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Sustainable Food Choices: An eco-friendly approach



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FOREWORD

The chair of the UN panel on climate change (IPCC), Dr Rajendra Pachauri once said that the best thing people can do to fight against climate change is to eat less meat. He said that people should start by having one meat-free day per week then cut back further. Diet change is important in reducing greenhouse gas emissions and environmental problems associated with rearing cattle and other animals.

Sustainable food choices have a big impact on our carbon footprint. According to a research study conducted by the University of Michigan, a quarter-pound Beyond Burger requires 99% less water, 93% less land and generates 90% fewer greenhouse gas emissions, using 46% less energy to produce in the United States than its beef equivalent. The Beyond Burger is the world's first plant-based burger.

According to the Food and Agricultural Organization (FAO), adopting sustainable diets at a global level is urgently needed. They found that livestock farming emitted 14.5% of the globe's total greenhouse gases in 2013. Considering these numbers, the maintenance of the world's food supply is a part of the climate change puzzle that should not be overlooked.

Regarding the environmental aspects of a sustainable diet, a shift from current dietary patterns towards more environmentally friendly habits appears necessary. Environmentally friendly habits include reducing the

consumption of animal products and increasing the consumption of plant products. The FAO also mentions that alternative modes of production may be important in the promotion and development of sustainable diets.

We can save the Environment through our Food choices. Beyond going vegetarian or vegan, there are other ways our food habits and type of food impact the environment. The food production has also an impact on the environment. According to the U.S Environmental Protection Agency (EPA), during 2014, agriculture was found to be responsible for 9% of total greenhouse gas emissions in the United States. At the same time, transportation, an important part of the USA's food supply system, made up a hefty 26% of greenhouse gas emissions that same year.

India has more vegetarians than the rest of the world put together. In India, vegetarianism is usually synonymous with lacto vegetarianism. But now Indians are also taking the vegan route and there is a positive growth in all spheres surrounding this lifestyle.

The global adoption of healthy diets from sustainable food practices would safeguard our planet and improve the health of billions. The present issue discusses sustainable food choices and whether a vegan meal has an impact on environment or not.

Sustainable Food Choices

Transformation to healthy diets by 2050 will require substantial dietary shifts. Global consumption of fruits, vegetables, nuts and legumes will have to double and consumption of foods such as red meat and sugar will have to be reduced by more than 50%. A diet rich in plant-based foods and with fewer animal source foods confers both improved health and environmental benefits.

*Prof. Walter Willett MD
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Sustainability is a balancing act. The United Nation's 1987 *Report of the World Commission on Environment and Development: Our Common Future* noted that sustainable development meets the needs of the present without compromising the well-being of future generations. Sustainability covers economics, environment, health, nutrition, and other related dimensions. This interconnectedness can be observed in the FAO's definition of sustainable diets:

Sustainable Diets are those diets with low environmental impacts that contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources.

In multifaceted aspect of sustainability, the food production system and our food practices play a crucial role. According to the 2019 EAT-Lancet commission on *"healthy diets from sustainable food*

systems: food planet earth", a global shift towards more plant-based foods including legumes (beans, peas, lentils, peanuts), whole grains, vegetables, fruits and nuts, and less animal-based foods, especially red meat and processed meat, will help feed the world's growing population a nutritious and sustainably healthy diet.

There are substantial scientific evidence that links diets with human health and environmental sustainability. The environmental impacts of various diets, with most studies conclude that a diet rich in plant-based foods and with fewer animal source foods confers both improved health and

Vegan vs Vegetarian

Vegans do not eat animal, animal products including honey, while vegetarians do not eat animals, but may eat products that come from them (such as dairy and eggs). Vegan also avoids household products, clothing, or other items made from animal products or tested on animals. People typically choose these diets because of health concerns, religious restrictions or moral concerns about harming animals.

environmental benefits. Overall, the literature indicates that such diets are “win-win” in that they are good for both people and planet. However, there is still no global consensus on what constitutes healthy diets and sustainable food production and whether planetary health diets may be achieved for a global population of 10 billion people by 2050. The new term “*planetary health diet*” was coined by the EAT-Lancet Commission to highlight the critical role that diets play in linking human health and environmental sustainability and the need to integrate these often-separate agendas into a common global agenda for food system transformation to achieve the SDGs and Paris Agreement.

