INTERNSHIP REPORT

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K.KUMARASIVAM YOUNG ENVIRONMENTALIST AWARD

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Centre for Environment Education,
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SUMMARY

My internship with the Centre for Environment Education (CEE), New Delhi, India, covered a period of two-weeks, beginning 1st to 15th November 2008. I was given the opportunity to travel with the CEE Team and observe the workings of an Indian Non-Governmental Organisation which is devoted towards environmental awareness and education.

During my internship, I was given an insight into different aspects of environmental management, some of the key areas being as follows:

- Awareness through Education
- Biomedical Waste Treatment and Management
- Sustainable Forestry and Eco-Tourism
- Solid Waste Management
- Environmental Awareness through Socio-Economic endeavours

This internship has provided me with a unique insight into the environmental scene of a nation with more than one billion people. Despite the vast differences between general scale of economics, climate, geography, socio-cultural, political scenario and population numbers, the similarities between the two nations (Malaysia and India) are somewhat striking, especially in facing challenges related to the environment...thus providing the strongest evidence that environmental management and conservation is our joint responsibility.

INTRODUCTION

Sustainable development is defined by the Brundtland Commission (1983) as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It is an all-encompassing term covering education, awareness, technology and attitude. A quarter of a century after the formation of the Brundtland Commission, the term has become synonymous with environmental management across the globe.

Although it is loosely defined, sustainable development is integral in tackling a number of inter-related global issues such as poverty, social inequality, hunger and starvation and broad-scale environmental degradation. In theory, development that is sustainable and does not pose adverse impacts to the environment is very possible and achievable. However, in reality there are numerous challenges involved; ranging from insufficient funding, rapid urbanization, population expansion, political inaction and general public apathy.

In view of the above, promoting sustainable development requires all parties to put their shoulders to the wheel in striving towards the end goal – which is - achieving sustainable development! The Government, the Private Sector and Non-Governmental Organisations form three legs of a tripod that helps address different aspects of sustainable environmental management.

My two-week internship with the Centre for Environment Education (CEE) New Delhi, India represented an opportunity to experience first-hand the various aspects of sustainable development from an NGO perspective. The following pages of this report represent an overview with key insights into some of the projects and programmes that I participated in over the two-week period.

CENTRE FOR ENVIRONMENT EDUCATION

The Centre for Environment Education (CEE) was created in recognition of the importance of environmental education in India's overall environment and development strategy. The result of a unique partnership between the government and a non-governmental institution, the CEE was established as a Centre of Excellence in 1984. The CEE has inherited the rich multi-disciplinary resource base and varied experience of the famed Nehru Foundation for Development, its parent organisation, which has been promoting educational efforts since 1966 in the areas of science, nature study, health, development, and environment.

Although the CEE was founded on the premise of promoting environmental education, the organisation works within a wide range of sectors, for various target groups and in widely diverse geographical areas. The CEE has a network of forty (40) offices (with over 380 staff) across the country, including Regional Cells in the Central, East, North, North-East, Southern and Western zones of India, as well as several State, Field and Project Offices, and campsites to carry out their programmes and projects.

In recognition of their efforts, the CEE received "The India NGO Award 2007" for the western region (joint) in the large scale NGO category.

Primary Objective

The CEE's primary objective is to improve public awareness and understanding of the environment with a view to promoting the conservation and sustainable use of nature and natural resources, leading to a better environment and a better quality of life. To this end, the CEE develops innovative programmes and educational material, and builds capacity in the field of Education for Sustainable Development (ESD).

