

UTILIZATION OF NON-HUMAN RESOURCES IN URBAN AREAS AND ITS IMPACT ON GREEN ECONOMY AND SUSTAINABLE DEVELOPMENT

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Abstract—The individuals and households as a unit should always try to lead a sustainable lifestyle and use practices that reduce their contribution to the ecological footprint. This study was undertaken to know the utilization pattern of non-human resources like fuel energy consumption levels, waste generation, water usage patterns and environmental issues faced in and around the sample households. The results regarding the energy usage showed that the respondent households used cooking gas, petrol and diesel as primary fuels; and electricity as an alternate fuel. Petrol usage ranged from one litre to more than 20 litres per month and electricity usage more than 200 units per month, depending on the size of the family. Switching off the lights, electrical appliances and taps immediately after usage are the saving strategies used for energy and water. The results regarding the waste generation showed that cent percent of the sample households generated more plastic waste, followed by food and other wastes. The water usage levels in the households ranged from 300L – 1500 L depending on the number of family members. Few of the households used conservation strategies like re-using water for gardening and rain water harvesting. Most of the households faced noise and air pollution from the vehicles and factories around their houses. The results gained from this study can be used to formulate suggestions on how to use the resources effectively in order to protect the environment at a micro-level and promote Green economy and Sustainability at macro-level.

INTRODUCTION

Green Economy and Sustainability are two different inter-linked actions that can help a nation's GDP and environmental quality together. The main objective of green economy is improving the human well-being and social equity by significantly reducing the environmental risks and resource scarcities. It is low carbon, resource efficient and socially inclusive as defined by United Nations Environment Programme (UNEP) in the year 2011. According to Brundtland Report (1987) Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs (thwink.org. 2014).

There is a three-fold benefit gained from the Green Economy and Sustainability, i.e. promoting

economic development, improving environmental quality and promoting social well-being. All these issues can happen at a macro-level; but at a micro-level, it is individual's responsibility to be cautious about their utilization of resources. Urban people are more accessible to resources and technology, and hence their consumption patterns differ in terms of quality and quantity when compared to rural people and will have a stronger impact on ecological balance. Hence, this study was undertaken to understand the human consumption patterns of non-human resources required for the daily living of people living in the urban areas.

Objectives of The Study

1. To study about the fuel usage patterns and the conservation practices followed in the urban households.

2. To understand the water consumption patterns and the conservation practices followed.
3. To identify the different types of waste generated in the households.
4. To explore the sources and problems associated with different kinds of pollution.

METHODOLOGY

An exploratory research method was adopted for the present study. The study was conducted in Hyderabad, among 30 households. A structured interview schedule was used to collect the data. The data collected was analysed using frequencies and percentages.

RESULTS AND DISCUSSION

The results gathered in the study are discussed below:

(a) Type of family

Majority (53.33%) of the respondent families were small sized comprising of 2 to 4 members, as displayed in Table 1. While 43 per cent belonged to medium size families comprising 5-7 members. It gives an idea that majority of the families were nuclear families.

Table 1. No. of members in the respondent families

Type of Family	Frequency	Percentage
Small (2-4 members)	16	53.33
Medium (5 – 7 members)	13	43.33
Large (8 or more than 8 members)	1	3.33

(b) Fuels used

The results (Table 2) showed that very few household used the primary fuels i.e., firewood

Table 2. Fuels used by the respondent families

Fuels	Percentage	Frequency
Primary Fuels		
Firewood	1	3.33
Coal	1	3.33
Secondary Fuels		
LPG	30	100.00
Petrol	22	73.33
Diesel	3	10.00
Kerosene	7	23.33
Electricity	30	100.00

(3.33%) and coal (3.33%). The results gave an indication that, due to the technological advancement people are using more of LPG for cooking purposes and hence the usage of firewood and coal has been reduced.

All the respondents used the secondary fuels like LPG and electricity, as they are basic and essential fuels for everyone in order to cook and generate electrical needs. Petrol was used by around 73.33 per cent in order to run their vehicles. Few also used diesel (23.33%) for vehicles and kerosene (10.00%) for cooking purposes.

(c) Quantity of Fuels used (per month)

The results related to the quantity of fuels used per month by the respondent families (Table 3) showed that majority (36.66%) of the respondent families used one cylinder per month to meet their cooking needs. Majority (26.66%) did not use petrol for running the vehicles, and among the ones who used petrol, majority (20.00%) used 0.1 – 5 litres per month. With regard to electricity, majority (43.33%) of the respondent families used around 50-100 units per month.