A report named the “*People, Plate and Planet: The impact of dietary choices on health, greenhouse gas emissions and land use*” by UK-based the Centre for Alternative Technology (CAT) has revealed that eliminating all animal products (both meat and dairy) is the most successful way of reducing GHG emissions (43% reduction) and land use (about a 70% reduction, depending on the diet). A reduction (but not an elimination) of meat and dairy in the diet, and selecting lower-emitting options such as pig or chicken meat (rather than red meat), and yoghurt or

“Veganism is a philosophy and way of living which seeks to exclude—as far as is possible and practicable—all forms of exploitation of, and cruelty to, animals for food, clothing or any other purpose; and by extension, promotes the development and use of animal-free alternatives for the benefit of humans, animals and the environment. In dietary terms it denotes the practice of dispensing with all products derived wholly or partly from animals.”- As defined by the Vegan Society

milk over cheese, can still result in somewhere around a 34% reduction in GHG emissions and a 65% reduction in land use. Reducing the import of meat products, fruit and vegetables also significantly lowers GHG emissions (8-13% reduction depending on the diet), but has less of an overall impact than



changing diets can have. This report sets out three important issues related to food -'healthiness' of the average diet of the population, greenhouse gases that contribute to climate change and use less land globally and found that these are interlinked – what we eat has an impact on our health, climate change and other environmental issues related to land use. The report concluded that the move to a vegan diet with the addition of cutting food waste by 50% would reduce total food-related carbon emissions by 57%. Wasting less food also, very importantly, decreases demands for land.

Sustainable eating is about so much more than what you consume. It is about taking the whole process of how the food is grown, processed and sold into consideration, whether you're in the mood for take-out or eating at home.

However, by making sustainable food choices, consumers can have an extremely positive impact on the environment. A pan-European study by the European Food Information Council (EUFIC), published in Food Policy, has also found that consumers have a reasonable understanding of sustainability as a responsible behaviour towards the environment and a fair treatment of present and future generations.

Source:

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Being Eco-Friendly with a Vegan Meal

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In India, around 60-70% population consumes non-vegetarian diet. According to recent studies, the demand for meat will double by 2050. A report released by the Food and Agriculture Organisation (FAO) of the United Nations, states that "the livestock sector is a major stressor on many ecosystems and on the planet as a whole. Globally it is one of the largest sources of greenhouse gases (GHG) and one of the leading causal factors in the loss of biodiversity, while in developed and emerging countries it is perhaps the leading source of water pollution."

GHG Emissions

Our direct food-related (production, processing, and food preparation) GHG emissions alone contribute to 16-21% of all statistically reported

national emissions. This is more than the emissions produced from powering all the world's road vehicles, trains, ships and airplanes combined.

- Dairy products, eggs, fish and meat have higher environmental impacts compared to starchy products, vegetables, legumes and fruits. Almost 70% of the direct GHG emissions resulting from our food consumption can be attributed to livestock-based foods, making it the largest global source of GHGs.
- A report published by the Worldwatch Institute shows that a staggering 51% or more of global greenhouse gas emissions are caused by animal agriculture, and therefore a major driver of climate change.
- The UN says that raising animals for food is "one of the top two or three most significant contributors to the most serious environmental problems, at every scale from local to global."
- An Oxford University study shows that meat-eaters are responsible for almost 2 times as many dietary GHG emissions per day as vegetarians and about 2.5 times as many as vegans.

