

Sustainable Energy and Decentralised Healthcare

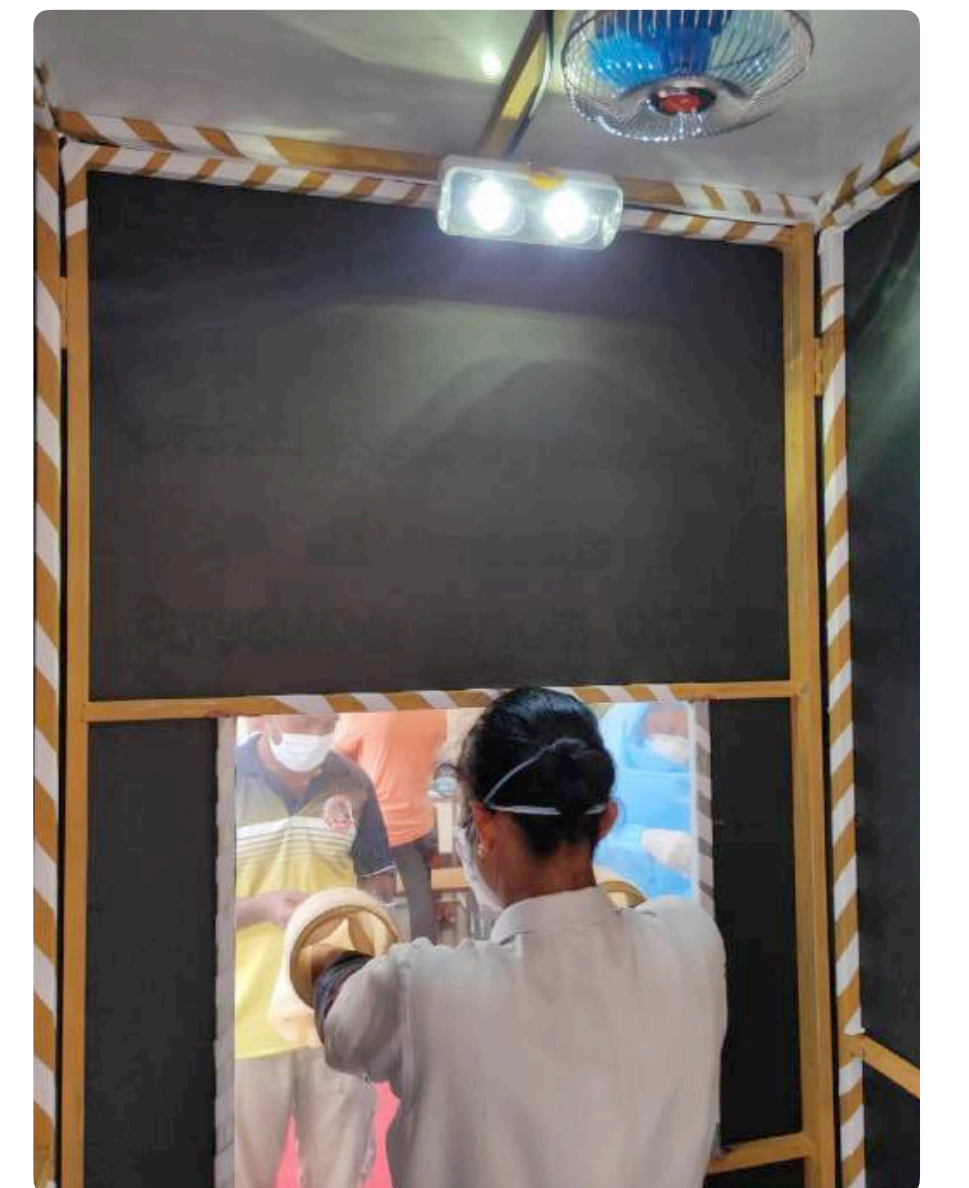
+ COVID 19

A compilation of the research and implementations carried out by SELCO Foundation between April - June 2020



SELCO Foundation

June, 2020



“The first cardinal rule when operating in a disaster scenario is to always prepare for the worst. Through our experience, we have also learnt that in disaster scenarios the role of the Nurses is paramount - we don't have adequate doctors for the situation.”

Dr. Ravikant Singh

Founder, Doctors for You

“The need of the hour is to increase diagnostic facilities in secondary and tertiary health care units- this is critical to bridge gaps, make health care more affordable and manage it efficiently in low resource settings.”

Dr. Nandakumar Menon

Founder Member and Director, ASHWINI and Gudalur Adivasi Hospital

“We shouldn't look at health care from a low resource perspective, but should make health infrastructure more efficient since currently there is a state of uneven resource capture between urban and rural.”

Dr. Prabhakaran D

Director, Centre for Chronic Disease Control

“Developing technologies for last mile health workers like ASHA workers and ANMs have come in most handy now such as NCD kits, screenings apps, electronic medical records etc. A good energy infrastructure also allows us to keep in constant contact with our health staff across our health centres, boosting their morale during these times.”

Dr. H. Sudarshan

Founder, Karuna Trust

“This is the opportunity to strengthen rural infrastructure and health economics in the villages. We should correct haphazard growth.

An alternate development paradigm should be developed- Urban has become the focal point and rural infrastructure is always neglected.”

Dr. K. Srinath Reddy

President, Public Health Foundation of India

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INTRODUCTION

“Post COVID-19, strengthening a decentralised approach would be critical. We have seen its benefits in Kerala. But also realise that decentralised systems don't develop overnight. They need decades of investment and vision. We have also seen much required inter-departmental convergence during this time- and hope that will continue post COVID-19.”

Dr. Rakhal Gaitonde

Professor of Public Health, Achutha Menon Centre, Trivandrum

SELCO over the last two decades has been striving to provide sustainable solutions, to under-served communities, that can enable better delivery of livelihoods, health and education. The primary philosophy being to eradicate poverty permanently an eco-system approach needs to be applied where the poor become asset owners and creators. The crisis SELCO was trying to mitigate was climate change and its effect on the poor communities.

The present crisis of COVID-19 is no different, but just that it has happened extremely suddenly and has impacted all parts of the society at once. Again, the biggest victims of this ongoing crisis are the poor. SELCO's again believes the eco-system approach will help come up with appropriate solutions to the problems being created by COVID-19.

There are multiple interventions SELCO has furloughed and one of the most critical being in the health vertical. Working with experts from the medical field across the world, grassroots level health focussed NGOs and local governments SELCO has mapped out the initial set of interventions. The document presents some of the most critical ones that along with the stakeholders, the consortium would implement, and that then can be replicated by others in different regions.

WHO has declared the COVID-19 (SARS-CoV-2) outbreak as Public Health Emergency of international concern and has raised the risk assessment of China, Regional Level and Global Level to Very High and “all countries should be prepared for containment, including active surveillance, early detection, isolation and case management, contact tracing and prevention of onward spread of SARS-CoV-2 infection.

