

solshare<sup>®</sup>

2020

ANNUAL REPORT





## FREQUENTLY USED TERMS

**SOLgrid:** A peer-to-peer (P2P) solar micro-grid, that physically interconnects households and microbusinesses with and without solar home systems enabling real-time energy exchange.

**SOLbazaar:** An IoT-driven energy exchange platform. It stands on its three pillars: the **SOLbox**, the **SOLapp**, and the **SOLweb**.

**SOLbox:** A machine-to-machine (M2M) enabled integrated direct current bidirectional power smart meter that is the point of interconnection within the peer-to-peer (P2P) network.

**SOLapp:** Manages customer portfolios taking user information and payment details into account.

**SOLweb:** All the information is gathered and analyzed to understand system paradigms and irregularities.

**Swarm Electrification:** Similar to a swarm of bees, the concept of swarm electrification refers to a swarm of electrons. The more houses that are interconnected, the stronger the swarm becomes, there is more energy, which equals more power.

**Peer-to-peer microgrids:** The grid which connects users with SHS and without SHS.

**Prosumer:** The person who owns an SHS (battery and panel), produces and consumes electricity.

**Consumer:** Person who buys electricity, but does not own an SHS.

**Producer:** An entrepreneur who owns an SHS and is a net-seller of electricity.

**Microutility:** A person who sells electricity from an SHS that is owned by the operator.

**Beneficiaries:** Everyone who is benefited from the electricity produced by the SOLbazaar.

**Microenterprise:** Small businesses that are financed by small loans (microcredit), available to people who have no collateral, credit history, savings, or employment history.

**Rooftop Solar:** Photovoltaic system that has its electricity generating solar panels which are mounted on the rooftop on various infrastructures.

## CAUTIONARY STATEMENT

All statements which refer to future conditions and/or events in this report are forward-looking. Actual future results, including, but not limited to the demand for electricity, changes in production, rates, project plans, costs, capacities, resources available, cash flow generation, the impact of new technology, and its benefits, can differ due to several factors.

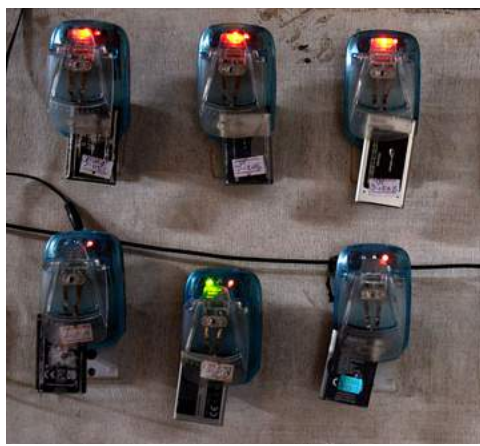
These factors include, but are not limited to local, national, regional, and global changes in raw material prices, market and economy conditions; timely completion of our projects; Changes in the demand of our products and services; in the public health, war, security, political, governmental regulation scenarios; Unexpected developments in technology, economy, political sanctions and regulations, and research. Every future statement has been based on management's knowledge and expectations.

## ABBREVIATIONS

**SHS:** Solar Home System; **P2P:** Peer-to-Peer; **PAYG:** Pay As You Go; **B2B:** Business to Business; **PO:** Partner Organization; **SME:** Small and Medium Enterprises; **M2M:** Machine to Machine; **SAM:** SOLshare Area Manager; **R&D:** Research and Development. **EV:** Electric Vehicle.

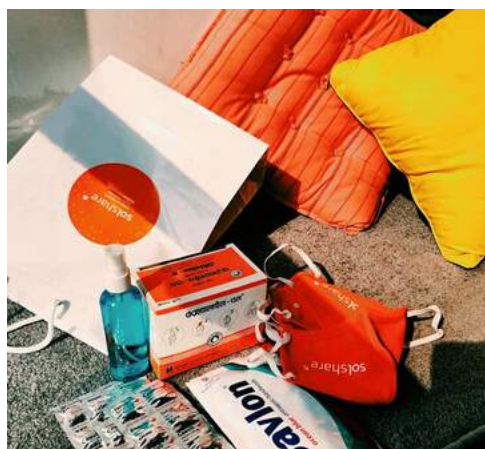
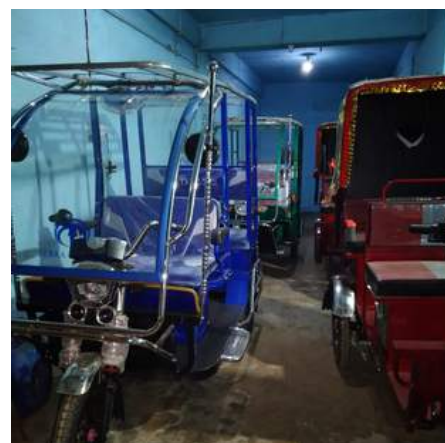


# TABLE OF CONTENTS



5	Message from The Managing Director
7	SOLgrid Highlights In The Year 2020
9	Carbon Emission Data
11	Our Impact Till Date
13	About SOLshare
14	Timeline
15	Mission & Vision
17	Values
18	Competitive Advantage
19	The Need, Limitations & Opportunity
21	The SOLshare Model
22	2020 Projects

# TABLE OF CONTENTS



User Stories	23
COVID-19 Impact	25
Sustainable Development Goals	27
2020 Divisional Highlights	29
What's Ahead	31
The Board of Directors	35
Top Management, Seed Investors, & Advisory Board	38
Awards	39
Welcoming New Investors	41
Thankyou Note	43
Support Network	44
General Information	45





Message from

## THE MANAGING DIRECTOR

*Dr. Sebastian Groh*

Dear Reader,

I'm really happy to be able to present you with our Annual Report of 2020, a year which I am sure none of us will ever forget that easily – the “Beginning of Corona”.

It has been a test of resilience for us as a company, as well as for our users. The ongoing global health crisis caused by COVID-19 has led to an influx of migrant workers into the country in search of income-generating opportunities, as well as to an exodus of people from the capital whenever new lockdown restrictions are announced.

According to the National Telecom Monitoring Centre (NTMC), the number of mobile users alone who rushed out in a single night at the end of March when the Government of Bangladesh announced a general holiday until further notice was 10million people.

A migrant's social security lies in her village, where she is assured food and accommodation. Overnight, this led to the average household size in our grids doubling from 5 people to 10 people on average in the first half of 2020.

As part of the World Economic Forum's COVID Action Platform, SOLshare has been engaging in various activities throughout the year to ease the adverse impact on our users.

Prominent among those efforts have been under a Covid-19 Project co-financed by DEG from public funds of the German Federal Ministry for Economic Cooperation and Development where we were able to quickly transfer energy subsidies to each of our users' meters and provide community pharmacists with healthcare packages that included special equipment such as electric nebulizers, among other healthcare appliances.

Fast forward through the year and we are extremely proud that amid all the madness, we managed to raise an equity financing round via a SAFE note valued at USD 1.5M. Thank you and a warm welcome to our new Angels, we are excited to have you onboard, including EIT InnoEnergy, our latest institutional investor and one of Europe's largest in the sustainable energy investor landscape.

I wish you much fun in reading chapters ranging from our common fight against climate change, exciting user stories from the ground, an overview of our board to a sneak peek into what we have in store for 2021 (spoiler alert: SOLshare goes e-rickshaw!).