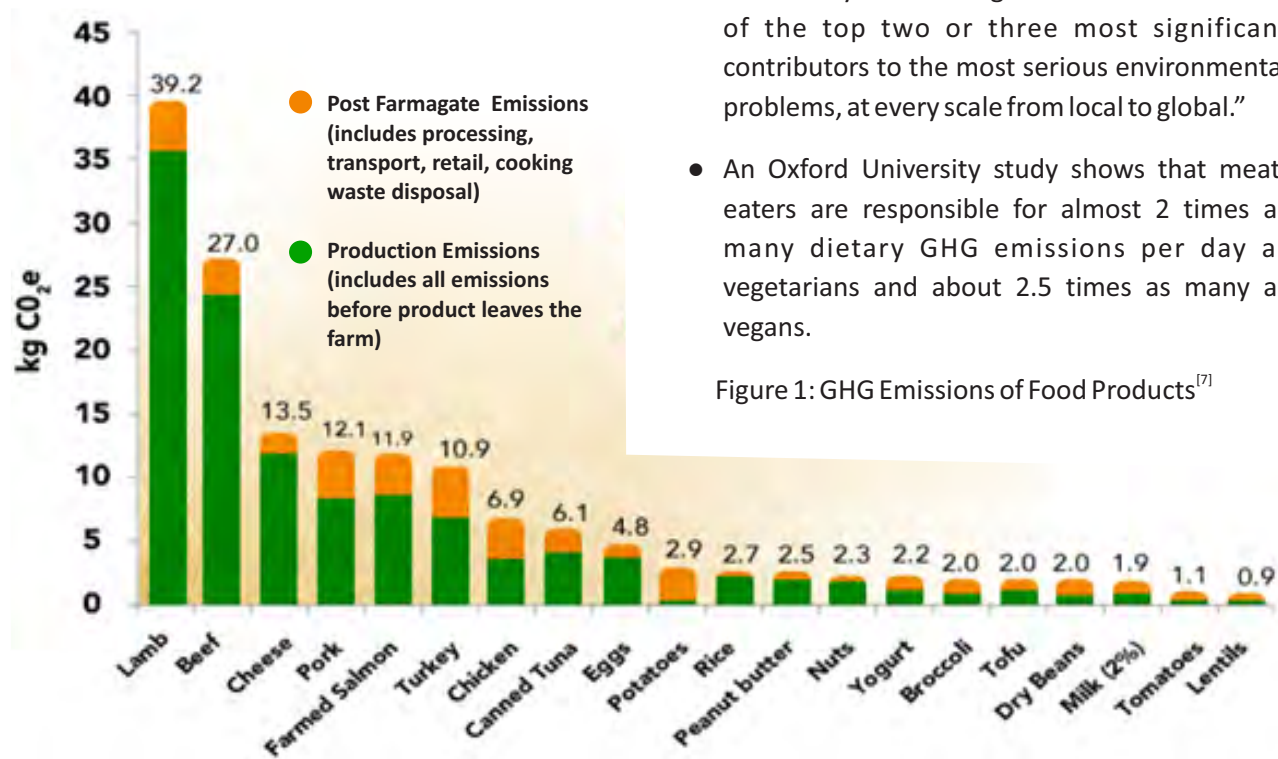


Figure 1: GHG Emissions of Food Products^[7]

Figure 2: Emissions associated with various processes involved in livestock management for food production^[4]

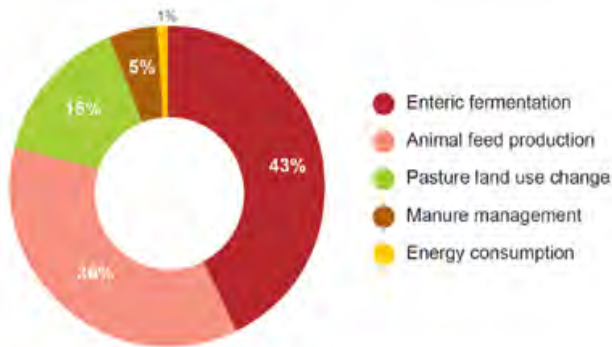


Table 1: Mean greenhouse gas emissions per 2,000 kcal by diet type^[12]

Diet type	Mean GHG emissions (kg CO ₂ e)
High meat-eaters (≥100 g/day)	7.19
Medium meat-eaters (50-99 g/day)	5.63
Low meat-eaters (<50 g/day)	4.67
Fish-eaters	3.91
Vegetarians	3.81
Vegans	2.89

Table 2: Carbon footprint per kilogram of product^[12]

Food type	Carbon footprint (kg CO ₂ e)
Pulses (dry)	1 - 2
Meat Substitute (vegetable)	1 - 2
Milk	1 - 2
Eggs	2 - 6
Poultry	2 - 6
Meat Substitute (with egg or milk protein)	3 - 6
Pork	4 - 11
Seafood (aquaculture)	3 - 15
Cheese	6 - 22
Seafood (fisheries)	1 - 86
Beef	9 - 129
Mutton	10 - 150

Carbon Dioxide Emissions:

- Researchers with Loma Linda University in California found that vegans have the smallest carbon footprint, generating a 41.7% smaller volume of greenhouse gases than meat-eaters do.
- Beef produces twice the GHG emissions of pork, four times as much as chicken, and 13 times that of vegetable protein such as beans, lentils and tofu. It is especially alarming since we waste about 20% of what we produce, meaning that all that carbon was generated for nothing.
- Diets of people who eat more than 100g meat per day generate 7kg carbon-dioxide equivalent (CO₂e) each day, whereas vegetarians and vegans are responsible for 4 kg and 3kg CO₂e, respectively.
- Most seafood has a carbon footprint similar to that of chicken, but certain shellfish is as damaging to the environment as high-polluting meats such as lamb and beef.
- Moreover, emissions from fishing are considerable due to the fuel used to power fishing vessels.

Methane Emissions:

- Ruminants such as cows, sheep and goats produce methane while they digest their food and it's also emitted from the acres of cesspools filled with the faeces that pigs, cows and other animals on these farms excrete.
- The U.S. Environmental Protection Agency has shown that animal agriculture is globally the single largest source of methane emissions, and is more than 25 times as effective as CO₂ at trapping heat in our atmosphere.

Nitrous Oxide Emissions:

- Nitrous oxide is about 300 times more potent as a GHG than CO₂; According to the UN, the meat, egg and dairy industries account for an astonishing 65% of worldwide nitrous-oxide emissions.
- Forests, which absorb greenhouse gases are cut down in order to supply pasture land and grow crops for farmed animals. Finally, the animals themselves and all the manure that

they produce release even more greenhouse gases into our atmosphere.

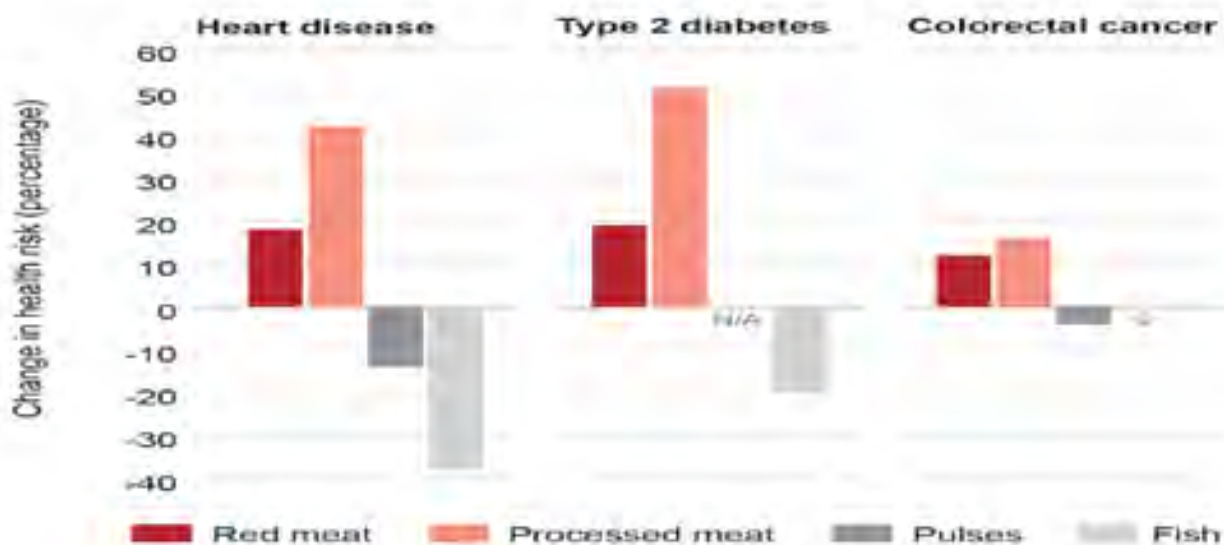
Resource Requirements

- Feeding massive amounts of grain and water to farmed animals and then killing them and processing, transporting, and storing their flesh is extremely energy-intensive.
- The rearing of livestock for meat, eggs and milk utilizes 75% of agricultural land and 23% arable land is used to raise animals, through growing crops for animal feed and pastures as grazing land.
- It is found that only 30% of livestock production might reasonably be considered an efficient use of land.
- A meat-based diet requires more than 15 times the water requirement of a pure vegetarian diet, about 15,160 liters of water per day.
- According to Water Footprint Network data, it takes over 4500 liters to produce just 1kg of chicken meat and nearly 1500 liters go into just one egg.
- An estimate suggests that 30% of global biodiversity loss is linked to livestock production, owing to its contribution in deforestation, land conversion, overgrazing, degradation of grasslands and desertification.

