

One Small Step

Changes our School and Colonies Must Make

General information

Name of the school: Sri Kumaran Children's Home –CBSE

Registration Number: 1000321

Overall Theme: Water

Project Title : One Small step...*changes our schools and colonies must make*

Team size: 5

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“Mata bhumi putro aham prithivyaha”

-Prithvi Sukta, Atharva Veda (12.1.12)

(Earth, thou art my mother and I art your child.)



*Samudravasane Devi,
parvatastana mandite,
visnupatni namastubhyam,
padasparsham kshamasvame*

(O goddess Earth, the consort of Vishnu, you whose garments are the oceans and whose breasts are the hills and mountain ranges; please forgive me as I walk on you this day.)

1. INTRODUCTION

The theme “Environment in cities and communities “is of prime importance in our world today. 27.7% of India’s population is urbanized; this figure is predicted to double by the year 2030. With the ever increasing amount of greenhouse gases, rising temperatures and plunging water tables, a large chunk of our population will be adversely affected. Especially in urban areas which are “pollution hotspots”, the effect of global warming will be magnified. The urgent need of the hour is to redefine our country’s model of urbanization and bring in the concept of a *sustainable community* or an *ideal community*. The following project looks into “building green communities” mainly in **schools** and **gated communities**. We believe this is a vital starting point because these are the primary institution of home and human society and any kind of initiative taken in them will change the mindset of the youth of today, or the policy makers of tomorrow.

We hope to implement our green plan to three vital areas of consumption in these institutions namely **WATER, ENERGY AND WASTE**.

WATER -The problems with water in urban areas are both in terms of quantity as well as quality. Urban areas and industries added to being large consumers of water are large producers of sewage and waste; also slum areas are a breeding site for water borne diseases. Most urban areas have also destroyed or polluted their local water bodies like ponds and lakes. Though domestic water supply constitutes only 5% of the total water consumption in the country, the demand of water is also increasing exponentially with the growth of population .In this project we hope to encourage efficient water management and fruitful use of every drop of water in schools and gated communities, so that they become *self reliant* institutions which can meet their own demand for water, without having to depend on external sources. We also analyze ways to minimize water wastage in these institutions so that demographically the region as a whole has sufficient water supply.

ENERGY- In both urban and rural areas energy is needed for cooking; water heating lighting; running appliances and fossil fuels are needed to power any kind of conventional vehicle. But a city differs greatly in terms of magnitude of energy consumed compared to rural areas. Karnataka itself uses 14235.11 to 28467.4 GWh (giga watt hour) of power annually .The household sector experiences the most fluctuations in trends of energy usage overtime. Households are fantastic institutions to apply policies of energy mitigation because they are very versatile institutions which can adapt to new forms of cleaner energy and can minimize energy usage to a significant extent.

WASTE -India has 25% of the world's total land area. But effective utilization of our land cannot be done because of enormous waste accumulation, in urban areas today. Rapid and indiscriminate industrialization, population growth and urbanization have led to a massive waste generation; this has further accelerated the existing environmental problems in our country by polluting its natural resources like water and soil. Further examination of the trends in waste generation in India has shown that the more affluent communities generate 3 to 5 times as much waste as poor communities.

For waste reduction policies like recycling, waste segregation and composting to truly work, it has to start with the more affluent sections which are not adversely affected by slightly downgrading lifestyles. Effective waste management in households and educational intuitions affects a young person's attitude towards consumption. If the citizens of today can visibly see and comprehend their waste output in the future they may end up reducing their waste rather than just recycling it.

The main idea of our project is to concentrate on microscopic ways to become greener in small intuitions today, so that on a macroscopic level sustainable development will be achieved. This is called the "ripple effect " .

2. CASE STUDIES

Case studies of successful environmental blueprints not only help in setting an example to individuals and communities but also help in inspiring them to act fast about the growing environmental concerns that urban communities face.

Students and the youth are the leaders in this strife against an unhealthy environment. Therefore, in our paper we have included an elaborate case-study of one very successful story in one of Bangalore's leading universities. Their approach towards greening their campus has showed commendable results and can be used as an example while educating universities, corporate houses and other institutions about the absolute necessity of green campuses and responsible communities.

2.1. a The story of Christ University, Bangalore

In Christ University, Bangalore, all it took was a group of interested and hard-working students to kick-start a very successful waste management movement.

These students, realised the importance of waste segregation and recycling of waste and started spreading awareness by means of songs, streetplays, posters etc. and also conducted long awareness parades in their campus and neighbourhood to make sure they sent out their message loud and clear.

2.1.b Measures taken to segregate waste

The university took various measures in segregating their waste.

- 1) Students were provided three different waste bins -one for plastic, one for paper and one for wet, kitchen waste.
- 2) Apart from providing different dustbins, students and faculty were given presentations as to how they must use these bins and the dos and don'ts of

segregation. For example: - Students were taught how to separate plastic straws from their tetra paks and put them into two different containers.

3) They ensured they had a good follow-up mechanism to make sure every student made waste segregation a habit, thereby achieving a major goal.

