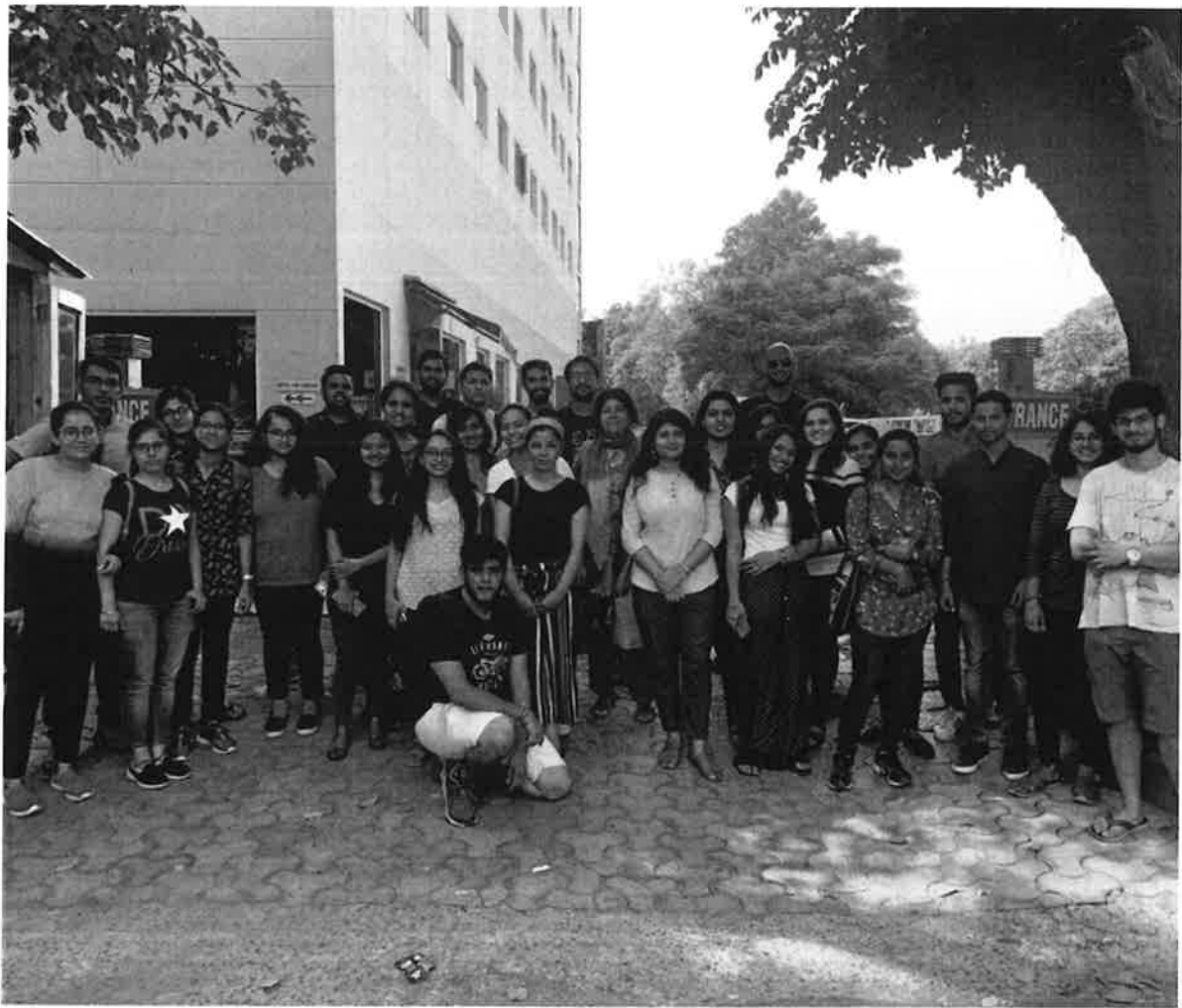


Educational Trip to Chandigarh

A Brief Summary



7- 10 October, 2018

TERI School of Advanced Studies organized a study tour to Chandigarh from 7th October – 10th October 2018, for the first semester Master's student. The objective of the tour was to expose students to issues of sustainable development in an urban area, rural area and natural habitat. Also, the tour wasn't program specific, but aimed at offering exposure on multi-disciplinary development issues.