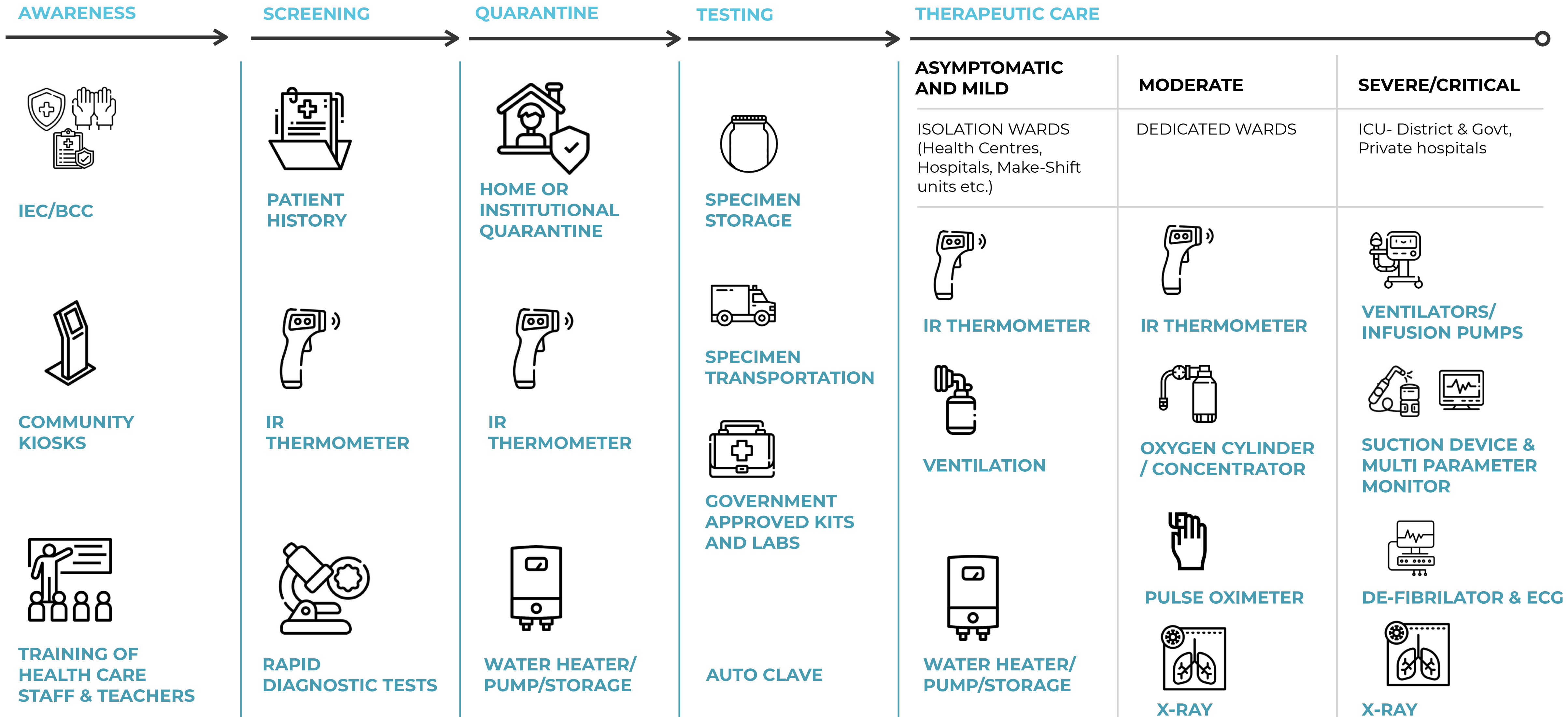
- **Quarantine** refers to separation of individuals who are not yet ill but have been exposed to COVID-19 and therefore have a potential to become ill. There will be voluntary home quarantine of contacts of suspect /confirmed cases. The guideline on home quarantine available on the website of the Ministry provides detail guidance on home quarantine.
- **Isolation** refers to separation of individuals who are ill and suspected or confirmed of COVID-19. All suspect cases detected in the containment/buffer zones (till a diagnosis is made), will be hospitalized and kept in isolation in a designated facility till such time they are tested negative. Persons testing positive for COVID-19 will remain to be hospitalized till such time 2 of their samples are tested negative as per Ministry of Health and Family Welfare (MoHFW) discharge policy. About 15% of the patients are likely to develop pneumonia, 5 % of whom requires ventilator management.

COVID-19 crisis has provided an opportunity to prove that sustainable energy, appropriate building design, utilisation of sustainable materials for construction and efficiency of medical equipments are all critical components for delivering emergency services. SELCO has worked with stakeholders to consider both the above criterion and have created a blueprint for the 1st set of interventions.

The added advantage being these components and interventions can be used even after the crisis is over, thus making it economically sustainable for governments to invest in them.

COVID 19 - PATHWAY TO RECOVERY

Sustainable Energy, Infrastructure and Technology Input Requirements



TESTING KIOKS FOR COVID 19

TESTING CHAIN FOR COVID 19



Methods of Sample Collection

Collecting virus samples by nasopharyngeal (NP) swab, oropharyngeal (OP) swab method

1. COVID WISK
2. LABORATORY
3. MOBILE COVID 19
4. TESTING VAN

See complete details on various testing equipment and solar designs for them in this report