It can be seen that there are few families who use one cylinder only for 15-20 days. There are also some families who use more than 20 litres of petrol per month and use more than 100 - 200 units of

Table 3. Quantity of Fuels used by the respondent families (per month)

Fuel/ Quantity used	Frequency	Percentage
Cooking Gas (per cylinder – no. of days)		
1 cylinder – 15 days	1	3.33
1 cylinder – 20 days	2	6.66
1 cylinder – 25 days	1	3.33
1 cylinder – 30 days	11	36.66
1 cylinder – 45 days	7	23.33
1 cylinder – 60 days	7	23.33
1 cylinder – 90 days	1	3.33
Petrol (per month)		
Do not use	8	26.66
0.1 – 5.0 litres	6	20.00
5.1 – 10.0 litres	4	13.33
10.1 to 15.0 litres	5	16.66
15.1 to 20.0 litres	2	6.66
More than 20 litres	5	16.66
Electricity (per month)		
50.0 – 100.0	14	46.66
100.0 – 150.0	4	13.33
150.0 – 200.0	5	16.66
More than 200 units	7	23.33

Table 4. Fuel Conservation Practices followed by the respondent families

Practices Followed	Frequency	Percentage
Switching off lights, fans and electrical appliances when not in use	18	60.00
Use electrical appliances only whenever required	5	16.66
Use Public Transport to travel	3	10.00
Use Solar Geysers	3	10.00
Cooking food using low flame	2	6.66
Use lids for vessels and pressure cooking method	2	6.66
Pool Transport	1	3.33
Stop the vehicle engine at traffic signals	1	3.33
Use Energy saving appliances	1	3.33
Using less volt bulbs during day time	1	3.33
Use Compact Fluorescent Lamps (CFL)	1	3.33
Take a walk for shorter distances	1	3.33

electricity per month. Such families have to be educated to reduce their usage of fuels and follow some conservation practices. Due to various reasons, the fuel availability in the nature is decreasing as needs of the human being is increasing. Hence, individuals and families need to be aware of using the fuels consciously.

(d) Fuel Conservation Practices followed

Majority (60.00%) of the respondent families used to switch off lights, fans and electrical appliances when not in use as a fuel conservation practice. The other important conservation practices followed were using public transport for travelling, using solar power for heating water etc. However, a negligible percentage had used car pooling method and star rated electrical appliances. Research can be conducted to identify some conservation practices regarding different kinds of fuels and educate the people about these practices, so that the fuels will be conserved and sustainability can be achieved.

(e) Water consumption (per day)

The results (Table 5) showed that majority (36.66%) of the households used around 1000 - 1500 L per day, followed by less than 500 L (33.33%) and 500 – 1000 L (30.00%). As per the standards one person requires nearly 130 L of water per day in an urban area. Majority of the sample comprised of 2-4

Table 5. Water consumption by the respondent families

No. of litres used (per day)	Frequency	Percentage
< 500 litres	10	33.33
500 – 1000 litres	9	30.00
1000 – 1500 litres	11	36.66

persons that requires 260-520 L of water. But the results imply that majority of them are using more water than the standard requirements. Hence, people should be educated to use less amount of water. As water availability is becoming very less now-a-days due to less rainfall, climate change and other environmental problems; people must be educated to use water carefully in order to save water for future generations and also reduce the ground water level depletion.

(f) Water Conservation Practices followed

The results displayed in the Table 6 showed that, majority (56.66%) of the respondent families closed the taps when not in use in order to save water. Very few (3.33%) said that they would use water carefully, check leakages and repair them, and use less amount of water wherever required. Leakages and careless usage of water are two ways which cause a lot of water wastage as per few researchers. Hence, awareness need to be created among the people about the importance of checking these two issues and use water carefully.

(g) Types of Waste Generated

Following are the different types of wastes generated by the respondent families in a week's time of the study:

- ✓ **Plastic Wastes Generated:** Oil packet, shampoo packets and bottles, tooth paste packet, Pens, Food covers, Polythene covers, Plastic boxes, water bottles, milk packets, soap covers, biscuit covers, ice cream cups, Bread covers, Pen Refills, Jam sachets, butter packets, Mosquito repellent bottle, Gas pipe cover, Disposable cups, Oil bottle, cool drink bottle, old cylinder pipe, shampoo bottle, milk

Table 6. Water Conservation Practices followed by the respondent families

Practices Followed	Frequency	Percentage
Closing taps when not in use	17	56.66
Reusing used water for gardening	6	20.00
Washing clothes once in a week	3	10.00
Rain water Harvesting	3	10.00
Washing clothes in Washing machine	2	6.66
Check leakages and repair them	1	3.33
Use less amount of water wherever required	1	3.33
Use water carefully	1	3.33

packets, Broken scale, old slippers, Detergent packet, gum bottle, recharge cards, Food product covers, salt covers, Dettol bottle, waste sandals, CD's, disposable plates, Straws, talcum powder bottle, packaging material, curd covers, facial cream tube and cake packaging covers.