Strategies

The CEE seeks to achieve its objectives through the implementation of a multi pronged approach. Some of the **key strategies** are:

- Informing local environmental agencies with **state-of-the-art** thinking, developments, innovations and perspectives in the areas of Environment and Sustainable Development.
- **Adaptability** to different geographic, cultural, social and economic contexts.
- **Partnerships** utilising complementary strengths of other organisations to avoid duplication of effort, and to network effectively for synergistic convergence of ideas and goals. CEE tries to ensure that its programmes **do not re-invent the wheel**.
- Developing programmes and materials to **build on existing** strategic opportunities and facilities for EE.
- **Encouraging and supporting** other agencies in the field of EE and ESD to develop similar materials and programmes based on their specific needs and situations.
- Building **synergies** between Government, NGOs and CEE for comprehensive impact.
- Identifying key entry points for different thrust areas, and key targets for initiating and consolidating gains, to achieve a **multiplier effect**.
- **Facilitating networks** at local, national and regional levels, through a number of tools such as dialogues, directories, newsletters, etc.
- Working to **develop a cadre of professionals**
- **Bringing international experiences** within the ambit of EE in India, so as to enhance quality, depth and range of programmes.
- Using **media and technology**, to leapfrog and achieve a wider reach.
- Ensuring **innovation, R&D, quality control and excellence** in the production of all material through in-house infrastructural support like studios, workshops, printing pres, etc., and expert editorial and design services.

INDIA

With the introduction of the CEE, its primary objectives and strategies for creating and enhancing environmental awareness in the previous section, this section follows with a brief discussion on the CEE's implementation base and major target groups.

Implementation Base

India (officially known as the Republic of India), is the seventh-largest country by geographical area, the world's second-most populous country (1,147,995,904), and the largest democracy in the world. It is a culturally diverse country with 23 recognised languages and well over 1,000 spoken dialects. Bounded by the Indian Ocean on the south, the Arabian Sea on the west, and the Bay of Bengal on the east, India has a coastline of 7,517 kilometers (4,671 mi).

The nation of India lies within the Indomalaya ecozone and displays significant biodiversity. Many eco-regions within India such as the *shola* forests, exhibit extremely high rates of endemism; overall, 33% of Indian plant species are endemic. India's forest cover ranges from the tropical rainforest of the Andaman Islands, Western Ghats, and North-East India to the coniferous forest of the Himalaya.

With a booming economy fueled by the I.T. rush, India faces many of the same environmental challenges seen by other nations, albeit on a far larger scale due to its population, geographical, social and cultural diversity and complexities.

It is against this backdrop that the CEE has set up shop; using education as the focal thrust to address issues pertaining to poverty, self-sustenance, sustainable development and responsible environmental management. The following sections will however show that the CEE has not only assumed responsibility in the field of environmental education, but has also devoted itself towards serving all segments of the environment – the physical, biological and socio-economic segments.

AWARENESS THROUGH EDUCATION

This project sees the CEE Team heading out to various schools in Delhi to promote environmental awareness. The target audience who mainly consist of primary school children, are provided with written material and given hands-on seminars about the importance of conservation and the benefits of recycling and reuse. The programmes are conducted in an informal manner through 'show and tell' sessions and competitions at the individual school grounds.

It was heartening to note that children across the world are essentially the same; filled with enthusiasm, a sense of moral duty and always eager to participate. The two photo plates show an exercise conducted by the CEE at the Delhi Public School to encourage school children to recycle. The exercise involved a 'hands-on' session designed to introduce kids to simple 'do-it-yourself' techniques in recycling. The teaching faculty of the school was also encouraged to incorporate topics pertaining to environmental management in their daily teaching modules. The CEE Team conducts follow-up exercises at these schools in order to keep encouraging the students and staff to continue with their recycling and conservation efforts.

This approach has been similarly adopted at other schools across Delhi and India with the hope that future generations are attuned towards the importance of sustainable development.

BIOMEDICAL WASTE TREATMENT FACILITY

The biomedical waste treatment facility in Gulbarga city, state of Karnataka, is a CEE Flagship project that focuses on the collection, segregation, transportation, treatment and disposal of biomedical waste in the District of Gulbarga. The Project, also known as the CHAMP (Common Healthcare Appropriate Management Plant) Project, is a partnership between the CEE, the Government of India and End-Users (i.e. medical facilities such as hospitals and clinics). The main objective is the standardization of healthcare waste management with maximum emphasis on eco-friendly and cost effective technologies, which will ensure safe disposal of biomedical waste.