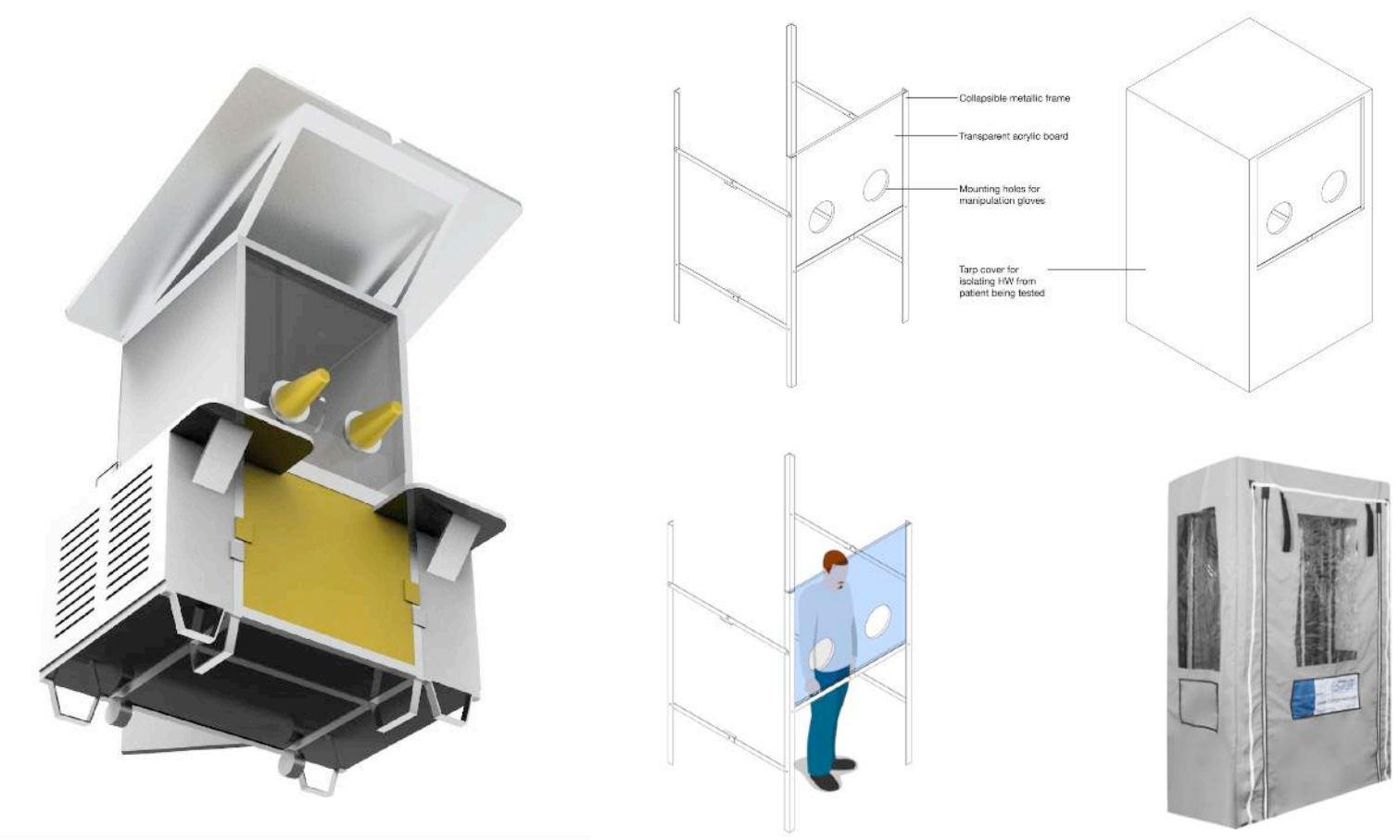


Portable Walk in Sample Collection Kiosk Facility

To minimize the consumption and disposal of the already scarce protective wears in the testing for Covid-19, we followed up on of the most effective design strategy presently available; to create a low footprint, contained kiosk-like barrier between the health-worker and the patient being tested. In addition to the existing framework, we designed them to be operable off-grid with solar panels. However these kiosk-esque testing cabins are more or less stationery spaces as they are heavy and difficult to carry around. This is less than ideal for remote and rural areas where health-workers need higher mobility of these testing kiosks.

A new prototype was designed using fabric covers and an easy to assemble design for more portable use.

[See the complete design document here.](#)



SOLAR POWERED MOBILE SWAB COLLECTION UNITS

SELCO India has been working in the Udupi District for more than 20 years. The region faced a complete lockdown with all borders being sealed off on 23rd of March i.e. the first phase of national lockdown. The lockdown has been relaxed since the 3rd of May i.e. the third phase of lockdown as the district went from three cases detected to zero cases and being in the green zone. The district is expecting 8000 people leaving the district, migrant labourers returning to their homes as well as people coming back to the district from other countries. Mangalore International Airport is about 95 kms, making Udupi a destination for many of the immigrants returning back.

Given this situation, strict protocols need to be followed with regular and increased testing for COVID-19 - both targeted and random as stipulated by the Health Department. The district administration has started the initiative of mobile testing vans for conducting random tests along with kiosks at check posts and any entry points.



Mobile COVID 19 Testing Van in Kundapura, Karnataka

The Mobile COVID19 Swab Collection vans have two people at every given point with some more people joining in at panchayats. They have a target of testing a minimum of 100 people daily in the targeted regions. The staff have to be completely sealed inside the vehicle and cannot roll down their windows for ventilation, as it can be hazardous. With the summer season at its peak, this task is very difficult for the health staff working in the van with it being parked under sunlight for hours.

Bharatiya Vikas Trust (BVT), a long-time partner of SELCO has been working with the district administration on COVID relief activities, providing masks to frontline workers. They have made over 10,000 masks in 30 days and distributed it across different panchayats. The health department approached SELCO through BVT to solar power the loads in the vehicle. The request was raised 10 days prior to the installation and with agreements and financing worked out.

Two fans, one light (75 W module), a mobile charging unit, a 30 Ah battery and one 10 Amp charge regulator were designed to be installed in the van. The battery was small sized as it is a daytime load with the van only running till the afternoon.

Post COVID, the vans will be used for other purposes as they belong to the health department and the solar system will be moved to a Sub Centre or a Primary Health Centre.

KEY TAKEAWAYS

Increased comfort and well-being for the frontline workers as they were working with no ventilation before the installation of the solar energy system. The temperatures in Kundapura near 40 degree Celsius in April/May.

SELCO Solar Pvt Ltd had worked with the health department previously, powering about 20 sub centres in the district. The trust built over the years on the quality of solar energy service in the region resulted in the district administration and SELCO's partner Bhartiya Vikas Trust reaching out to SELCO with the need for powering the van.

This intervention will be followed by powering of 2 more testing vans, border police check posts, and primary health centres in the district.

SOLAR POWERED SWAB COLLECTION KIOSKS

With the incoming of returning migrants, The state of Jharkhand has witnessed a sharp spurt in the COVID 19 cases. The state government is responding to the emerging crisis by upgrading the facilities by involving various stakeholders. The biggest challenge for district health officials however, was screening and sample collection of the suspected cases. One of the designated health facilities in Giridh district was SADAR hospital, one of the biggest and best-equipped with a large OPD to handle the screening for identifying the suspected cases.

Health care workers who are involved in sample collection are coming directly in contact with COVID suspects. Though they are using PPE Kits, still they have fear and apprehension that they may get infected with corona virus. Already under strain and shortage of resources, the administration was forced to divert meagre budgets towards buying PPE kits like a coat/face shield/masks/gloves, one of which cannot be worn for over 4-5 hours of use.



COVID 19 Swab Collection Unit in Giridh, Jharkhand

To overcome this challenge, SELCO foundation approached the health authorities with a cost effective solution in the form of solar powered sample collection kiosk. The sample collection kiosk was proposed as a mobile cubicle cabin which comes with a pair of gloves attached to it in the front through which the health workers can take samples of the suspected patient. The structure is supported with four wheels at the base for mobility. The swab collections can also be done without any contact with the patient, and the gloves used can be sanitised from outside. This will reduce the need for more PPE kits and will enable more tests in less time.

On 30st May 2020, the Solar Powered Sample Collection Kiosk was installed and was inaugurated by Dr Awedesh, Civil Surgeon. This DRE enabled sample collection kiosk is placed in the premises of Sadar Hospital, Giridh.

The kiosk is also powered by solar which has basic critical loads of light, fan and mobile charging point which will be very useful for the frontline worker working from within the cubicle for extended hours, if required.

KEY TAKEAWAYS

Comfort for Health Staff: With increased cases expected by the health and district administration, large numbers of swab collections can be handled very easily and comfortably through the kiosk.

Maintaining Distance and Increased Sense of Safety: The staff can maintain distance following protocol and have reduced risk of infection. They also feel more comfortable and have reduced apprehensions while handling swab samples.

Saving on PPEs: The District Program Officer believes that this kiosk will reduce the use of PPE kits due to this kiosk. A single PPE kit is advised to be used only for 4-5 hours, and with the scarce availability of the same in the district, the kiosk can be very useful for the staff.