Despite taking several measures, some amount of waste was always inseparable and had to go into the all-purpose dustbins as they could not be given for recycling or composting. Examples of such waste are – paper napkins with ketchup or other wet waste on them.

2.1 c. Christ university recycling unit:-

A major feature of Christ University's green movement was their campus owned paper recycling unit.

This recycling unit was stored away at the backyard of the campus in a place specially provided for it.

Students volunteer and collect paper waste at the end of every fortnight or month and assemble it in the recycling unit. The waste is then checked and the paper collected, and put into the machine after a few hours of soaking. Once the machine is operated, paper pulp is obtained and this pulp is spread out and dried to be used for making other products.

Now, Christ University employs women from rural areas to work in the recycling unit. The proceeds from the sale of recycled products also go towards the welfare of these women.

2.1 d .Other activities

The university has not only taken steps in reducing waste and promoting the environment but has also measured the benefits of doing so. With the help of Reap Benefit, an environmental awareness organisation, they have conducted carbon audits and waste audits exactly quantifying and estimating the amount of emissions saved. This has helped in giving students an incentive to work towards

achieving several targets with respect to waste generation, water and energy consumption.

2.2 OTHER ECO-COMMUNITIES

△ Rishi Valley School, Andhra Pradesh – where Kitchens have large solar cookers students eat their food in banana leaves so as to avoid any wastage of water for washing plates. The school also actively segregates and composts waste. Students are also engaged in plantation drives.

△ Barefoot college, Tilonia-Students have recycled rubber *chappals* to make toys. The school has its own rain-water harvesting system and also, the campus is almost entirely run on solar electrification.

△ Good-Earth housing societies in Bangalore and Mumbai-This is a housing society unique, in the sense that every piece of construction is made to ensure that the apartments are in harmony with nature and that a sustainable environment is created for its residents.

These examples will be of immense help when teaching people about the various problems and solutions there are when it comes to maintaining a healthy environment in cities. The major problem lies not in the implementation of plans but rather, in convincing people to participate in the plan. Cities and communities cannot be cleaned up by the co-operation of only a few individuals. In order to obtain the results, we must also make sure that every individual is aware and takes a conscious effort in making their neighbourhood, school, district sustainable. Therefore, these examples will help in re-enforcing and warning others of the consequences that follow unresponsiveness, carelessness and irresponsible attitudes towards managing the environment and the earth's limited resources.

The following diagram illustrates the concept of a sustainable household with respect to water, electric power and waste.

