

FOLLOWING THE SUN

A TRANSFORMATION IN PUBLIC HEALTHCARE IN THE
BODOLAND TERRITORIAL REGION IN ASSAM,
UPHOLDING SOCIAL EQUITY AND CLIMATE JUSTICE.



स्वास्थ्य एवं
परिवार कल्याण मंत्रालय
MINISTRY OF
HEALTH AND
FAMILY WELFARE

सत्यमेव जयते



BTR
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SELCO Foundation



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From the Chief Executive Member's Desk



Honourable Shri Pramod Boro
Chief Executive Member,
Government of Bodoland Territorial Region (BTR)

With great pride and optimism, we hereby announce that, through the Energy for Health (E4H) programme, we have successfully powered most of our public health facilities. This transformative collaboration between the SELCO Foundation and the BTR marks a significant step in overcoming long-standing challenges in healthcare delivery and enhancing the quality of healthcare services.

The E4H programme, a bold and visionary initiative, has upgraded 437 health facilities across the five BTR districts. By leveraging decentralised renewable energy solutions and integrating need-based, energy-efficient medical technologies, we have ensured that healthcare services for our communities become more reliable, accessible, and resilient.

Each health facility under this initiative serves as a model of climate-resilient community healthcare; they contribute to national health goals while reinforcing the decentralisation and democratisation of healthcare services. The initiative highlights our commitment to sustainability and ensures that essential health services remain both environmentally responsible and economically viable.

E4H has been a landmark achievement in our ongoing efforts to create a healthier, more equitable, and sustainable future for the people of Bodoland. We extend our sincere gratitude to all stakeholders, partners, and community members whose unwavering support and collaboration have made its implementation possible.

As we celebrate this milestone, we remain steadfast in our resolve to build on the success towards a future where health, sustainability, and innovation converge for the wellbeing of all. With collective effort, we have charted a course toward a healthier, more vibrant Bodoland — a legacy we will uphold and build upon in the years to come.



Chief Executive Member
Bodoland Territorial Council
Kokrajhar



E4H would not be possible without the support of







Preface



Sustainable energy practitioners have long established that lack of access to energy affects rural and urban populations' productivity and well-being, impacting their livelihood-generation capacity, education outcomes, health outcomes, and quality of life.

The Government of India, under its Community Development Programme, 1952, set up Primary Health Centres (PHC) and Sub-Centres (SC) at the village level. PHCs are the cornerstone of the last-mile healthcare delivery system. Their main objective is to provide preventive, curative, promotional healthcare and family welfare services to the people. According to Indian Primary Health Standards, there shall be one PHC to serve a population of 20,000–30,000 (depending upon whether the terrain is hilly or plain). Staff at each PHC must include a medical officer, staff nurse, laboratory technician, pharmacist, male and female health workers, Accredited Social Health Activists (ASHA), and administrative staff.

Each PHC is further supported by a network of five to six SCs, which are the most peripheral healthcare units at the village level. SCs provide healthcare to a population of 3,000 in hilly / tribal areas and 5,000 in the plains. The services are related to maternal and child health, family welfare, nutrition, immunisation, diarrhoea control, and communicable diseases. Each SC is run by an Auxiliary Nurse Midwife (ANM) and a Male Health Worker (MHW).

While the efforts of the health sector have focussed on the need for expanded access to skilled care, essential medicines, and medical technologies for priority diseases and health conditions, comparatively less attention has been assigned to the value modern, affordable, and sustainable energy access can bring to the delivery of quality healthcare. Unreliable and unaffordable energy and the lack of energy-efficient appliances reduce the efficacy and impact of healthcare services.

In 2023, in a significant step towards transforming the public health infrastructure, SELCO Foundation and IKEA Foundation, in partnership with India's Ministry of Health and Family Welfare (MoHFW) and various state Health Missions, launched a groundbreaking programme — Energy for Health. By 2026, 100MW of solar energy systems will be installed, along with energy-efficient medical and electrical equipment, in 25,000 healthcare facilities across 12 states. A first-of-a-kind programme, the massive outreach of Energy for Health is expected to touch 170,000,000 lives and improve the working conditions of over 160,000 frontline health staff.

Energy for Health brings with it positive impact across the spectrum of stakeholders — for last-mile communities in their access to timely healthcare; for health staff in ensuring a conducive work environment; for the health sector in reducing energy consumption, equipment-related costs, wastage of vaccines and critical resources; reinforcing climate resilience and positive health outcomes for all.

The 12 states under the programme throw up a rich diversity in terms of topography, socio-economic vulnerabilities, disease burden, and climate. As we innovate on approaches, models, and processes for this melange, they will emerge a global showcase and knowledge bank for similar contexts in any country.

In this report, **Following the Sun**, hear from the people who are creating the solutions as well as those who are accessing and using them. They are not networks enabled by solar panels and wires; they are a silent, ever evolving grid of hearts, stories, communities, and life itself in all its setbacks, complexities, and glories.



Energy for Health

Bodoland Territorial Council and SELCO Foundation



Energy for Health (E4H), a joint initiative of the Bodoland Territorial Council and SELCO Foundation, has strengthened health service delivery across all public health facilities in the Bodoland Territorial Region. Health facilities have incorporated decentralised solar energy as a foundational infrastructural requirement to achieve this. Sub-centres are powered by off-grid standalone DC solar systems (~1 kWp), and primary health centres are powered by off-grid or hybrid systems (~5 kWp). They provide two days of autonomy, taking into account local needs and weather conditions.

Bodoland's decision to achieve energy independence via E4H has not only benefitted the millions of people who rely on public healthcare but also improved the viability of the modernisation effort and generated savings for the health department. Additionally, the programme has provided engagements to solar energy service providers, which indirectly contributes to local economies and boosts adoption of solar energy across sectors.

E4H creates systems and processes that demonstrate ownership, management, and maintenance of the systems and appliances. It builds technical knowledge and capacity, as well as informs guidelines and policies that will enable health departments across the country, even beyond, to plan for sustainable public health infrastructure.

The programme is supported by the IKEA Foundation, the Waverly Street Foundation, the H. T. Parekh Foundation, and LIC Housing Finance. SELCO Foundation would specifically like to thank the innovative spirit and years of commitment contributed by the health practitioners of Bodoland.