The city of Gulbarga is dry, arid and hot throughout the year. With more than 400 Health Care Establishments (HCEs) and a population of 450,000, the city was selected as the location for the first CHAMP Facility. The project caters to all of the HCEs and treats some 1500kg of biomedical waste per day.

The Process

Biomedical waste is collected from all major government hospitals and also from a number of private hospitals, clinics (both government and private) and medical laboratories. The collection of waste is done in a hygienic and safe manner, where personnel are given basic Personal Protective Equipment (PPE) and waste is transported by lorries in non-leaching and

bacteria safe compartments to a secure facility located some distance away from the main town centre of the district. Some of the other notable features of the Project are the use of completely biodegradable wax coated paper bags for the collection of soiled cotton waste and special containers for the collection of syringe needles and scalpels with safe needle extraction

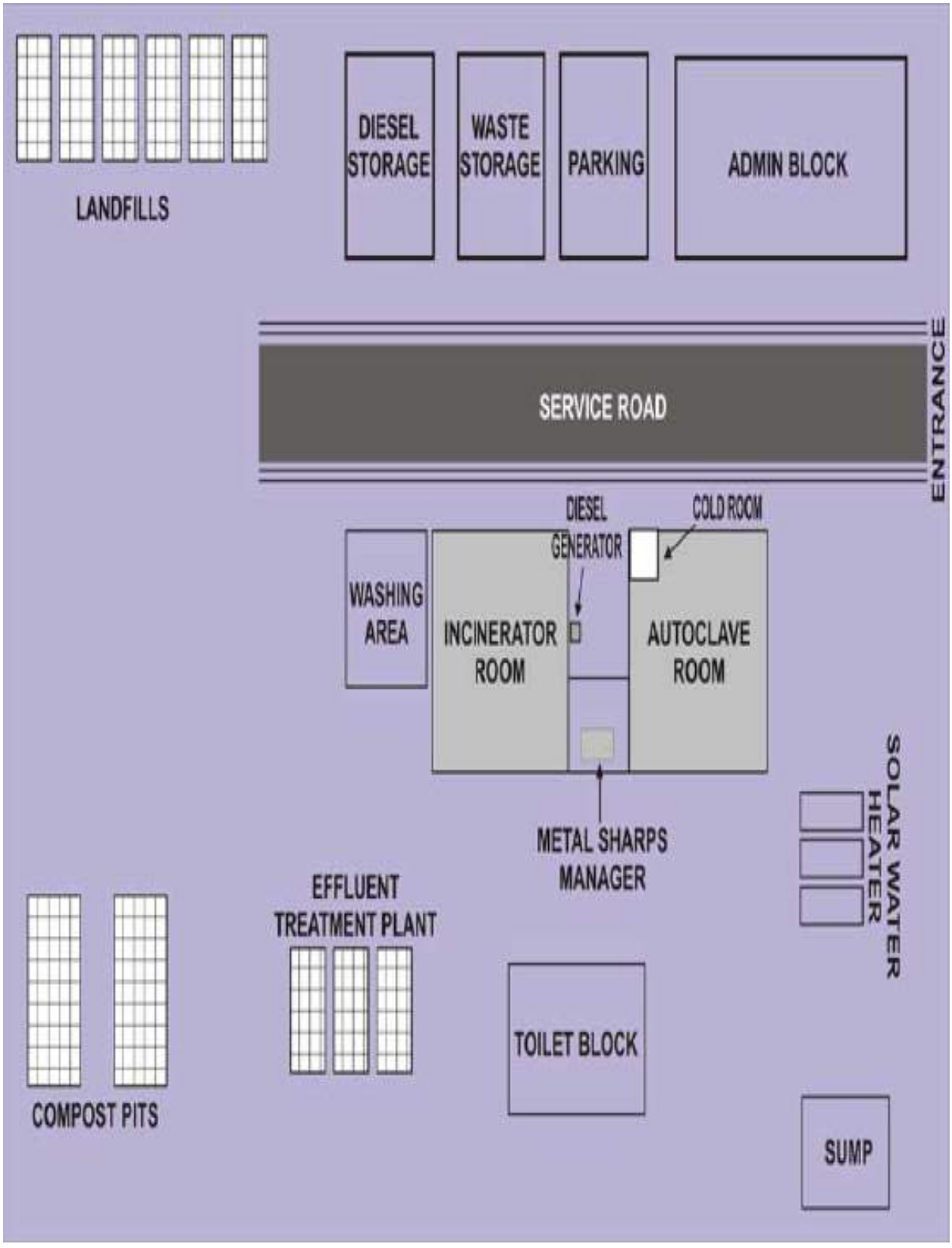
The processing technologies installed at the CHAMP Facility in Gulbarga include the following:

- Autoclaving
- Shredding
- Incineration
- Cold-room Storage
- Chemical Disinfection
- Liquid Effluent Treatment
- Secure Landfill
- Back-up generator unit

The function of the autoclave is to sterilize the waste through the use of sufficient high temperature and pressure. The autoclave is fitted with a custom-made stirrer unit to ensure uniform sterilization of the waste.

The incineration process is safeguarded through the installation of proper air pollution control equipment (e.g. venture scrubbers) to minimize the emissions of dioxins, furans and other harmful emissions. Regular checks are carried out to ensure that the system functions as per the design specifications at all times. The incinerator has a functional operational capacity of 50kg/hr.

The Figure below shows the general schematic layout of the CHAMP Facility in Gulbarga



BENGALURU

Bengaluru (also known as Bangalore) is the capital of the state of Karnataka and is also India's third most populous city (*Wikipedia online lists the population of Bengaluru as 5.2 million people - based on a 2007 estimate*). The city of Bengaluru is widely recognised as the I.T. hub of India. Because of its eminent position as a centre for education and research along with its booming I.T. sector, it is India's fastest growing metropolis, with thousands thronging into the city on a daily basis in search of jobs and better living conditions. In Bengaluru, we were given the opportunity to learn more about sustainable development in the Electronic Waste sector and also in the Solid Waste Management sector.

ELECTRONIC WASTE

With its status as India's centre of Information Technology, Bengaluru faces a critical problem in terms of its electronic waste management. Estimates quote the city's e-waste in the year 2005 as being in excess of 6000 tonnes. The lucrative nature of electronic waste, where it is possible to recover precious metals (e.g. gold, platinum, palladium, nickel, copper and silver) and reuse many other parts (e.g. plastic casing on desktop computers) of electronic products, has made it an industry that is difficult to monitor and regulate. This has been a cause for concern with India's Pollution Control Board as e-waste contains many toxic components (*Note*: domestic e-waste such as refrigerators, televisions and mobile phones contain more than 1000 toxic materials which can lead to serious health problems such as cancer).

The E-Parisara Electronic Waste Recycling and Recovery Centre is one of Bangalore's largest e-waste recycling and recovery centres. Located in Dobaspet (an industrial suburb), about 50-km north of Bangalore, the Plant employs state-of-the-art technology to segregate and recover usable components from electronic waste. A unique feature of this Plant is the fairly large workforce employed to complement the usage of high-end equipment. The utilization of manpower provides working opportunities to many unemployed persons in the city.

Electronic waste is brought to the Plant by scrap collectors and also by large vendors such as manufacturing and I.T. firms who have formal agreements with the Plant operators. The waste is then segregated into different lines based on the type of expected recoverable material. Each waste line undergoes a different process until the final products are recovered. The Plant operates on a 'Zero Waste Concept' and as such any material that cannot be recovered 'in-house' (e.g. trace amounts of gold) is sent to an E-Waste Recovery Facility in Belgium for further processing and complete recovery.

We were also given an insight into some of the smaller e-waste recyclers who operate from informal premises (such as shop-houses and along the back streets of Bengaluru) and their operations. These small scale operators receive waste from street scavengers and also have their own collection teams to seek out e-waste from various premises throughout the city. The operation largely centres on recovering recyclable materials from computers, radios and other household electronic sets through manual dismantling techniques. The availability of relatively cheap manual labour ensures that these small-scale centres do not require large overheads to run their operations.