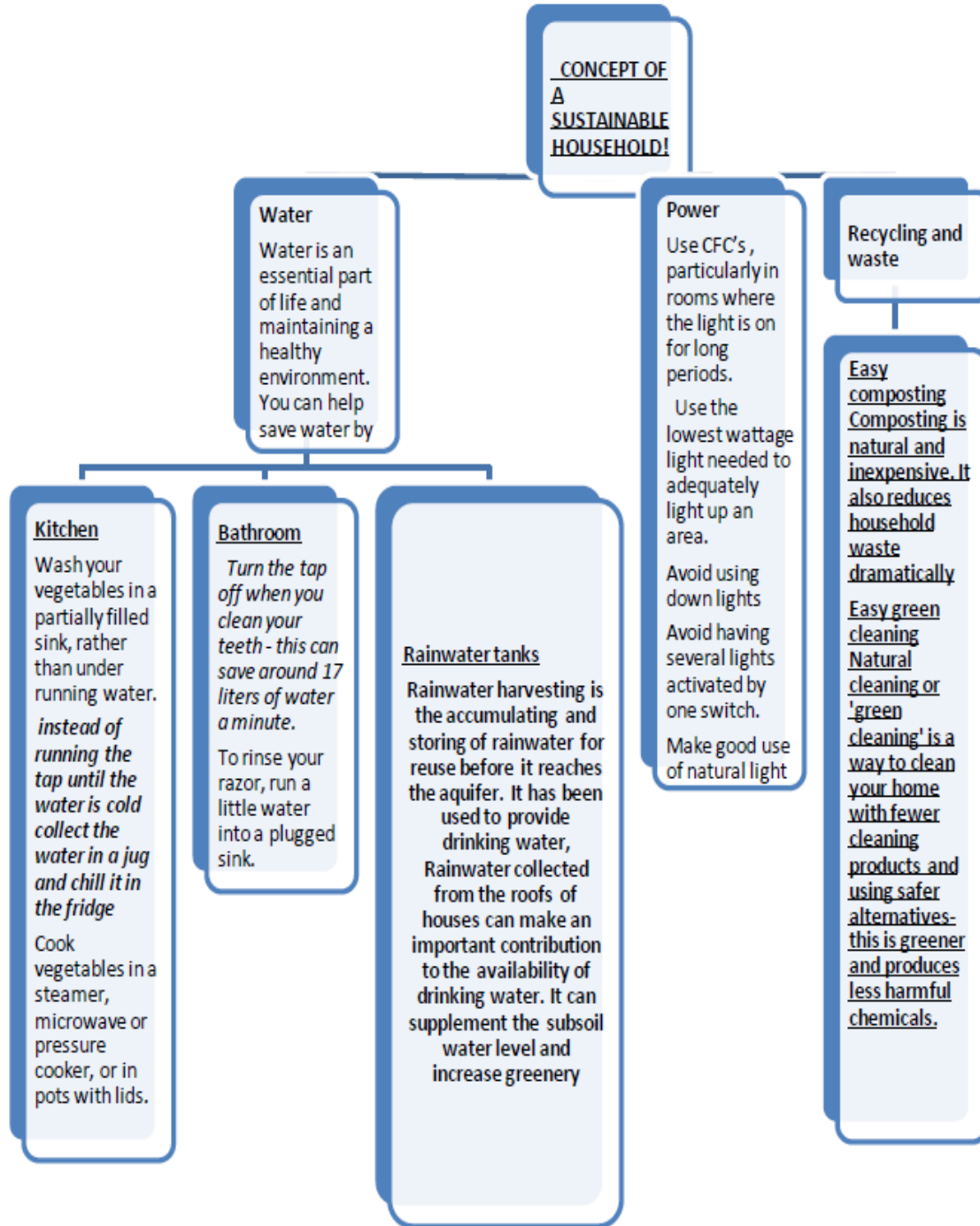


Figure 1 : Concept of a sustainable household community

The following diagram illustrates the concept of an eco friendly community

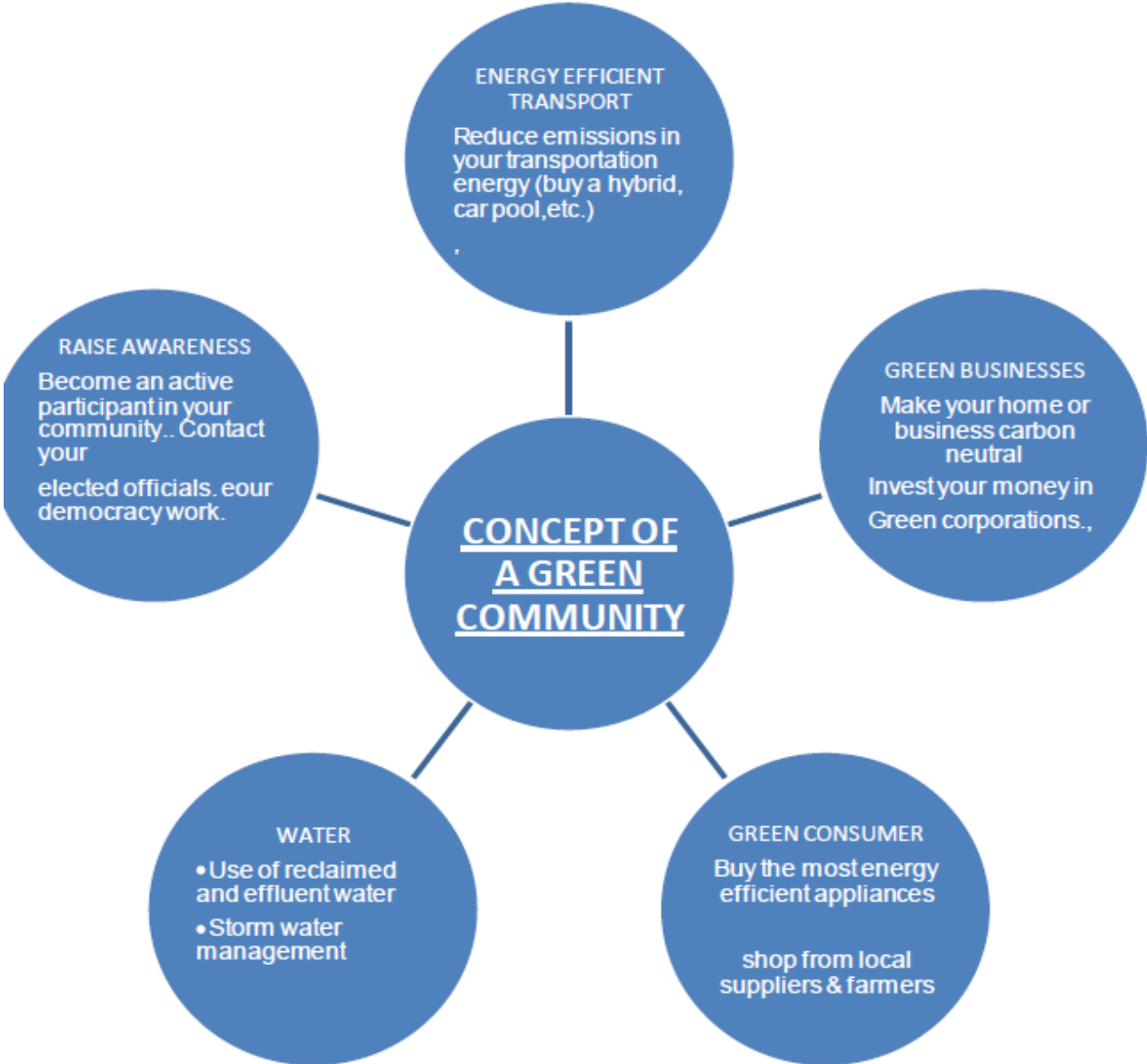


Figure 2 Concept of a green community

3. Factors that sustain a community

i) Economy

The mainstream vision of the economy is based on a number of assumptions that were created during a period when the world was still relatively empty of humans and pollution. But the world has changed dramatically. Measuring the strength of an economy in terms of “material consumption” is an outdated concept and will not sustain the economy long term in the face of a changing environment. A *new model of economy* needs to be established. The characteristics of this *green economy* are:

- acknowledges the importance of ecological sustainability
- social fairness, this means that the economy recognizes that distribution of wealth is an important
- Focuses on strengthening “human capital” rather than material capital

ii) Energy

Renewable energy sources produce electricity with no global climate-changing greenhouse gas emissions

- Use of solar , geothermal , wind energy in meeting city’s energy requirements
- City’s architecture makes maximum use of natural light
- Highly sophisticated transmission systems to prevent power loss

iii) Food

Food habits not only affect us, but have a profound impact on the planet. The global food system is responsible for as much as one-third of rising greenhouse gases. Production of food for the city should include

- City wide eco friendly food packaging

- Effective disposal system segregating “biodegradable and “non biodegradable” substances. This way food which is wasted can be put to good use.
- Encouraging local dealers
- Promotion of organic practices in farming

iv) Recreational centres

The more time one spends in cities, the more important it is for one to get away. Greenery available at close proximity facilitates our connection with the world around us. This is what eco-friendly recreation is :

- Outdoor fitness centres instead of power consuming gyms
- More areas devoted to public parks
- No encroachment of land near lake sides
- Encouragement of terrace gardening and architectural building plans which facilitate it

v) Social awakening

The most important part of any environmental movement is social awakening. In other words people need to have an intrinsic force driving them to be environmentally conscious. This can be done by