Overview

Location: Chandigarh

The objective of the assignment is to provide a summary of our experience and the knowledge that we have gained. Here are the following places we visited.

ROCK GARDEN

Chandigarh has the distinction of having a distinctive world-acclaimed Rock Garden. It consists of art objects, fashioned from industrial and urban waste. It is situated between the Capitol Complex and Rock Garden of Chandigarh Sukhna Lake in Sector 1. It nestles amidst 20 acres of woods in the form of an open air exhibition hall, theatre trove and a miniature maze all rolled into one vast fantasy land of art and landscape



It is without doubt, a tourist spot that is a must on the itinerary of every visitor to Chandigarh. The creator of the Rock Garden, Nek Chand, was a Road Inspector in the Engineering Department of Chandigarh Capital Project. He roamed the Shivalik Foothills and picked up stones resembling bird, animal, human and abstract forms. He brought them on his bicycle. The first seven years (1958-65) were spent collecting natural material, urban and industrial waste. Gradually his collection mounted to a staggering twenty thousand rock forms of amazing beauty.

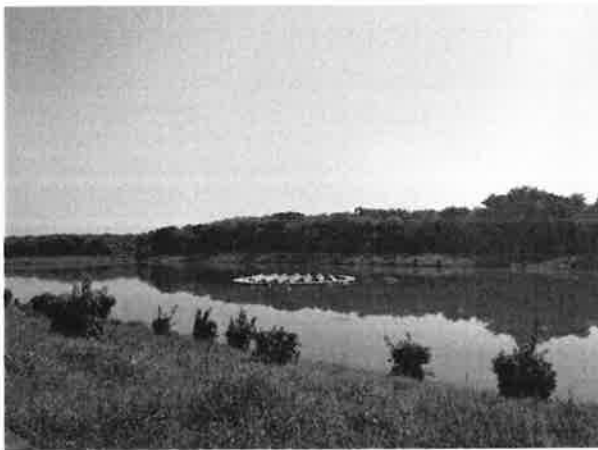


An unpretentious entrance leads to a magnificent, almost surrealist arrangement of rocks, boulders, broken chinaware, discarded fluorescent tubes, broken and cast away glass bangles, building waste, coal and clay-all juxtaposed to create a dream folk world of palaces, soldiers, monkeys, village life, women and temples. The open air sculptures and concealed gateways separating them are at places enhanced by a waterfall, pools and an open air theatre with proper stage setting. Several prestigious performances have been staged in this small but very artistic and naturalistic open air theatre.

CREST Site Visit

The fundamental problems pertain to an excessive dependence on fossil fuels to meet increasingly, energy-intensive life styles. The energy consumption difference is becoming wider between urban and rural India. Presently there is a wide-scale introduction of renewable energy technologies for a variety of applications in India. While Chandigarh Union Territory; took initiative to develop Chandigarh city as a solar city. The Chandigarh Renewable Energy, Science and Technology Promotion Society (CREST) had been

given the mandate to prepare the plan to achieve this objective. A floating solar power plant pilot of 10 kW peak (kWp) has been commissioned at Dhanas Lake; one more initiative of CREST to make Chandigarh – a solar city. It aims to supply power to fountains at the lake for aeration and this will reduce the dependency on fossil fuel powered electricity. It is indigenously made by Yellow 2 Gen Energy Pvt and has a dual-axis tracking technology that is capable of generating 30 per cent more power than conventional solar PVs mounted on the ground. CREST CEO Santosh Kumar said that this project is being first pilot floating solar power plant, if successful; will launch at other locations in the city.



Govt. Medical college in sector 32



Installed on the rooftop of parking area, capacity is 450 Kw, Individual capacity of cell is 320 W, Payback period - 5 years, consists of 1408 modules, 9 inverters of 50 Kw each, Polycrystalline cells, total cost of the project is 2.7 Cr, installed in 2017, maintained by Crest (Given to KEC Energy on a contract of 10 years).