QUARANTINE, ISOLATION AND THERAPEUTIC CARE FACILITIES FOR COVID 19

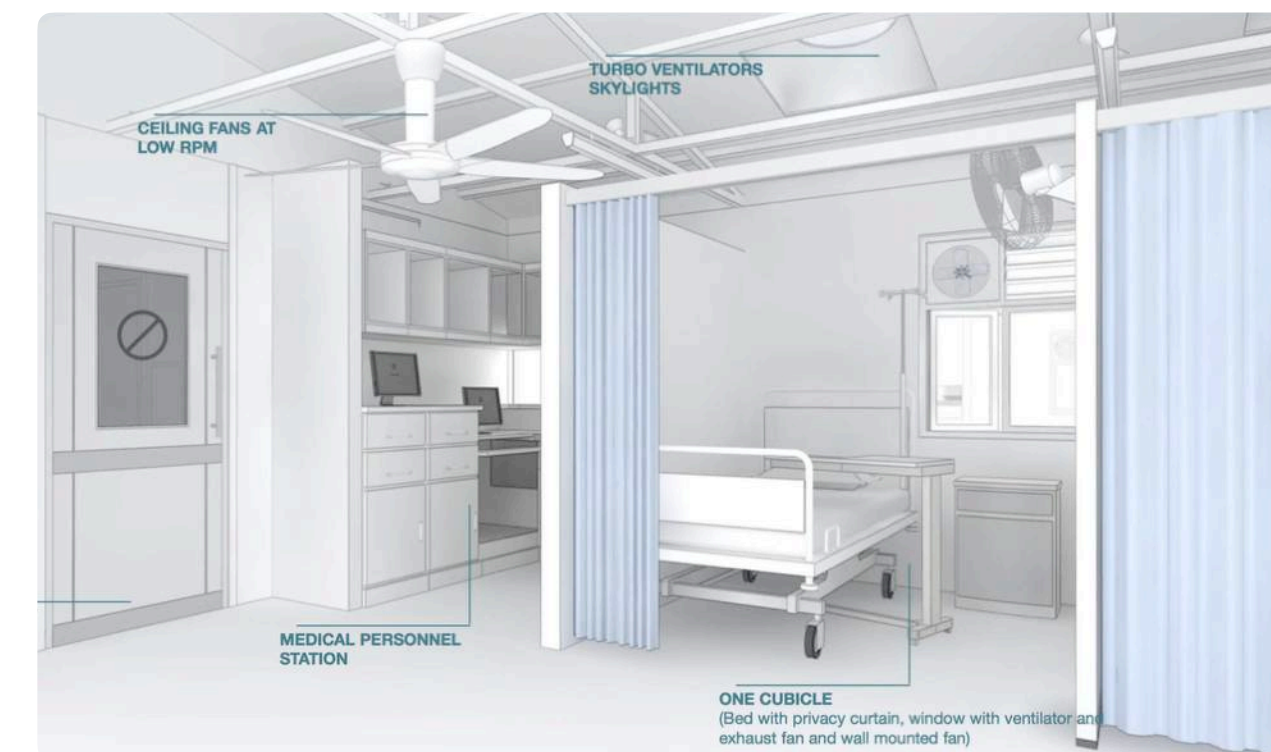
Infrastructure Gaps

- **Epidemic unpreparedness** of district level health centres such as: **unavailability of additional rooms, isolation beds, testing kits, quarantining & isolation facilities, ventilators and medical supplies**; as the coping mechanism is very much co-related to quality infrastructure
- Local community centres and government buildings converted to **temporary isolation wards lack access to reliable power supply**-critical for well-being and treatment of the patients
- Due to **unreliability of the grid (power cuts and voltage fluctuations)**, these buildings rely on **generators** resulting in high operational costs
- **Not originally designed to serve as isolation wards**, these temporary isolations wards also can **lack basic sanitation such as clean water, disinfected toilets and drainage facilities**
- Certain states/regions in India (which will also be the case across other developing countries) have **severe shortages in ambulances and oxygen cylinders** - leading to poor accessibility of health services and broken supply chains for critical infrastructure like ICUs
- **Social distancing is a hard concept to follow in dense urban slums and vulnerable institutions** catering to large number of individuals living in close proximity or using **common infrastructure- such as toilets, water points etc.** This may aggravate the community transfer of COVID-19

The shortfall of infrastructure, is being seen primarily in two ways

OPTION 1

Existing public buildings such as community centres, panchayat buildings, government residential schools, training centre of the NGOs, stadiums, etc can be upgraded and renovated to function as quarantine or isolation wards.



OPTION 2

Renovation, quick upgradation and extension of existing hospitals

These two options have been detailed [in this report](#) and guidelines have been specified. However, as stated earlier, it is important to also note that the infrastructure required for COVID 19 (particularly for Isolation and Therapeutic Units) will need to be combination of built infrastructure and energy infrastructure- energy required to ensure smooth running of critical health equipments and to ensure the well-being of the patients and the staff.

Chain of Recovery for COVID 19

Individual who are returnees from COVID19 affected areas, contacts with returnees or with confirmed cases etc. are the primary focus group for whom healthcare services are defined in this document. Depending on the stage of the COVID19 infection, medical services that need to be provided to the patient, the health staff and infrastructure (specifically technology) requirements differ.

It is also important to note that every positive COVID19 patient, infects 2-3 people on an average, Thus, contact tracing, identification, quarantine and screening of individuals who come in contact with a positive COVID19 patient is the first step to curbing the spread of the virus.

Asymptomatic

Individuals with the potential of developing symptoms related to COVID 19 or being carriers of the virus.

Quarantine facilities are spaces where individual can be separated from general public for 14 to 20 days for symptoms monitoring and test for Covid19 virus. Medical care is not required at these facilities and patients that develop symptoms, need to be isolated and transferred to medical care facilities.

Depending on the geography and the context, temporary quarantine facilities might need to be set up to ensure that quarantine protocols are followed. For example, in urban slums or households/ neighbourhoods with high density, regions facing a sudden influx of migrants etc. These units can be set up as makeshift units by upgrading existing public infrastructure- following guidelines stated in the following page to ensure quality care and well-being.

Asymptomatic / Mild

Tested COVID 19 positive cases with no symptoms or mild symptoms, such as fever and Fatigue.

100% of Covid19 positive patients need physical and social isolation with medical care and monitoring. These units will be built as extensions to COVID FIRST LINE TREATMENT CENTRES (CFLTC). These can be housed out of primary care units- but the identification of the location needs to be in line with the guidelines on the following page.

Moderate

Patients with fever and breathlessness and/or mild Pneumonia.

Close to 15% of COVID 19 positive patients need basic therapeutic care. These units will be built as extensions to COVID FIRST LINE TREATMENT CENTRES (CFLTC). These can be housed out of primary care units- but the identification of the location needs to be in line with the guidelines on the following page. It is also important to note that the facility should be in close proximity to the designated COVID hospitals, and patients should be closely monitored, so they can be transferred for critical care if needed. Patients with pre conditions (proving them to be high risk) should be prioritised in COVID Hospitals equipped for critical care.

Severe

Patients with fever, breathlessness and severe Pneumonia.

Close to 5% of Covid19 positive patients need ICU care who are critically ill. Among them 67% develop Acute respiratory Distress syndrome (ARDS). These units will be built as extensions to COVID HOSPITAL(CH). - (Source: WHO Clinical Management of COVID 19 Patients)

