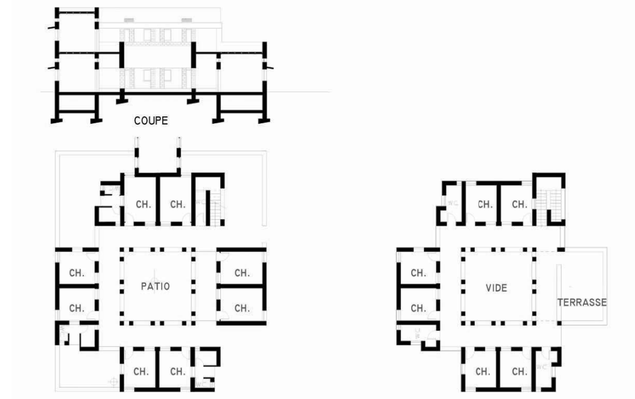
Barefoot College

methodology
local development
renewable energies
ressources management
materials
process

The Barefoot College began in 1972 with the conviction that solutions to rural problems lie within the community.
The College addresses problems of drinking water, girl education, health & sanitation, rural unemployment, income generation, electricity and power, as well as social awareness and the conservation of ecological systems in rural communities.

Le Barefoot College a été créé en 1972 avec la conviction que les problèmes ruraux pouvaient être traités de façon communautaire. Le College traite de la gestion de l'eau, de l'éducation, la santé, le chômage rural, les générations à venir, les énergies alternatives, les problématiques sociales et la conservation de l'écologie dans les communautés rurales.



A lesson from the desert

project

Function
The founder and director of the college, Bunker Roy, wanted to break away from the Indian social-work tradition, which had an urban, middle-class and academic orientation, to create a programme that respected local skills, providing training and upgrading to help people help themselves. Over the years, the centre has worked with local teachers, health-care providers, solar engineers and hand-pump mechanics in a comprehensive development plan, implemented with the rural poor for the rural poor.

Opening date
Design: February 1986 - Construction: April 1986-January 1989

Surface
Site area: 35,000m2 - Built area: 2,800m2 - Cost: INR 6,000,000 (USD 20,000)

Geographic morphology
Rajasthan is a vast and arid region of India, crossed by a range of mountains which is high enough to block the monsoon. Water is therefore a major problem in this region. The rainy season occurs from March to August. 250 mm water fell in 2003 and it has not rained for 4 years. The usual rainfall is about 500 mm a year in 20 days of rain spanning over these 4 months. The temperatures rise from O°C in the night to 30°C in the daytime in winter, and from 35°C to 50°C in summer. A nearby mountain reflects the sun on the campus and increases the heat perceived through radiations.

process

Methodology and buildings
A young architect, Neehar Raina, prepared the architectural layout, and an illiterate farmer from Tilonia, along with twelve other Barefoot Architects, constructed the buildings. With the help of Neehar Raina's drawings, these Barefoot Architects, most of whom have no formal education, were able to build the complete campus and lay down its services. They were assisted by several village women who not only worked as labourers, but also participated actively in the day-to-day decisions about techniques used in the building process. Sometimes, the plans were drawn and redrawn on the spot to accommodate traditional building techniques that were not featured in the original design. The buildings are based principally on a traditional courtyard format with surrounding circulation verandas. Cubic in form with flat roofs, the buildings were constructed using local materials such as rubble stone with lime mortar for load-bearing walls, and large stone slabs for the roof. As is the custom in Indian vernacular architecture, the courtyards are highly decorated at ground level.

The College was entirely built by local people. The campus spreads over 80,000 square feet area and consists of residences, a guest house, a library, dining room, meeting halls, an open air theatre, an administrative block, a ten-bed referral base hospital, pathological laboratory, teacher's training unit, water testing laboratory, a Post Office, STD/ISD call booth, an internet daba (cafe), a puppet workshop, an audio visual unit, a screen printing press, a dormitory for residential trainees and a 700,000 litre rainwater harvesting tank. The College is also completely solar-electrified.
The College serves a population of over 125,000 people both in immediate as well as distant areas.
Through its Homes for the Homeless programme, the college has provided more than two hundred basic, low-cost dwellings in surrounding villages. Most of the buildings were constructed from earth-brick, but people with greater economic resources used other materials, including rubble stone and lime mortar.