CAPITOL COMPLEX

The Capitol Complex is Le Corbusier's most spectacular work. It is the seat of the government of the States of Punjab and Haryana. It comprises three epoch-making master-pieces: The Secretariat, the High Court and the Legislative Assembly. Separated by large piazzas, the subtle and most evocative grouping of these buildings is of breathtaking beauty.

And in the center stands the giant metallic sculpture of The Open Hand, the official emblem of Chandigarh, signifying the city's credo of 'open to give' open to receive'.

- **The High Court**

The law-interpreting monument was built in the Capitol Complex during 1951-57. This structure has a double roof, projecting over the office block like a parasol or an inverted umbrella. The magnificent outward sweep of the upper roof is symbolic of protection and justice to the people. The three vertical piers, rising 60 feet from the floor and painted in bright colors form the grand entrance to the building. A gigantic egg-crate screen covers the building façade. On the rear walls of the court rooms, hang the giant woolen tapestries designed by Le Corbusier.



- The Secretariat

The law-executing monument is the largest and tallest of the three edifices in the Capitol Complex. Built during 1953-59, it is shaped like an eight-storeyed concrete slab, with its distinctive brise-soleil-louvered screen of deeply sculptured two-storey porticos in the center, housing the offices of ministers. The cafeteria rests atop the terrace is like an art object, giving a spectacular view of the city.



- The Legislative Assembly

The profile of this law-forming monument epitomizes stately grandeur. Square in plan, with a monumental portico standing free from the main building, it faces the High Court. The shape of the cupola is an obliquely truncated hyperbolic parabolic, extending well above the roof line. A pyramid covers the upper chamber of the erstwhile bicameral system and offers an exciting counterpoint to the cupola, lending artistic grace to the entire complex.

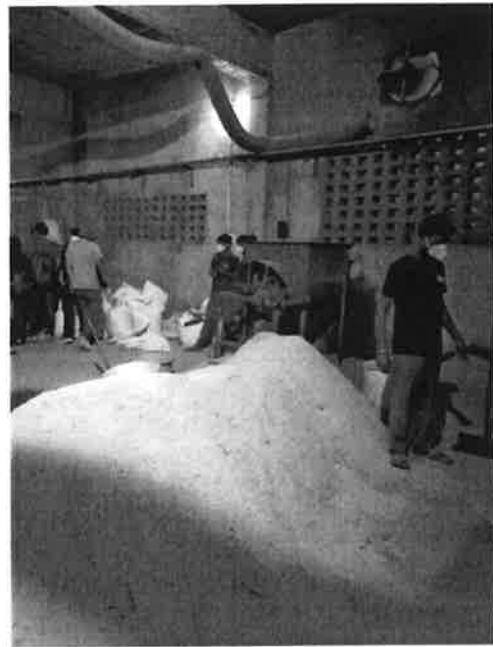
- The Open Hand Monument

One of the most significant monuments planned by Le Corbusier in Chandigarh is the Open Hand. The monument is a place to visit in Chandigarh. Rising 85 feet high from a sunken trench, a giant hand in metal sheets is designed to rotate "like a weather cock, not to show the incertitude of ideas, but to indicate symbolically the direction of wind (that is the state of affairs)." It is also meant to convey a message of peace "open to receive." Amongst the other monumental places to visit in Chandigarh are the Tower of Shadows, Geometric Hill, and Martyr's Memorial.



NISHANT BIOENERGY

Since 1999, Nishant Bioenergy is India's pioneer company in processing of biomass in to fuel & pellet fueled cook stoves and pellet burners. Nishant bioenergy has come up with revolutionary new concepts for carbon neutral biomass pellet fueled institutional cook stove "**EARTH STOVE ES4D AF**" as well as very innovative "**BIOMASS FUEL PELLET MAKING TECHNOLOGY**".