The role of the CEE in the case of E-Parisara is to act as a link to introduce the concept and technology to various e-waste generators and also to promote awareness about e-waste. In the case of the small-scale recycling outlets, the CEE not only helps with the provision of technology and know-how, but also provides key inputs with regard to fine-tuning of the processes and the much needed moral support for these outfits to continue with their commendable efforts.

SOLID WASTE MANAGEMENT

Many of the larger cities in India have opted to engage private sector companies to manage their solid waste activities. However, in most cases the extent of privatization is only partial, i.e. either not all of the Solid Waste Management activities have been privatized or privatization has been implemented in only a few zones of the city. The same applies to the city of Bangalore. An excerpt from the online edition of the Indian Newspaper, 'The Hindu' (6th August 2008) reads as follows: -

"*A comprehensive study of solid waste generation in Bangalore conducted in 2004 by H. Lakshmikantha of KSPCB found that 1,500 tonnes of waste is generated every day that has no fewer than 60 unauthorised dumpsites. The figure now stands at over 3,000 tonnes, Mr. Lakshmikantha told The Hindu. The largest component of this garbage, the study found, was not industrial waste or that from commercial establishments, but household waste. As much as 74 per cent of this is biodegradable…"*

With such issues looming over the city, the CEE has initiated a programme in joint consultation with the Residents Association of Kalyanagar and the Bangalore Development Authority. The Project, launched over the last decade, sees the residents of the suburb taking responsibility for their own waste. The Residents Association handles the day-to-day operations and has hired a number of staff, ranging from waste collectors and segregators to administrative staff (those in charge of receiving the waste, weighing and recording the data).

Domestic waste is collected from individual homes by teams in push cycles as seen in the photo. The waste is then brought to the Composting Centre, which is also the operations centre for the project. Here it is weighed and segregated – with plastics, metals and other non-organic recoverables being removed from the in-coming garbage lines.

The organic component of the waste then undergoes vermi-composting. Vermicompost is the end-product of the breakdown of organic matter by earthworms. The process usually takes a period of around twenty (20) days. The compost is sold in the open market and the proceeds

from the sales are channeled back into the project to pay for overheads, salaries and other operational costs.

The Project was sponsored by the Norwegian Agency for Development Cooperation (NORAD). The technology and expertise on composting was provided by the CEE whilst the residents of Kalyanagar were entrusted with managing the facility. The key to the project's success has been the initiative taken by the residents to ensure the cleanliness of their residential area, which has now become a source of pride and joy for them.

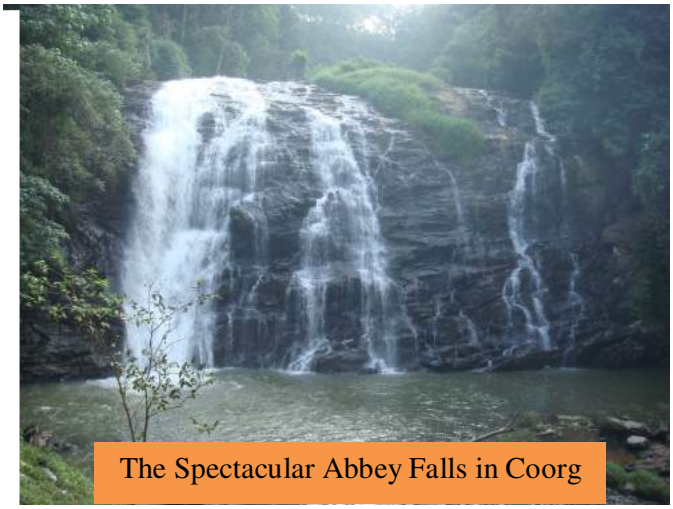
The photo below shows the vermi-composting tank, which is located behind the centre.

