improvements.

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<sup>7</sup> For example: [http://planningcommission.nic.in/aboutus/committee/wrkgrp12/wg\\_power1904.pdf](http://planningcommission.nic.in/aboutus/committee/wrkgrp12/wg_power1904.pdf)



### ***Suggested exercises***

1. Analyze the union budgets for the last three years and the latest five-year plan (e.g. Report from the Working Committee on Power<sup>7</sup>), and comment on the national perspective on coal import subsidies, financing for power plants, and incentives for renewable energy production and distribution.
2. Analyze the financial statements of Boond provided in the Exhibits and recognize the priority of investments and changes made over the years. Compare the total assets and liabilities over the years, as well as the liquidity profile.
3. Refer to the list of key clients and the order amounts both in Kw and financials provided in the Care Ratings. How else can 'value' of energy provision be measured? On the basis of this value, what would you recommend the Boond Management team about their future focus and institutional design?
4. After reading the case, discuss and recognize the value system pursued at Boond, and then compare them with the values and missions provided for one of the key partner institutions. Discuss if and how shared values are important in long-term partnerships and sustainability.



# Case Narrative





**This section contains**

- I. Case Abstract
- II. Case write-up
- III. Exhibits



# I. Case Abstract

In a context where traditional public sector agencies and other Non-Governmental Organisations (NGOs) are struggling to provide reliable energy access to all citizens of India, distinguishing themselves from these actors are other private players such as Boond, who are innovating ways to bring electricity to those excluded, in a way that it is sustainable: economically, financially, environmentally, and socially. The work Boond is doing, per se, may not be unique, or at a scale that can affect outcomes at the national level, at least not yet. But its focus on (1) innovation, (2) people-driven governance, (3) tech adoption, (4) commitment to sustainable outcomes, and (5) bringing new processes of management, are explored in this case, offering potential ways to fill the gaps in the traditional public sector approaches and imaginations for service delivery in the country.

This case explores how alternate forms of governance may be emerging in India that could potentially indicate an ongoing transformational change in the development trajectory for the country. This case is written to explore the leadership role played within the organisation and by it, towards improving developmental outcomes and building disaster risk resilience as a co-benefit.

*Note to readers: This case should be read alongside the film 'the last mile'. The case is written primarily for teaching and learning purposes and must not be quoted as facts. The views are entirely of the case authors, and cannot be construed as those of Boond, Indian Institute of Human Settlements (IIHS), George Washington University (GWU) or any other agency involved.*

## II. Case Write-up

### **The triggers**

Rustam Sengupta, a 25-year-old engineer previously an investment banker in the US and Singapore, who was finishing his MBA at the European Institute of Business Administration (INSEAD), came to India in 2008 as part of a course on building social ventures. He knew there were serious developmental issues that he felt the need to work on, but he wasn't yet sure of what to focus on. He also wasn't convinced by the idea of starting an NGO dependent on aids and grants which may not be self-sustaining. He went back to completing his MBA but continued thinking about what he could do after graduating. In March 2010, he came back to India, to stay in his village, Paushi in East Medinipur, for three months talking to people about what they needed most. He realized that underlying all their stated needs—education, health, livelihood opportunities etc.—could really be one thing: access to electricity.

Several villages in the district had no electricity. Those who did, suffered from erratic supply. Due to old and unkempt infrastructure there had been several instances of fire making people afraid of traditional electricity systems further. Most households, therefore, used kerosene lamps for light. The use of kerosene lamps also often led to fires, and children and women, particularly the ones who stayed home more, constantly inhaled soot from these lamps. Children weren't able to study comfortably or for long hours after sunset due to poor lighting. Healthcare services were also severely affected due to the lack of electricity. Rustam saw energy as 'an alternative to giving cash' to the poor and marginalized—he imagined multiple co-benefits coming out from energy access, and people getting a chance and choice to explore their full potential and therefore, setup an organization for providing energy.

Solar energy seemed an obvious choice—it was environmentally sustainable, already used by a few houses in his village, and could also be made affordable. He decided to set aside ₹11 lakhs from his own savings as seed capital towards his business, and setup a shop in Paushi village selling solar lamps sourced from Delhi. He also tried selling what he started calling 'Boond Development Kits' which had a solar lamp, a water purifier, mosquito net, three bars of soap and a tube of toothpaste through NGOs in Rajasthan, UP, and Manipur. Following the floods in Ladakh in 2010, he also went there to distribute some of these kits to the people affected. He soon realized that he had spent ₹7 lakhs already with no significant returns. This was the first lesson from a failure. An aid or a subsidized kit of this kind was not going to be sustainable. Besides, people didn't seem to want all these items bundled together. The offering needed to be customized to every household's needs. Despite these failures, he was determined to improve energy access.

### **Founding Boond and taking the first steps**

In October 2010 a breakthrough came with an award of ₹5 lakhs to incorporate the business when his idea won a start-up competition. The Centre for Innovation, Incubation and Entrepreneurship (CIIE), an incubation cell at the Indian Institute of Management Ahmedabad (IIMA), also came forward at the same time with an additional ₹25 lakhs.



Following this support, Rustam found his first major hire as a Chief Operating Officer (CEO) in Tarun Kalra, who was himself a serial entrepreneur having previously worked as a senior IT professional and consultant with agencies like Zee Media. He was tasked with sourcing alliances and operations for what would now be registered as Boond. Boond was registered as a private limited, with an aim of developing a for-profit social enterprise that could be financially self-sustaining. 'Boond [meaning a drop in Hindi] is a metaphor. We believe that every drop of effort to provide energy to every household has a generational effect on the family's quality of life', says Rustam.