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The Health Democracy

DR. HARISH HANDE

CEO, SELCO Foundation

2011 Ramon Magsaysay Awardee

SELCO Foundation must serve only as a catalyst for transformation, not as the focal point. We must move beyond seeing any one institution as the sole creator of solutions. We need to see the process of bringing about impactful and sustained change as an innovation — one that must be open-source and can be built upon. Our aim is not for people to think about how great our work is. Instead, we want them to look at the problem we are solving and think: ‘I can do better than that!’

The mission of SELCO Foundation is to use sustainable energy as a catalyst to democratise healthcare and livelihoods. When we speak about renewable energy, we often focus our conversations on the Decentralised Renewable Energy (DRE) technology and the equipment: solar panels, batteries, earthing cables, and charge controllers. However, the discourse must be about the delivery of health and livelihoods — it must become about the communities who use the solutions we build.

Health is a fundamental right. Without addressing the health crisis, we cannot solve poverty. From the micro point of view, it leads to better education for children, better livelihoods, and a better family life. On a macro level, healthy citizens contribute to the progress of the community, the region, and humanity as a whole.

For the poor, the transaction costs of receiving healthcare are enormous. Accessibility and affordability come in the way of their wellbeing. Medical expenses for a child or mother or father often consume savings; many families remain trapped in poverty for generations. SELCO Foundation uses decentralised energy solutions to alleviate this crisis; it enables healthcare to be accessible to the poor, near their homes, in the most affordable manner from their perspective. For the end-user, the focus is on accessibility and affordability. For the government, it is about building systems that are reliable and cost-effective. We deliver services that should reduce the burden on the state while boosting the number and quality of services available to the end-users over time.

Currently, healthcare services are pushed upwards to the overburdened district and city hospitals. We bring in innovations in technology and energy delivery systems to push affordable and efficient services back down to the last mile. Hence, our Energy for Health (E4H) programme is not just about solar powering health centres; It's about rethinking healthcare delivery itself.

Technology and DRE allows us to accept that not

all services require a brick-and-mortar space. With advancements in healthcare teleservices and the growing sophistication of communication technologies, the only few physical needs are a space for the delivery of a child, for instance. Let us imagine a scenario in 2035. What if a high-quality pop-up tent, powered by solar energy, is set up in front of a house a few days before a delivery? The tent includes everything from an incubator to a high-quality television, manned by a midwife. The television is connected to any specialist doctor in the world. Once the delivery is complete, the tent is dismantled and moved to the next location. Why should a woman have to walk even a kilometre to give birth?

SELCO Foundation takes the initial risk of piloting new models on the ground and showcasing their efficacy. This allows the governments to observe the interventions over a period of time and scale once they see impact. For instance, in Meghalaya, we redesigned maternal labour rooms, complete with energy efficient medical equipment and solar energy. Once we demonstrated its success, the state government embraced the idea for statewide adaptation.

Delivery of health services cannot take place in isolation. A high-quality baby warmer in a rural health centre is ineffective without trained personnel to operate it. Similarly, a trained healthcare worker cannot offer services if she/he/they does not have the necessary technology or infrastructure. Our role is that of an ecosystem builder that brings together all the stakeholders — the governments, the policymakers, the implementers, the technology providers, and the systems.

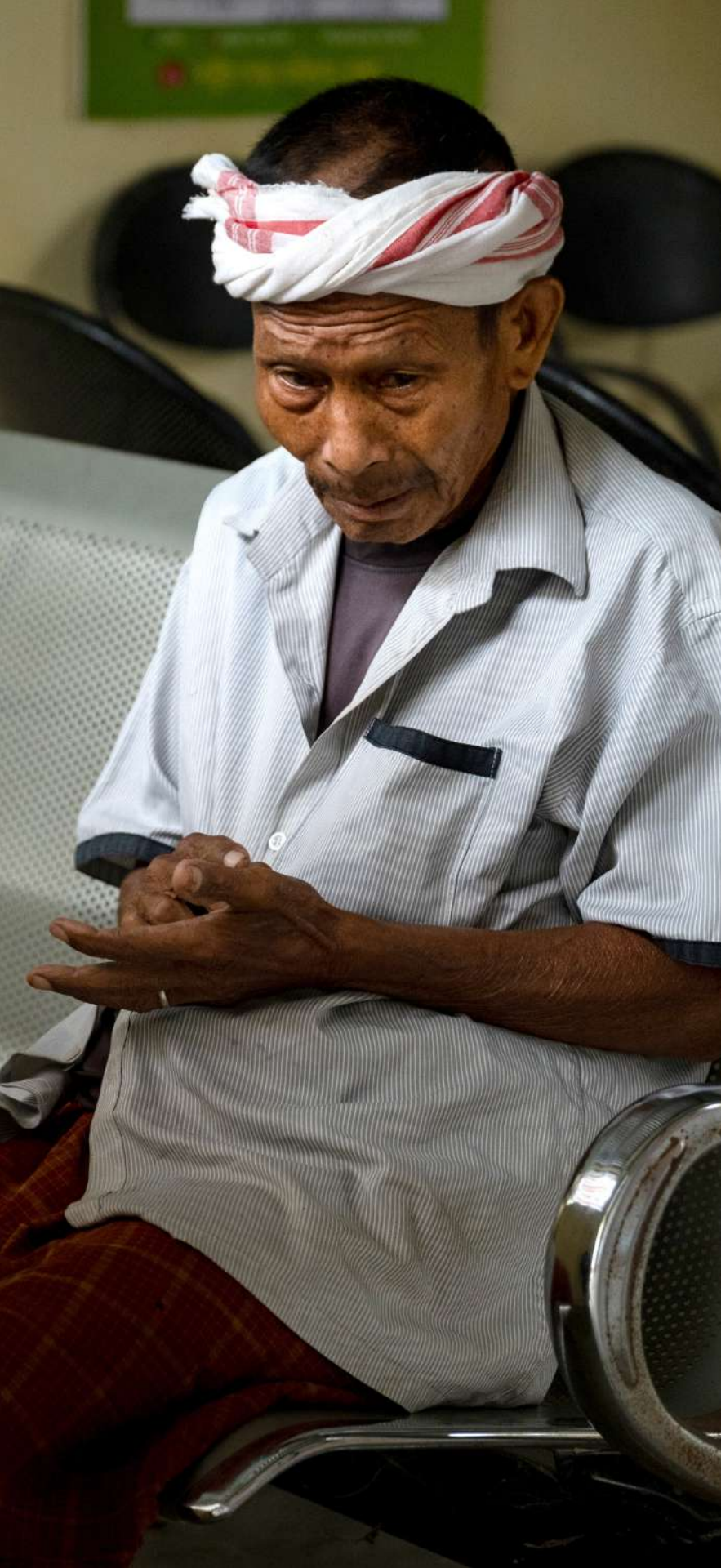
One of the barriers is the time it takes to understand the social nuances in any geography. For example, trust plays a significant role in rural healthcare. If someone has had a negative experience with the healthcare system, she/he/they may not return to it. Certain beliefs or customs may conflict with modern healthcare practices. Some communities may be reluctant to allow a male doctor to attend to childbirth. Designing an effective, culturally