- Making “environmental science ‘ a prime subject up until the final year of high school
- Having regular government sponsored events ,to raise environmental consciousness among uneducated masses
- Regular student organized clean up drives and community activities should be recognized and rewarded

vi) TRANSPORT

- Better network of public transport ex. Subways busses etc.

- Affordable Green vehicles powered by alternative fuels and advanced vehicle technologies and include hybrid electric vehicles, plug-in hybrid electric vehicles, battery electric vehicles, compressed-air vehicles, hydrogen and fuel-cell vehicles, neat ethanol vehicles, flexible-fuel vehicles

vii) WASTE: There are two aspects to this

WASTE REDUCTION

- Be an informed buyer
- Goods manufactured with minimum packaging
- Use of reusable containers

WASTE MANAGEMENT

- Large scale government funded recycling units
- City wide composting units

viii) WATER

Water suppliers should support long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands

- City wide compulsory storm water management
- Sewage treatment plants
- City water body protection control

ix) BUILDINGS

Green buildings are structures which use environmentally sound tactics in construction they have the following characteristics:

- It efficiently uses natural resources like light air etc.
- Gives occupants maximum resource availability
- Minimizes waste production
- Incorporates eco friendly building material (alternatives o cement etc.)
- Does not compromise or surrounding areas of greenery to expand

An example of a sustainable community

Tamkuha is a village in Bihar, that until recently had no power. That changed when GyaneshPandey, an NRI, set up a unique, low-cost, eco-friendly power plant- **a rice husk plant.**

His company, Husk Power Systems (HPS) took six years of research to hit upon this idea, and around 250 villages across Bihar has benefited from the plan. The villagers have light and electricity, generated from material readily available to them, without harming their environment.

According to HPS, 2 kg of rice husk generates one kilowatt of electricity, and the plan has saved approximately 750,000 tonnes of carbon dioxide from being released into the air. The burning of the husk is carefully controlled and 'producer gas', a mixture of nitrogen, carbon monoxide, methane, hydrogen and carbon dioxide, is led to a gas engine where it is combusted. It drives an alternator that generates electricity.

The response of the villagers was enthusiastic, and currently HPS operates sixty power plants across Bihar.