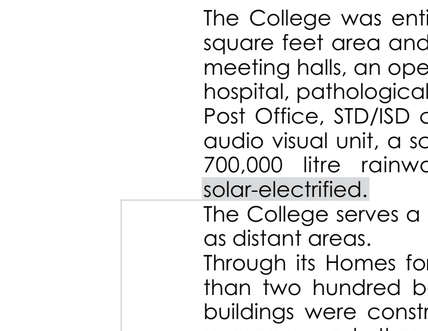
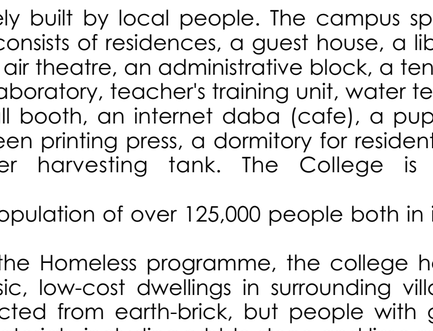
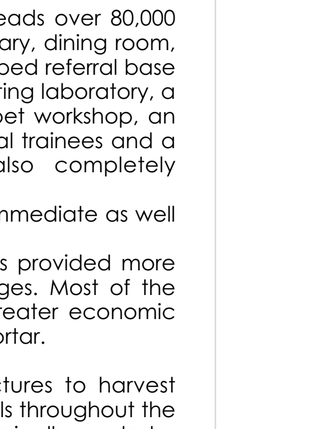
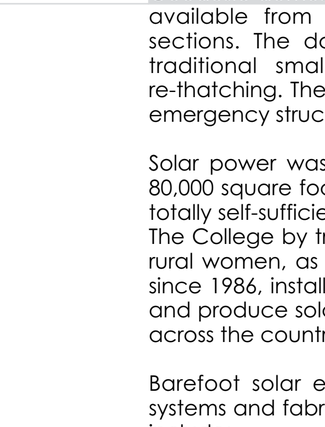
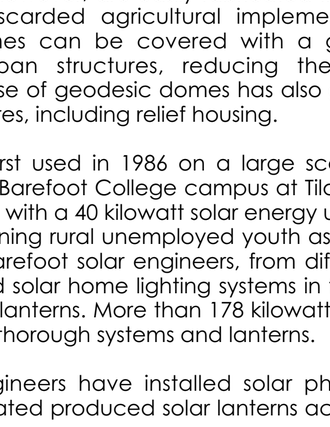
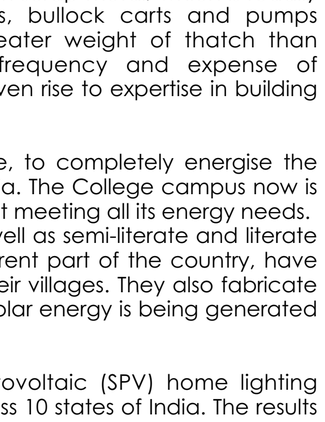
Another of the college's projects is the development of structures to harvest rainwater, which have been installed at the campus and in schools throughout the region. In rural areas, large-scale efforts to provide water are typically made by tapping groundwater sources - an expensive, short-term process that often yields brackish water. Rainwater-harvesting structures, based on tried-and-tested rural technologies, gather water from flat rooftops and channel it to storage tanks, usually situated underground. The system is inexpensive, provides a year-round water supply and has led to wasteland reclamation. In several rural primary schools, the attendance of girls has improved because they do not have to spend hours walking several kilometres to collect drinking water.

From vicious circle to virtuous circle
The Barefoot College has had a tremendous impact on Tilonia and other outlying rural settlements, influencing every aspect of people's lives. Lifting the surrounding population out of the vicious circle of poverty and helplessness, the college has facilitated a revival of traditional technologies and applied them on a wider scale to solve problems that have baffled scientists, engineers, environmentalists and politicians for years.

Technology and technics
Traditional housing in desert areas has sometimes used wood as a material, but this has become a scarce resource. Geodesic domes, however, are easily fabricated from scrap metal, which is readily available from discarded agricultural implements, bullock carts and pumps sections. The domes can be covered with a greater weight of thatch than traditional small-span structures, reducing the frequency and expense of re-thatching. The use of geodesic domes has also given rise to expertise in building emergency structures, including relief housing.

Solar power was first used in 1986 on a large scale, to completely energise the 80,000 square foot Barefoot College campus at Tilonia. The College campus now is totally self-sufficient with a 40 kilowatt solar energy unit meeting all its energy needs.
The College by training rural unemployed youth as well as semi-literate and literate rural women, as barefoot solar engineers, from different part of the country, have since 1986, installed solar home lighting systems in their villages. They also fabricate and produce solar lanterns. More than 178 kilowatt solar energy is being generated across the country thorough systems and lanterns.

Barefoot solar engineers have installed solar photovoltaic (SPV) home lighting systems and fabricated produced solar lanterns across 10 states of India. The results include:
· Solar electrifying 300 adult education centres.
· Solar electrifying 800 schools across the country.
· 3530 solar lanterns manufactured at the College.
· 28 remote and inaccessible villages in Ladakh have 40 Kws of solar panels that provide three hours of light in the bleakest winter to 1530 families.
· 315 villages and hamlets(clusters) have been covered where a total number of 8095 households have been solar electrified.
· 195,000 litres of kersoene saved, by replacing generators and oil lanterns with solar power.
· All solar panels have been installed, maintained and repaired by the village people without the assistance of any paper qualified engineer.

india

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