Create a network. Share electricity. Brighten the future



*Dr. Sebastian Groh*

*Managing Director, SOLshare Ltd.*

# SOLGRID HIGHLIGHTS

*in the year 2020*



Total Number of Customers

221

Total Number of Consumers

32



Total Number of Prosumers

189



# SOLGRID HIGHLIGHTS

*in the year 2020*

Total Number of SOLboxes Installed

287



Total Number of Households Covered

111



Total Number of Microenterprises Served

110



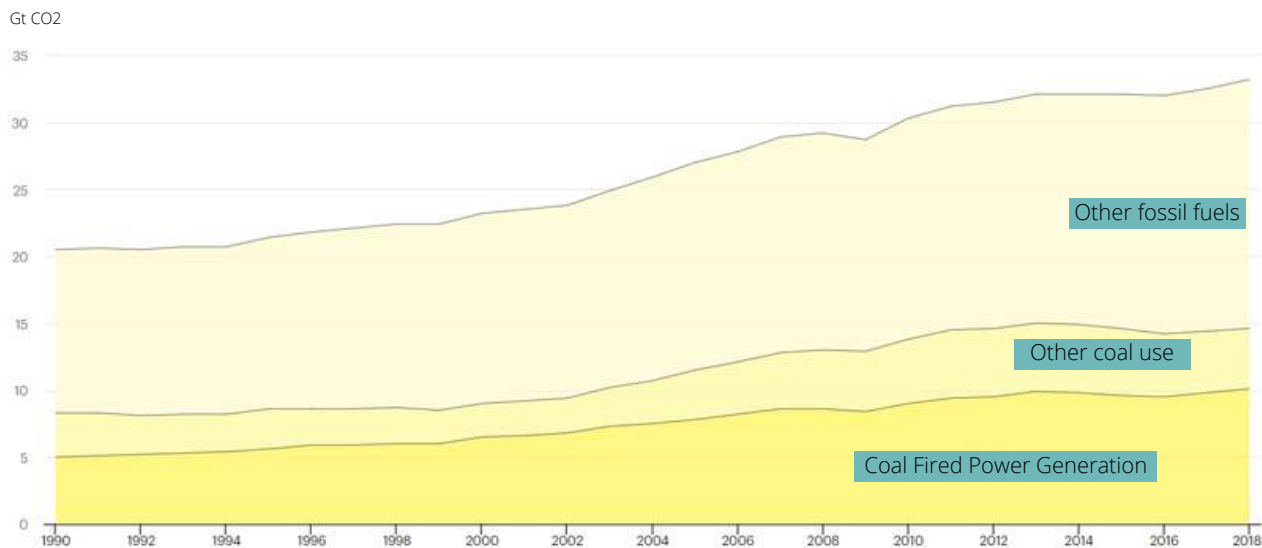
# CARBON EMISSION TIMELINE WORLDWIDE

A quick glance at where the world stands in terms of carbon emissions (graphs seen on the current page and the following page) is a good reminder of the much-needed change in terms of how we source and use our energy.

SOLshare is coming forward with its technology and expertise in a manner that can reduce carbon emissions, and provide an alternate source of energy for all.

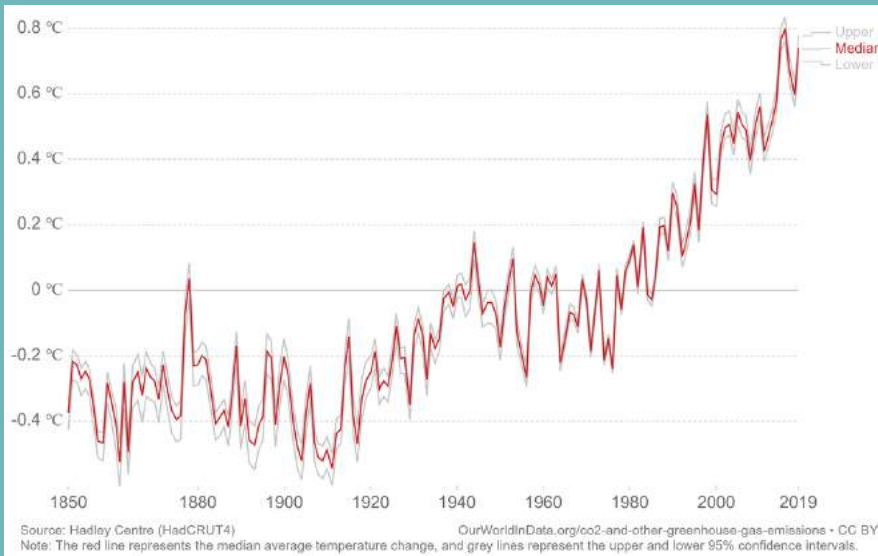
From creating the SOLbox as a means of sharing excess electricity to delving into new markets and technologies such as energy-efficient solutions for EV charging in Bangladesh and ensuring factories across the country have a portion of electricity supplied from solar energy, SOLshare is acting as a catalyst of change for the future.

Until the year 2020, we have reduced **75,000kilograms** of carbon emissions, and in the following year, as we work to install more grids and dive into newer territories, we also aim to reduce carbon emissions further for a greener and cleaner globe.



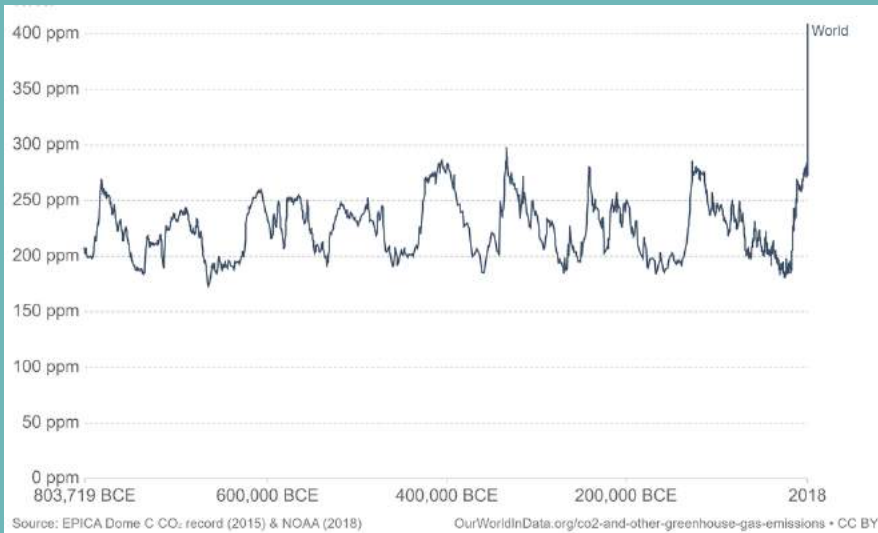
Source: IEA





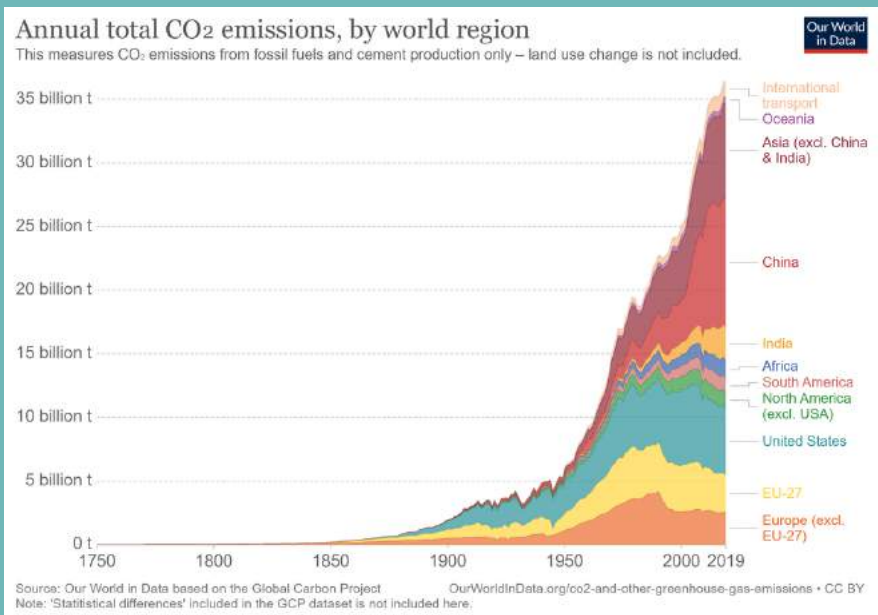
## AVERAGE TEMPERATURE ANOMALY GLOBALLY

Global average land-sea temperature anomaly relative to the 1961-1990 average temperature



## ATMOSPHERIC CO<sub>2</sub> CONCENTRATION

Global average long-term atmospheric concentration of carbon dioxide CO<sub>2</sub>, measured in parts per million (ppm).