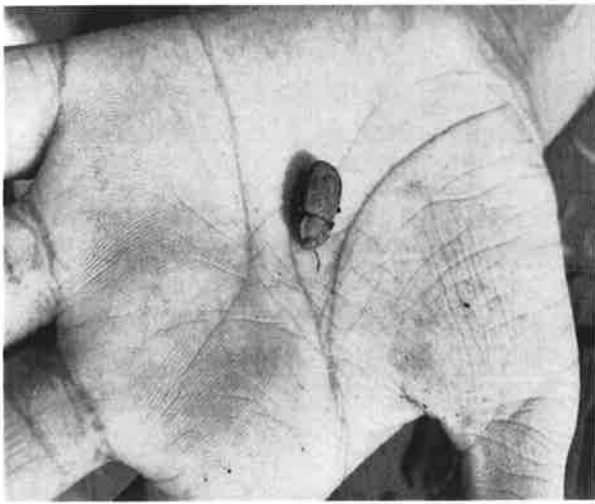
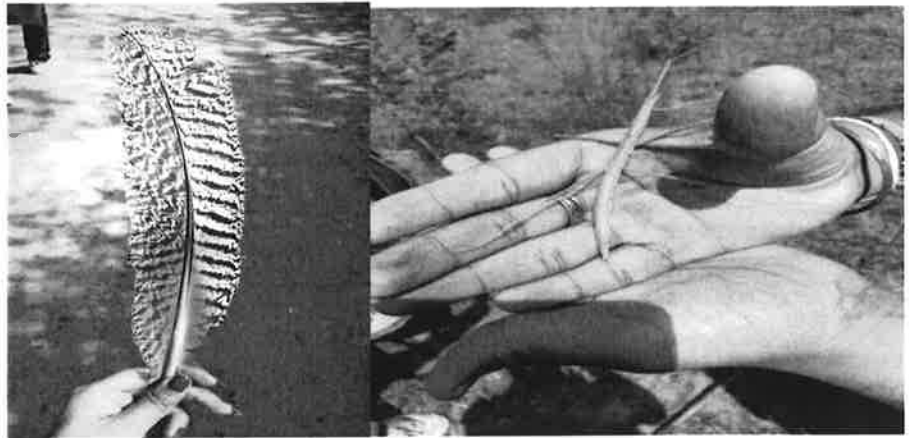
These technologies are indigenously built by Nishant Bioenergy which replaces CO₂ emitting LPG/diesel stoves/burners in institutional kitchens/industry. Examples are kitchens of restaurants/hostel mess/company canteens/marriage halls/base kitchens/namkeen manufacturers/sweet shops/religious and LPG/diesel/FO burners of boilers, air heaters, and water heaters etc. This solution offers around 35% savings in fuel cost (reference June 2016 prices). Nishant bioenergy is offering district level franchisee for manufacturing pellets and selling to exclusive pellet stove & pellet burner. Project is also being set up under gold standard carbon credit program with few partners.

SUKHNA WILDLIFE SANCTUARY

Sukhna Wildlife Sanctuary spreading over an area of 2600 hectares is situated at 1 Km. in the North-East of Sukhna Lake. It forms the part of Sukhna lake catchment area falling in Shivalik hills. Shivalik hills are ecologically sensitive and geologically unstable and thus are highly prone to soil erosion during rains.



The soil in the Shivaliks is sandy, embedded with pockets of clay which is highly susceptible to erosion by surface run off. Sukhna lake was constructed in 1958 and in sixties & early seventies, the rate of siltation of the lake was very high due to high rate of soil erosion from its catchment area. Up to 1988, 66% of the original water holding capacity of the lake was lost due to siltation. In order to minimize & control soil erosion from hilly catchment area, various vegetative and engineering methods were adopted by Forest Department. These soil & water conservation measures under-taken on sustained basis yielded very good results and the rate of siltation of the lake has reduced drastically. Soil conservation measures supplemented with massive afforestation led to the development of very good forest in hilly catchment area which is now an ideal habitat for wide variety of fauna. Consequently, this area had been notified as "Sukhna Wildlife Sanctuary".