On the other end of the spectrum of community based initiatives, are government run programmes. We were taken to a suburb known as HSR Layout and provided with an overview of their approach towards domestic waste. The programme, a joint initiative between the Bangalore Development Authority and the CEE, sees domestic waste being collected from individual residential homes and brought to a centralized facility for preliminary segregation (refer plate above). However, most of the waste is sent to a larger centralized composting facility. Whilst the venture is successful in principle due to the lucrative sales of compost as organic fertilizer, the programme has run into problems due to the inability of the centralized plant to accept any more waste. As such, the local council is now urgently seeking to find alternative locations to dump their waste.

KODAGU

Kodagu, also known as Coorg, is located some 250-km from Bengaluru and is about 1500m above the Mean Sea Level. Dubbed by tourists as the Scotland of the East, Kodagu by virtue of its Sanskrit definition simply means ***Dense Forest on Steep Hill***. The economy is largely dependent on agriculture, coffee plantations, forestry and tourism.

Here in Kodagu, we were given the opportunity to meet with Dr. Kushalappa of the College of Forestry who briefed us on the Sacred Forest concept and the strategy to preserve the forests of Kodagu. The idea, borne out of concern for rapid deforestation due to increasing development, has so far yielded significant success.



The Spectacular Abbey Falls in Coorg

A unique feature about forests in Coorg is that there are many temples and areas which are known as sacred groves within each patch of forest. These temples and places of worship are usually erected by the local tribes or villagers in nearby areas. The forest conservation strategy involves designating sections of the forests which have temples or places of worship (e.g. shrines) as 'sacred groves'. The local tribes are then given the responsibility to protect and preserve the forest.

The above plate shows a temple within a 'sacred grove' in Kodagu. This temple, built deep in the jungle, is relatively well maintained. There is no evidence of deforestation in the surrounding areas of the temple; evidence that the Sacred Forest concept is well accepted by the communities of Kodagu. The programme, jointly initiated by the CEE along with experts such as Dr. Kushalappa from the Coorg College of Forestry, is a benchmark for forest conservation efforts all over the world.

The CEE, along with other agencies such as the Indian Tourism Board and the Coffee Planters Association, has also initiated programmes to promote eco-tourism in Coorg. The initiation of this programme is a huge victory for conservation efforts as mainstream hoteliers and large resorts are prevented from exploiting the natural beauty of the land. Instead, Coorgies who are mainly involved in agricultural endeavours such as coffee planting, have been given the opportunity to initiate 'homestay' concept accommodation facilities for visitors to the district (which is also the smallest district in the state of Karnataka). Apart from providing much needed revenue to the coffee planters during the non-harvesting season, the programme also offers visitors a unique opportunity to

experience life the Coorgi way; in terms of the natural environment, the people, the accommodation, and the food. My stay at the Sandbanks homestay in Coorg was an absolutely beautiful and breathtaking experience.

At the risk of sounding 'touristy' (if such a term can be used), there probably cannot be many experiences in life that equal to waking up to the chirping of birds in the heart of a coffee plantation, drinking fresh, steaming hot coffee and enjoying a hearty Coorgi breakfast of banana jam, toast and scrambled eggs; all prepared by our gracious hosts, the Kalappas.

The photo to the top left shows a National Park in Coorg; where deer, wild boar, birds, tigers and other wild beasts roam free; relatively undisturbed except for a number of tourist buses which amble along designated routes with wide-eyed tourists (yours truly included) staring out the windows. The 2nd plate is our cottage at the Sandbanks whilst the 3rd plate shows the amazingly diverse foliage within a Coorg coffee plantation; with coffee, cardamom, cinnamon, teak and bamboo all growing within the same square area of land.