## ANNUAL TOTAL CO<sub>2</sub> EMISSIONS BY WORLD REGION

This measures CO<sub>2</sub> emissions from fossil fuels and cement production only-land use change is not included

# OUR IMPACT TILL DATE

829

SOLboxes

38

Operational  
microgrids

75,000

kilograms of  
carbon emissions







# ABOUT THE COMPANY

Founded in 2014, and incorporated in 2015, SOLshare is an ICT-based private enterprise that allows low-income rural households to access sustainable, affordable, and reliable electricity. We have created a revolutionary new approach to bring affordable solar electricity to the energy-poor in remote, rural off-grid communities in Bangladesh, India, and beyond. Through Digitalization, Decentralization, Decarbonization, Democratization, and Disruption, we are paving the way for the future of energy with our disruptive technology by interconnecting individual Solar Home Systems (SHS) in a peer-to-peer energy sharing model.

Bangladesh currently has over **6million** individual Solar Home Systems (SHS), which generate an excess of **30%** energy, summing up to **600,000kWh** of energy per day being wasted. This untapped resource, however, comes at a hefty price tag as people suffering under an energy poverty penalty are forced to pay up to **10 USD/ kWh**. This has led to extreme user behavior from rural villagers who strive to share electricity amongst themselves.

This is where SOLshare's award-winning solution comes in where this excess energy can be traded with peers, allowing users to monetize solar energy in real-time by trading with previously electrified peers, and becoming solar entrepreneurs. This creates a low-cost energy trading and PAYG solution for low-income citizens, who can transform the way they use and pay for clean energy.

Named as the 'Uber' of the off-grid world, SOLshare does not own any Solar Home Systems, but aggregates existing under-utilized assets and provides an ICT platform with metering, distribution, and payment system for the efficient allocation of clean electricity in off-grid areas. The SOLshare peer-to-peer solar electricity trading platform leverages a growing market of more than **5million** SHS (most of them with batteries) through close B2B partnerships with large Bangladeshi SHS providers known as Partner Organizations (POs) who have experience in financing and distributing SHSs, as well as providing technical training and after-sales services to rural households and SMEs.





# TIMELINE

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**2014**

**Opened first office and lab in Dhaka City**

**2015**

**Completed the Shariatpur pilot grid system, the first of its kind! The official Incorporation Certificate was received.**

**2016**

**UNFCCC Climate Award at COP22**

**2017**

**8 solar ICT enabled P2P grids installed by Q1. Seed Funding raised through angel investors: USD 385K**

**2018**

**UNDESA grant to implement 100 grids. Raised Series A funding of USD 1.64m. World's Best Energy Startup, Free Electrons.**

**Installed 2 solar P2P grids in India**

**2019**

**25 solar ICT enabled P2P grids Installed**

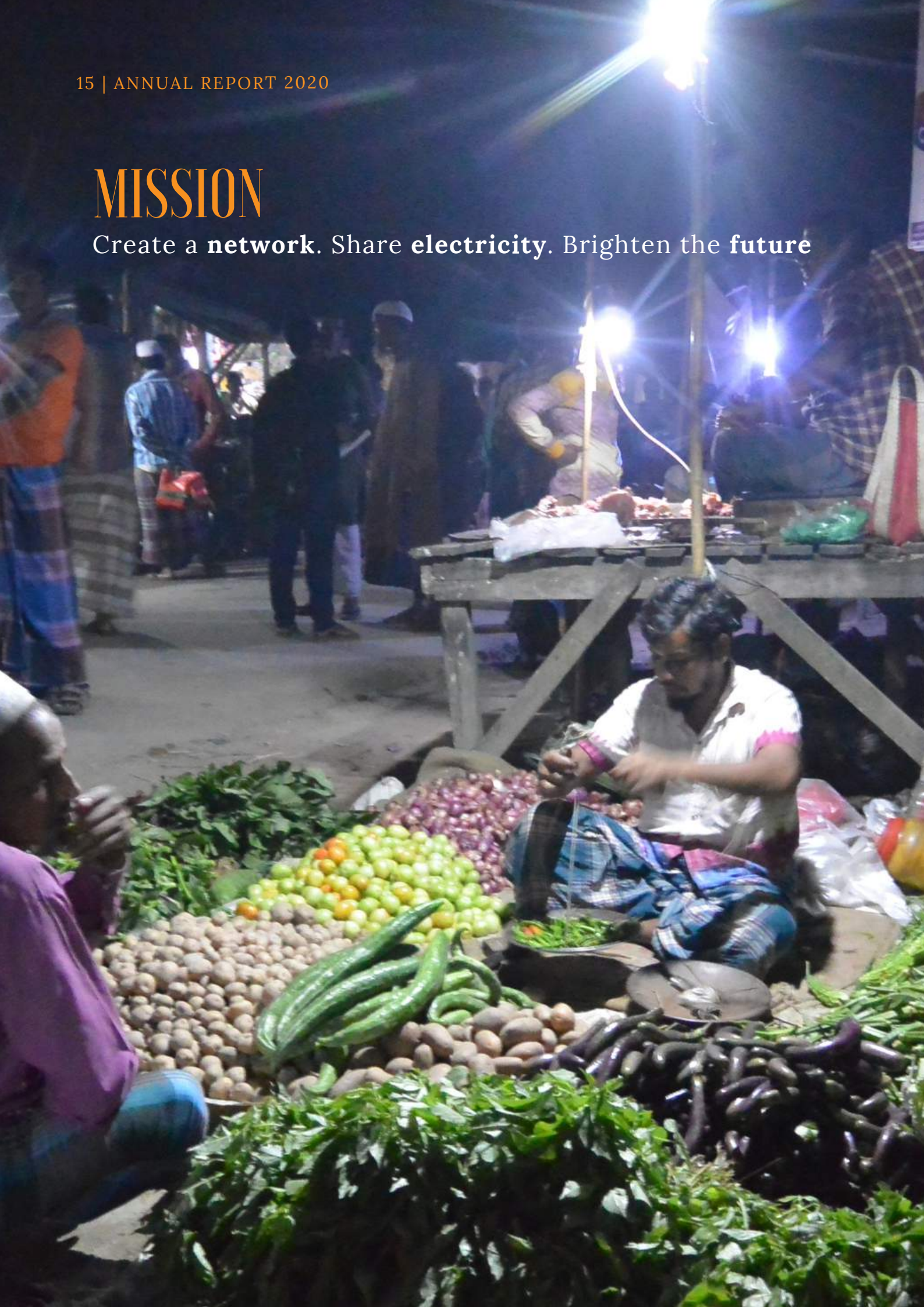
**2020**

**38 solar ICT-enabled P2P grids installed so far. Raised bridge round of USD 1.5m. Over 60 staff**



# MISSION

Create a **network**. Share **electricity**. Brighten the **future**





# VISION

E-mobilizing  
**livelihoods**  
and creating a  
**greener** world.



