

How We Can Live Sustainably

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Almost three years have gone since COVID came into our life. It created havoc in our personal, social, and economic spheres and we are slowly recovering from its effects.

Most people believe that [the attack of this virus was compounded and accelerated because of our unsustainable lifestyle.](#)

We have become soft and with ever improvement in technologies are getting lazy and obese. Scientists have long suggested that obesity is an inflammation of the body and severely compromises our immune system. Thus, with present lifestyle our immune system never gets stretched and tested and I have a feeling that in coming years and decades we will have many more such epidemics unless we strengthen our bodies and mind and reduce stress.

One of the best ways to reduce stress is to live a simple, holistic, and sustainable life. Besides helping overcome the COVID challenge such lifestyle will also help slow down the climate change process. With each one of us living sustainably the world can become sustainable. This was the [message of Mahatma Gandhi.](#)

The consumptive lifestyle of western societies is putting tremendous pressures on world resources besides increasing earth warming and pollution. For example, an average [American consumes 306 GJ/yr. of energy.](#) If every citizen of this planet wants to have the wasteful and consumptive life style of an average American then we will need the [resources of 4-5 earths to sustain us.](#)

I have tried to live a simple but fulfilling life for the last 40 years and would like to share my experiences. My small experiment is not the final word on sustainable living. It is just a pointer, and I am sure many readers may have even better answers and solutions.

My experiments in sustainable living are:

1. I live in a small rural town of [Phaltan in Western Maharashtra](#). It is about 800 m above sea level and is 100 km south-east of Pune or 300 km south-east of Mumbai. [Its climate is very mild](#). Still in some years during winters the minimum temperatures can reach 7-8 °C. Our house is not heated. We close the windows at night if needed and wear warm clothes and socks. It keeps us warm and comfortable.

2. I live in a house designed by me and constructed in 1984. It has 18” thick stone walls which allow thermal lag-time, so heating and cooling due to ambient atmospheric temperature is delayed. It is passively cooled in the summer by laying old jute



gunny sacks on the roof and sprinkling water on them two times a day. These sacks are very cheap and cost Rs. 10/m². [The evaporating water from the sacks cools the roof from where 80% of thermal load comes into the house](#). Thus when the outside temperatures are about 40-45 °C the average temperatures of rooms range from 25-30 °C. This is mostly because of thick walls and cool roof. Besides, we also close all the windows and draw the drapes over them so that hot air and radiation from outside does not come inside the house. The trees surrounding the house also help.

3. In the last 2-3 years we have had scanty rains in Phaltan and so there is drought-like conditions. To mitigate that and keep the house cool without the use of water we have set up green shade nets over the roof. These shade net cost Rs. 150/m² and together with gunny sacks provide adequate cooling for the roof. This type of simple cooling system has also been put on all buildings in our Institute. The Institute buildings are also stone structures with 18” thick walls.
4. This simple rooftop cooling system is a highly effective air-conditioning system, with very little energy and cost involved. The gunny sacks last for about two years, after which they need to be replaced, and the **water requirement is only 1.5 liters per square meter of roof area**. Costing done by us has shown that this **system is one-tenth the cost of a regular electric air conditioning system**, and when the electricity supply is irregular—especially during summer—the rooftop system provides a very cost-effective method of cooling the house.



5. In a couple of years or so the gunny sacks get worn out because of the salt left behind by the evaporating water. These old gunny sacks are either used as mulch in the garden or burned in our hot water boiler, which supplies water for our daily bath. The water boiler is a simple grate-type multifuel boiler with about a 10 m long chimney attached to it. This chimney height gives an excellent draught and hence burns the wood and other material quite cleanly. The ash from this boiler is used as a fertilizer in our garden either by putting it directly around the plants or in composting pits.

6. All our kitchen waste is composted in a pit (dimensions of 1 m X 1 m X 1 m) and within 2-3 months it provides excellent fertilizer for the garden.