Capacity Needs

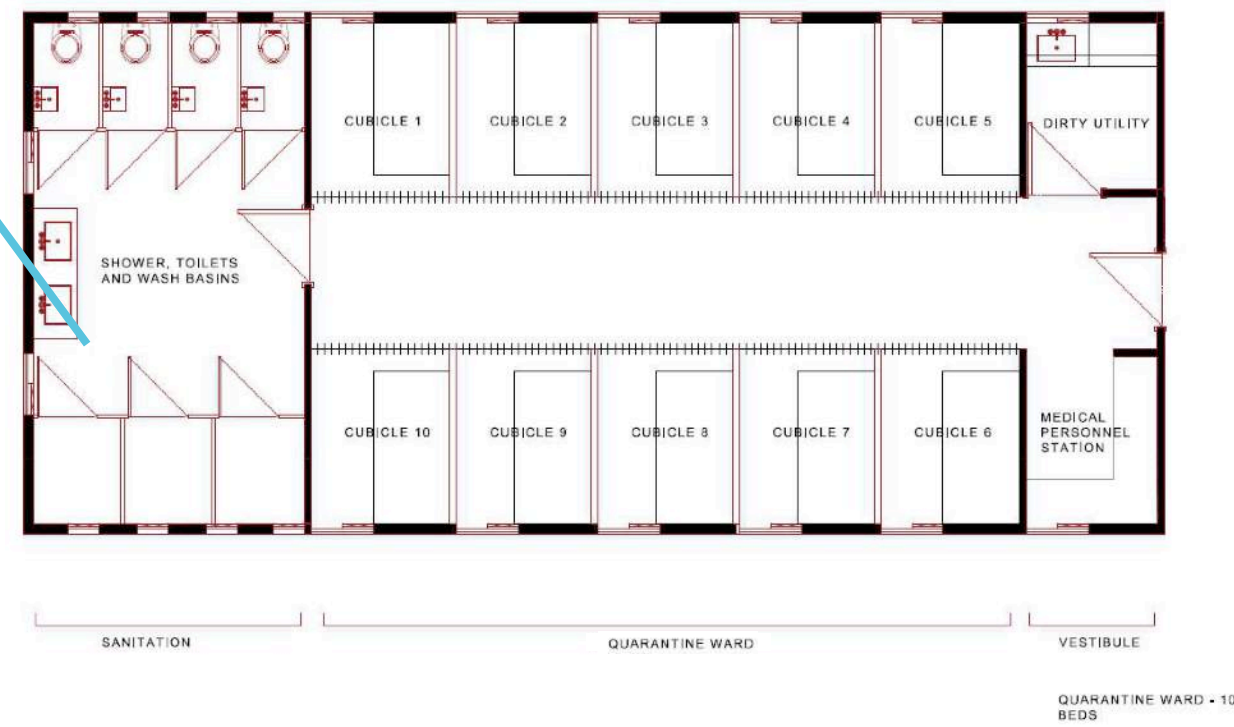
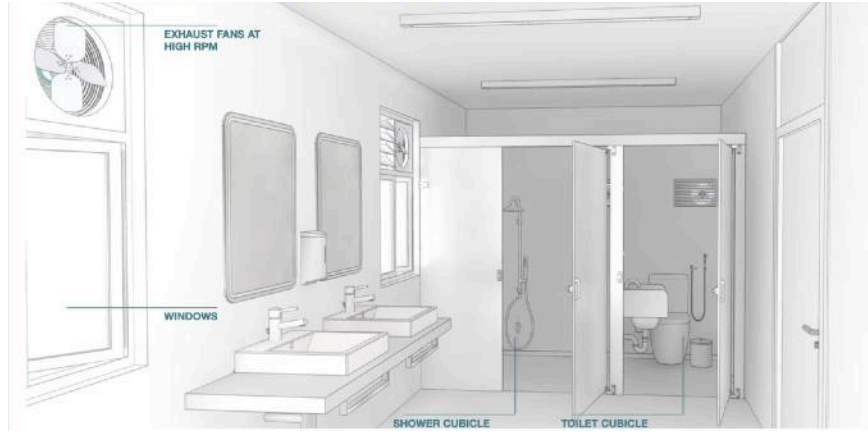
Capacity Needs	PROBABLE EXPOSURE	COVID +VE CASES		
	Asymptomatic	Asymptomatic / Mild 100% approx	Moderate 15% approx	Severe 5% approx
	Quarantine Ward	Isolation Ward	Basic Therapeutic Care	ICU
# of BEDS		300 beds per 100,000 population	4 beds per 100,000 population is essential	2 ICU beds per 100,000 population is essential
HUMAN RESOURCES	ANM, ASHA, AWW	Nurses, Medical Officers	General Medical Officer, Medicine Specialist, Paediatric, Microbiologist, Psychiatrists/ Psychologists, Nurses, Lab Technician, Public Health Specialist	Therapeutic Care HR + Respiratory specialist, anaesthesiologists, ICU Nurses and Technicians
APPLIANCES	Exhaust fans, Pedestal fans, Lights, Mobile charger			
MEDICAL EQUIPMENT	1 unit IR Thermometer**, Covid sample collection kits (ratio to affected population, 1hr = 10/15 tests)	1 unit IR Thermometer**	1 unit IR Thermometer**, 3 units Oxygen concentrator/Cylinder, 6 units Pulse Oximeter (+2), 1 unit X-Ray Machine (for all wards)	4 units [Ventilators (with/ without splitters) - cylinders/ oxygen concentrator, infusion pump, suction devices, multipara monitor], 1 unit defibrillator (+1)
SPATIAL - BEDS PER MODULE	6ft by 8ft cubicle - 10 beds	6ft by 8ft cubicle - 10 beds	6ft by 8ft floor area - 6 Beds	10ft by 8ft floor area – 4* or 6 beds
SANITATION	4 toilets and 2 showers, 200 LPD Solar Water Heater Water Pump (as per need)	4 toilets and 2 showers, 200 LPD Solar Water Heater Water Pump (as per need)	2 toilets and 1 shower 100 LPD Solar Water Heater, Water Pump (as per need)	
VESTIBULE	Common entry	Designated airlock entry and exit channels		

***Economical and Practical to set up 4 Bed vs. 2 Bed.** Can be used as both therapeutic and ICU care by building 1 six bed unit per 6 Lakh population)

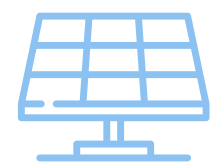
**** IR Thermometer is suggested in places where more than 80 people are expected to be screened in a day.** Further, in case IR thermometer is being used in a health facility, adequate training of staff on its use needs to be provided.

Quarantine Centres

Spaces where individual can be separated from general public for 14 to 20 days for symptoms monitoring and test for COVID 19 virus. Medical care is not required at these facilities and patients that develop symptoms, need to be isolated and transferred to medical care facilities



Layout of an Ideal Quarantine Unit



5 kWp
Solar Panel Capacity



360 Ah, 96 Vdc
Battery Capacity

APPLIANCES

Exhaust Fans, LED Tube Lights, LED Bulbs, Mobile Chargers, Wifi Modem, Infrared Thermometer,

SUNSHINE

5 Hours

AUTONOMY

2 Days

SOLAR POWERED MODEL QUARANTINE CENTRES

In the state of Manipur, the number of cases detected as of 15th May 2020 was only 3, but with the migrants coming back home from other states this number is bound to increase. By 17th May, 4 new cases were detected, all amidst the return of the people who were stranded in other states so far. One such district is the Ukhrul District. The district has already seen a return of about 500 migrants and is expecting another 7000+ according to local administration.

Existing health infrastructure in the Ukhrul district might not be able to cope up with the anticipated influx of residents who need to undergo mandatory quarantine and at same time cater to the other medical needs of the population. **After careful assessment of such identified facilities, a comprehensive plan was suggested to the District Administration. Facilities with unreliable access to electricity were mapped, and the list was presented to the District Administration for installation of Solar Energy Systems for Lighting and Mobile Charging.**



Volunteers for Village Development (VVD) Training Centres identified for Quarantine in Ukhrul District, Manipur- Installation in progress across identified quarantine centres

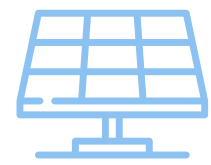
KEY TAKEAWAYS

Rapid upgradation of public infrastructure important to improve the quarantine facilities. As stranded migrants reach home - it is important that the state and district administrations provide them with well equipped facilities where they can rest and also save their families from being exposed to the virus through them.

Civil Society Organisations, together with District Administrations can play a key role in rapid assessments of facilities and upgradation that is required to convert them for quarantine.

