

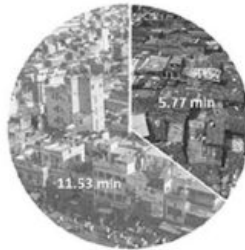
Una “First Aid Clinic” portatile per New Delhi

Questo è l'obiettivo che ha animato l'attività di un team progettuale integrato (architetti e ingegneri) formatosi nel quadro di un'avanzata esperienza di design e industrializzazione all'interno dell'Alta Scuola Politecnica (acronimo ASP, organizzata congiuntamente dai Politecnici di Milano e Torino) per definire il prototipo virtuale di un piccolo edificio definito in ogni singolo dettaglio; una clinica/pronto soccorso sostenibile, energeticamente indipendente, concepita per portare servizi di assistenza di base in contesti in via di sviluppo, poveri e sovrappopolati, come baraccopoli formatesi intorno alle megalopoli ad alta densità abitativa. Il management e la comunicazione di tale progetto è invece affidato ad Abad Architetti di Milano (www.abad.it), che già aveva curato il progetto di “smart school” pubblicato su diversi networks.



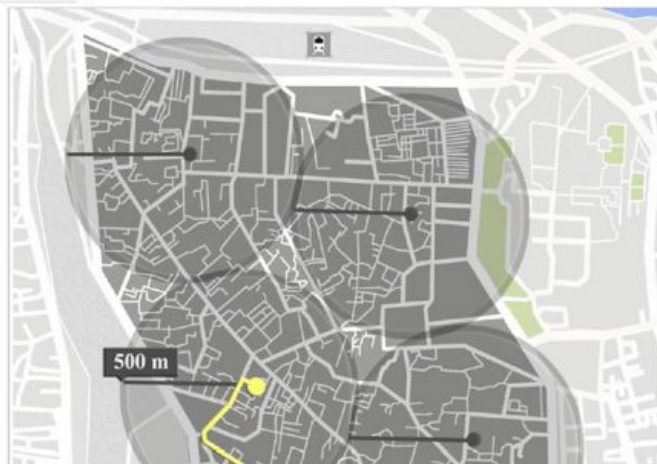
NEW DELHI SLUMS

“Mainly those residential areas where dwellings are in any respect unfit for human habitation by reasons of dilapidation, overcrowding, faulty arrangements and designs of such buildings, narrowness or faulty arrangement of streets, lack of ventilation, light, sanitation facilities or any combination of these factors which are detrimental to safety, health and morals.”



L'idea alla base di tale ambito di ricerca progettuale va cercata – per accelerare il miglioramento delle condizioni umane di persone socialmente svantaggiate – nella necessità di energia e acqua pulita a buon mercato, condensati in pochi, piccoli smart-tech “Hub”, che possano svolgere un ruolo fondamentale per l’attivazione di una virtuosa interazione tra competitività economica e salubrità ambientale, e che questi fattori possano a loro volta contribuire a limitare le barriere materiali e culturali tra periferie degradate e il resto della città.

THE PROJECT



Micro Clinic within Walking Distance

By using a micro clinic design, rather than a larger medical center, the project aims to provide a better experience for patients, with more personalized care. With small clinics located 1km apart, patients do not need motorized transportation to reach a clinic. This is crucial because slum residents do not have access to cars and the narrow streets make it difficult for emergency vehicles to enter slum areas.



Provision of Additional Services

The clinics are designed to provide additional services such as clean water and health education, in order to improve the unhygienic conditions of the slums and reduce the spread of preventable illnesses. Health education is an important aspect of disease prevention. Disease prevention through education is as important as disease treatment, and the small, localized design of the clinics is convenient for the distribution of educational materials and information at the neighborhood level.



Energy Independent

The implementation of our public buildings is thought to be possible also in areas not connected to the electrical grid, without reducing the quality of the services provided. Health assistance needs some electric devices and the clinic of course must be provided with adequate lighting and a cooling system to cool the environment and medicines. To maintain these high quality services, the design of the clinics has moved in two complementary directions: smart tools to reduce the energy consumptions and a system able to provide electricity.