sensitive healthcare delivery system is complex.

Another deterrent is the perception that solar energy technology is complicated and difficult to maintain. In reality, it is far simpler than a mobile phone. Anyone interested in the technology in a village can easily repair it, just as many young people repair mobile phones. So, we bring the right local ownership into play. When we install a solar energy infrastructure, we involve different community members — from, say, community health workers to the school principals to the village committee members to the community leaders. Once they understand why the infrastructure is being installed and how it works, they develop a sense of responsibility, and the energy system becomes part of the fabric of the community. When we began our work in the Northeast, we encountered several complaints from the staff at the health centres who live on the premises and are in charge of the maintenance of the solar energy infrastructure. They said that the systems did not function as expected, and they didn't have the time to resolve the issues. It became clear to us that the systems were failing not because of faulty technology but because the people responsible for them were not adequately supported or incentivised. We found that the staff quarters were poorly equipped, and the living conditions for the health workers were subpar. We solar powered the quarters. Once the staff had a reliable supply of electricity, their lives became a little less stressful; as a result, both the quality of healthcare delivery and maintenance of systems improved, and the entire ecosystem improved with it.

However, the biggest challenge we face today is not posed either by the end users or the government. It lies in the gaps within the systems we have inherited. Current models are designed with an assumption of abundant resources, which is simply not true of rural areas. In urban areas, innovative dental chairs have made it possible to provide dental care for free. The rural communities cannot access that technology because villagers have to travel for hours, sometimes days, to receive healthcare.





Major global manufacturers have never considered adapting their products to resource-poor regions. Why can't we develop a foldable, solar-powered dental chair for difficult-to-reach areas like the forest hamlets in the Majuli islands in Assam? Its varied geography, rich cultural diversity, and complex challenges offer a perfect microcosm to test models for climate resilience.

Our journey thus far has been made possible through collaborations with health practitioners, philanthropies supporting equity and sustainability, enterprises working in far-flung geographies who install and maintain solar energy infrastructure at health facilities, and state governments without whose support no public health intervention can sustain and scale. The journey has also been inspired by the people we meet on the ground, like the Accredited Social Health Activists (ASHA). Many of them have been working for 20 to 25 years despite the challenges and frustrations that come with the job. Their work hours are long and unstructured. They almost never get vacations. They are from the communities they work for, so they have to be available for any and every health crisis and emergency. I have asked many ASHAs why they continue to do what they do. Most of them say, 'It's a calling.' Come floods or cyclones, they stay committed because they believe in their work.

If we look at the history of technology, it is clear that tools and systems develop through iterations, with different players contributing their part. SELCO Foundation must serve only as a catalyst for transformation, not as the focal point. We must move beyond seeing any one institution as the sole creator of solutions. We need to see the process of bringing about impactful and sustained change as an innovation — one that must be open-source and can be built upon. Our aim is not for people to think about how great our work is. Instead, we want them to look at the problem we are solving and think: 'I can do better than that!' The aim is to make India a model for the two billion people in the Global South who don't have access to affordable healthcare. The goal is to show the world that it is possible to democratise health — that it is not just a privilege for the wealthy, but a right for all.

WAITING ROOM





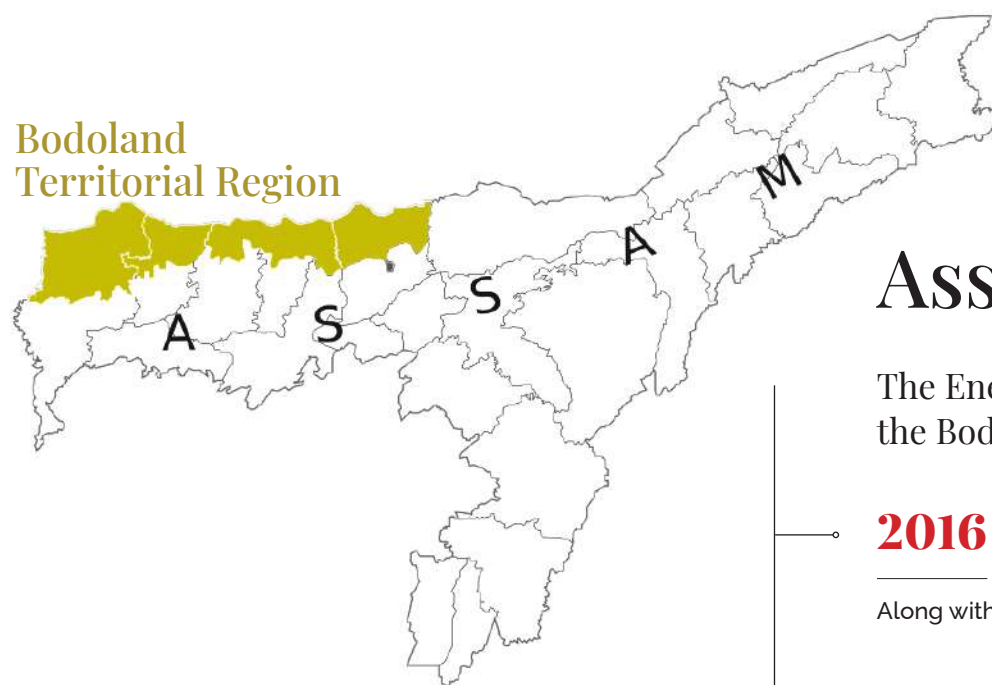


The Future is Lit

HUDA JAFFER

Director, SELCO Foundation

Assam is a critical state for E4H. One of the largest states in the Northeast, it is not only natural disaster-prone, it also has a complex topography. From the perspective of climate resilience, it is imperative that the programme works in Assam. So, we have a long-term plan, based on which by 2030 we will cover a significant percentage of the state's health centres. We have started with the blanketing of the four districts of the Bodoland Territorial Region, where the traction from the local government is strong. In the next phase, we will expand to install 800 systems in five districts.