Health Implications:

- Overconsumption of red and processed meat is directly associated with increased risk of non-communicable diseases. A recent World Health Organisation report found that 50g of processed meat a day can increase the risk of colorectal cancer by 18%.
- Meat has also been identified as a contributor to obesity, which is one of the three most costly social burdens created by humans.
- The industrialization of animal production to meet growing demand has also seen the widespread use of antibiotics to prevent disease, contributing to increased antimicrobial resistance and rising costs of treatment.
- Even at the production level, industrial livestock farming relies heavily on antibiotic use to accelerate weight gain and control infection – in the US, 80% of all antibiotics are consumed by the livestock industry.
- More than 23,000 people are estimated to die every year in the US alone from resistant bacteria. As this figure continues to rise, it becomes hard to overstate the threat of this emerging crisis.

Figure 3: A relation between consumption of various foods and change in health risk^[4]





Alarming Effects of Red Meat

- The popular red meat requires 28 times more land to produce than pork or chicken, and 160 times more land compared to staples.
- On average, beef needs more water than any other food type—equivalent to close to four bathtubs of water per kilogram. It also causes considerable water pollution, contaminating three bathtubs of water per kilogram of beef produced.
- The consumption of 1 kg beef has a similar environmental impact as 6.2 gallons of gasoline, or driving 250 km in an average mid-size car.
- It results in 5 times more climate-warming emissions than pork or chicken and 11 times more than staples like potatoes, wheat, and rice.
- Production of 1kg beef requires 25 kg grain 15,000 liters of water to feed the animal because as ruminants, cattle make far less efficient use of their feed and so the bulk of the energy is lost.
- "The biggest intervention people could make towards reducing their carbon footprints would not be to abandon cars, but to eat significantly less red meat" as said by Prof Tim Benton, at the University of Leeds
- High meat consumption is linked with poor health outcomes, including heart disease, stroke, diabetes and various cancers.

Conclusion

- According to the Environment Working Group, reducing waste and buying only as much as you can eat is the easiest way to reduce greenhouse gas and other environmental impacts of food, hence treading towards an eco-friendly approach.

- Climate change cannot be solved by merely a shift away from fossil fuel power to renewable energy. The diet must also play a significant part of the solution as livestock agriculture holds a key to the drastic reductions in emissions required to avoid catastrophic climate change.
- If your four-person family skips meat and cheese one day a week, it's like taking your car off the road for five weeks – or reducing everyone's daily showers by 3 minutes.
- The researchers acknowledge that it is more 'climate efficient' to produce protein from vegetable sources than from animal sources.
- A widespread switch to vegetarianism would cut emissions by nearly 70%.
- A healthy diet in accordance with scientific recommendations would lower emissions in terms of CO₂e per person by approximately 162 kg or 8%.
- If all grain were fed to humans instead of animals, we could feed an extra 3.5 billion people.
- It should be made mandatory on the government's part to label carbon footprint value of food products that would be further helpful for the consumers to choose low impact food products.
- Currently, the average meat intake for someone living in a high-income country is 200-250g a day, far higher than the 80-90g recommended by the UN. Switching to a more plant-based diet could save up to 8 million lives a year, lead to healthcare related savings and avoided climate change damages of up to \$1.5 trillion worldwide by 2050.
- More than 5 million premature deaths could be avoided globally by 2050 if health guidelines on meat consumption were followed, rising to more than 7 million with a vegetarian diet and 8 million on Veganism.
- Adhering to health guidelines on meat consumption could cut global food-related emissions by 30% by 2050.
- It has been acknowledged by UN's Environment Working Group that many people will give up meat or dairy entirely. The message instead is simply to eat and waste less of what we produce and to look for greener options such as meat from grass-fed, pasture-raised animals, etc.

Glossary

Greenhouse gases: These are the gases that trap heat in the atmosphere and contribute to climatic changes like global warming. The principal forcing greenhouse gases are: Carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O) and Fluorinated gases.