# OUR VALUES

Empathy

Ambition

Accountability

Passion

Courage

Integrity

Mutual  
Respect





## OUR COMPETITIVE ADVANTAGE

Being a pioneer in its line of work, SOLshare combines its one-of-a-kind technology with the market demand. This creates a unique set of capabilities and chances for investors to benefit from opportunities to invest in the new energy world fueled by the **5 D's - Decentralization, Decarbonization, Digitalization, Democratization, and Disruption.**

We are P2P enabled and have our ownership decentralized while being integrated with mobile money. At the same time, we are IoT-enabled, have a high scale of operations, have the capacity and regulations, which gives us an edge compared to other similar start-ups.



### **First Mover in the New Energy of Things**

World's first successful installation, representing a large untapped market potential.



### **Robust Technology**

First grid running since September 2015, contributing to the energy transition and electrification of Asia and beyond.



### **Triple Bottom Line**

Seek financial performance without compromising on safety, environmental, and social impact.

### **Massive Scalable Opportunity**

A favorable regulatory framework in South Asia.



### **Comparatively Low Development Cost**

Full Research and Development outside of Dhaka.

### **Future Potential Upside**

Ability to license its technology and business model to future-proof utilities globally.



## THE NEED

Projections from the Government of Bangladesh state that the electricity demand will reach **34GW by 2030**, and **52GW by 2041**. The actual generation however remains below **25,000MW** with more than **10million** people residing in Char areas.

Bangladesh also has the highest population density in the world, where **60million** people do not have access to reliable electricity. However, **600,000kWh** of daily excess energy is wasted which comes down to **USD 1 billion** per year.



## THE LIMITATIONS

The limitations which exist include the poor transmission infrastructure that limits the possibilities of a large amount of excess energy, up to **30%**. This unreliable power supply results in constant outages which brings to light the disparity between the demand and supply of electricity.

This disparity has given birth to numerous private power installations, which represent **50%** of total investments and have high charges for renting light and mobile charging at **US \$3.50/kWh** and **US \$10.50/kWh** respectively. Financing options, however, are scarce, locking isolated communities into an energy poverty trap. The lack of accurate data in char and river island areas is also a stumbling block on an unstructured process that results in significant delays, expenses, and viable projects being discarded.



An aerial photograph of a village in Bangladesh. The image shows several houses with corrugated metal roofs. In the foreground, a concrete structure, possibly a well or a small shop, has two solar panels mounted on its roof. The background shows more houses and lush green trees. The text 'THE OPPURTUNITY' is overlaid in white, serif, all-caps font on the left side of the image.

## THE OPPURTUNITY

This leads to an opportunity for micro-grids at the community level which can enable local balancing, provide extra revenue schemes, and unlock private potential.

Productive use at a community level, however, cannot be stimulated only through the provision of energy; a supportive ecosystem that combines access to financing for appliances with entrepreneurial training and market pull for the newly improved, enhanced products and services needs to be created.

As the birthplace of microfinance for the poor, Bangladesh's microfinance institutions cover around **32million** members and give out more than **\$7.2 billion** annually. Bangladesh also has the world's largest solar home systems installation base with **25million** people using SHS.

Combining access to energy systems with financial inclusion instruments and entrepreneurial training for productive use is a clear market opportunity for SOLshare since it will allow us to reach more than **10million** people who currently remain off-grid.

Furthermore, the value of the data collected through the peer-to-peer grids could set an academic benchmark for open-source models for electricity pricing in decentralized power markets.



# THE SOLSHARE MODEL

SOLshare's technology is composed of the **SOLgrid**, which is a peer-to-peer (P2P) solar micro-grid interconnecting households and microbusinesses with and without solar home systems. The SOLgrid is dependent on an Internet of Things (IoT) working together called the **SOLbazaar**.

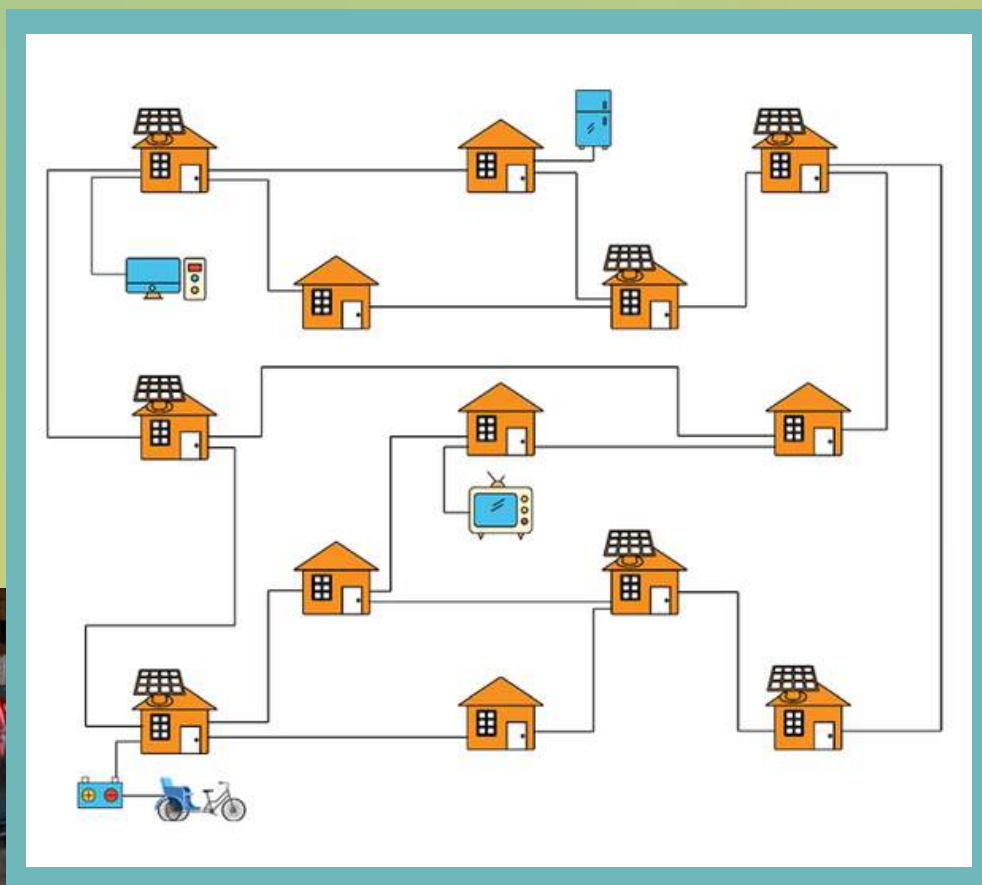
The **SOLbox** is a machine-to-machine (M2M) enabled integrated direct current bi-directional power smart meter that is the point of interconnection within the peer-to-peer (P2P) network. The SOLbox is installed in every home within the microgrid and empowers users to choose whether to become consumers, producers, or prosumers of energy. The SOLbox shows each user how much energy they can trade, and users can top up the box using pay-as-you-go mobile payment software such as bKash.

Each user is registered using SOLshare's app, the **SOLapp**, which allows SOLshare to study the energy trading data of each user.

Every microgrid has a Wi-Fi tower through which data from the surrounding SOLboxes are transmitted to SOLshare's head office. Here, the data team receives, analyzes, and translates this data, which is then stored on a dashboard, the SOLweb.

Each microgrid has a trained appointed **SOLshare Area Manager (SAM)** who looks after the grid and can help tackle minor problems that may occur.

All of the analyzed data is ultimately used by SOLshare's R&D and Lab teams to continue to upgrade and optimize the SOLbox.