Assam

The Energy for Health (E4H) Journey in the Bodoland Territorial Region (BTR)

2016

Along with C-NES, solar powered 4 boat clinics.

2020

Along with HLPPT, solar powered 8 mobile health centres.

AUG 2023

E4H programme launched in the BTR.

OCT 2023

MoU for blanketing of BTR signed.

FEB 2023

Government inaugurates first solar powered health centre.

MARCH 2024

Blanketing of all 437 health centres of BTR complete.

SELCO Foundation's Energy for Health (E4H) programme addresses the energy needs of India's last-mile health centres — Primary Health Centres (PHC), Sub-Centres (SC), and Health and Wellness Centres (HWC) — with a special emphasis on the remote and difficult-to-access regions. Deep-diving into the energy and systemic gaps, we provide health centres with Decentralised Renewable Energy (DRE) systems or distributed solar energy infrastructure that not only enables them to become energy-sufficient, but also energy-efficient, more productive in the human aspect of healthcare delivery, and climate-resilient. We believe, designing DRE into the healthcare delivery system has become a no-brainer from the climate disaster perspective. We cannot have a health centre failing any time a calamity hits; in fact that is exactly the time when we cannot have it fail.

To roll out E4H, we chose certain regions very deliberately — the South, the East and the Northeast. While we play the role of technical knowledge partners in the rest of India, we chose the states based on three criteria:

- The difficulty of terrains and remotenesses;
- proneness to disasters such as floods and cyclones, droughts and earthquakes;
- and, extremely rich cultural, linguistic, social, and ethnic diversity.

These regions perform poorly on the human development indices. The infant mortality rate and the maternal mortality rate is high and so is the disease load. They are developmentally backward areas. We felt we would really be able to develop champions, and model processes and methodologies that can be a learning for people from anywhere in the world. It is here that they can truly understand what it takes to successfully deploy a DRE system, to own it, and to run it under the most challenging conditions.

Assam is a critical state for E4H. One of the largest states in the Northeast, it is not only natural disaster-prone, it also has a complex topography. From the perspective of climate resilience, it is imperative that the programme works in Assam. So, we have a long-term plan, based on

which by 2030 we will cover a significant percentage of the state's health centres. We have started with the blanketing of the four districts of the Bodoland Territorial Region, where the traction from the local government is strong. In the next phase, we will expand to install 800 systems in five districts.

The priority of E4H is not to power every single facility and every last health centre as quickly as possible. It is to build DRE into the existing healthcare delivery and maintenance systems so that governments are able to own the programme and expand the systems on a need basis. Before installing the systems, we ensure that the health centre staff not only understands the entire concept and what it can do for them, they also run and maintain the systems and feel a sense of ownership. So, say, if a panel breaks or a charge controller stops working, decision makers and officials in the internal and local systems can decide how to fix it and how quickly. Only this kind of deeper engagement can ensure the sustenance of programmes such as E4H. However, we cannot depend on processes and systems alone. The investment in the local champions is equally critical. Whether it is a doctor, a teacher, a village elder, a night nurse, a district health officer, or a health secretary, when they see the true merit of E4H, they become invested in the programme, and turn into natural influencers and guardian angels.

Our DRE system batteries come with a warranty of five years as mandated by the Ministry of New and Renewable Energy (MNRE); if maintained very well, they run for about eight to ten years. Panels also come with a similar warranty, but they typically last about 20–25 years. So, capacity building for maintenance is a core focus area. It includes pre-installation, installation, and post-installation training for local enterprises and technicians. We cannot expect anyone to provide this service for free. So, we prioritise local enterprises with a good service network to install the systems, and the payment comes, and this is a systemic innovation, from untied funds with local Rogi Kalyan Samitis (RKS). These are patient welfare

committees enabled by the NHM that act as trustees for hospitals and health centres. They are free to prescribe, generate, and use their funds as per their judgment for the smooth functioning and maintenance of the services.

E4H DRE systems have a standard built-in autonomy of two to three days, but if we are implementing them in an area with very heavy rainfall or high cloud cover, we extend it to five to six days. If our systems can function well in Meghalaya's Cherrapunji, one of the world's wettest places, then they can work anywhere. We have collaborated with the state governments to ensure that when they procure new equipment, like baby warmers, oxygen concentrators, and freezers, they acquire the most energy-efficient appliances available. This could potentially result in reduction in energy requirement by 60% to 80%, and therefore a reduction in the solar energy capacity needed for the smooth functioning of the health facilities, reducing the costs by 60-80% as well. For newer health centres, we have also been pushing for green building designs. When combined, these elements provide an energy-optimised, futuristic pathway for public health.

At this juncture, we are working to power 25,000 health centres in 12 states by 2026-2027. The goal is not to do all of it ourselves. To ensure that the best possible DRE systems and synergies emerge, we will also leverage resources and work with public and private partners, while we play the role of a strong technical and knowledge advisory. The goal is to ensure that the learnings from this programme enrich and augment other programmes in India and also Africa because it has similar terrains and challenges. To think that India has taken the global leadership in the 'energy for health' sector both in terms of depth and scale is inspiring and enlightening. In the long run, we will similarly strengthen 100,000 health centres, and many more across the African subcontinent and the world, which the first 25,000 can influence, inspire, and transfer learnings to. This is just the beginning.