source: rediff.com, huskpowersystems.com

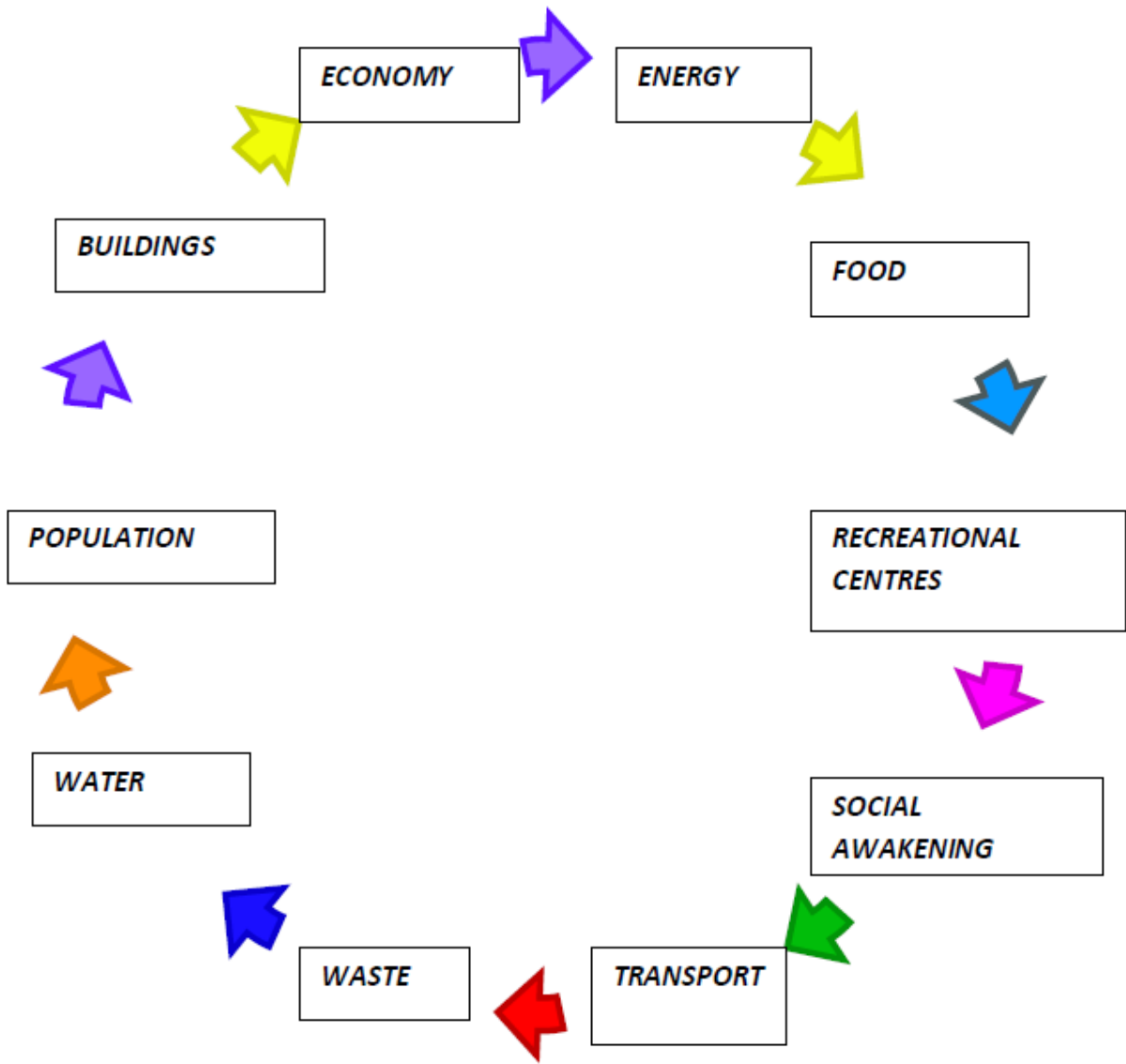


Figure 3 – Factors that sustain a community

4. Our Action Plan

We are students, so our communities are our school and our residential complexes. To have an impact on the environment on any scale, we must begin with our immediate surroundings. Our primary concern is therefore the eco-friendliness of our school and gated communities. We realise that our biggest task is to convince others of the importance of being aware of the environmental damage we are causing, and to move them to consider and take action about the same.

4.1 Our Colonies

Most apartment complexes have associations that formulate policies regarding waste management and energy considerations, which are usually followed by members of such complexes. Associations therefore need to have an inclination towards environmental causes before gated colonies become actively involved in the green movement.

L&T South City is a large apartment compound in south Bangalore, which has a resident's welfare association. It has 17 towers, with some still being built, and 13 of them have 19 floors. The compound is powered by diesel generators when there is no current supply, and it does not segregate waste. Many simple steps can be taken, according to our team, to minimize the impact of such urban societies on the environment without affecting anybody's routine or comfort level.

4.3 Water

Apartment complexes drain a lot of water, often leaving very little available to underprivileged people nearby. A CERE statistic shows that while those living in slums in Indian cities have 5-10 litres of water available to them per person day, a middle-income or high-income locality has 125-300 litres of water per person per day. Some steps must urgently be taken to reduce this disparity, starting with these:

- Bucket baths should be encouraged. By our own experimentation, a short, five minute shower at medium flow takes this much water:



- Ten people taking only five minute showers for five days would lead to 200 buckets of water being wasted. An online survey of our peer group shows that showering time hovers around the ten-minute mark.
- Memos must be circulated to encourage people to tie cloths around high-flow faucets. A simple, mundane action, which will save litres and litres of water in the long term.
- Tippy taps can be installed in areas like slums, where flowing water is hard to come by. These are hygienic and allow only a small stream of water to flow when tilted, making it efficient for actions like soaping and washing hands.