Map of Clinic Positions

- Distance from Home to Clinic
- Roads
- River
- Green Space
- Project Area
- Surrounding Area



Local materials and labour

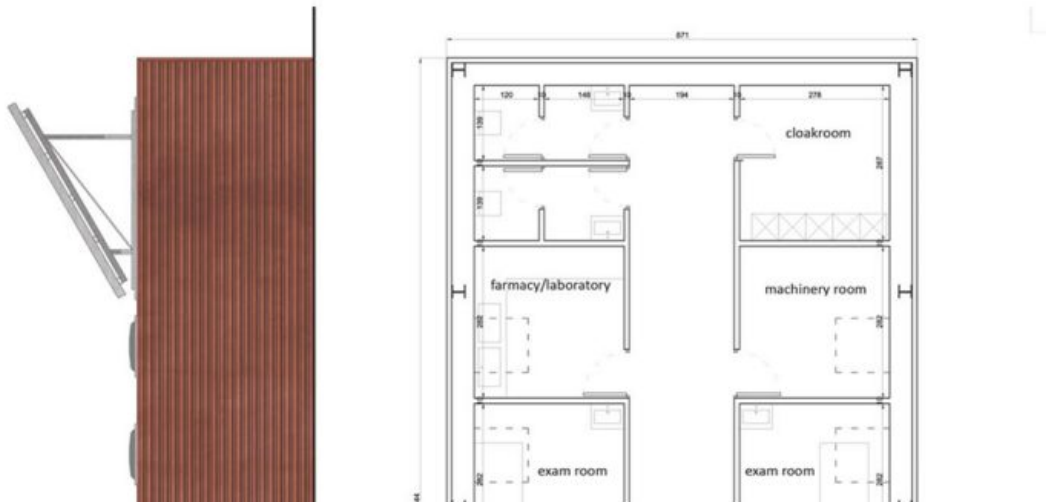
This requirement has the dual purpose of reducing the use of transportation resources and involving local producers and manpower in the construction of a public building. First of all, using materials that can be found locally reduces the costs for the clinic and also stimulates local economies, increasing the social utility of the buildings and making the clinics more accepted.



Prefabricated design

The clinics are designed to be easy to assemble, with a high grade of pre-fabrication to cut costs and time. The intervention to provide a social service in critical areas has to be fast, because health is a crucial issue in these areas. Moreover, the urban situation in developing countries is so changeable that a fast implementation is a key requirement. High grade pre-fabrication reduces the assembly time and the collection of material in a central place is easier and cheaper. The IKEA logic of pre-fabrication, easy and well-explained assembly is also a way to avoid the problem of non-specialized manpower.

Un primario criterio definito per la scelta della posizione di questi piccoli edifici all'interno degli slams (testato attraverso lo specifico caso di studio di New Delhi) è quello di mantenere una distanza massima da percorrere per raggiungere le smart-clinic come punti di riferimento delle zone degradate. Questo aspetto migliora l'ottenimento di un'elevata accessibilità in termini spazio-temporale del tessuto urbano, questione definibile cruciale in aree caotiche e affollate, dove le persone si muovono a piedi o in bicicletta e gli ostacoli per i mezzi sono ovunque.





Il risultato del progetto è quindi uno smart building, sostenibile, energeticamente indipendente e produttivo per i fabbisogni quartierali, a chilometro zero, reversibile e portatile. Al raggiungimento dei propri scopi verrà semplicemente smontato e ricollocato.

MATERIALS: TRADITION AND INNOVATION





Bamboo

Bamboo is a highly available and extremely low cost material in India. It is used for a great amount of purposes, but it can also be employed as structural material, thanks to its high mechanical properties.



Phase Changing Materials (PCM)

PCMs are materials that uses their phase-changing ability for the purpose of heating, cooling, or temperature stabilization. PCMs have found applications in a wide array of areas such as in thermal energy storage, building energy efficiency, food product cooling.