Solar Powered Isolation Centres (Mild Symptoms) Ward

Tested COVID 19 positive cases with no symptoms or mild symptoms, such as fever and Fatigue. 100% of COVID 19 positive patients need physical and social isolation with medical care and monitoring. Designs for these are developed such that they can be easily deployed by a single vendor and with anywhere between 1-4 days for on-site installation.



5 kWp
Solar Panel Capacity

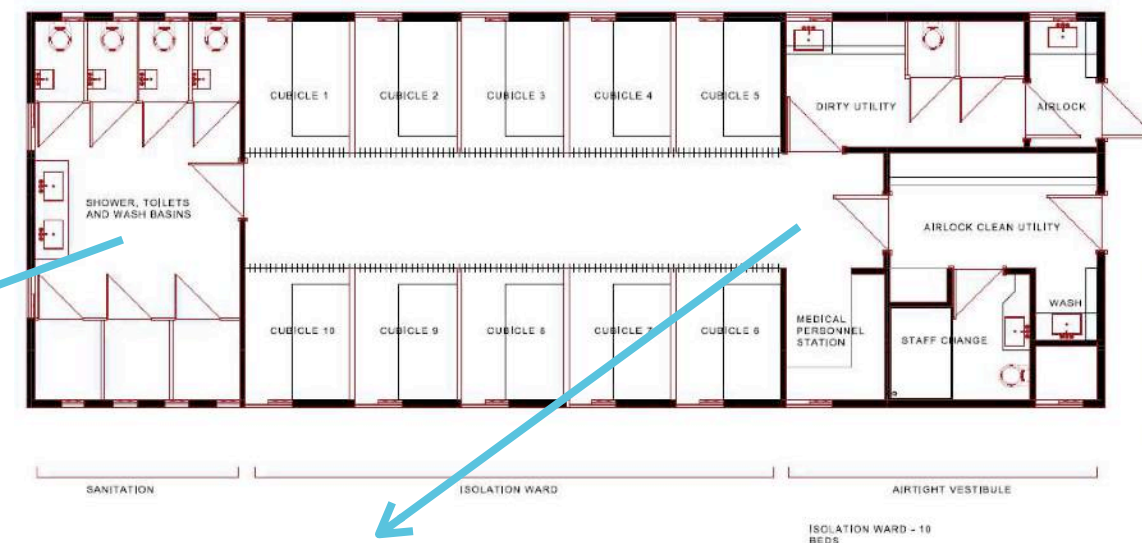


360 Ah, 96 Vdc
Battery Capacity

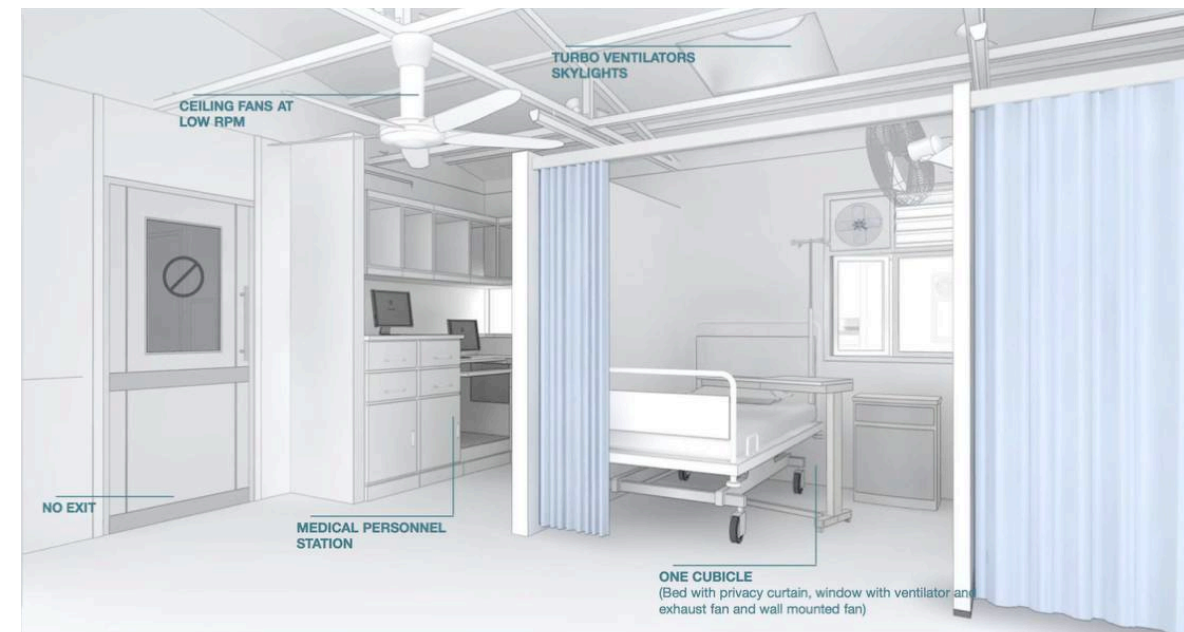
APPLIANCES

Exhaust Fans, LED Tube Lights, LED Bulbs, Mobile Chargers, Wifi Modem, Infrared Thermometer,

SUNSHINE	AUTONOMY
5 Hours	2 Days

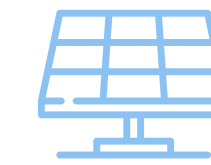


Layout of an Ideal Isolation Unit



Solar Powered Therapeutic Care (Moderate Symptoms) Ward

Patients with fever and breathlessness and/or mild Pneumonia. Close to 15% of COVID 19 positive patients need basic to advanced therapeutic care. Construction of these are proposed to be carried out using prefabricated structures that are easy to transport and set up and include decentralised solar systems, restrooms and thermal insulation.