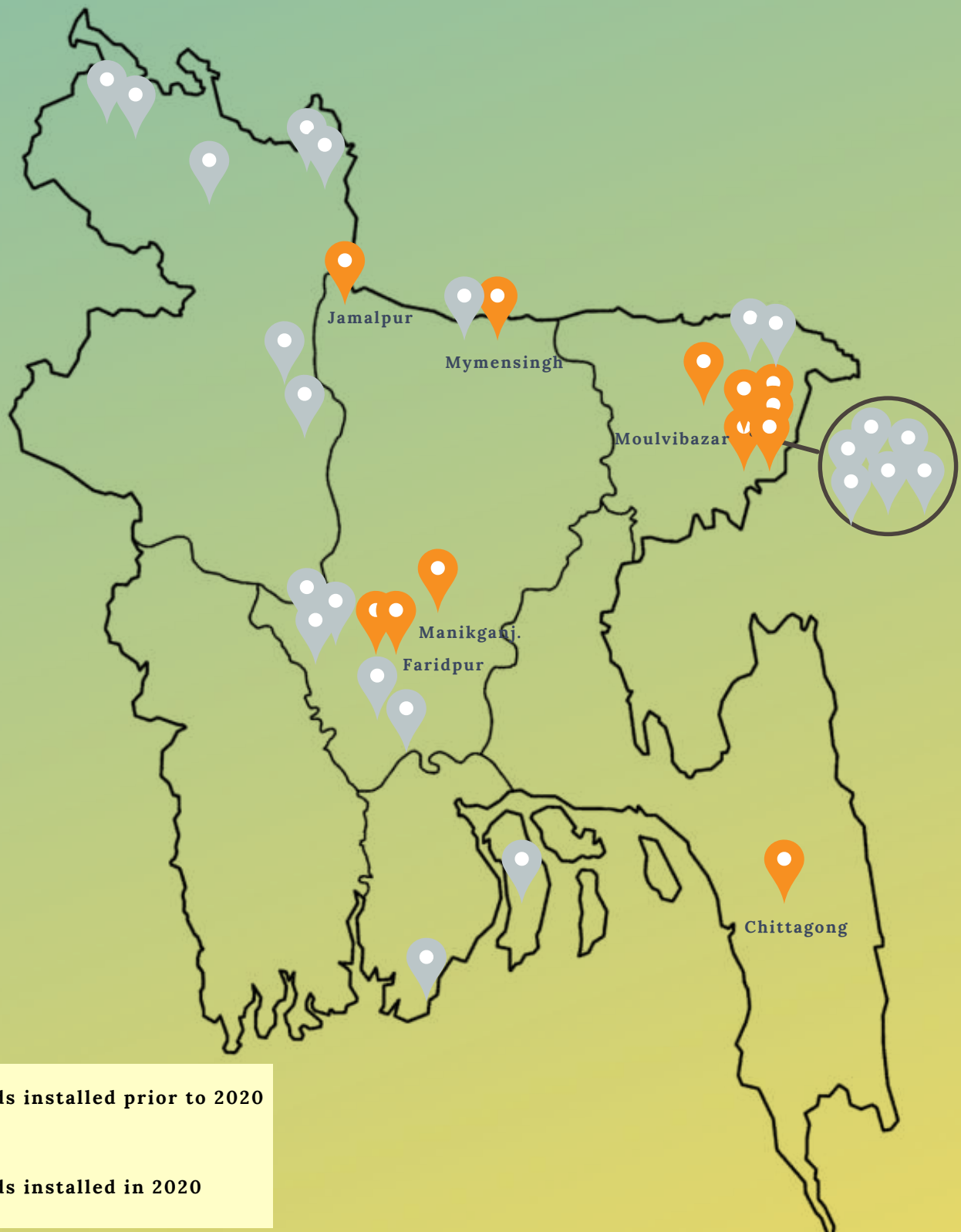




# 2020 PROJECTS

Despite being a difficult year, SOLshare has successfully implemented **12 new grids** across the country. Most of these grids are located in Moulvibazar, followed by Jamalpur, Faridpur, Chittagong, Mymensingh, and Manikganj.

- The 12 new grids comprise a total of **287 SOLboxes**, serving **221 customers**, generating **12,820kWh** of energy.



## END USER STORIES

Our End users are the ones behind our inspiration and drive to work. Our end-users comprise producers, prosumers, and consumers, all of whom are eventually benefited through our products. From buying new appliances and buying electricity, to selling goods and services and selling electricity, all activities monetarily benefit our end users by increasing their incomes and bettering their way of life. Seen below are only a handful of some of our end users, who have interesting stories of their own that act as an inspiration to all of us.



### Unyan Ching Marma

Unyan Ching Marma is a prosumer from the Dhormogoda Para grid. She used to have an old SHS which could not provide enough power for her TV and sewing machine simultaneously.

The SOLbox became her way out as she can now consume enough energy to run both electrical devices while creating an income from sewing clothes as well.

### Alomgir Hossain

Alomgir Hossain is a prosumer from Pirgacha Bazar who runs a microenterprise. Although he owned an SHS, it was not enough to power his 36-inch TV continuously for long. SOLshare's technology has enabled Alomgir to run his TV for longer hours, which also attracts customers to his shop, in turn increasing his income.







## Aleya Begum

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Aleya Begum is a prosumer from the Pirgacha Bazar grid, who runs a microenterprise. One of the key appliances required to run her business is a refrigerator, which can keep drinks cool at the peak of summer.

With SOLshare's help, she purchased a DC refrigerator that allows her to smoothly run her business, and stay afloat on her own income.

## Shafiqul Islam

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Shafiqul Islam is a Prosumer from Pirgacha Bazar. He is a village doctor and runs his own microenterprise. He purchased a SOLbox and a nebulizer from SOLshare as it allowed him to get the devices at affordable prices.

With these essential devices, he can run his store and support patients in the area when required.



## Mamoin Ching Marma

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Mamoin Ching Marma is a consumer from Dhormogoda Para grid and a smart owner of the DEG Health Package.

As a midwife whose main aim to aid others, getting the health equipment at an affordable rate allowed her to bring her services to all women who were not willing to visit male doctors.

## COVID IMPACT

2020 has been a tough year for SOLshare in many ways, as it has been for the rest of the world, due to the global pandemic COVID-19. However, to ensure a safe working environment for SOLshare's employees and its customers, SOLshare has taken multiple initiatives to combat the pandemic and reduce its effects.

### Office Protocols

SOLshare hygiene kits have been disbursed to the employees, where each bag contains strips of Vitamin C tablets, Orsaline, hand sanitizers, hand wash soap, and our SOLshare face masks.

At the HQ, employees are required to switch shoes and masks while entering to minimize cross-contamination. Furthermore, employees are seated far from one another during work and lunch, all the while ensuring gatherings are avoided. Thanks to these actions, our employees have held on to their good health.



### Field Protocols

SOLshare field staff working at the front line have raised awareness on social distancing in our grids in the remotest parts of Bangladesh by creating markings on the ground so people can maintain distance as they stand.



Co-financed by DEG from the public fund of the German Federal Ministry for Economic Cooperation and Development and in partnership with the SBK Foundation, SOLshare began by halting all service charges and pushed out energy subsidies to all our active users.

So far, we have swapped the batteries of **10 entrepreneurs**. Finally, we have subsidized new connections to ensure energy access to all households and microbusinesses within the community. Since our initiative with DEG, we've had **104 new connections!**

The DEG Covid response project was implemented in the following districts of Bangladesh: Sylhet, Mymensingh, Panchagarh, Kurigram, Moulvi Bazar, Bhola, Patuakhali, Faridpur, Manikganj, Sirajganj, Bogura, and Rangpur.



We have distributed sewing machines to some of our end-users including those who have lost their jobs in the RMG sector and returned to their hometowns.

SOLshare has also swapped batteries for microbusinesses that have been using our SOLboxes since before so that more energy is available for use of productive energy use appliances and trading for increased community income.