Smart City Initiative – Municipal Corporation of Chandigarh

Sustainable Mobility-ISBT at Chandigarh

ISBT Chandigarh unlike any other city is very clean, planned and sustainable. The buses and the whole ISBT is very well maintained and in a very good condition. Every day, 10 buses are selected systematically to undergo routine checks and maintenance. Such is their quality of operations that buses as old as 10 years could also be seen in very good conditions. The complete maintenance/repair operations are outsourced, ensuring top-notch quality of work and they could also boast of the fact that the entirety of their fleet (100 buses) was functional.



ISBT of Chandigarh, clean and hygienic, well organized and well planned, had solar panels above the ISBT. The ISBT has recently introduced electronic display boards on arrival and departure of buses to various destinations in and around Chandigarh.

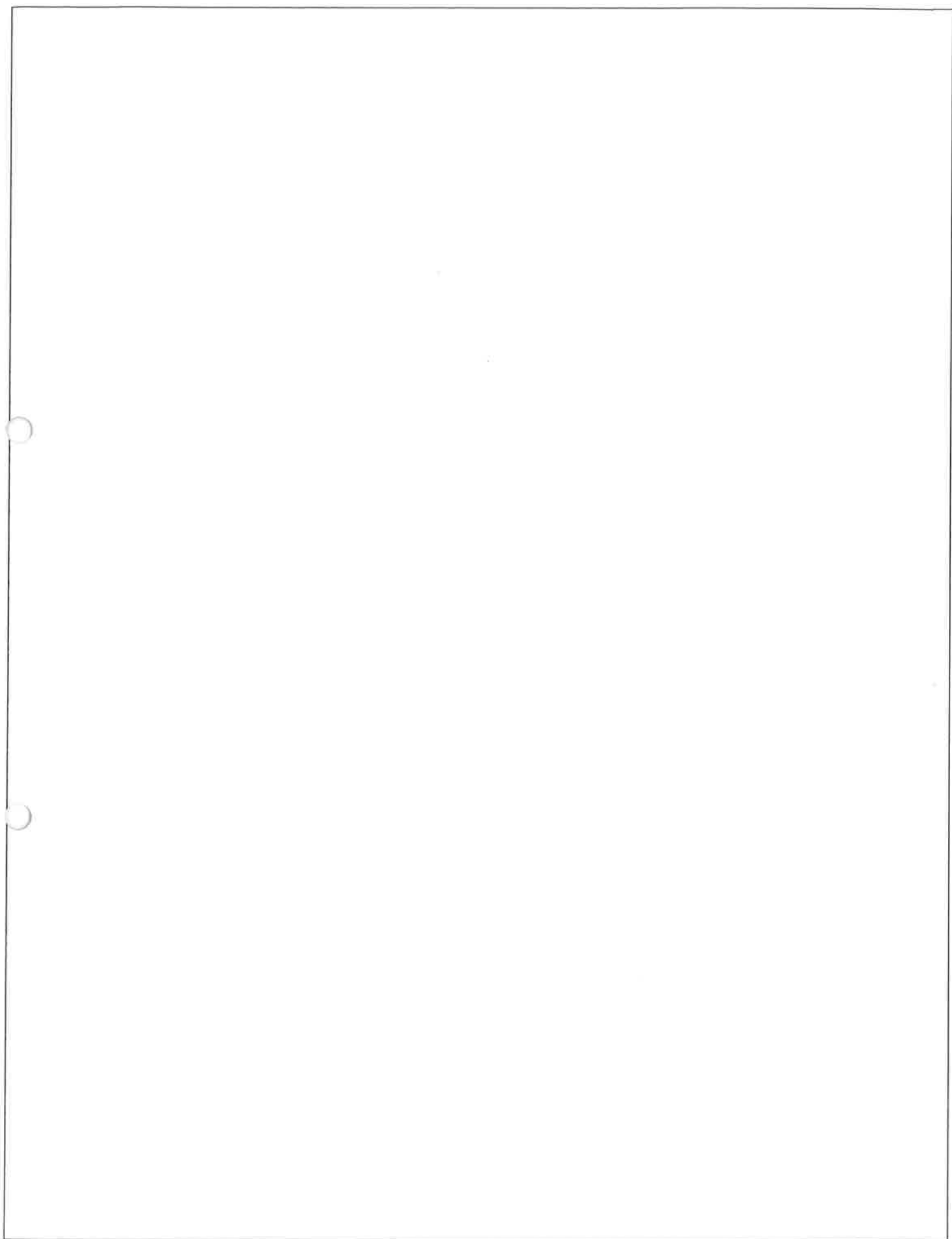
Learning Outcomes

As far as I could gather there were two sites in terms of gaining an understanding of sustainable development, namely, Dhanas Solar Panel Initiative, Chandigarh Hospital and Chandigarh Transport LTD, which is their public transport hub. These sites are clubbed under the CREST initiatives and Smart city initiative respectively. Which are either in the process of adopting newer means and technology or have already using it. These sites exhibited how greener and power saving alternatives in harnessing power can be practical applicable, socially accepted, economically feasible and environmentally safer. We also learned about the parameters one needs to look at while setting up alternate sources of harnessing power like solar panels, which I imagine to be very useful later in our journey to understand and apply sustainability. While the other site which was a smart city initiative helped us learn about increasing efficiency in the service sector by improving the management system. Another important site we visited was the Nishant bio-energy LTD, which made us aware about carbon neutral fuels, which can be an extremely useful product to fight against green-house gases, i.e, if distributed and used in a planned and proper manner.