11 kWp
Solar Panel Capacity

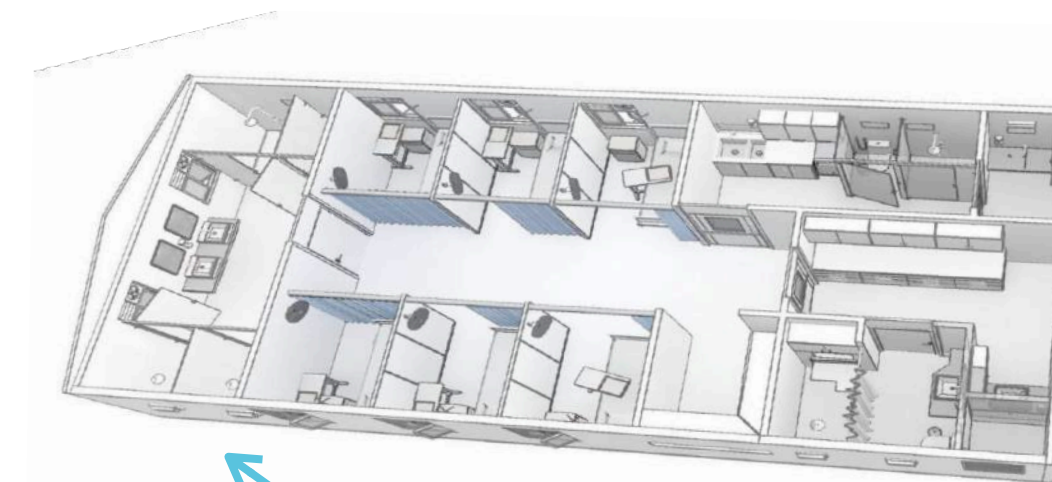


300 Ah, 240 Vdc
Battery Capacity

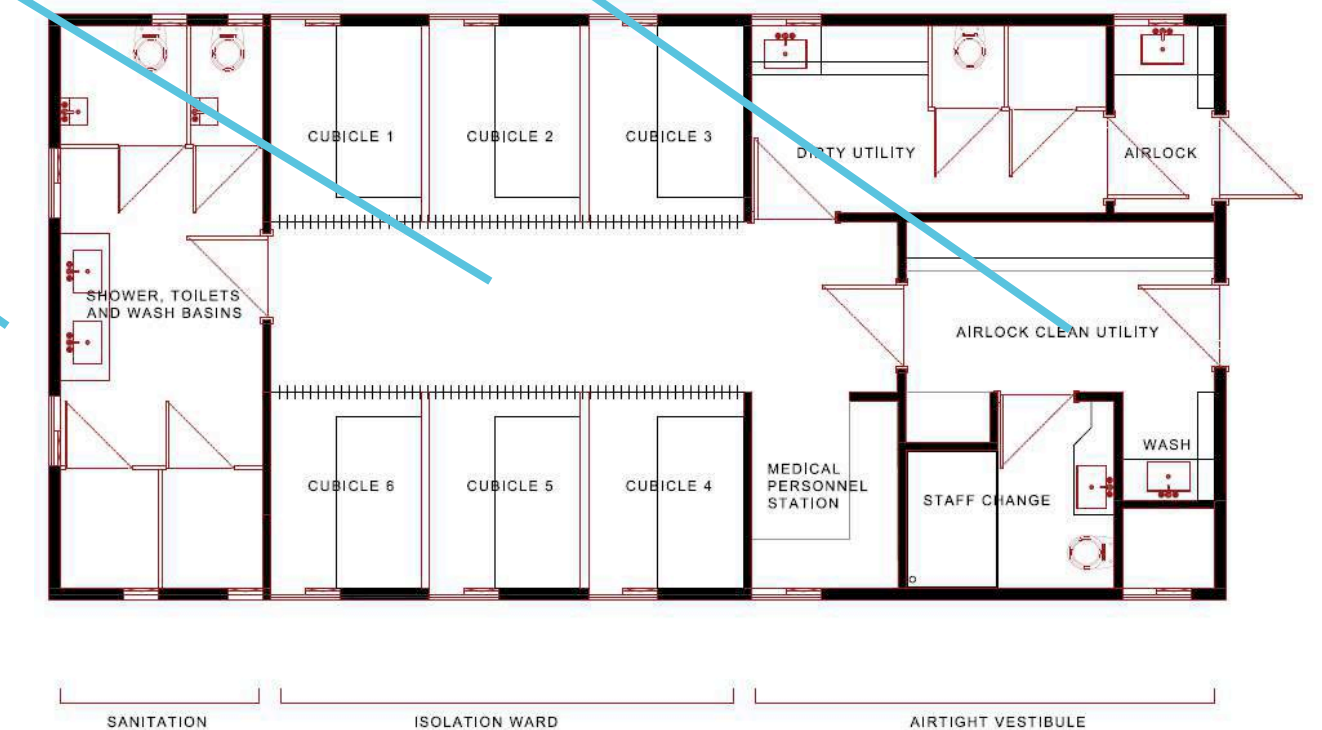
APPLIANCES

Oxygen Concentrators, Exhaust Fans, LED Tube Lights, LED Bulbs, Mobile Chargers, Wifi Modem, Infrared Thermometer,

SUNSHINE	AUTONOMY
5 Hours	2 Days



Layout of an Ideal Therapeutic Care Unit



SOLAR POWERED CORONA CARE HOSPITALS, EAST GARO HILLS, MEGHALAYA

[Click here to read the complete case study](#)

East Garo Hills is a district in Meghalaya with a population of about 3,17,917, according to the 2011 census. 97% of the total population belongs to tribal communities and the district is signified by hilly terrains with many areas being extremely remote. There is a district hospital in Williamnagar (District Headquarter) which has been designated as the frontline facility to treat COVID patients and has a capacity of 230+ bed facility in it.

The East Garo Hills district hospital has two buildings which have been converted for COVID measures - Covid Care Centre (therapeutic care centre) and Isolation Ward. **The centres have been solar powered to support basic loads like lighting as well as powering critical equipments for COVID Care. The loads include powering existing LED bulbs and tubes, charging points, refrigerator, deep freezer, suction apparatus, oxygen concentrator, semi auto analyser and needle cutter.**

“We are looking to blanket the district. And this is not just about solar powering, we want to see how we can improve the whole medical machinery- rural health care is the foundation of the public health system. And how we upgrade the technology and human resource is going to be the key.”

Swapnil Tembe, District Collector, East Garo Hills

The Inauguration of the COVID Care Hospital in Williamnagar, East Garo Hills, Meghalaya was done by the Honourable Chief Minister Sangma Conrad



KEY TAKEAWAYS

Established relationship with the District Administration: The implementation was carried out in partnership with the district administration in a smooth manner due to the nature of the existing relationship and work plans set for the post COVID future.

Convergence of stakeholders: This initiative also showcases that the state government tried to actively tap the synergies springing from coordinated action from various stakeholders such as non-governmental organisations, local administration, health authorities, local enterprises etc who all work together in battling the pandemic. Such initiatives reinforce the the need for inter-departmental convergence for developing comprehensive responses.

Strengthening primary care: With easing of the lockdown the state is witnessing heavy influx of the migrants for which advance screening, sample collection and testing has to be scaled up. The need for the centres to be self-reliable was critical to be able to serve the populations in a decentralised manner.

CRITICAL EFFICIENT EQUIPMENTS ADDED FOR COVID CARE

Oxygen Concentrator: 15% of positive COVID cases tend to require oxygen supply. These concentrators can be used as an immediate response before patients are moved to critical care which then requires piped oxygen.

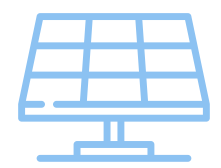
Semi Auto Analyser: Blood tests are critical for COVID testing and this equipment is useful for blood count which determines the spread of infection. It is useful to detect all diseases and infection spread as well.

Needle Cutter: A device which renders a plastic syringe of any type safe by removing cutting or destroying the needle. This equipment is useful as noncontact equipment for health staff as minimal contact is best suited.

Read the full market research on [Oxygen Concentrators](#) and [Ventilators](#)

Solar Powered ICU Units (Severe Cases)

Patients with severe symptoms are required to be isolated with additional care in the form of Ventilators (with/ without splitters) - cylinders/ oxygen concentrator, infusion pump, suction devices, multipara monitor, defibrillator, ECG, etc. No partition walls to be provided in ICU units - privacy curtains to be added. Separate oxygen tank storage for centralised oxygen supply needs to be provided.