By the first quarter of 2011, two angel investors came forward with an additional ₹25 lakhs investment into Boond. Boond received another grant of ₹22,000 in the same year, from a Netherlands-based organization, Mr Keepi Foundation, to be used for providing microloans to poorer households. Although by now Boond had sold over 6000 solar lamps, they recognized that rural consumers needed more than just light. They needed power, just like urban consumers. By now, access to mobile phones, televisions and refrigerators was also common in these villages, but to run them, rural consumers still needed to send batteries to nearby towns regularly for charging. With access to new funds, Boond could now look beyond solar lamps.

Later that year, working with an NGO, Seva Mandir, Boond installed its first solar home system of 40Watt (W) DC power at a flour mill in Kherwara block in Rajasthan. This system, that cost about ₹20,000 could run two CFL bulbs (9W each) and charge a mobile phone. With this partnership, Boond not only found its revenue model, but also its Chief Technical Officer (CTO) in Simran Grover who was at Seva Mandir for a fellowship.

Over time, their solar models evolved and became cheaper—₹8000 for a 20W DC home system or ₹54,000 for a 200W AC system—but still remained unaffordable for an average rural consumer. They approached Regional Rural Banks (RRBs) for support with microloans but that effort failed. Rampant free distribution of solar products by NGOs and the government with no after-sales support had made people cynical and hurt even their credibility.

Their competition also came from organizations like Tata Solar, which have a much wider distribution presence across the country, and their well-established brand and credibility is a big advantage for them in exploring new markets. Then there are also other Chinese brands selling solar products that sometimes are even cheaper. Yet when asked about the competition, Rustam is convinced that 'while there are many models of solar energy operational, there are enough villages to be lit up. Darkness is our biggest competition'.

### **Finding feet**

In 2012, Rustam approached Harish Hande from Solar Electric Light Company (SELCO), a well-established sustainable energy provider in India, to mentor them. Hande incubated Boond, and offered them training on technology, systems, and financial management. He also continues to be on the Board of Directors (when the case was written in 2018).

CRESONIX, a trademark of Emsys, a Bengaluru-based solar electronics manufacturing company, were brought on as technical partners for setting up DC and AC off-grid systems.

Over time, other global leaders—Fortum, in the space of renewable energy and Futurize IT services, both based out of Finland—were also brought on as partners. The commitment to develop cutting-edge, innovative, and sustainable energy systems was central. The idea to reduce long-term operations and management costs came from a more practical need to develop remote systems for managing these grids using the help of these partners.

In 2013, Boond received ₹30 lakhs in funding as an Artha Venture Challenge finalist, and ₹60 lakhs from another round of angel investors.

Meanwhile, Boond still needed a geographical locus. While they continued working with their existing network of partners in Rajasthan, they had to find a more demanding market. Public data (including 2011 Census) corroborated that in India, Uttar Pradesh (UP), Bihar, Jharkhand and Chhattisgarh were among those states with least electricity access. The choice of location to start working in could still not be determined. They needed the right local networks, partners and opportunities.

Rustam had a classmate and friend named Sumit Tandon, whose mother, Annu Tandon happened to be a former MP and social worker from Unnao district in UP. The district of Unnao in UP had over 81 per cent households (over 4.6 lakhs) still dependent on kerosene for their source of light, and only 17 per cent (about 99 thousand) with access to any electricity. In rural Unnao, this difference was even more exaggerated with over 90 per cent households (about 4.3 lakhs) using kerosene and only 8 per cent (about 40 thousand) having access to electricity. Meanwhile, East Medinipur, where Rustam's own village was, being a larger district, also had over 5 lakh households using kerosene as their primary source, but over 5 lakhs (over 48 per cent of households) who had electricity access. The choice became simpler. Of the many villages surrounding Unnao, there were some which were in particular cut-off from the main access, and therefore prioritized for these off-grid systems of electricity generation and distribution. With the association of Annu, Rustam also found Vipin Tripathi—a local from Unnao who was deeply connected with the villagers in the area, having worked there for several years with Annu Tandon's NGO. He was hired as the Unit In Charge for Unnao, with his main focus being building relationships and credibility with the community. With all this support, the work started in Unnao.

After a few years, Rustam also found Kunal Amitabh, who was then working with DESI Power, another solar energy provider working in rural India. He brought with him field experience that Boond needed in their work, meanwhile giving him the opportunity to lead all these field units, support the teams working there as required, and help them scale up over time.

Boond established tie-ups with RRBs like Grameen Bank of Aryavrat in UP, and Baroda Rajasthan Kshetriya Grameen Bank and Mewar Aanchalik Grameen Bank in Rajasthan to help offer 40 per cent of the cost as microloans. They also took support of the 40 per cent subsidy being offered at that time through the Jawaharlal Nehru National Solar Mission by the Government of India's Ministry of New and Renewable Energy Systems. This would leave about 20 per cent to be paid by the households. For poorer households, Boond would also offer an additional microloan using the Mr Keepi Foundation grant received earlier.

Small technical teams were setup in Unnao and Udaipur by hiring locals from the respective districts. They were sent to Bengaluru and other places in the country for training with

CRESONIX, SELCO, and other partner organisations. Another critical team of social mobilisers was also setup in each of the two units. Vipin headed this team in Unnao. Their job was to find what people needed locally, and were willing to pay for, but more importantly, to build recognition and credibility for Boond's work.