We provided Healthcare Packages across our grids which includes medical equipment such as infrared thermometers, blood pressure machines and nebulizers to ensure the availability of basic medical provisions.





# SUSTAINABLE DEVELOPMENT GOALS

Since its initiation, SOLshare has been committed to serving the Sustainable Development Goals (SDGs) set by the United Nations. Through our work and efforts, we are meeting multiple goals and focusing intensively on energy access at the community level.



1 NO POVERTY



SOLshare's business model promotes universal access to affordable and reliable basic energy services for the bottom of the pyramid (BOP) market. Through its energy exchange platform and EV charging opportunities, SOLshare promotes equal rights and economic resources to low-income communities, offering alternative sources and increased income.

7 AFFORDABLE AND CLEAN ENERGY



SDG 7 is the core focus of SOLshare, as it works to ensure universal access to affordable, reliable, and modern energy services to the 950M peoples that lack access to electricity globally (IEA, 2019), as well as to another billion people that have a very uninterrupted service supply (7.1), as well as it contributes to increasing renewables in the energy mix (7.2) and energy efficiency (7.3).

Working in rooftop solar also opens up new ways to increase clean energy usage while reducing carbon emissions.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



SOLshare is building resilient communities using innovative infrastructure which promotes sustainable development, and social and economic growth through access to clean and affordable solar energy which fosters women-led homegrown businesses, increased usage of rooftop solar for cleaner access to electricity, innovation in EV charging to make electric rickshaws more viable and efficient.

These create alternative income-generating opportunities and allows end-users to earn money directly from the sun without any hassle.

11 SUSTAINABLE CITIES AND COMMUNITIES



SOLshare's P2P microgrids promote sustainable development within remote rural off-grid communities by keeping the money invested within the community all the while improving livelihoods and increasing economic and social development and growth. Installing rooftop solar in factories enables these large structures to become energy efficient and brings down the carbon footprint by a significant amount.

EV charging also creates a big step in ensuring that the transport sector is moving towards clean and renewable energy as a source of power.





Women are able to access electrical lighting for housework and reading, instead of relying on kerosene, which is known to have adverse effects on human health with prolonged use. Further, as observed in the field, women are given the opportunity to participate directly in economic activities when they trade energy with SOLshare's platform. This is especially evident for women in rural households.

Increased opportunities in EV charging also opens up chances for women to enter the transport sector as they do not have to rely on physical labor, and they get better access to charging.



Entering the EV charging market allows us to contribute to SDG 8. As EV charging is made more accessible and transparent to the users, more people get to see the value they get for what they pay.

Increased charging opportunities also mean increased labor productivity due to technological innovation, contributing to sustained economic growth.



Through the provision of providing affordable clean energy to the most vulnerable off-grid communities, SOLshare is bridging the disparity gap by bringing urban services such as billable Wi-Fi, EV charging, and productive energy use to remote rural off-grid areas.

Our decentralized solution is the perfect approach to reducing rural to urban migration.



SOLshare adopts energy solutions that are resource-efficient and environmentally sound. Our technology reduces carbon emissions by unlocking clean energy. Using the SOLbox, additional energy is unlocked by integrating existing infrastructure (e.g. solar home systems, mini-grids) with innovative technology which is backed by engineering and scientific studies and iterations over the years.

An increase in rooftop solar also acts to reduce carbon emissions, reducing climate change. As EV charging is made more efficient, more users are able to use it to the fullest, increasing the use of clean energy.



# DIVISIONAL HIGHLIGHTS



Completed the first annual cycle of our employee performance management programme.

Redesigned the annual salary review process from a flat-increment rate to a salary slab-based increment process in order to bring more fairness to the performance review process.

Drastically improved employee acquisition process and reduced lead time to <25 days.

Further expanded employee healthcare packages and established Provident Fund for all employees of SOLshare Bangladesh.

Developed major HR policies e.g. Talent Acquisition, Performance Management, Grievance Management, Disciplinary Management.

Inaugurated Peer-to-Peer review process for employees and kicked off SOLshare value card programme.

Implemented a Covid 19 response plan that allowed the company to extend its runway while jointly minimizing negative effects for our staff.

Improved financial reporting systems on all company levels and successfully established frequent internal audits.

Successfully promoted shift to digital payment systems for all transactions and decreased share of cash and account cheque transactions to below 5%.

Ensured that every SOLshare employee has a bank account.



Deployed our revenue-product system in the production environment.

Provided a MVP release for the new SOLgrid restructured system.

Introduced a much faster flashing process for SOLbox. It saves at least 10 minutes for each SOLbox.

Established the software release management process.

Enhanced bKash payment process by integrating new API.

Integrated Google BigQuery service with the SOLgrid system to scale up data analytics with Big data.



SOLbox development, establishment of rapid prototyping scheme.

SOLbox 3 cost reduction design released.

Digital controller development for power electronics design.

Uniform code for SOLbox product line.

Advances in the PAYG product offering.



# DIVISIONAL HIGHLIGHTS



36 SOLgrids installed.

First ever grid installed in Chittagong Hill Tracts area in tribal community.

3 DEG energy credit transferred to 892 customers as COVID compensation.

11 PUAs (3 health packages and 8 sewing machines) distributed among 11 new entrepreneurs who lost their job due to global pandemic. Among them 40% was women and 1 man with physical disability.

1 battery swapping has been done with a female entrepreneur who added a DC fridge into her existing business.

NPS value has reached positive value.

All SAMs have received ToT to maintain hygiene and social distancing into their own community.

All SOLsharers are receiving refresher training weekly on hygiene and social distancing to handle the global pandemic.



## GENERAL MANAGEMENT

Named a 2020 Global Cleantech 100 company for the second consecutive time as a first company from Bangladesh.

Successfully closed \$1.1 million financing round with support from IIX Impact Partners.

Won the Ashden Awards in the Energy Access category amongst 200 other applicants.

Won the 2020 Global Final at the Business Booster by EIT InnoEnergy.

Won \$120K cash prize along with \$364K for investment by EIT InnoEnergy.

Closed \$1.46million financing round.

Won 2020 MIT-Solve Competition in the Good Jobs and Inclusive Entrepreneurship Category.



## PRODUCT MANAGEMENT

The small batch of SOLclock delivery to our B2B sales partner has resulted in a 14x increase in order for the next batch.

SOLbox NG can now support Bangla and thus improve our users' engagement with our trading platform.

The automated grid map topology has been designed for any Operations team to see how the SOLboxes are interconnected and trading with each other in real-time. It is the first step in theft detection and management. The product is currently being tested.

The product development process has been further streamlined to ensure transparency, accountability and quality gatekeeping at multiple stages. A product's success in the market is now shared by all Divisions.

# WHAT'S AHEAD

## Energy Efficient Solutions For EV Charging

Bangladesh hosts a booming market with more than **1.5million** electric vehicles across the country.

However, there are several growth challenges due to the informal charging infrastructure which is hazardous, uncoordinated, and informal. It is also largely only available during the night for non-rickshaw owners, is slow and inefficient.

### The Need

Currently, many rickshaw pullers walk home with a net loss given that their lead-acid batteries on average only last around 10 months, and they remain in a continuous loan cycle with p.a. interest rates north of **300%**.

### The Scope

However, the increasing number of EVs, eager garage owners, and rickshaw pullers create a market opportunity of approximately **USD 200M per year**. The goal is to increase rickshaw drivers' monthly net income by **25%** by offering them thorough improvements in range charging speed, charging efficiency, asset financing, and asset lifetime.

### SDG Impacts

**SDG 1** - EV drivers will have an opportunity to earn more through more efficient charging, less frequent battery replacements, and by covering more distances per day for an increased income.

**SDG 5** - They will be able to charge during the day and could pose an opportunity for more women in the sector as less manual labor is involved.