Carbon footprint: It is the total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO₂e).

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Tips for Sustainable Food Practices



Sustainable eating is defined as consuming food that's healthy for your body *and* the environment. The Key players in the contribution towards Green House Gases are Agriculture & Livestock farming. However, we can contribute a positive influence by making some sustainable food choices.

Natural and Organic Products

Buying natural, organic, or eco-friendly produce and food products is one way to reduce carbon footprint. Foods made with preservatives require far more energy to produce than those without because the preservatives are created through their own cycle at a separate facility before even being added to food.

Eat Locally

Most communities have farmers' markets and local farm stands. This will reduce carbon emissions and road congestion, boost the local economy and support local farmers. Also, taking advantage of local food helps the farmland in your community stay intact while preserving plants, which remove carbon dioxide and release oxygen.

Eat Seasonally

This goes hand-in-hand with eating locally. Buy locally grown fruits and vegetables when they are in season. For example, eat root vegetables and hearty greens in the winter; eat salads, fruit, and tomatoes in the summer. Seasonal eating is a great way to reduce your impact on the environment. By eating seasonally, you are increasing the likelihood that your food was shipped to the grocery store from a closer location. This can help eliminate a lot of the resources needed to get foods to the grocery store and eventually into homes.

Grow Your Own

The connection you have with the food you grow is special. Whether it is a backyard garden or herbs in a pot on your kitchen windowsill, homegrown is as fresh and local as you can get! And again, you can not beat the taste. Get Gardening! Start with a simple herb garden on a raised bed in your own home. It will enrich the immediate environment with plants, which remove carbon dioxide from the atmosphere and replace it with clean oxygen.



Prioritize plants & Minimize Meat

Cutting out meat just one day a week, and eating more fruits, veggies and whole grains, will have a positive impact on both the environment and your health.

Livestock farming contributes to global warming in a multitude of ways, including excessive water and farmland consumption, massive pollution from both the animals and processing plants, and extensive energy usage. However, not all meat and protein sources contribute the same amount of greenhouse gases to the atmosphere. The World Resources Institute (WRI) categorized protein sources based on their greenhouse gas emissions into high, medium, and low categories. Beef, lamb, and goat make up the high emission category while poultry, pork, and dairy (milk and cheese) populate the medium category. The protein sources that produce the lowest emissions include fish, eggs, nuts, seeds, soy, rice, beans, peas, corn, and wheat. When making sustainable food choices, keep this in mind and try to consume more plant-based protein sources. It is a common practice these days to feed growth-producing antibiotics to animals raised for meat, but this results in health risks for the animals and, by extension, the people who eat them. So be Anti-Antibiotics!

Sea Food

Fish can be a healthy choice but some species are at risk of being overfished, or produced in ways that harm the marine environment. Look out for the label of the Marine Stewardship Council, which guarantees that a product has successfully met requirements for sustainability. Experiment with fatty fish like sardines and anchovies. These are rich in omega-3 acids that are nutritious and healthy. Treat wild salmon and Tuna as delicacy.



Source: • <https://www.mindbodygreen.com/0-2356/Eating-Green-Beginners-Guide-to-Sustainable-Food-Choices.html> • <https://www.murad.com/blog/sustainable-eating-101-a-beginners-guide-to-sustainable-food-choices/> • https://www.vitamix.com/us/en_us/how-sustainable-food-choices-can-make-a-difference • <https://www.nap.edu/read/18578/chapter/6#101>



<http://www.healtheducationarticles.com/vegetarian-environmental-benefits/vegetarian-environmental-benefits-27-best-environment-images-on-pinterest/>

The Environmental Information System acronymed as ENVIS was implemented by the Ministry of Environment & Forests by end of 6th Five Year Plan as a Plan Scheme for environmental information collection, collation, storage, retrieval and dissemination to policy planners, decision makers, scientists and environmentalists, researchers, academicians and other stakeholders.

The Ministry of Environment and Forests has identified Consumer Education and Research Centre (CERC), Ahmedabad, as one of the Resource Partners to collect and disseminate information on "Environment Literacy - Eco-labelling and Eco-friendly Products". The main objective of this ENVIS Resource Partner is to disseminate information on Eco products, International, and National Eco labeling programmes.

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