### **Off-grids off the ground**

Boond's promise to the people was to provide reliable, affordable, and safe energy 24 hours a day. It started with offering individual solar home systems to those who could afford it but in poorer villages a shared 'picogrid' or 'microgrid' system was favored. A pico grid setup connects 3-8 houses to one central unit of energy production and distribution system. This system was more useful also in extremely small and disconnected villages in Udaipur's hilly terrain, where one village had no more than 10 houses. For more populated villages, like those in Unnao, a microgrid that could connect between 25-40 households to one grid was going to be more cost effective.

#### **BOX 1: The off-grid model**

**Gathering demand:** The social mobilisers went from village to village to shortlist the ones where there was some acceptance of the idea for installing solar off-grids. They would then work closely with the village panchayats to have a minimum of 3 houses in case of picogrids and 24 houses in case of microgrids (required to make the systems cost-effective) to agree to pay for electricity from an off-grid solar system.

**Finding an owner:** The next challenge was to find a space for the physical infrastructure required for the off-grid system. The solar panels needed a flat roof, which very few households had. They needed a lockable room where the system could be installed, and batteries and inverters could be kept. But most importantly they needed someone who could take charge of the system and protect it from mishandling and theft. While the first two requirements could be met by installing the system at a public location like a village panchayat's office, the third condition, and possibly the most critical for the long-term sustainability of the system, could suffer from 'the problem of the commons'. They decided instead to install these systems at a villager's house who was well-respected in the village, had some inclination of doing social service, and was relatively better off, and had a flat roofed house. (Some people had previously received funding from the central or state housing schemes like Indira Awaas Yojna to build brick and mortar houses with concrete roofs). These individuals were recruited and were now called village entrepreneurs. By design, they were not offered any compensation for providing their roofs and the additional room, as any compensation would run the risk of either being insufficient or creating a social rift in the village, which Boond remained cognizant of. These village entrepreneurs did so with a belief that it was for 'the well-being of their fellow villagers and development of their village'.

**Smart central stations:** Working with their Finnish partners, Boond installed smart central units for each microgrid that could monitor and transmit live information on the energy generated and consumed, battery capacity, voltage levels, individual connection consumption etc. These systems were connected via Wi-Fi and could be accessed remotely

and controlled (turning on or off the system or individual consumer's connections) from anywhere with Internet connectivity using a dedicated cloud-based application.

Pay as you go: Boond recognized that household-level needs and abilities to pay varied dramatically even within a village. Additionally, there was a prevalent history in the energy sector in the country of poor metering, billing and payment collection systems, which they wanted to avoid. Instead, they innovated and introduced a Bluetooth-based USB device that would plug into the home unit. Users would bring these to the central unit for checking their account balance and recharging them with any denominations that they could afford. The electricity they received would be based on this prepaid amount. The village entrepreneurs were also given the task of collecting the money from the villagers and recharging their pay-as-you go USB sticks. As a sign of appreciation Boond, offered them 20 per cent free electricity based on the charges they collected in a month.

### **Using research-based evidence**

Boond took support of various research and academic institutions to help them understand their impact better and to find more grounded reasons for their project designs.

Before starting to set up the microgrids, the social mobilisers team went across all the villages conducting social surveys to assess their willingness to setup these off-grid systems Boond and their partners, Fortum and Futurece, had to offer. They identified three villages in Unnao—Salhe Pur Purwa, Ichhauli, and Methi Tikur (Chakalwansi)—to start their first pilot called Solar2Go. The consortium partnered with the Initiative for Sustainable Energy Policy (ISEP) to conduct a detailed baseline survey of these three villages and three more as a control group, to assess 'this [intervention] from the perspective of its impact potential and to understand the direct and indirect benefits to the consumers through electrification by solar microgrids with intelligent metering'.

They would conduct the end line survey after a few months on the same villages to assess: (1) the savings on kerosene expenditure, mobile-charging costs and increase in family savings, (2) improvements in business productivity, (3) perception/quantity of time devoted/quality of education, (4) improvements in healthcare seen resulting in fewer doctor visits, (5) any increase in use of appliances, (6) change in the use of Internet, (7) improvements in safety, especially for women, (8) decrease in the incidence (or perception of incidence) of fires or other destruction, and (8) increase in social activities. This evidence would help Boond assess the impact it is making, and course correct if and as required.

The live information collected on consumption patterns from the smart central units is also analyzed on a regular basis which then informs Boond about their scaling strategy within a village, helps them design their offers and plans for other neighboring villages.

## **BOX 2: Playing games**

One of the challenges Boond faced initially was villagers' unwillingness to pay for a system they didn't trust, for something they had lived without all these years, especially from a company they didn't know. It took a lot of motivational and behavior-changing work to get them to see the value in electricity. They started with setting up one system at a time. Then, slowly by word-of-mouth people found out across neighboring villages that Boond was indeed offering what they had promised—reliable electricity—using high-quality products. That Boond was here to stay and not run away like others in the past had. But this was only the first step. Boond was still running this system in significant deficits. Villagers' consumption of electricity was still extremely low. To scale up, Boond needed people to use more electricity per connection. It wasn't clear how much the villagers valued this electricity, or if they would be willing to pay more for it, or if they would in fact increase their consumption if the electricity was free or cheaper.