E4II coverage in BTR		
District	Health Blocks	Number of Health Centres
Baksa	Barama	11
	Mushalpur	18
	Niz Kaurbaha	13
	Jalah	25
	Tamulpur	15
Chirang	Ballamguri	51
	Sidli	30
Kokrajhar	Balajan	42
	Dotma	32
	Gossaigaon	46
	Kachugaon	35
Udalguri	Khoirabari	32
	Orang	37
	Udalguri	51
Total	14	438

The Constant Gardener





DR. ANUP K. DAS

Rural Health Practitioner

Bhutankhuti Primary Health Centre (PHC)
Baksa District,
Assam

I remember this one night when I used up two whole packets of candles to conduct three deliveries. On such nights, it felt as though we were conducting deliveries at home because we couldn't use even the most basic equipment to provide the required minimum care to mothers and newborns.



When I came to Bhutanekhuti, a village in the hill forests of the Indo-Bhutan border, the sub-centre offered very limited services. There was an Auxiliary Nurse Midwife (ANM) who focussed on weekly immunisations for mothers and children. No deliveries were conducted. Nor were critical cases attended to. I opened up the delivery room using the minimal capacity we had because I believed we needed to encourage institutional deliveries. In 2018, the sub-centre was upgraded to a Health and Wellness Centre, and in 2023, it was rebranded as an Ayushman Arogya Mandir via a government notification.

Today, apart from me, we have a staff strength of five, including three Accredited Social Health Activists (ASHA), an ANM, and a multipurpose health worker. We serve a population of roughly 7,000. The nearest civil hospital is

20 kilometres away; therefore, the majority of villagers depend on us for basic medical care. Their biggest challenges are the lack of adequate public transport, water, and electricity. The area is overpopulated. Most people are poor and live in congested colonies. As a result, there is a high incidence of skin diseases such as scabies, fungal infections, and diabetes. The monsoon season brings intense rainfall. While it hampers commutes, no floods occur as the water flows downhill. The summers are extremely humid. During those months, potable water becomes scarce. This leads to many cases of jaundice. Japanese encephalitis is also not uncommon. Seasonally, cases of acute respiratory infections, diarrhoea, and food poisoning go up. In the past two years, since the staff has started using digital blood glucose metres and blood pressure monitors, we

are diagnosing more cases of diabetes and hypertension.

When I arrived here, the power supply was negligible. Patients were suffering. We were suffering. I mobilised the community leaders, and, in collaboration with the medical committee, secured an additional electrical connection for the sub-centre. However, the power lines are no match for the heavy winds and torrential rains, so we benefitted very little.

I remember this one night when I used up two whole packets of candles to conduct three deliveries. On such nights, it felt as though we were conducting deliveries at home because we couldn't use even the most basic equipment to provide the required minimum care to mothers and newborns. We couldn't use the infant radiant warmers, so we had to be extremely careful about keeping the babies warm with clothes and blankets, guarding them against hypothermia. Sometimes, post-delivery, mothers get the chills. We could not power up room heaters. Then there was the matter of post-delivery stitches that, in the absence of focus lights, were an ordeal. The forests are full of wildlife. With no strong lights to scare them, elephants, bears, and animals of prey often entered the compound. Once, about five years ago, a herd of elephants blocked the road. A woman was in labour. We couldn't risk bringing her to the sub-centre in a vehicle. Nor were we able to drive to her. So, we walked to her house and delivered the baby.

The solar power supply at our centre has been a game-changer. The installed capacity serves us exceptionally well. Our basic requirement is visibility; we have green energy-compatible lights that create minimal burden for the system. We have a fully functioning labour room and emergency area. We can use the infant radiant warmer and the suction machine any time and stabilise the newborns in just about a minute. It is so satisfying to see a baby cry for the first time after we use the suction machine.

After any delivery, the staff conducts home visits for 42

weeks, which is a critical and risky period for both the newborn and the mother. SELCO Foundation has provided our ground staff with a very convenient mothercare kit that includes a light, a stethoscope, a digital thermometer, a glucometer, and a urine test kit. It comes in the form of a backpack that is easy to carry on these steep roads. Using this mobile kit, the health workers can identify even minor danger signs and symptoms related to gestational diabetes, hypertension, or jaundice and take appropriate action.

Additionally, the SELCO Foundation has provided us with a health ATM. When we conduct a test using a digital glucometer or a digital blood pressure machine, there could be errors in the results due to simple factors, like an almost discharged battery. However, the ATM results are 100% accurate. It not only provides us with the clinical parameters, such as pulse, respiratory rate, and oxygen level, but it also generates comprehensive reports and prompts prescriptions. We use the ATM to check the oxygen levels of patients with asthma and chronic obstructive pulmonary disease. The machine is equipped with leads and systems for electrocardiograms, which is helpful to heart, hypertension, and diabetes patients.

Given the geography, electricity supply will always be unreliable in a state like Assam. With solar electricity, we have truly become a 24/7 centre. Our printers run. Our mobile phones and laptops are always charged, which allows us to finish the mounting paperwork. We hope every health centre in the country receives solar energy infrastructure. It will cut costs and increase efficiency. Everyone can breathe easy — the government, the health staff, and definitely the patients.



The Light Feels Right



The light outside the centre turns on automatically when the sun sets. The compound used to be dark and eerie at night. It attracted nuisance-makers and vandals. I used to be scared to step out of the quarters when I was alone. The light feels truly right.

ANUSHMI BORO

Staff Nurse

Dakua Mini Primary Health Centre (PHC)
Udalguri District,
Assam



I am a General Nursing and Midwifery (GNM) graduate. I have lived in the staff quarters of the state dispensary with my husband since 2020. Now we have an infant. GNMs are trained under a three-year undergraduate diploma programme in patient care, midwifery, and community health. During the outpatient hours, we are the first point of contact for patients.

We receive ethnically diverse groups of patients — the Assamese plains people, the indigenous Boro people, members of smaller indigenous groups, and also Nepali

settlers. The dispensary primarily deals with routine cases and tests. We measure their vitals and check blood sugar and blood pressure. We give them any shots that might be required. It is a very busy centre; there are outbursts and disruptions every now and then. We take care of those situations too. We refer serious cases to the civil hospitals in Tangla town, which is about 10 kilometres from here. However, the quality of the roads is poor. Even when it is not raining, power cuts can be severe, sometimes lasting for days. Mobile networks are generally weak. We had an old inverter that could handle a small load — a few lights



and fans. When we used it for anything else, it crashed and required expensive repairs. It is mandatory to wash hands before administering an injection to a patient or even after touching them because we deal with fevers and infections all the time. However, during long power outages, we were unable to turn on the water pump, and the dispensary's taps ran dry.