7. Similarly at our Institute NARI we compost all the agricultural residues from our farm in four huge pits. The residues after crop harvesting are brought to the pits, chopped into small pieces by chaff cutter and then put in them. Periodic water spray and additions of cow dung helps to produce good compost in 3-4 months. Use of such farmyard manure has greatly improved soils of NARI farm.



8. We never waste any food in the house. Whatever we take on the plate is eaten. The leftovers are either used next day or fed to our dog and cats. There is no special food for the pets. They eat whatever we eat.



9. We have a [2-acre plot on which our house is located](#). It mostly contains trees planted by us. Their leaf litter rots in the soil during rainy season and provide nice mulch. The dead branches and trees provide us the wood for heating our bath water in the boiler. In fact, we always have surplus of wood so that we sell it and make a tidy sum.

10. We [purchased this barren land at throw away price in 1981](#). The quality of land was so poor that there would be huge cracks – big enough for whole sheep to disappear in them. We planted about 30 different types of trees. With time the trees

have grown so that the garden is presently like a tropical forest. Last count showed that there are about 40 different types of birds which either live in our garden or take refuge during migratory phase. Besides the birds the garden also attracts poisonous snakes like Russell Vipers, Cobras, and non-poisonous ones like rat and wolf snakes! The leaf litter from the trees and the compost fertilizer has improved the soil quality and it has therefore become springy and quite fertile.



Institute farms
transformation in
40 years

11. Similarly, when the NARI farms were purchased in late 1970s, they were mostly barren. With the use of irrigation water from the Nira Right Bank canal and organic fertilizer from the compost pits, the lands have become quite fertile.
12. Most of our groceries and vegetables are grown within 10-15 km of our home. The eggs are mostly from local poultry, milk from cows across the road and vegetables and groceries from our farm and the local market.

We use safflower and mustard seed produced on our Institute farm for crushing in the local mill for oil. Thus, the oil is fresh and without any chemicals. We also consume some fruits grown in our own garden.

13. Until five years ago ***I drove my 1985 Maruti 800cc car*** which transported me from point A to B comfortably. After being driven 150,000 kilometers it has been sold since it could not be insured, and neither could I get spare parts for its repair. So now I drive Maruti Alto, an efficient small car which gives me between 16-18 km/liter and is small enough to go in the smallest of lanes and by-lanes of Phaltan town. For long distance driving to Pune or Mumbai (300 km from Phaltan) I use hired taxi which is cheaper and convenient.
14. We have few clothes, and they are worn until they get torn. They are then used in the house as dusters and wipers and after becoming tatters are used in the water boiler to heat the water. Mostly I wear khadi or cotton spun in cottage industries. Khadi is a very comfortable material to wear and makes excellent dusters and wipers after the shirts get torn.
15. Similarly, all the papers in the office are used for writing on both sides and the used ones are brought to our house to again heat our bath water. Thus, we try to recycle most things.
16. We have battery-powered inverters both in the offices and at home which supply enough juice during power cuts for lights, fans, and computers only. Therefore, no TV or refrigerators run on them. During electricity cuts we walk, talk, or read. This provides a good quality time to catch up on reading and discussions. Sometimes I think this is for the best as 24-hour electricity with TV and other electronic media running continuously causes distraction.
17. We do not travel very much but communicate more by phone and internet and believe that this is much more energy-efficient way of

keeping in touch. With availability of broad-band internet connection both at home and in the office, it is an excellent communication and information medium. One of the positive outcomes of COVID crisis has been tremendous increase in communication via internet and has greatly helped in reducing the cost of travel and pollution.