They partnered with a research team from New York University (NYU) to develop an economic-model-based game to help them understand this better. In one game for instance, 12 winners are picked out of a lottery from a pool of 30 households in a village who are their customers. Each is assigned a number between 1-30 and there is a bag with balls numbered between 1-30. A child then picks out three balls in a way that everyone can see, and these three are given unlimited electricity for free for the month. The next three customers picked are given 75 per cent discount (i.e. 75 per cent more electricity than they had paid for), the three after are given 50 percent discount and the last three are given 25 per cent discount. While discounts are just a way to make consumers believe it was their luck, it gives the researchers a way to assess what people's abilities are to consume electricity and gauge the possibility of behavior change if the electricity was made free or cheaper for a substantial period of time.

Then they play the bidding game. They go back to the same households, this time tell them that they now have to pay for the electricity they received free last month, but they have a chance to pay less for it. They carry a bag with 20 balls with numbers between 0-300. The rule of the game requires the customer to say a number they are willing to pay for that electricity between 0-400 and if they pick a ball that is less than that number, they would only have to pay that much, else they would have to pay the amount they quoted. E.g. if they say 100, and they end up picking a ball that reads 75, they would only have to pay 75 for the electricity they used last month, but if the ball reads 200, they would still need to pay 100 for it. In the big picture, this helps assess their willingness to pay for the electricity they have now used for a month.

Similarly, there are other lotteries where meters are upgraded from 30W to 60W, people are given AC low energy-consuming fans, and in some cases also new meters of 20W. All these games offered insights into people's patterns of consumption, and changes in consumption behavior with price changes. These games gave them the insight that people were, on average, willing to pay between ₹100-150 for a unit of electricity in most of these villages. This maybe a much higher rate per unit as compared to what people pay in urban

areas, but owing to overall low consumption, the expense per household would still remain as low at ₹100-120 per month.

There were other social insights that came while playing these games that helped them understand their customers better. For instance, older people were more reluctant to use this system, had less trust in it, and their consumption also changed much less, as compared to younger people. Women lacked confidence and would depend on their husbands or educated children to make the paying price decisions.

The sales team has also experimented by mentioning to their customers that they may have to end the service and go away once government connection became available, but people insist that they stay because they did not trust the public supply of electricity as much as they did trust Boond. In many villages where they have received public supply over the years, consumers still keep the Boond connection.

## Impact

Boond remains 'product agnostic, technology specific' (for instance, they would make multiple solar energy-based systems but not manufacture biomass energy which uses a different 'fuel' to generate energy). It offers a wide range of solar products including solar home lighting solutions, solar street lighting solutions, solar UPS and inverter solutions, solar water pumps, solar rooftop systems, solar microgrids, and solar water heaters, as and when there is a need.

Since its inception in 2010, Boond has managed to provide electricity to over 10,500 households affecting over 50,000 people across UP, Rajasthan, Delhi and other states. It has a team of over 40 people, most of whom are locals employed and based in their field units in Unnao and Udaipur. They have installed over 21 off-grids, over 2000 home systems, and 8000 other smaller solar units.

Besides providing energy to households, Boond has actively been working with many other social aspects including education, livelihoods, healthcare, and other needs of the underserved communities. In partnership with Mr Keepi Foundation, Boond's Light for Education (LFE) Programme aims at improving quality of education in rural schools. They support some schools with a small solar unit and rechargeable lamps (so far for Class 10 students) who can then take these homes and use them while studying after sunset. The students' families also tend to use these for their household needs such as cooking etc. These lamps are also provided with one charging point that their families can use to charge their phones on. Students bring these backs to the school to be recharged, and once they graduate, the next batch inherits these lamps. As part of the Digital Education Programme, they are also developing audio-video teaching aids for these schools that they can run using solar-powered projectors provided by Boond. Following the famous Sugata Mitra's concept of Hole in the Wall<sup>1</sup>, Boond has also been placing solar-powered computers in accessible locations in many

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<sup>1</sup> [https://www.ted.com/talks/sugata\\_mitra\\_shows\\_how\\_kids\\_teach\\_themselves?language=en](https://www.ted.com/talks/sugata_mitra_shows_how_kids_teach_themselves?language=en) : Accessed on 25 December 2018

villages for community use, especially kids, giving them the opportunity to catalyze their learning.

Boond has also provided electricity to more than 300 milk collection centers in the villages of Unnao. Working in collaboration with the local milk cooperative, Boond engineered custom solutions to power quality control instruments at various collection centers. Supply chain has become more efficient, quality control has improved, and since there is no middle person involved, the cost has reduced, and the profits are directly received by the milk sellers.

The company, in collaboration with SELCO, also plans to introduce solar-powered *sari* looms and mills for weavers in Varanasi, a city which is renowned worldwide for the artistic skills of its traditional handloom weavers. The company would be offering two models of solar systems and has tied up with banks to finance its products and also plans to offer a community model where a self-help group (SHG) owns a power loom and each member has to pay a monthly charge for using the community power loom. Boond also aims to provide uninterrupted energy access to rural healthcare centers. They have partnered with grass root organizations like Karma Healthcare and Aajeevika Bureau and are trying to understand the correlation between energy access and quality of healthcare services delivered.

In 2014, Boond received ₹1.7 crore from Milan-based Opes Impact who fund early-stage social entrepreneurs. According to this organization's Executive President Elena Casolari, they decided to invest in Boond not only because it is a promising solar energy enterprise, but also because it was a unique social enterprise with an effective social impact model where the energy poor are seen as asset creators.