Health workers lead hectic lives. The arrival of solar energy infrastructure has made it a bit easier. To begin with, it really feels good to work in a well-lit and airy

space. The waiting area is comfortable for outpatients. We always have water in the toilets and the workstations. The lighting outside the centre automatically turns on when the sun sets. The compound used to be dark and eerie at night. It attracted nuisance-makers and vandals. I used to be scared to step out of the quarters when I was alone. The light feels truly right.



The Day of a Junior Doctor



DR. SUSHMA DASH

Medical Officer

Karemura State Dispensary
Baksa District,
Assam

My peers and I frequently require consultations with seniors. We reach out to them via video or audio calls. If there is no electricity, given the high volume of use, our phone batteries can run out of charge at any time. This would lead to another situation. The community health officers in the lower centres consult junior doctors using the eSanjeevani telemedicine service. We serve as their guides for the necessary next steps. Our phones must have juice at all times.

I am from the city of Guwahati and have completed my education at the Tezpur Medical College. As a doctor in my first posting in a rural area, I may be able to offer a unique perspective.

The Karemura centre was solar powered before I was posted here. During duty hours, I am confident that a power outage won't halt work. In any case, young doctors lack the necessary experience to treat patients without the use of electrical medical equipment and lab tests. We can only treat them symptomatically for the time being. Most people see the obvious ways in which 24/7 power supply empowers a health centre. From the light bulb in the toilet to the case reports we upload online, the submission of daily accounts, and the stocking of the pharmacy, each of these not-so-visible aspects of our work is critical and dependent on reliable power.

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Living in the city, I have never seen power cuts that are eight hours long, sometimes longer. The rains are extremely heavy, and power lines break or short-circuit routinely. I am very careful about keeping my phone charged. Our patients don't have access to solar power or power banks. They often walk five or six kilometres for an issue that could have easily been resolved on the phone. It would be a travesty if they arrived at the centre and we were unable to help because of a power cut.

Solar power empowers peripheral health facilities, enabling them to maintain essential services such as lights, water filters, refrigerators for vaccines and medications, and smooth operation of medical equipment. India has




a plentiful supply of solar power. Agricultural fields make up the vast majority of rural India. There will never be a shortage of sunlight. This is the most logical and cost-effective way to empower not just health centres but also households. Solar is the power of the future.



The Night is Not Long



A portrait of Dr. Rahul Boro, a man with dark hair, glasses, and a goatee, wearing a light blue polo shirt and a stethoscope. He has his arms crossed and is standing in what appears to be a clinical setting.

We are a 24/7 centre. We are on call round the clock. However, earlier the quality of our lives was subpar. Night deliveries and emergency cases during power cuts would take every bit of energy out of us. During the last Durga Pujo festivities, a staff nurse and I were the only ones on duty. I remember we had to stitch up six people involved in a road accident by a torchlight. Once they were a little stable, we had to send them to a hospital for X-ray and CT

DR. RAHUL BORO

MEDICAL OFFICER OF HEALTH

Bhakatpara State Dispensary
Udalguri District,
Assam



Government regulations specify that a Public Health Centre (PHC) should serve approximately 20,000 people in rural areas and 30,000 people in urban areas. However, the Bhakatpara area has only one state dispensary that covers a 25-kilometre stretch. The number of villages we serve is not fixed. The closest hospitals — Mangaldai Civil Hospital and Kalaigaon Model Hospital — are about 15 kilometres away. In effect, we end up serving a population of 40,000 to 50,000 people. It's always rush hour.

Apart from the surgical and medical cases in the inpatient and outpatient departments, the staff has to

conduct health surveys in the community on issues such as maternal and neonatal health. We have to investigate the causes of various deaths. We also have to monitor dengue, smallpox, or measles outbreaks. Nonetheless, we still manage to deliver the second highest number of babies in the entire district.

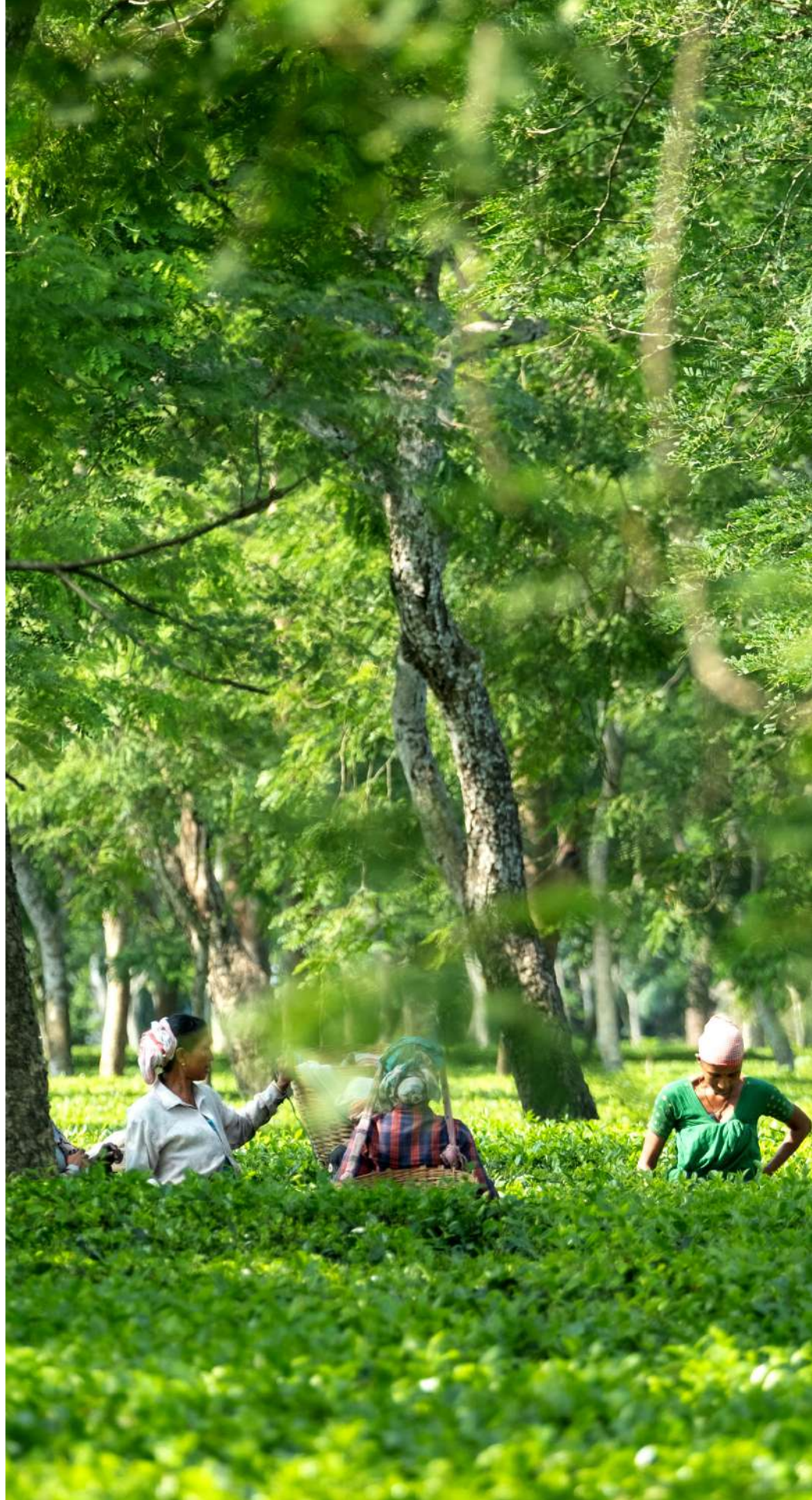
Power cuts impacted our service quality for a long time. We would lose time, resources, and even stocks of medicines because the cold chain would be broken. There were times when I had to work a full shift without power and, at the end of the day, sleep by candlelight in the staff quarters where I lived. We are a 24/7 centre. We