**SDG 7** - Through this charging system, there will be an increase in access to energy in a reliable and affordable manner.





**SDG 8** - It will create better governance by providing better and safer service with a requirement for rickshaws to be registered.

There will be an additional push for electric rickshaws to register for access to service. With more and better-charging sessions, more work opportunities will arise in the sector.

**SDG 9** - The lack of access to transport services can create disproportionate negative impacts on certain groups of people.

Through innovation in EV charging, we can create a more resilient infrastructure that can promote an inclusive, safe, and sustainable industrialization through an increased number of registered electric rickshaws, and more efficient charging.

**SDG 10** - The use of smart chargers within the EV charging stations will reduce battery damage and extend battery life, reducing their additional heavy investment cost every **6-9 months** and allowing them an opportunity to pull out of the vicious debt cycle.

This will create an increased income through access to energy, which could break the poverty cycle for many.

**SDG 11** - The use of electric vehicles does not release any pollutants into the atmosphere, and provides the opportunity to reduce carbon dioxide emissions in the transport sector.

This makes them a cleaner mode of transportation and their scale of operation creates the growth of sustainable cities and communities.

**SDG 13** - The planned use of solar PV within the EV charging stations has the capacity to reduce tons of carbon emissions annually, making them a more environmentally conscious choice compared to energy sourced from fossil fuels.



# WHAT'S AHEAD

## Solar Rooftop

Solar Rooftop installations help to reduce overall energy costs while increasing the reliability of the electricity supply. As a clean source of energy, Solar PV creates opportunities for sustainable operation and an alternative solution to increasing LNG prices.

### The Need

LNG price has been increasing every **2 years** at **15% in 2017**, and **38% in 2019**. The Bangladesh Power Development Board (BPDB) has also proposed to raise the bulk tariff of electricity by **23.28%** from next year to tackle the massive financial deficit.

The average annual growth of gas in the past **10 years** has been **5.63%** for industrial use. The Power System Master Plan (PSMP) 2016 also proposed that Bangladesh needs to increase the tariff for gas, coal, and oil products due to expensive imported fuel and investment in energy infrastructure.

The average annual growth of grid electricity in the last **7 years** has been **5.01%** for industrial use, which is correlated with gas prices. The Power System Master Plan (PSMP) 2016 also proposed that Bangladesh needs to increase tariff by **10.3% until 2041**, to be able to respond to the financial need for the expansion and quality enhancement of power infrastructure.

Not to mention, climate change also takes precedence as a global issue that is and should be of concern to everyone, regardless of their demography, provided the increase in natural disasters, and rising sea levels.

However, those residing in the global south are more vulnerable to the effects of climate change and global warming, and Bangladesh being a low-lying country is highly vulnerable to rising sea levels. Rooftop Solar Panels provide an alternative way to this form of generation.



## The Scope

**40,000MW** of electricity in Bangladesh could be generated from solar energy by 2041, in which case it would constitute **50%** of the country's installed capacity. However, at least **8,000MW** of solar power could be generated by 2041 in the case of the "as usual business case scenario", and **25,000MW** in a "medium case scenario".

Currently, Bangladesh generates a total of **649.61 MW** of electricity from different renewable sources while the country's total generation capacity is **22,000MW**. Of this, **415.68MW** is being generated from solar power.

This leaves a big gap for improvement and implementation of solar power, which could potentially help Bangladesh reach the target numbers.

Moreover, with the new Net Metering Policy in place, electricity bills will be lower with the use of Rooftop Solar. This will increase profits for factories while reducing carbon emissions, overall improving the economy.

More than **500 factories** have registered to make their manufacturing facilities more eco-friendly in the garment exporting powerhouse and the nation's net metering rules offer an obvious step in the right direction.

## What We Do

To reduce carbon emissions and speed up renewable power generation, SOLshare has partnered with GIZ to provide rooftop solar installations at RMG factories across Bangladesh in collaboration with Solaric and Scube Technologies Ltd.

Being a pioneer in its line of work gives SOLshare the upper hand in market expertise and enables SOLshare to provide the right services by connecting factories with solar panel providers.



# BOARD OF DIRECTORS



**Dr. Sebastian Groh**  
*Chief Executive Officer  
(CEO), Chairman of the  
Board, and Co-Founder*

Dr. Groh is a 2013 Stanford Ignite Fellow from Stanford Graduate School of Business (USA) and holds a Ph.D. from Aalborg University (Denmark) and the Postgraduate School Microenergy Systems at the Technische Universität Berlin, where he wrote his thesis on the role of energy in development processes, energy poverty, and technical innovations.

He published a book and multiple journal articles on the topic of decentralized electrification in the Global South.

Since 2014, as the CEO and Co-Founder of SOLshare, Dr. Sebastian Groh has led the company. He is also an Associate Professor at the BRAC University Business School in Dhaka, Bangladesh.

On behalf of SOLshare, he won the empowering people Network Award 2019 from the Siemens Stiftung Foundation. Dr. Groh was further selected into the SE100 2017, a list of the top 100 Social Enablers around the world.

Dr. Sebastian Groh is working as the Chief Executive Officer of SOLshare. He manages the overall operations of the company and his passion has led the company's vision into reality.



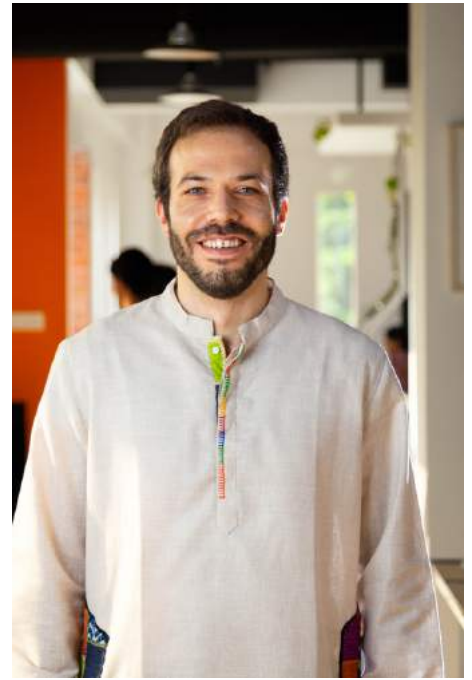


**Hannes Kirchhoff**  
Chief Technology  
Officer (CTO),  
Co- Founder

Hannes Kirchhoff is an energy and process engineer and holds an MSc. in Renewable Energy Systems engineering, and is pursuing a Ph.D. in DC Microgrids. Before joining SOLshare, Kirchhoff has worked as a technical consultant for MicroEnergy International (Germany) on several projects in Asia and Africa undertaking technology, supplier, and value chain assessments. Previously, he has worked for CAMCO (Tanzania), Schott Solar CSP (Germany), and the Institute for Ecological Economy Research (Germany). Kirchhoff has authored multiple technical and non-technical international publications on the topic of swarm electrification. Kirchhoff is involved in standardization work in IEEE and IEC, has co-authored the VDE DKE “Low-voltage direct current standardization roadmap”, has served in IEC system evaluation groups, and is a member of the IEC System Committee Low Voltage Direct Current (SyC LVDC).

As the CTO of SOLshare, he is responsible for the provision of prepaid and energy-trading platforms for energy access technologies.

**Daniel Ciganovic**  
Chief Financial  
Officer (CFO),  
Co-Founder



Daniel Ciganovic holds a Master's Degree in Economics from the University of Trier with a specialization in Monetary Economics and Social Psychology. He has more than ten years of experience in business development and international development projects and has worked in Germany, Serbia, and Bangladesh.

As Co-Founder and CFO of SOLshare, Daniel is leading the business as well as company development activities and is overseeing the company financials, accounting, and HR department.