- Associations should be made to harvest rainwater. The BBMP in Bangalore (the municipal corporation) could make rainwater harvesting compulsory, like it is in Tamil Nadu. In any case, the cost is not gargantuan and residents of large and small societies can pool in money and set up rainwater harvesting systems.

South City, for example, has an area of 34 acres. 85% of this is open space. The block area, therefore, comes to be 20,700 square metres. The upper limit of the cost of building a rainwater harvesting unit for a building of 300 square metres of area, according to www.rainwaterharvesting.org, is Rs. 30,000. The highest amount that South City needs to pay for a rainwater harvesting system comes to Rs. 2,070,000.

The number of flats in South City, adjusting for vacancies, is roughly 1106. The amount that each family needs to pay, therefore, is Rs. 1872, which is a very reasonable amount.

- Water tankers drip water all the time, which can be stopped with nozzles. Associations can make it clear to tanker companies that water conservation is important to them.

4.4 Waste

Large complexes are waste generators, to put it mildly, so they have a civic responsibility to manage all the waste that they create. The first step associations can and should take is waste segregation.

Dry waste can be divided broadly into dry plastic waste, dry paper waste, and dry metal foils and cans. As a beginning, a few households segregating dry waste in bins can give this waste to the 'old paper marts' found in every locality. When the project picks up, waste management organisations like Saahas in Bangalore can be asked to manage the complex's waste.

Wet waste can be segregated according to whether it is biodegradable or not. The unusable wet waste cannot be recycled, but the biodegradable waste should be placed in compost pits that can be built virtually anywhere.

E-waste or electronic waste is the last important portion of waste that simply cannot be thrown into the soil or burnt. Batteries, headphones, broken adapters, CDs, and other, similar waste release heavy metals and harmful chemicals into the soil, water, and air when not disposed of properly, so these must be handled with care. Common deposition terminals can be set up in convenient locations in apartment complexes, and given to organisations like GEM (Global E-waste Management).

This is the least, in our eyes, that gated communities can do for the environment, having caused deforestation and erosion so that they could come up in the first place.

5. Our Schools

Our school is where we learn and grow, and spend most of our daylight hours. A school doesn't only influence its students; it changes the area around it. It can provide employment to the poor around it, it can teach more than just math and science. It can teach the importance of going green and spread awareness about the reality of the problem of climate change. It can lead by example and nudge the people living in proximity to it to take corrective measures themselves.

5.1 Energy

The first step with respect to saving energy in our school is conducting an energy audit to find out just how much we are using. Once that is done we can find out how much our actions can change our consumption and emissions.

- The use of school buses should be encouraged, and those using private transport can be persuaded not to do so.
- A school should ideally be built with plenty of light streaming into it and plenty of ventilation, but this is not often possible, so lights and fans should be minimally used either way. For lower classes, an 'electricity leader' can be appointed in rotation to make sure that the lesson of being aware of power wastage is taught effectively.
- Computer labs can and should use power managing software like Reap Benefit's power saver: www.reapbenefit.org/lab
- If the school is used in the evening, cheap and cost effective solar lights can be used. These need a one-time investment and hardly any maintenance.

5.2 Water

- Recycled water from the bathrooms can be used to water the gardens.
- Posters should be put up in the bathrooms about the common ways to avoid water wastage: turn off the faucets, flush minimally, turn off the tap when soaping. Automatic taps (motion sensing) can be installed, these are the most economical.
- Rainwater harvesting can be done, as described for gated communities.

5.3 Waste

- Waste segregation should be done effectively.
- Reusable or natural cutlery, like ceramic cups and metal plates, or even banana leaf plates can be used for meals.
- Clean up drives should be organised in nearby localities, especially to create awareness about littering.
- Reducing waste by changing how food is packed is important. School tuck shops should refrain from packing sweets (like cakes, muffins) individually, and instead can use large airtight containers for the same. The effective cost of making these sweets would be lowered, too.

Tree planting days must be organised, to actively involve every student in the green movement and familiarise them with the practice and its importance. The most important thing a school should look at is the spread of awareness about all of the above through student groups. These groups can go to public areas like slums and parks and conduct activities like street plays, rallies, poster campaigns, and involve the public in their cause. This is effective because people feel that they can make a change, and that they are important.

6. Challenges

The action plan that we have discussed above, cannot be deemed foolproof.

There are some challenges that we anticipate throughout our journey towards achieving sustainability in our households and schools. These are given below:-

1)**Convincing People** – The action plan needs to be as attractive and convincing as possible in order to make people understand the immediate need to respond and help them participate in those plans without being dissatisfied or confused.

This is a great challenge as one cannot expect every individual's reaction to be the same. There will be a lot of questions and we must come up with quick, honest answers so as to give them the true picture and urge them to participate.