are on call round the clock. However, earlier the quality of our lives was subpar. Night deliveries and emergency cases during power cuts would take every bit of energy out of us. During the last Durga Pujo festivities, a staff nurse and I were the only ones on duty. I remember we had to stitch up six people involved in a road accident by a torchlight. Once they were a little stable, we had to send them to a hospital for X-ray and CT scans..

The supply of solar energy has dissipated the cycle of crisis. Even if the power goes out for three days at a stretch, our cold chain doesn't break, mothers deliver babies in fully functional delivery rooms, and surgeries or procedures are carried out under spotlights with the aid of every piece of electrical equipment required. We are able to maintain the highest quality of services for emergency cases.

For the second and third deliveries, parents are more prepared and relaxed. There was a case the day before yesterday that involved a first-time mother. It was nighttime. Heavy rains had disrupted the grid power supply. Both parents were anxious. They had arrived well before the onset of labour pains. We admitted her, kept her company for moral support, and closely monitored her condition for the next six hours, until she was ready to deliver her firstborn. What would have been a tedious nightmare in the dark was a memorable night because we were in the safety net of solar power.

When I am out in the compound during short breaks in the evenings, I see villagers resting in the corridors. Some are patients, some are relatives, some are neither. The Accredited Social Health Activists (ASHA) return from a long, hard day and charge their phones to update case reports. Shopkeepers from around the area come for a break. A microcosm of the village sits here discussing everyday goings-on. All of them are attracted by what an outsider may not even notice — a few lights and fans.



Nikashi, of
my Heart



The biggest complications arose when we couldn't use the infant radiant warmer to shield a newborn against hypothermia, or we couldn't use the suction machine to clear its air passage. In such situations, doctors and nurses must resort to manual procedures, which can be time-consuming, laborious, and not always effective or error-free.

DR. ADARSH MOHAN

Medical Officer of Health
Thamna Primary Health Centre (PHC)
Baksa District,
Assam





I hail from Kollam, a small district in the lower part of Kerala. I came to study medicine in Assam via the all-India quota in the National Eligibility cum Entrance Test (NEET). After completing my MBBS from the Fakhruddin Ali Ahmed Medical College and Hospital, Barpeta, I started working in Bodoland. Every junior doctor serves a mandatory rural posting for at least a year. I am serving the last month of my stint. As I look back, I cannot help but be amazed at the journey.

I currently work in Thamna, but I spent most of my rural experience in a village named Nikashi, located in the northernmost region of Assam, a mere two miles from the border between Bhutan and India. Nikashi may be developmentally poor and backward, but it is culturally and ecologically rich. The villagers are indigenous people who mainly live on subsistence farming; sometimes they sell their produce in the Tuesday and Wednesday bazaars.

Even five years ago, Nikashi was infamous for malaria. The second big problem was the lack of Accredited Social Health Activists (ASHA), who form the bedrock of India's maternal and child health care. In the absence of their monitoring at the village level, mothers delivered babies at home. Many would develop complications, and inevitably some wouldn't survive. There was an extremely low level of awareness about healthcare. I have met people who have told me that they lost their infants to common diarrhoea.

Years of government interventions have nearly eradicated malaria and dengue. The government has also recruited more ASHA workers. Yet, even today, when the mighty Brahmaputra is in spate, people who live in small, scattered hamlets cannot reach the health centre. The monsoons also completely disrupt the entire area's electricity supply and mobile connectivity.

The biggest complications arose when we couldn't use the infant radiant warmer to shield a newborn against hypothermia, or we couldn't use the suction machine to clear its air passage. In such situations, doctors and nurses must resort to manual procedures, which can be time-consuming, laborious, and not always effective or error-free. I remember one delivery when the baby took longer than expected to emerge out of the mother's womb. Since there was a power outage, we gently used mouth suction with the suction tube to relieve his stress. We patted and rubbed him for a long time to keep him warm. Eventually, his condition stabilised, but we had to refer both the mother and the baby to a higher centre for further treatment.

During normal outpatient hours in the summer months, sweat rolled down our faces and bodies. Without the fans working, the crowded waiting room would quickly become overwhelming. The entire staff would be irritable. I can remember moments when I have wanted to run out into the open. The Nikashi centre switched to solar power in May 2024. It marked the end of a period of darkness that health workers will not soon forget. We received green-energy-compatible lights, fans, and a cold chain system. With the facilities operating around the clock, the energy of the place changed. I could see a visible improvement in our services in a matter of days. When I left, the centre looked nothing like the one I entered on my first day.