- ✓ **Food wastes Generated:** Banana peels, mango peels and other fruit peels, vegetable peels, food wastes, egg shells, Groundnut shells, coconut shells, Pickle, vegetable waste, tea powder, meat waste, fruit pulp, cooked rice and rotten fruits.
- ✓ **Glass wastes Generated:** Nail polish bottles, Broken Bulb, Cosmetic bottles, broken glass pieces, jam bottle and broken bangle pieces etc.
- ✓ **Metal wastes Generated:** Chocolate wrappers, Deodorant bottle, Cool Drink Tin, Foil paper, Stapler pins, rusted blades, Chilli powder packet, jeera packet cover, dhaniya powder cover, Steel Scrubber, Mehendi sachets and Body spray bottles.
- ✓ **Paper wastes Generated:** Shoe Box, soap packet, Papers, newspapers, waste cardboard boxes used for different product packaging, recharge cards, detergent covers, bus tickets, chart papers, match box, detergent bar covers and Tetra packs.
- ✓ **Cloth wastes Generated:** Waste cloth, threads, Hair bands and Door mat
- ✓ **Non-recyclable wastes Generated:** Sanitary napkins
- ✓ **Other wastes Generated:** Pencil and Eraser wastes, Hair, Flowers, Nails, Broken pot pieces, Wax, Dust, Leaves and twigs

The results displayed in the Figure 1 showed that the all the respondent families generated plastic, food and paper wastethroughout the week. Apart from these, other wastes like Pencil and

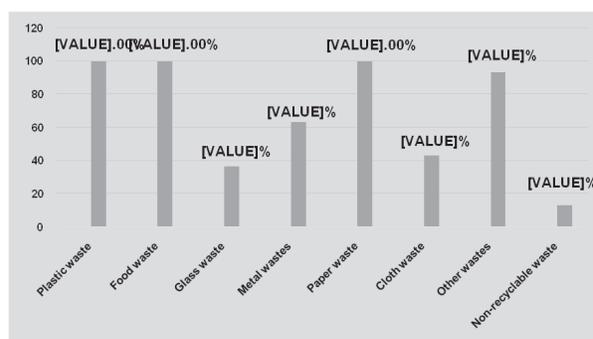


Fig. 1. Different types of Wastes generated by the respondent households (in the last one week of study time)

Eraser wastes, Hair, Flowers, Nails, Broken pot pieces, Wax, Dust, Leaves and twigs etc. were generated by around 93.33 per cent of the households. Non-recyclable wastes were the wastes which are generated by very less number of households (13.33%). People should be appraised about the negative impacts of non-recyclable wastes and also non-degradable wastes like plastic wastes as they are very harmful to the environment. Proper education and awareness in people can help them in generation of less number and amount of non-recyclable wastes and non-degradable wastes.

Apart from these wastes, people also must be educated to generate less amount of paper wastes. Paper is one such item which is made from wood pulp of some trees. Hence it is important to reduce the generation of paper wastes as there is a chance of cutting down the trees the number of trees for the production of paper. Paper can also be made again by recycling used paper or used paper products. Hence, the paper manufacturers have to use recycling methods and produce new paper and this reduces the cutting down of new trees.

(h) Exposure of the respondent families to the types and Sources of Pollution

Majority (93.33%) of the sample households were subjected to noise pollution through vehicles (63.33%), TV/ Radio (16.66%), Train/ Railway Station nearby (13.33%), Loud Music (13.33%), Music Bands (10.00%) and other sources.

Table 7. Exposure of the respondent families to the types and Sources of Pollution

Type of Pollution/ Source	Frequency	Percentage
Noise Pollution	28	93.33
√ Vehicles	19	63.33
√ TV and Radio	5	16.66
√ Train/ Railway Station nearby	4	13.33
√ Loud Music	4	13.33
√ Music Bands	3	10.00
√ Drilling in Construction Work	3	10.00
√ Mechanic Shop nearby	2	6.66
√ Function Hall	2	6.66
√ Loud speakers	2	6.66
√ Crackers	2	6.66
√ School located nearby	1	3.33
√ Street Vendors	1	3.33
√ Public meetings	1	3.33
√ Rice Mill	1	3.33
Air Pollution	23	76.66
√ Vehicles	17	56.66
√ Factories	8	26.66
√ Burning wastes/ garbage	8	26.66
√ Solvent Oils	1	3.33
√ Rice mill	1	3.33
√ Crackers	1	3.33
√ Construction	1	3.33
√ Train	1	3.33
Water Pollution	4	13.33
√ Factories	1	3.33
Land Pollution	4	13.33
√ Garbage	3	10.00

Majority (76.66%) of the sample households were also subjected to air pollution through vehicles (56.66%), factories (26.66%), burning wastes and garbage (26.66%) and other sources.