He moved to Dhaka, Bangladesh in January 2015, and has played a major role in the fast development of the company, with a focus on product-market fit, operational, and business model development. Before joining SOLshare, Daniel worked as an independent consultant for IT Start-Ups in Germany.

He then worked in the development sector as a consultant for MicroEnergy International in Germany as well as the KfW Development Bank and GIZ in Serbia, where he was involved in energy and private sector development projects.

# NON-EXECUTIVE BOARD OF DIRECTORS



**Manuel Luis**  
*Executive Board  
Member, Energias  
de Portugal (EDP)*

Manuel Luis is an Executive Board member at Energias de Portugal (EDP). EDP is an energy producer, distributor, and retailer with 12 million customers in Portugal, Spain, and Brazil. Its renewable power business is present in 14 countries including the US and Brazil.

EDP Ventures is the early-stage corporate venture capital fund of the EDP Group, with the aim to support and stimulate the open innovation process in the energy sector.

António Mexia, CEO of the EDP Group, is also the Chair of the Administrative Board of Sustainable Energy for All.



**Yi Jean Chow**  
*Investment  
Principal at  
Future Energy  
Ventures*

Yi Jean is an Investment Principal at Future Energy Ventures, and E.ON. She was previously Head of Product at Verv, an energy start-up, and started her career in operations and strategic consulting. She has lived in Boston, New York, Kuala Lumpur, London, and is now based in San Francisco.

She is also host and creator of a podcast, 'Distributing Solar', interviewing entrepreneurs working in off-grid solar in Sub-Saharan Africa, Asia, and Latin America.



**Robert Kraybill**  
*Managing Director, IIX  
Growth Fund*

Robert Kraybill is the Managing Director, Portfolio Management for the Impact Investment Exchange (IIX), a global organization dedicated to building a more inclusive world as the foundation for sustainable peace. They do this by changing financial systems and innovating solutions for women's empowerment, climate action, and community resilience. Over the past decade, they have built the world's largest crowdfunding platform for impact investing (Impact Partners), creating innovative financial products such as the Women's Livelihood Bond, operated award-winning enterprise technical assistance programs such as IIX ACTS, and established an Impact Institute for training and education.

IIX has received numerous awards for its work including the Oslo Business for Peace Award, the 'Nobel Prize for Business.' Rob Kraybill started to mentor SOLshare on financial issues in 2013 when SOLshare came 3rd in the CTI PFAN business plan competition. The engagement which came as part of the prize was originally intended to be one year. However, the relationship between Kraybill and SOLshare never stopped. Today, Kraybill is sitting on our Board representing the IIX Growth Fund.





**Aziza Sultana Mukti**  
Head of Operations



**Salma S. Islam**  
Head of Projects, Fundraising and  
Communications



**Eshrat Waris**  
Principal Product & Business

## T O P M A N A G E M E N T



**Javed Hassan**  
Principal- Data & Software Development



**Sonia Bashir Kabir**  
Founder of SBK Tech  
Ventures & SBK Foundation

## S E E D I N V E S T O R S & A D V I S O R Y B O A R D



**Shahriar Ahmed Chowdhury**  
Director, Centre for Energy  
Research of UIU



**Noara Kebir**  
Managing Director at Microenergy  
International



**Dr. Daniel Kammen**  
Director of Renewable and  
Appropriate Energy Laboratory (RAEL)



# 2020 AWARDS

Pictured Below: The Ashden Award 2020





# 2020 AWARDS



## ASHDEN AWARDS

SOLshare has won the Ashden Award in the category of Energy Access - Finance & Business Model Innovation. Ashden spotlights and supports climate and energy innovators around the world – including businesses, non-profits, and public sector organizations that are delivering proven, ready-to-scale climate solutions.

## GLOBAL FINAL AT THE BUSINESS BOOSTER

SOLshare won the grand prize of €100,000 at the 2020 Global Final at THE BUSINESS BOOSTER. The Business Booster (TBB.Connect!) is an annual two-day international networking event that showcases 150+ sustainable energy technologies under one roof.

**TBB.** The Business Booster  
by InnoEnergy

2020 GLOBAL  
CLEANTECH 100

## GLOBAL CLEANTECH 100

SOLshare has once again been named a Global Cleantech 100 company in 2020 by Cleantech Group for the second consecutive time. The Global Cleantech 100 is an annual list comprising of the most innovative companies and the most promising cleantech ideas to build a resource-efficient, decarbonized, and digitized future.

## MIT SOLVE GLOBAL CHALLENGES 2020

SOLshare won the 2020 MIT-Solve competition, in the Good Jobs and Inclusive Entrepreneurship category. MIT Solve finds incredible tech-based social entrepreneurs through open innovation challenges and brings together MIT's innovation ecosystem and a community of Members to fund and support these entrepreneurs to help them drive lasting, transformational impact.

**SOLVE**

# WELCOMING EIT INNOENERGY

EIT InnoEnergy is the leading engine for innovation and entrepreneurship in sustainable energy across Europe and beyond.

EIT InnoEnergy has provided investments and added value services to some 380 sustainable energy related start-ups, of those 30+ are in storage, including flagship players like Northvolt, a vertically integrated sustainable battery manufacturer, and Skeleton Technologies, a global leader in ultracapacitors who is playing a key role within leading OEMs.

Following the mandate of the EU Commission, EIT InnoEnergy is leading the industrial stream of the European Battery Alliance in 2017, a European Commission initiative to build a strong and competitive European battery industry.

EIT InnoEnergy was established in 2010, has invested €560million in sustainable energy innovations, and is supported by the European Institute of Innovation and Technology (EIT).

## EIT Innoenergy's Investment in SOLshare

EIT InnoEnergy has awarded a €100,000 cash prize plus a €300,000 investment in added value services to support the expansion of SOLshare's pioneering peer-to-peer solar trading platform. During the next five years, SOLshare has ambitious plans to bring its technology to 350,000 householders and small businesses across Bangladesh, India, Sub Sharan Africa, and the Pacific Islands.

This investment took SOLshare's fundraising efforts to the €1.2million mark, against a target of €2.26million. The €100,000 cash prize was awarded to SOLshare as part of EIT InnoEnergy's annual sustainable energy competition, the global call for start-ups. The call seeks to reward and develop the most innovative ideas in sustainable energy from around the globe, with 1098 applicants from 83 countries.

We are excited to welcome EIT InnoEnergy as our 6th institutional investor after Future Energy Ventures, EDP Ventures, IIX Global, SBK Ventures, and Sangam Ventures.



EIT InnoEnergy is supported by the EIT, a body of the European Union



# INNOGY VENTURES

turns into

# FUTURE ENERGY VENTURES

Global Energy company E.ON bought Innogy, a fellow German energy provider that had previously held the largest market cap in the country. By acquiring Innogy's networks and retail activities E.ON gained 51.5million clients and a regulated asset base of €33.2billion across Europe, the most on the continent.

Following this, E.ON launched a new fund and "venture capital platform", Future Energy Ventures, with a portfolio already valued at €250million. The fund invests in digital technologies and business models aiding the transition to clean energy. Specifically, the fund focuses on scalable and asset-light businesses, seeking funding at Series A and beyond, that have shown evidence of a product-market-fit.

The portfolio of Future Energy Ventures consists of startups that E.ON and Innogy had previously, separately, invested in including SOLshare!



# THANK YOU

*2020 has been a difficult year for all in numerous ways. However, we are fortunate to have had constant support from our local and global stakeholders as we all fight through the ongoing pandemic.*

*We would like to extend our gratitude and thank everyone for their continuous support and interest in SOLshare. Let's create a world with more equal and better access to energy together.*



**solshare**®



# SUPPORT NETWORK

Thank you to our committed investors and partners for supporting our work!

## INVESTORS



## PARTNERS





# GENERAL INFORMATION

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