Coconut Fiber

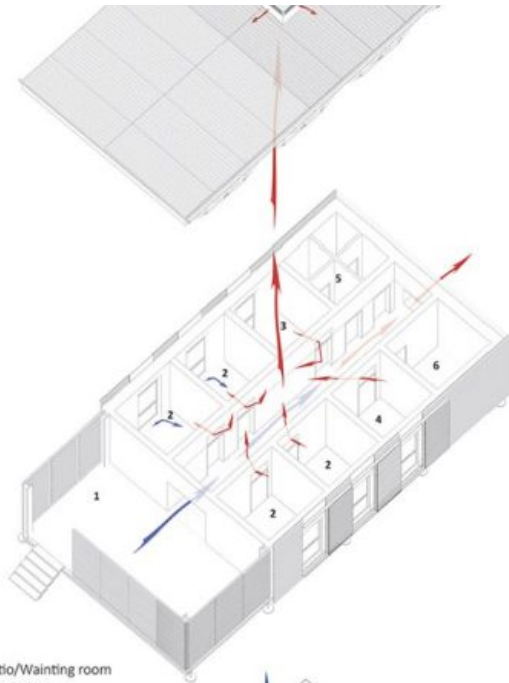
Coconut fiber panels are produced by drying the exterior part of coconuts. After an easy and natural process, made by hand using just air and water, it is transformed into panels and pressed in order to reach the right rigidity. India is one of the main producers in the world.

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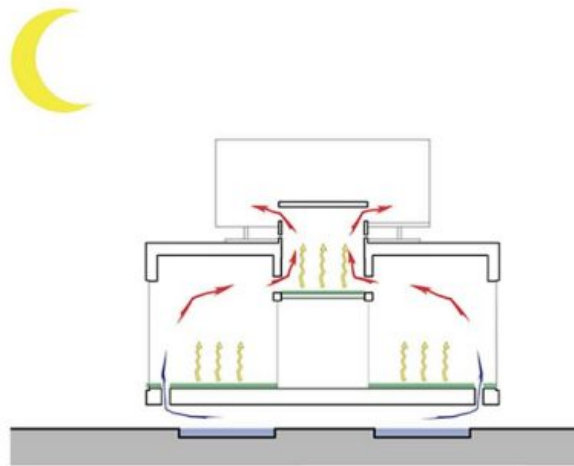
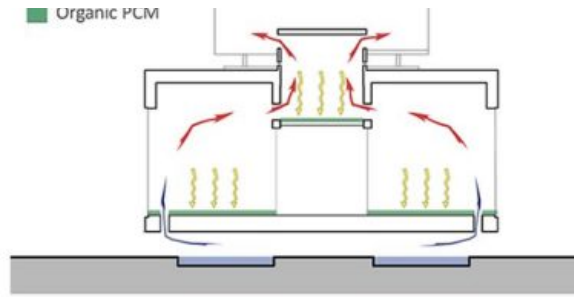
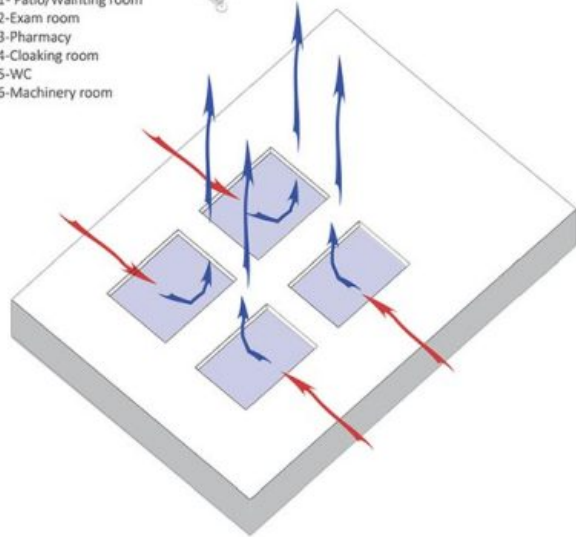
Progetto a cura di:
Politecnico di Milano (www.polimi.it)

Management a cura di:
Abad Architetti Milano (www.abad.it)





- 1- Patio/Waiting room
- 2- Exam room
- 3- Pharmacy
- 4- Cloaking room
- 5- WC
- 6- Machinery room



COOLING STRATEGIES

To satisfy the high comfort levels required for a building like this we coupled a natural and a mechanical cooling strategy. Thanks to the energy produced by the photovoltaic panel on the roof it is possible to supply a heat pump through which we can control the air in each room, with the possibility to switch off the mechanical system separately. Openings in the floor allow fresh air, cooled by water tanks under the building, to enter the building, while hot exhausted air can exit through the cooling chimney. PCMs store heat during the day lowering the temperature in the rooms and release it during the night, while natural ventilation lowers this extra-heating effect.