23 kWp
Solar Panel Capacity



300 Ah, 240 Vdc
Battery Capacity

APPLIANCES

ICU Ventilators(With Oxygen Cylinders), Multi Para Monitors, Infusion Pump, Defibrillator, Suction Machine, Exhaust Fans, LED Tube Lights, LED Bulbs, Mobile Chargers, Wifi Modem, Infrared Thermometer,

SUNSHINE AUTONOMY

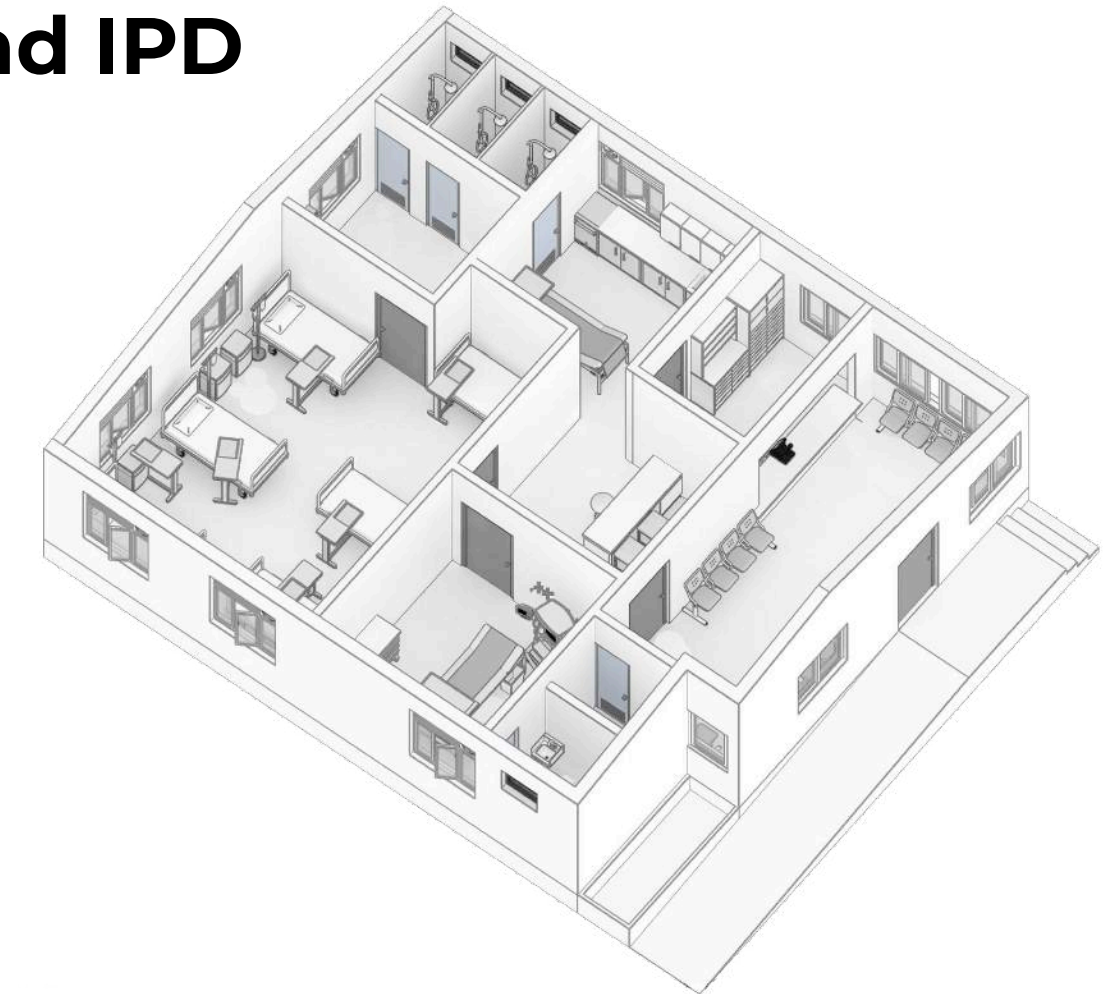
5 Hours 1 Days



Layout of an Ideal ICU Unit

Auxiliary Infrastructure - Solar Powered OPD and IPD

In this case, care for regular patients and services to TB, cardiovascular, neurology patients need to be provided in an auxiliary infrastructure. This service could be provided by a local private hospital or Primary Health Facility, in the absence of which this can be supplemented as an add-on unit to the speciality hospital.



Auxiliary Infrastructure - Solar Powered Staff Quarters

Spaces need to be provided for the staff to live in quarantine from their families, and other non COVID19 medical staff at the facility as a precautionary measure. The following protocols and guidelines should be followed in these staff quarantine units:



SOLAR POWERED OPD & STAFF QUARTERS FOR COVID RESPONSE IN BIHAR

Masarhi village in Patna district of Bihar hosts a hospital known as Vistex Hospital. The health centre has served more than 25,000 patients since November 2015 and it a population of over 200,000 poor communities. The hospital has had a huge number of emergency cases recently. With no other speciality care health facility nearby, Vistex hospital is the only hospital located in the area that can provide quality emergency health care services.

In view of the recent COVID 19 outbreak in the state, the Bihar State Government has directed Doctors For You (DFY) - who have partnered with doctors without Borders to aid Vistex Hospital in becoming a COVID 19 screening and management centre. In response to COVID 19, DFY in partnership with SELCO Foundation has designed a COVID speciality Isolation facility with reliable and sustainable energy resource and climate responsive, quick deployment infrastructure for OPD, IPD and COVID staff quarters as an expansion. Read more about Doctor's For You here.

“While we convert our hospital into a COVID 19 Isolation Facility, we need to make sure of 2 things — First that there is a clear separation between our emergency and OPD, IPD cases from the COVID cases; and second that we build comfortable facilities for our doctors and medical staff so that they can rest at the hospital premises and quarantine themselves from the families.”

Dr. Ravikant Singh, Founder, Doctors for You



Ongoing construction at the Vistex Hospital in Bihar using Pre-Fab and Pre-Cast Materials

KEY TAKEAWAYS

Dedicated therapeutic units are crucial in managing COVID 19, for this access to reliable energy is a must to provide quality health care. Since Vistex Hospital is a dedicated covid treatment centre, additional infrastructure was required to address general OPD services and staff quarters. Through this pilot project the following infrastructure would be set up:

- **Reliable Sustainable Energy Solution for Critical Care during COVID19, ensuring uninterrupted running of crucial medical appliances.**
- **Capacity building of health facilities and health workers from Government & Private hospitals working for COVID 19 prevention and management will be carried out for efficient use of the space -- where OPDs will be organized in such a manner that patients exhibiting flu like symptoms, cardiovascular issues and tuberculosis are attended separately from other patients and spaced out so as to avoid overcrowding.**
- **New Infrastructure for the OPD facility for general OPD and accompanied IPD (6 Beds) will be built with optimum thermal comforts.**
- **Safety of health care providers or medical staff will be ensured as well as the risk of transmission of the virus prevented by providing staff quarantine facilities.**

[Click here to view the Precautionary Measures set up for Construction and Implementation in the COVID-19 Setting](#)

Useful Links and Resources

[WEBINAR: Responding to COVID19 by Strengthening the Health Infrastructure and Systems in Low Resource Setting | April 2020](#)

[Sustainable Energy Driven and Climate Responsive Infrastructure for Isolation and Therapeutic Units for COVID-19](#)

[Solar Powered Oxygen Concentrators- In the Context of COVID-19](#)

[Solar Powered Ventilators- In the Context of COVID-19](#)

[Sustainable Energy Access for COVID-19 Testing](#)

[COVID-19 Travel WISK \(Walk-in Sample Collection Kiosk Facility\)- Collapsible Design](#)

Case Study: [Mobile COVID-19 Testing Vans](#)

Case Study: [COVID Care Hospital, Meghalaya](#)

Case Study: [Swab Collection Kiosk, Jharkhand](#)

Case Study: [Quarantine Units, Meghalaya](#)

Sustainable Energy and Decentralised Healthcare + COVID 19

A compilation of the research and implementations carried out by SELCO Foundation between April - June 2020

Thank You!
For more information
please get in touch:

covid19@selcofoundation.org
www.covid-19.selcofoundation.org



SELCO Foundation

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