### **BOX 3: Empowering inside**

A technical team was installing a microgrid in a village named Salepur Purva, when they asked a villager for some water to drink. They instantly realized that that water was murky as the water quality was bad. They collected a sample of water and had it tested for quality. Sure enough, the findings directed towards some leaching in the ground water, potentially from the leather industry close by. They took the idea to their seniors in the management office to install a solar energy run water purification system. Boond went ahead with installing a small solar-based water reverse osmosis (RO) system and are currently distributing clean water for free in the village through one public tap. They are noting what the consumption patterns are, before augmenting the supply. People, although initially unmoved by this offering, are now recognizing the value of good quality water. Although it is free, people seem to only get enough water for drinking and cooking from this tap, while continuing to use their ground water supply for all other household needs like washing and cleaning.

### **Empowering outside**

Phoolan Devi is a resident of a completely disconnected village Aath. She is illiterate, with a difficult history of multiple migrations until she reached Unnao from West Bengal. She is well-respected in her village, for all the work she does as a member of the Mahila Mandal. Since she has been recruited as the village entrepreneur by Boond, she has gone on to take

complete charge of the system. She has not only learnt how to operate the machines, she has developed her own instincts of when to turn the machine on or off depending on the weather. She notes every payment that the villagers make, goes out of her way to convince people to buy more electricity for their own good, and reports to Boond office on a regular basis.

### **The 'for-profit'**

In parallel to its social impact work, Boond has also been providing big commercial rooftop solar energy systems across the country. Some of their big installations include the 100kW system at Freyer Energy, with about ₹1.2 crore (Cr) value (whereas the value of all their microgrids in UP is comparable at about ₹1.6 Cr total). They have installed these commercial systems for many clients including Jesus and Mary College in New Delhi, Amazon Development Centre in Noida and Gurgaon, several set-ups for Selco Foundation across the country, as well as many other individuals. Their total turnover in the financial year 2016 was ₹5.33 Cr, of which total sales in the social impact business was ₹3.58 Cr. They just broke even that year.

To make the social sector financially viable, there needs to be greater energy consumption per connection, which is currently a demand-side limitation. Scaling up by adding more villages and households at this point may not be economically viable, unless their operations are currently cross-subsidized by their commercial work. The government subsidy programme that they took support of, was also stopped in 2014. Moreover, in their initial years of functioning, they invested a bulk of the money raised through grants and investments, into building the physical infrastructure, and kept basic amounts for everyday operations and management. Even though they have kept their costs at unit offices at the minimum, running a unit without interruption for at least 10 years to ensure its sustainability was becoming more unviable with the revenue generated per unit, and without substantial savings. There was a serious need to reflect and recourse.

### **Rustam steps down**

To add to the financial challenges, in 2016, Rustam had to move to Canada for personal reasons, and by now had also recognized that Boond needed someone who would be more financially astute. Rustam had met Bhaskar Palit, a private entrepreneur from Kolkata, as a donor, during the early years of Boond's work. Although they had stayed in touch since 2010, Bhaskar, not being from the field of energy, could only provide limited inputs from outside. At this point in the journey of Boond, it had become pertinent to bring someone like Bhaskar to take charge. He finally agreed to come over to Delhi and take charge of Boond as its Managing Director to relook at the model of Boond and take it forward from there. Rustam would stay on the Board of Directors, and help with the outreach work of the company, but the need for new leadership was felt as was the need to ensure Boond's sustenance.



## **What could Boond's future sustainable model be?**

Knowing well the two portfolios of work that Boond had—the social impact and the commercial venture—Bhaskar recognized that it was unclear how the outside world perceived them. This was hampering their market demand, brand, and outreach.

As soon as he took charge, Bhaskar went to the villages where Boond had been working all these years and was instantly convinced by the social impact that it was making to the lives of so many. Yet, he recognized the lacunae in its financial model. The first steps he took to mitigate some of it immediately, was to invest some of his own money and other equity raised, in an endowment fund. This fund would ensure the functioning of the current Boond liabilities (running the offices, paying salaries etc.) for at least 8-10 years. However, with growth over time, these liabilities were also likely to grow, so he needed to take another major decision. There were two options ahead of him.

### *Option 1: Restructure as two separate entities— Boond Solar and Boond Foundation*

One option was to split the functioning of Boond into two separate entities—Boond Solar (as a for-profit private limited company) and Boond Foundation (a not-for profit company under the Indian Trust Act). The former would focus on the commercial work they were doing and conduct their outreach accordingly. The latter would continue to do the social impact work and raise grants and aid to support the self-paying revenue model. This would require a complete rebranding of Boond, and he was aware that this could also affect the current image of Boond built over the years.

### *Option 2: Retain the composite for-profit social enterprise structure*

The second option was to keep the organization and its functioning as is but focus entirely on building out this endowment fund. They would have to follow a lean methodology such that the liabilities don't grow over time. This might require them to have stricter profit and loss targets for all units, but he was unsure if these markets were ready to grow.

The next steps for Boond remain open, and the case opens the questions on which model could be more sustainable for an organization like Boond, and what possible future courses it could take to ensure its own sustainability while upholding its values of achieving energy access

## Handout 1: India's energy crisis

According to the World Bank's SEAR 2017, India tops the list of countries with the world's largest electricity access deficit and is alone responsible for a little less than one-third of the global deficit (270 million of the 1.06 billion people)<sup>2</sup>. These households across the country still live without electricity, excluded<sup>3</sup> from the development trajectory that the rest of the country is experiencing. Besides, such households have no other option but to depend on expensive, unhealthy, and potentially dangerous kerosene oil to meet their lighting needs.