2)**Avoiding delayed procedures and increased cost-** The plan must be such that a community can implement it without having to wait for several days and months. It must be something simple and consistent. Another major challenge will be to find out cost-effective methods that will help in drawing more people without them having to worry about excessive costs.

3)**Being sensitive** – The plan must not be presented or carried out in a way that it might hurt any individual's or community's sentiments. While carrying it out, we must make sure that we explain our ideas convincingly and gently persuade them into following it.

4)**Carrying out large scale operations** – Carrying out large scale operations requires a lot of networking and door-to-door convincing. This is merely a hurdle that can be overcome with sufficient volunteers and through good contacts.

7. Following up on our action plan

We believe that a plan without a good follow-up mechanism is a plan that is incomplete. This is because it takes a while before people adjust themselves to this new suggested lifestyle. We must reiterate and reinforce our methods and check if they are able to follow the methods that have been illustrated to them. This will help us compare and contrast the benefits of such a lifestyle and also will inspire people to continue doing the things the clean, green way.

The following are some methods we would adopt:-

- Mail them questionnaires asking how they have been changing their ways to help make greener societies.
- Throw get-togethers in small societies where people discuss on how they have cut down on their consumptions.
- Compare the emissions before and after these methods have been instructed and implemented in schools, colonies etc.
- Appreciate or reward people who have gone the green way and publicise them in order to attract more people into the process.

8. Statistics

In order to understand, comprehensively, the sort of situations we have to deal with in terms of carbon footprints, energy and water consumptions, and the following information was collected from various reports and sources.

a) Collection of public data on energy/water consumption patterns in Bangalore city

BWSSB currently supplies approximately 900 million litres of water to the city per day. Taking the per capita requirement from the below table and estimating the population of Bangalore to be 65 laths, the city's requirement is 877.5 million litres. However, the distribution of water availability, and hence consumption, is highly varied, with it being as low as 40 litres per person in rural areas lacking infrastructure, or even lower.

Water consumption requirements

Usage Purpose	Litres / Person
Drinking	3
Cooking	4
Bathing	20
Toilet flushing	40
Washing clothes	25
Washing utensils	20
Gardening	23
Grand total	135

Source: CPHEEO

Sources of Water Supply

Sources	No of areas
Rivers / Lakes / Streams	103
Bore wells / Open wells	53
Canals	17
Other sources	15
Reservoirs	13
Tanks	11
Recycled backwash water	3
Dams	2
Grand total	217

Source: <http://www.kuwsdb.org>

b) Estimation of Carbon footprint of schools and gated communities on an average

A 'carbon footprint' measures the total greenhouse gas emissions caused directly and indirectly by a person, organisation, event or product.

The footprint considers all six of the Kyoto Protocol* greenhouse gases: Carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O), Hydro fluorocarbons (HFCs), per fluorocarbons (PFCs) and Sulphur hexafluoride (SF₆).

Carbon footprints in school and gated communities occur mainly due to:

- Transportation – burning of fossil fuels during travel
- Energy used in buildings – for lighting, heating, cooling, etc.
- Inefficiencies in waste management and disposal
- Supply chain and production of goods and services utilised by schools and gated communities

Bringing down this footprint is a simple procedure, once implemented, primarily involving people of the community, and then travelling by foot or cycle instead of fossil fuel consuming vehicles, minimising waste, waste segregation, decreasing unnecessary demand, and even just switching off the lights and other electronics while leaving the room.

*The Kyoto protocol is a protocol to the United Nations Framework convention on climate change. It is an international environmental treaty aimed at fighting Global warming.

c) The direct impact of energy usage and generation: emissions and warming

Energy production and generation, using any of the various methods (thermal, hydro, etc.), has some level of environmental impact.

Sources of energy	Environmental Impact				
	Air Emissions	Water Resource Use*	Water Discharges*	Solid Waste Generation	Land Resource Use
Natural Gas	Burning of natural gas releases oxides of carbon, sulphur and nitrogen, but in much lower quantities than coal.	The combustion turbines themselves require very little water, but the entire system uses large amounts for cooling.	The water used is released when the pollutants and heat of the water reaches a certain level. Pollutants in the water are minimal.	The amount of generation of solid waste is not substantial.	Extraction of natural gas causes a huge impact on the land and destroys the habitat, further causing soil erosion, landslides, etc.
Coal	Burning coal releases complex molecules containing the oxides of carbon, sulphur and nitrogen in very high proportions.	Large quantities of water are required during combustion and cooling, along with removing impurities from coal mine.	The discharged water can contain pollutants, including heavy metals like arsenic and lead.	Solid wastes are generated, namely ash (metal oxides and other pollutants), from the burning of coal.	Extraction of coal also destroys the habitat and causes large amounts of damage to the land.
Oil	Combustion of oil causes the release of mercury compounds, along with oxides of nitrogen, sulphur and carbon in large quantities.	The drilling of oil wells, extraction of oil, refining of oil, and generation of energy using oil, all require water in large quantities.	Drilling, extraction and transportation of oil can release oil into water. Water discharged from refineries and power plants can contain pollutants.	Refining oil releases sludge, containing solid waste including heavy metals and other harmful pollutants.	As such, generation through oil does not cause significant damage to land by itself.