18. We bring most of our groceries and vegetables in cotton carry bags and hence have little garbage of plastic. Nevertheless, we cannot get away from plastic as most things come already packed in it and this is the biggest nuisance we have. ***Our plastic garbage is approximately 1 kg/month.*** We have no way to recycle it. Presently we take the plastic bags and bottles to the local garbage dump from where they ultimately go to the recycling center. The technology for recycling of plastics in rural areas is not available and is very much needed.
19. We are teetotalers and drink only water, which is boiled. Thus the plastic bottles and cans of soft drinks do not litter our garden. Drinking only water is not only healthier but also helps the environment by not producing plastic bottle litter.
20. We buy only those things which are needed and since we live simply, we do not need to buy too many things. I still use my 1985-made wristwatch, which gives excellent service and also use one of our 20-year-old refrigerators. We try to get most of our gadgets repaired rather than throwing them away when they stop working. This reduces the garbage production and at the same time is easy on the pocketbook. However, India is rapidly developing into a throwaway society and hence it is becoming increasingly difficult to get the old gadgets repaired.
21. The main external inputs we use are electricity for lighting and gadgets, petrol for transport, and liquid petroleum gas (LPG) for cooking. Our per capita energy consumption (from last 2-3 years data) is 14.5 GJ/yr. for electricity (both in offices and home), 10.8 GJ/yr. in transport (mostly

for petrol for 2 cars) and 2.1 GJ/yr. in cooking gas. Thus, we personally consume ~ 27.4 GJ/person/year of energy. To this should be added the energy in India's infrastructure which comes to about 10 GJ/person/year. Hence **our total commercial energy consumption is ~ 37.4 GJ/person/yr.** Contrast this with about 306 GJ/person/year that an average U.S. citizen uses. Thus in 1/8th the energy that is used by an average America citizen we can live quite decently in a modern industrial society.

22. Our low electricity consumption results since we use only fans and LED lamps and evaporative or passive roof cooling system. Even in our offices we use evaporative roof cooling. We do have an air conditioner (AC) in our bedroom and in my office, but it is hardly used because of passive evaporative roof cooling system. Last 8-10 years data show that we have used AC for 15-20 days a year during the hot humid weather. The low energy usage in transport is because on average we travel between 15-17 thousand km/yr.
23. If air travel is added to the above energy, then the consumption increases drastically. With the [energy norm of 1.4 MJ/passenger-km for air travel](#) a trip to US from Mumbai consumes 28.3 GJ/person of energy while each domestic air travel consumes – 3 GJ/person. For example, in 2018 we made four domestic and one foreign trip and hence the total energy used was 86 GJ/person. This is still less than 1/3rd the energy consumed by a US citizen. Though our air travel is quite limited but still it is the biggest user of energy in our case.
24. Our average water consumption is 180 liters per person/day for household purposes. This is almost one-fourth that used by a U.S. citizen. In late 1980s we did an experiment of rainwater harvesting. We have set up a small hut-like structure in the Institute and collected the rainwater from its roof in a Sintex plastic tank. Even in Phaltan with 500 mm rainfall/year we were able to show that the area of small hut roof is

sufficient to collect all the water needed for yearly drinking requirement for a family of 4-5. We now feel that our [solar water purifier in combination with roof top rain harvesting](#) system can be an economically viable answer for drinking water



requirements for families in rural areas. We have expanded this concept to provide 400 l/day clean drinking water for two rural schools in Phaltan area.

With these examples I feel a satisfying and decent lifestyle can be maintained in much less energy and water usage as compared to that in western societies and do hope it may inspire the readers to do their own energy calculations for sustainable living. ***Interestingly if every person has the energy consumption pattern like ours then [one earth is sufficient to provide all the energy needs of mankind.](#)***

However, sustainable living can take place only when a person becomes internally secure since the desire to show off is reduced and the mind is focused on higher things in life. Internal security is achieved by spirituality which also helps a person get wisdom. This allows him/her to use the resources judiciously and efficiently. I believe that [spirituality with technology can lead to sustainability and happiness.](#) This should be the mantra of India's and world's development.

[HOME](#)

©Anil K Rajvanshi. August 2023.

Originally published in 2009. It has been periodically updated. (November 2024)

Published in [South Asia Monitor. 21 November 2020](#)

A nice [video on this theme has been made by Madhura Rajvanshi](#). And a [podcast discussion on this theme is here](#).