In most cases, either the basic energy infrastructure is lacking, or when that exists, electricity supply remains irregular. Further, due to poor tariff collection systems, the households receiving electricity from the grid are faced with bulk charges which they cannot afford. All leading to one thing—darkness.

The central government continues to see this gap as a service provision challenge, to be dealt with a linear process of production, distribution, and consumption<sup>4</sup>. It maintains its international policy stance that India would not achieve its Intended Nationally Determined Contribution (INDC) without huge infusions of financial assistance. Apart from continuing to remain largely fossil fuel dependent, the bulk of investments are being made on large scale energy production systems (both renewable and thermal)<sup>5</sup> feeding into the grid serving populated regions. Meanwhile, the disconnected small hamlets and villages continue to remain outside the view of such provisions, and off-grid renewable energy systems are seen as short-term<sup>6</sup> alternatives for them.

In such a scenario, when the public provisions are failing these people, there are other actors jumping in to fill the gaps. There are many NGOs as well as CSR funded private actors aiding the needed energy provisions with one-time grant money, but they too fail on counts of sustainability, long-term operations, and management of these service intensive provisions.

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<sup>2</sup> World Bank (2017). *State of Electricity Access Report 2017*. [Online] Accessed at <http://documents.worldbank.org/curated/en/364571494517675149/pdf/114841-REVISED-JUNE12-FINAL-SEAR-web-REV-optimized.pdf>.

<sup>3</sup> Khandker, Shahidur R., Samad, Hussain A., Ali, Rubaba, Barnes, Douglas F. (2012) *Who Benefits Most from Rural Electrification*. The World Bank policy research working paper 6095. Available at: <http://documents.worldbank.org/curated/en/374171468331748897/pdf/WPS6095.pdf>.

<sup>4</sup> Ebinger, Charles K. (2016), *India's energy and climate policy (policy brief 16-01)*. Retrieved from: [https://www.brookings.edu/wp-content/uploads/2016/07/india\\_energy\\_climate\\_policy\\_ebinger.pdf](https://www.brookings.edu/wp-content/uploads/2016/07/india_energy_climate_policy_ebinger.pdf).

<sup>5</sup> Adani Solar (2016). *Adani unveils the world's largest solar power plant in Tamil Nadu and dedicates it to the nation* [Press Release]. Retrieved from: <http://www.adanisolar.com/power-plant-in-tamil-nadu.html>

<sup>6</sup> Government of India. Niti Ayog (2017). Draft National Energy Policy. Retrieved from: [http://niti.gov.in/writereaddata/files/new\\_initiatives/NEP-ID\\_27.06.2017.pdf](http://niti.gov.in/writereaddata/files/new_initiatives/NEP-ID_27.06.2017.pdf).

## III. Exhibits

### Exhibit 1: Timeline of Boond

Year	Milestone
<b>2010</b>	Year of incorporation as Boond Engineering and Development Pvt Ltd Incubation grant by IIMA-CIIE Winner of Economic Times-Power of Ideas Award
<b>2011</b>	Investment by 2 angel investors Winner of UN Foundation Award; first solar home lighting system installed at a flour mill Worked for Ladakh Relief providing solar solution to over 1000 families
<b>2012</b>	Partnership with leading rural banks in UP and Rajasthan
<b>2013</b>	Implemented 400 solar milk collection centers + 5 offices setup
<b>2014</b>	Received series A equity investment from Opes Impact Fund, Artha Initiative and Sumantra Roy Implemented first of its kind prepaid microgrid Winner of Echoing Green Climate Change Fellowship (US)
<b>2015</b>	Partnership with Finnish Co. for solar concentrator Received second tranche of series A investment of ₹1.25Cr Over 20,000 households electrified plus Research Partnership with Columbia University (USA) & Aalto Univ. (Finland) Won Packard Foundation partnership for developing microgrid system
<b>2016</b>	Won Packard Foundation partnership for developing Micro grid system (USD 250,000) Patented Boond's innovative dynamic pricing based prepaid model Won, US Millennium Alliance Grant USD 100,000 Won WWF Climate Solver Award
<b>2017</b>	Won allocation under SECI for 3.2 MW across six states in India
<b>2018</b>	Got top 50 most influential Solar Leaders Award at World CSR Day Partnered with Fortum, Cresonix and Futurice to implement 3 nos of AC Microgrid in Unnao District of UP Rustam steps down as the CEO, but continues to be on the Board of Directors Bhaskar Palit joins as the Managing director

**Exhibit 2: Boond impact and locations (as of December 2018)**

Metric	India (Total)	Delhi NCR	Rajasthan*	UP**	Uttra - khand	Himachal Pradesh	Punjab	Chhatis-garh
Households (MGs & SHLS only)	10702	3,924	2,857	3,921				
Team	38	20	8	10				
Pico/ Micro Grid	36	0	8	28				
Wattage	39,61,550	7,88,736	6,03,319	3,46,495	13,53,000	95,000	25,000	7,50,000
Population Reach (For MGs & SHLS only)	53,510	19,620	14,890	19,705				
Small Solar Systems	7,955	3,734	1,022	3,199				
Home Systems	2,696	176	2,172	348				
Commercial/ Industrial System	181	37	45	29	60	8	1	1

*\*Rajasthan – mostly solar home lighting solutions (SHLS) across Udaipur, Ramganjmandi, Bundi, Patan, Sawai Madhopur, Barapal, Gogunda, Tidi, Barmer*

*\*\*UP – mostly microgrids across Unnao, Aira Bhadyar, Chakravanshi, Sumerpur, Hardoi, Mathura*