Nuclear Energy	The extraction and refining of uranium releases fossil fuels but generation of energy through nuclear power does not.	Large quantities of water are required for generation of energy and for the cooling of the power plants.	Pollutants build up in water used in nuclear power plants and are discharged along with the water. However, it is not radioactive.	Solid wastes are not generated but radioactive wastes are and these need special care in their disposal.	Like generation through oil, the only impact on land is the impact due to construction of the power plant itself.
Hydro-electricity	Fossil fuels are not burnt at all and so, emissions into air are non-existent.	Dams constructed for generation of energy affect aquatic life adversely.	Water discharge is either non-existent or completely non-polluting.	Energy produced through all four of these methods does not produce any substantial amount of solid waste.	The construction of dams completely destabilizes the area around the dam.
Solar		Water use is minimal, if any, and does not cause any adverse effects.			Requires minimal use of land that needs to be exclusively used for production.
Geothermal					

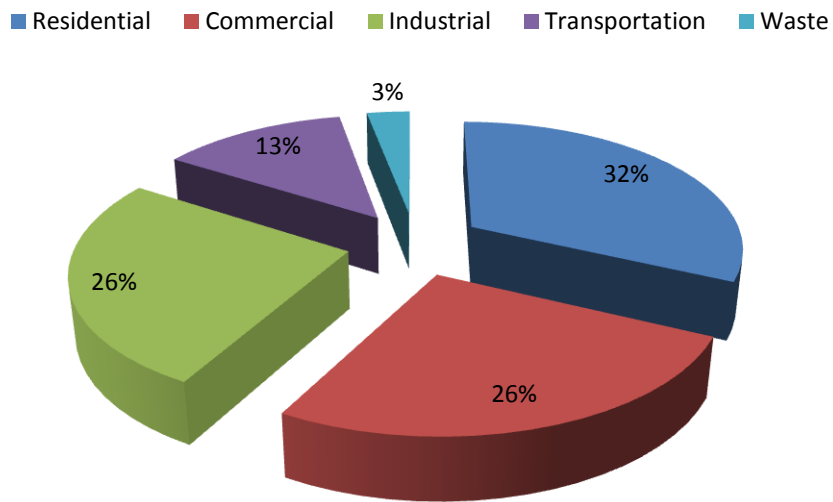
* Water Resource Use and Discharges into Water cause further problems such as polluting the water, releasing heated water into water bodies, or decreasing the amount of water (in case of water used from lakes or rivers), which causes loss of aquatic life and stability.

Most of the above environmental impacts lead to generation and emission of greenhouse gases (GHGs) like oxides of carbon, sulphur, nitrogen, etc. and these, in turn, lead to global warming on a large scale. Further, pollutants suspended in the air (due to soil erosion and release of solid wastes) merely add to the phenomenon of global warming by absorbing heat.

India's annual GHG emission increased from 1.25 billion tonnes in 1994 to 1.90 billion tonnes in 2007. However, India has decreased its carbon intensity by 17.4 percent in the 15 years up to 2005. Carbon intensity is the measure of carbon emissions per unit of gross domestic product (GDP). India has further voluntarily undertaken to decrease its carbon intensity by 20-25 percent by 2020 over the 2005 level.

Bangalore's emissions of carbon dioxide alone are estimated to be 6.36 million metric tonnes, from corporations (77%), street lighting, transportation, and a surprisingly large amount from lack of efficient waste management.

Bangalore's Carbon Emissions in 2007



Source: ICLEI reports

9. Conclusion

India has traditionally been a land of villages and was largely an agrarian economy up until the sudden boom in the service sector after liberalization, when there was a shift in employment from the primary sector to the tertiary sector.

As a consequence, large numbers of people migrated from villages to cities.

What were once colonial centers or centers of commercial activity and trade soon became a place that promised better livelihoods and newer prospects. Today, city populations are growing more than those in villages, though four-fifths of our population lives in rural areas.

Cities were once considered places where hopes and dreams were fulfilled, but today the sad reality is that they are centres of pollution and waste, that are consuming and ruining India's abundant resources. When one thinks of cities, he/she thinks of big industrial settlements, smoke-spewing factories, busy streets full of vehicles and absolute chaos. However, if we and our future generations are to survive, then we need to modify the picture and bring in harmony, serenity and peace. The best way to start would be to respect nature, cultivate basic civic sense in ourselves and our children and learn to live together as a community in a responsible manner.

It is time for us to *'Think globally and act neighbourly'*

10. SOURCES

The Centre for Environmental Research and Education's information booklets and database

www.un.org

www.guardian.co.uk

www.designrecycleinc.com

www.forbes.com

www.indiaenergyportal.org

www.indianwaterportal.org

<http://bangalore.citizenmatters.in/articles/view/1831-carbon-emission-level-bangalore>

The Water Literacy Foundation (<http://www.waterliteracy.org/>)

The Ashoka Foundation's database

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