The other sites we visited were of academic value as well, sites like Sukhna lake and wildlife sanctuary and Rock Gardens urged us to acknowledge the importance of nature and wild-life to people in respect to most of the spheres in life, like social, economical and cultural. They reflected the intrinsic need and dependency of people with nature, which was quite evident from the amount of human activities going in and around these areas. Finally the Capitol Complex which is an architectural marvel made reflects the vision of Le Corbusier in making the city. This was especially interesting to me and relevant as well because it showed us the designs and principles Le Corbusier used to design the entire city. It also holds a great cultural and political significance, as the Legislation assembly, the high court and the Secretariat with four other monuments, each reflecting the principles of Le Corbusier in making the city.

Conclusion

The surmise our educational trip, I would like to highlight a few important information and knowledge I could gather. A) the exposure to a marvel city like Chandigarh has made us aware of the initiatives Chandigarh took as a city to make itself relatively more sustainable, which is crucial to our understanding for the trip as well as our subject and instrumental to scholars and planners. This also points out a few limitations of other states in regards to sustainability and planning. B) Similar to how the city was designed and made the culture too was closely integrated with nature. One could observe the benefits of this symbiotic relationship and it was very beneficial for students of sustainable development to be sensitized towards such concepts and finally C) is that I personally learnt about group dynamics, which is how a group behaves in a natural setting, which I believe is vital knowledge to have for any human being.



Sunday 07 Oct 2018

Departure from Delhi at 7:00am

Arrival at Chandigarh at 3:00PM

07 October Sunday	Time	Activity
	Afternoon	Rock Garden Visit Solid Waste Management
	Evening:	Hotel

08 October Monday	Time	Activity
	10:00	Capitol House-UNESCO Heritage site
	12:00	Dhanas lake-Floating Solar
	13:30	Lunch
	15:00	Smart City Initiative
	17.15	Close

09 Oct Tuesday	Time	Activity
	10:00	Sukhna Lake/Sanctuary
	13:00	Lunch
	14:00	Crest Site visits, solar initiatives
	16:00	Nishant Bio Energy
	18:00	Close

10 Oct Wednesday	Time	Activity
	7:00am	Departure for Delhi

Contact details of Mr.Sukhwinder Abrol for CREST-Solar facilities at Dhanas lake and the other site is 9906150087, crestchandigarh@gmail.com.

Contact details of Mr.Ramesh Kumar Nibhoria of Nishant Energy is 9815609301, nibhoria@gmail.com

Chief Conservator of forests and Chief of Forests and Wild life Warden,UT, Chandigarh,

2nd Floor, Paryavaran Bhavan, Contact Person:Mr. Anil Kumar Sood