### Exhibit 3: Promoter details, profile of directors and key partners

#### Promoters

No.	Promoter Name	Share/Equity stake*
1	Mr Rustam Sengupta	38.65%
2	Fondazione Onlus	26.56%
3	CIIE-IIMA	5.5%
4	Other investors	25.99%
5	Mr Tarun Karla	1.49%
6	Mr Simran Singh	1.49%
7	Other individuals	0.32%

\*As on 31 March 2016

No.	Promoter Name	Share/Equity Stake**
1	Mr. Bhaskar Palit	89.98%
2	Mr Rustam Sengupta	4.09%
3	Mr. Ceaser Sengupta	2.82%
4	Mr. Sumantra Roy	1.56%
5	CIIE- IIM Ahmedabad	1.48%
7	Other individuals	0.07%

\*\*As on March 2018

#### Supplier Profile

Supplier	Key raw material	As % of total	Years of association
<b>Goldi Green Technologies Pvt Ltd.</b>	Solar panels	100	3
<b>Artheon Electronics Pvt Ltd</b>	Batteries	100	3
<b>Statcon Energiaa Pvt Ltd</b>	Solar inverters	100	2
<b>Emsys Electronics Pvt Ltd</b>	Charge controllers and LED bulbs	100	3
<b>Supreame And Co.</b>	Pole, Microgrid equipment	100	3

The company has tie-ups with RRBs including Baroda Rajasthan Keshtriya Grameen Bank, Rajasthan Marudhara Grameen Bank, Mewar Aanchalik Grameen Bank, Hadoti Kshetriya Grameen Bank and Grameen Bank of Aryavart for financing solar projects.

### Operations and maintenance capability

O&M system	Through own personnel
<b>O&amp;M team numbers</b>	22 (installation cum O&M team) out of 41 total employees
<b>Geographical reach</b>	The company has 2-3 member teams based in its 9 branch offices at Udaipur, Sawai Madhopur, Ramganji Mandi, Bundi and Patan in Rajasthan and Unnao, Chakravanshi, Aira Bhadyar and Sumerpur in UP
<b>Details of service agents</b>	The company trains locals as service agents
<b>O&amp;M records</b>	Automated
<b>Turnaround time</b>	24 hours
<b>AMC policy</b>	The company offers a warranty of 2 years with its products and charges 3-4% of order value for Annual Maintenance Contracts.

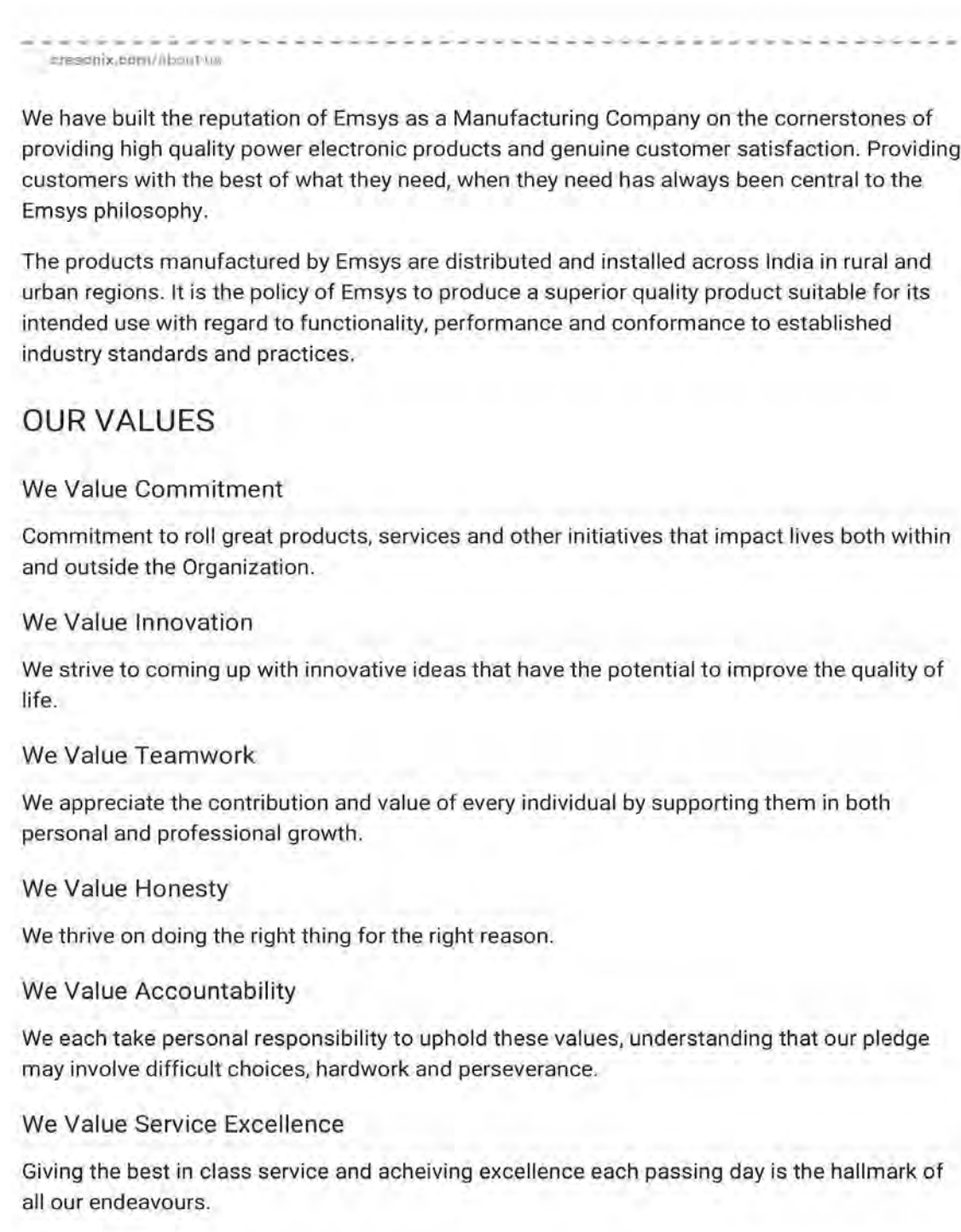
### Exhibit 4: Boond's Financial Performance