The plates above show the 'polyloom' and recycled paper-making works at Coorg. The 'Polyloom Project' is another initiative by the CEE to promote awareness about recycling and reuse. Discarded poly bags (better known by its common name – plastic bags) are cleaned, stripped and woven into intricately designed carry bags. The bags are being promoted across India as a safe and environmentally friendly option to conventional plastic and leather bags. The project has been well received by the corporate sector; with many sectors such as the hotel industry, keen to review this option as an alternative to discarding their used polybags. In New Delhi, the ITC Maurya Sheraton, a deluxe hotel in the heart of the capital, has opened its premises as a centre for the production of these bags as part of its environmental conservation efforts.


Paper making in Coorg: A mixture of cloth and used paper along with organic dyes, form the coloured papers seen in the plate above. The paper is usually made to order – for special functions, conferences and general use. The Project, apart from being an environmental endeavour, also provides crucial employment opportunities to many women from impoverished and unfortunate backgrounds through the use of simple and yet effective recycling methods. The CEE helps to train these women by providing them with the necessary knowledge and skills to earn an income in order to sustain themselves and their families.

CONCLUSION

The two-week internship in India has been a unique experience. I was afforded the opportunity travel to many parts of India. Travelling from Delhi to Agra, down into Hyderabad, Gulbarga, Bangalore and Coorg – in a variety of transport modes – the auto-rickshaw, private taxis, government run taxis, public buses, tourist buses, express buses, internal flights and the famous Indian Trains (I somehow managed to miss the boats), it has been an experience that tantalized all five human senses (and more). Amidst trying to savour the new sights and at the same time attempting to cast a technical 'eye' on everything that was shown to me, I have come to realize that India adopts an all encompassing approach to all things – from the simplest of matters to the most complex of issues.

The same approach is reflected in the nation's attitude towards environmental management. It is all-embracing; integrating geographical, socio-economic and political issues. There is no separation of people from the land. The planning, logistics and economics required to manage the environmental situation in India necessitates that things must be done in an efficient, cost-effective manner – covering all bases. It is easy to be overwhelmed by the magnitude of environmental and economic problems facing a nation of more than one billion people and easier still to give in to what many may perceive to be a hopeless and thankless endeavour.

However, many agencies and NGOs such as the CEE continue to blaze successful paths in environmental awareness, conservation and management. Adopting the same all encompassing attitude, the programs and strategies devised by these NGOs are formulated to include all segments of society – a classic example being the CEE; whilst being devoted to environmental education and awareness, they are actively involved in preserving the forests of Kodagu, indulging in R & D with the Gulbarga biomedical waste treatment plant and equipping many less fortunate segments of society with basic skills required for economic survival. It is not only an amazing feat (due to financial, logistics and numerous other constraints); but more importantly, an absolute necessity with the Indian landscape.

ACKNOWLEDMENT

I would like to thank ENSEARCH for providing me with this excellent opportunity. A special mention of thanks also goes out to Dr. Shyamala Mani of the CEE, who has been instrumental in providing me with such a broad-based experience. I cannot possibly have asked for a better mentor and facilitator. Your generous sharing of knowledge and wonderfully refreshing perspectives on life (not forgetting the sense of humour) and the environment has made this internship an unforgettable and memorable one. Many thanks and as the Indians so graciously and beautifully say it…..DHANYAVAD.

A Malaysian and Indian Sangam (Note: Sangam is a Sanskrit term that means confluence or meeting)

REFERENCES

Sustainable Development – Wikipedia, the Free Encyclopedia. Retrieved on 30th November 2008 from http://en.wikipedia.org/wiki/Sustainable_development

India - Wikipedia, the Free Encyclopedia. Retrieved on 30th November 2008 from http://en.wikipedia.org/wiki/India

CHAMP CBWTF, Gulbarga India Unique Endeavor of a Partnership Between an NGO, Government and End Users Towards Biomedical Waste Management, Theme Number 3, Developing Models: Opportunities & Limitations by Ms. Shubhangi Wankhede and Dr. Shyamala K. Mani

Gulbarga – Facts and Figures. Retrieved on 30th December 2008 from http://www.tourism-of-india.com/gulbarga.html

Bangalore - Wikipedia, the Free Encyclopedia. Retrieved on 30th November 2008 from http://en.wikipedia.org/wiki/Bangalore