An equal percentage (13.33%) of the sample households were subjected to water pollution through wastes generated from factories (3.33%) and to land pollution through wastes generated from garbage (10.00%), as shown in the Table 7.

(i) Measures suggested to combat Pollution

Only few respondent families have suggested measures to combat pollution. Out of the ones who

suggested measures, majority of the respondents said closing doors and windows is the better option to combat noise and air pollution, whereas dumping of wastes in dustbins is suggested to combat land pollution (Table 8).

(j) Other General/ Environmental issues faced

The results displayed in the Table 9 showed that majority (40.00%) of the respondent families faced issues from the unclean garbage, no DDT spraying (23.33%), open drainages (20.00%), water scarcity (13.33%) and other issues. Around 10 per cent expressed that the Government is not taking Proper initiatives for Environmental Protection. This is a matter of concern. Government should try to create and conduct some awareness Campaigns on reducing and combating environmental pollution issues.

CONCLUSION

It can be concluded from the results of the present study that majority of the urban households are dependent on secondary fuels like LPG for cooking and electricity for lighting purposes. About one cylinder per month for cooking purpose, 10 lts. petrol for transport and 100 units of electricity approximately was used by majority of the respondents. Switching off lights, fans and electrical appliances when not in use were few fuel conservation practices followed by the households. Water consumption was also found to be high among the respondent families. Closing taps when not in use and reusing used water for gardening were the water conservation practices followed by nearly 80 per cent of the households. Plastic, food and paper waste generation was found to be very high among the sample studied. Cent per cent of the households reported that they were exposed to both noise and air pollution, whereas, few of them were also exposed to water and land pollution. Very few could think of some corrective measures to combat different types of pollution at individual level. Hence this study implies that a lot of awareness needs to be created among the population regarding the role of human being on environmental degradation and measures to overcome it. Rainwater harvesting needs to be promoted to combat water scarcity issue, plantation of trees in and around the house and their colonies for improving air quality and also to reduce noise pollution, stopping/reducing the

Table 8. Measures suggested to combat Pollution

Type of Pollution/ Measures to combat pollution	Frequency	Percentage
Noise Pollution		
✓ Closing Doors and Windows	2	6.66
✓ Planting trees	1	3.33
✓ Put strict provisions on timings for loud speakers	1	3.33
✓ Ban Loud Speakers	1	3.33
✓ Public meeting Permissions should not be given in residential areas	1	3.33
✓ Educating people	1	3.33
✓ Shifting Train Tracks from Residential Areas	1	3.33
✓ Reducing the Vehicle Horn Noises	1	3.33
Air Pollution		
✓ Closing doors and windows	4	13.33
✓ Educating and creating awareness in people	4	13.33
✓ Pollution check-up in vehicles regularly	3	16.66
✓ Cleaning home and surroundings regularly	2	6.66
✓ Reduce Vehicle usage	2	6.66
✓ Walk for shorter distances	2	6.66
✓ Fix mesh to doors and windows	1	3.33
✓ Servicing vehicles regularly	1	3.33
✓ Pollution Board should take strict action	1	3.33
✓ Rice mill have to be shifted to industrial zone	1	3.33
✓ Using Eco-friendly crackers	1	3.33
✓ Reduce Plastic use	1	3.33
✓ Use cycle as a transport mode	1	3.33
✓ Moving Railway tracks away from residential areas	1	3.33
✓ Population Control	1	3.33
Land Pollution		
✓ Use dust bins instead of throwing garbage directly	1	3.33

Table 9. Other General/ Environmental issues faced by the Respondent families

General/ Environmental Issues faced	Frequency	Percentage
Garbage is not cleaned regularly	12	40.00
No regular spraying of DDT	7	23.33
Open drainage	6	20.00
Water scarcity	4	13.33
Blocked Drainages in Rainy season	3	10.00
Unhygienic market	3	10.00
Streets are not cleaned regularly	3	10.00
No Proper Government initiatives for Environmental Protection	3	10.00
Electricity problems	2	6.66
Bad Drainage systems	2	6.66
Unhygienic market near by	1	3.33
Open Hospital Waste Dumping	1	3.33
Damaged Roads	1	3.33
Water Stagnation	1	3.33
Construction Works should be reduced	1	3.33

extensive use of plastic, composting waste are the few measures that can be adopted by the families to sustain the quality of environment. Such corrective measures will help in promoting Green Economy and Sustainability on the whole.

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