No.	Particulars (as of 31 Mar Financial Year End)	2015	2016	2017	2018
<b>I</b>	<b>EQUITY AND LIABILITIES</b>	<b>197,07,212</b>	<b>442,22,510</b>	<b>420,88,876</b>	<b>843,49,123</b>
a	<i>Shareholder's funds</i>				
	Share Capital	18,19,830	31,34,930	31,34,930	31,34,930
	Reserves and Surplus	128,27,349	244,05,715	245,04,519	248,55,429
b	<i>Non-current liabilities</i>				
	Long-term borrowings	4,12,213	2,73,950	57,80,349	96,99,178
	Deferred tax liability	-	14,69,826	18,78,009	19,07,985
c	<i>Current liabilities</i>				
	Short term borrowings	19,53,857	23,39,438	42,55,756	-
	Trade payables	21,10,872	86,24,187	16,34,052	355,52,770
	Other current liabilities	1,93,630	21,00,038	3,95,334	91,98,831

No.	Particulars (as of 31 Mar Financial Year End)	2015	2016	2017	2018
	Short-term provisions	3,89,461	18,74,426	5,05,927	-
II	<b>ASSETS</b>	<b>197,07,212</b>	<b>442,22,510</b>	<b>420,88,877</b>	<b>843,49,123</b>
a	<i>Non-current assets</i>				
	Fixed assets				
	Tangible assets	2,47,985	101,98,853	73,29,981	118,20,226
	Intangible assets	3,48,790	6,51,841	5,31,632	4,35,469
	Deferred tax assets (net)	45,152	-	-	-
	Long-term loans and advances	4,31,745	7,37,700	7,79,509	17,13,423
b	<i>Current Assets</i>				
	Current Investments	-	203,46,683	140,20,019	32,36,047
	Inventories	6,26,849	25,16,017	63,09,024	118,39,183
	Trade receivables	103,96,526	68,88,897	116,68,792	443,61,534
	Cash and cash equivalents	62,62,861	18,85,385	4,78,092	5,11,255
	Short-term loans and advances	13,47,304	9,97,134	9,71,828	104,31,986
III	<b>REVENUE</b>	<b>260,90,984</b>	<b>533,76,204</b>	<b>324,94,384</b>	<b>842,92,557</b>
a	Revenue from operations	246,31,354	518,81,624	273,60,200	805,25,298
b	Other income	14,59,630	14,94,580	51,34,184	37,67,259
IV	<b>EXPENSES</b>	<b>259,20,878</b>	<b>509,88,178</b>	<b>319,87,397</b>	<b>839,11,671</b>
	Cost of materials consumed	163,98,443	290,92,686	107,49,875	527,15,361
	Employee benefits expense	51,43,240	89,79,503	103,74,022	140,21,508
	Finance costs	48,176	2,11,237	7,55,399	10,80,865
	Depreciation & amortization	93,803	2,77,287	34,65,582	37,62,385
	Other expenses	42,37,216	120,59,512	66,42,519	123,31,552
	Prior Expenses	-	3,67,953	-	
V	<b>PROFIT (/LOSS) BEFORE TAX</b>	<b>1,70,106</b>	<b>23,88,026</b>	<b>5,06,987</b>	<b>3,80,886</b>
VI	<b>TAX EXPENSE</b>	<b>580</b>	<b>19,94,323</b>	<b>4,08,183</b>	<b>29,976</b>

No.	Particulars (as of 31 Mar Financial Year End)	2015	2016	2017	2018
a	Current Tax	-	4,78,765	-	-
b	Deferred Tax	580	15,15,558	4,08,183	29,976
VII	<b>PROFIT (/LOSS) AFTER TAX</b>	<b>1,69,526</b>	<b>3,93,703</b>	<b>98,804</b>	<b>3,50,910</b>

## Exhibit 5: About CRESONIX (Boond's technical partners)





## OUR VISION

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TO USE OUR PIONEERING SPIRIT TO  
DELIVER PRODUCTS THAT IMPROVE  
THE QUALITY OF LIFE

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## About IIHS

The Indian Institute for Human Settlements (IIHS) is a national education institution committed to the equitable, sustainable and efficient transformation of Indian settlements. IIHS aims to establish an independent funded and managed National University for Research and Innovation focused on the multi-sectoral and multi-dimensional challenges and opportunities of urbanization. The University is intended to be a globally ranked institution. The IIHS is a proposed network of mother and daughter institutions across South Asia, leveraging on the local and regional knowledge and innovation and linking them to global best practices. Its mother campus, based in Bengaluru, will include academic, research and social infrastructure, student and faculty housing. This campus is expected to set international standards for efficient, economic and sustainable design, operations and maintenance.





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