My current workplace, Thamna, has been using solar power for some time now. We see up to 90 cases in the outpatient department on a busy day. The centre is open 24/7 for deliveries and emergencies. Everything runs like clockwork. The machines in the labour and emergency rooms are always ready. Just the other day, a patient required urgent stitches. We could stabilise him in a matter of minutes. There was a time this would have been an ordeal.



The Turnaround Season



For the last 12 years, I have been a pharmacist at this centre, which is a mini-PHC. Mini PHCs rank above sub-centres, which are the most peripheral healthcare service delivery outposts. They don't have doctors, only nurses and health workers. In addition to two Accredited Social Health Activists (ASHA) from each village who report to us, we have a doctor, a pharmacist, two nurses, and a laboratory technician. We serve 15 villages and receive 40 to 60 outpatients on an usual day. Additionally, we have five beds for daycare and observation.

For the majority of people in and around Dakua, we

are the first point of contact. The nearest town is about ten kilometres away, and the journey is neither cheap nor convenient. We test and treat the common communicable and non-communicable diseases, like hypertension, typhoid, malaria, syphilis, and HIV. We also offer basic checkups and tests related to maternal and child health. However, we do not have a delivery room. All the mothers have to go to the higher centres.

The centre was in dire need of renovations for some years now. Finally, the building is getting a facelift. I strongly believe that the introduction of the National Health Mission in 2007 has been a milestone for



BHASKARJYOTI SHARMA

Pharmacist

Dakua Mini PHC
Udalguri District,
Assam

We have been given new lights and fans that work very well on solar power and do not consume electricity in excess of requirement. Looking at the busy outpatient waiting area today, you wouldn't believe that there was a time when nobody used the chairs. Assam summers and monsoons are extremely humid. Feeling stuffy and hot without fans, patients preferred to sit outside, under the shade of big trees.



public healthcare in India. Prior to it, there were many unaddressed issues related to infrastructural gaps, quality of the medicine supply and availability of diagnostic instruments. Now, our complaints are heard, even though the solution might take some time. We receive the required medicine supplies without lags. We are also able to acquire replacements for old and non-working equipment, such as blood pressure monitors, stethoscopes, and laboratory machines for diagnostic procedures without a hitch.

The biggest challenge, however, was always the power shortage. During torrential monsoons and in the aftermath of natural calamities, we had to run the centre without any electricity for up to three days — without

lights, refrigerators, diagnostic equipment, or lab machines. In those inclement weather spells, we had to refer deteriorating patients to the hospitals because we couldn't help them any further. We were also unable to establish contact with the communities and patients in trouble because no phones worked. The decision of the government to install solar panels, to make the PHC energy-resilient and climate-resilient, has proved to be a turnaround. We have been given new lights and fans that work very well on solar power and do not consume electricity in excess of requirement. Looking at the busy outpatient waiting area today, you wouldn't believe that there was a time when nobody used the chairs. Assam summers and monsoons are extremely humid. Feeling stuffy and hot without fans, patients



preferred to sit outside, under the shade of big trees. Our refrigerator that contains vaccines and injections used to malfunction when we used our old and weak inverter for emergencies; it works perfectly now. We don't have to throw away any stock because the cold chain has been compromised by a power cut. Most of all, patients had to wait for days for simple test results because the lab machines couldn't be switched on. Sometimes, the samples would get spoilt, and they had to take retests. Now tests are not delayed; hence, treatments are not delayed.

Sometimes, when power cuts last very long, patients charge their phones at the centre while they finish consulting the doctor, take their tests, and receive their

medications. This is not a prescribed service, but we do help the community in a small way, especially the poor.

The availability of solar power has helped the immediate community in another way. The compound used to be dark at night. We had no security person or emergency lights to cover the perimeter. Many times, we would come in the morning to see littered bottles of alcohol or small damages to the property. Troublemakers were using the compound at night and were also causing problems for households nearby. The new light installed outside has resolved that situation. It comes on automatically after sunset and switches off when it's daylight.



We Flow With the Light

This is not a typical health centre. It caters to only about 3,800 people. The location is not remote. There are private hospitals nearby. The roads and public transport are not bad. Most people who require emergency care or medical procedures prefer to go to the government civil hospital, which is about a 20-minute drive from here.

Despite that, we get around 15 cases in the outpatient

department (OPD) everyday. We are relevant because the poorest of the poor — the small farmers, the daily-wage labourers, and the menial workers — prefer not to travel for common complaints such as body aches, fever, diarrhoea, high blood pressure, and high blood sugar.

As a pharmacist, my job is to dispense medicines to the patients as per the prescriptions issued by the doctors. I



The backend work involves a lot of tiny processes, and every detail has to be entered online and updated everyday. Therefore, electricity plays a crucial role in my work life. I must keep my laptop charged and connected to the internet. I need lights to navigate the storeroom and locate medicines.

ABDUL HAKIM

Pharmacist

Karemura State Dispensary
Baksa District,
Assam

take down the patient's name, registration number, and details of the medicines we have dispensed. The district drug warehouse delivers medicines as per the orders I place. I am responsible for refilling the shelves and labelling the boxes. Thereafter, I update the stock book and issue medicines to the various departments, like the laboratory, the labour room, and the OPD. The backend work involves a lot of tiny processes, and every detail has to be entered online and updated everyday. Therefore, electricity plays a crucial role in my work life. I must keep my laptop charged and connected to the internet. I need lights to navigate the storeroom and locate medicines.

In Karemura, daily powercuts can last up to four to five hours. The timings are not fixed. For many years, we would switch on the inverter to finish the job at hand, but it didn't have the capacity to cover the entire dispensary. Since we have received solar power, we feel free. We don't have to keep patients waiting. The lab test results are delivered on time. Minor emergency cases don't have to be referred to the city. Such a small change has made such a big difference to the people..



OPD (1)

OPD (2)

जय हिन्द
सर्वोदय विद्यालय, बलरामपुर









FOLLOWING THE SUN

**A TRANSFORMATION IN PUBLIC HEALTHCARE IN THE BODOLAND
TERRITORIAL REGION IN ASSAM, UPHOLDING SOCIAL EQUITY AND
CLIMATE JUSTICE.**