The Ecological Footprint of India

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In 1996 the concept of ecological footprint was created. It became a valuable index for measuring the pressure of the human beings on the biosphere. It helps to understand the amount of resources we use and the emissions we produce to support our lifestyle. The comparison between the rates obtained for each country can distinguish those who have a lighter ecological footprint, which contribute little to threaten the environmental destruction, and those who have a heavier footprint, with a strong negative impact on the sustainability of our civilization. The ecological footprint measures the pressure on natural resources due to population consumption and life style. It estimates the biologically productive area required to provide the natural resources we use in our daily life: the resources used in the house we live in, the furniture and objects, clothes, transportation that we use, what we eat, what we do at leisure and to absorb carbon dioxide emissions. It is measured in global hectares (gha), and global hectares per capita (gha/pc). A global hectare quantifies the biocapacity and measures the average productivity of all biologically productive areas in a given year. A global hectare per capita refers to the amount of biologically productive land and water consumed per person. The United Arab Emirates (10.7 gha/pc), Qatar (10.5) and the United States (8.0) are those with heavier ecological footprint per capita, i.e., they threaten the global sustainability. An average German uses 5.1 hectares, a Brazilian, 2.9; a Chinese, 2.2. In Japan 4.7, Russia, 4.4, Portugal, 4.5, Argentina, 2.6. The average Indian has an ecological footprint of 0.9 gha/pc. The global footprint is 2.7 global hectares per capita. If the entire population of the planet adopted a lifestyle similar to the U.S., we would need four planets Earth because the biocapacity of a single planet is insufficient to sustain the demands of the population. When the body is heavy, the footprint deeply hurts the earth. A lighter footprint is a valuable quality in a world with limited productive land and growing population. In our planet it is increasingly necessary to conserve energy and materials, reduce emissions of greenhouse gases and at the same time, to live in peace, with well-being and in a non-violent way. India has the third heavier ecological footprint in the world and its resource use is double its biocapacity. The total ecological footprint of India is heavy because of its population of over 1 billion people, which is a seventh part of the global population. In spite of this, compared with others, India is one of the countries with a lighter ecological footprint. The average Indian has an ecological footprint nine times lighter than the U.S. citizen, three times lighter than the global footprint. The comparison with other societies shows that India is one of the countries with lighter ecological footprint in global hectares per capita. The average Indian has, thus, an ecological credit, because it contributes very little to threaten the global sustainability. If we imagine a just and equitable planet, the per capita ecological footprint should be equal for all inhabitants of earth. India would have a credit in comparison with other countries. Such credit could be used to allow the country to invest in infrastructure, remedy environmental sanitation problems and improve the welfare of its population that is currently deprived of essential things needed for a decent life. On the other hand, if this credit was used without concerns for social justice, it could facilitate increasing the consumption pattern of rich Indians. Why India has a light ecological footprint per person? India has a light ecological footprint per person because it has a large population with an extremely light ecological footprint. However, it has also 200 million middle class and rich people, with consumerist aspirations and life styles. The light ecological footprint of India results only partially of material deprivation from the basic things needed for a decent life, such as food, water, energy, sanitation, housing, learning, and health. To a great extent it results from the ability of the Indian society to meet material needs with minimal pressure on the environment. Frugal habits, associated with a decentralized territorial organization in villages, and combined with extended families and communities are the ways followed by millions of people in India. These features significantly reduce the consumption of natural resources and help explain its light footprint (0.9 gha/pc). There is a decentralized distribution of over one billion people in hundreds of thousands of semi self-reliant villages, which obtain supplies of food, water, energy and materials nearby, without the need for large displacements. The economy of means to perform the daily activities at home or at work, the economy of furniture, objects and implements, vegetarian habits, the intensive use of the body and the ways of relating to animals, all these qualities reveal a way of life that makes more with less, respects the environment and avoid wasting natural resources. These qualities are more evident in an Indian village than in any other patterns of settlements. The transport system is relieved by the proximity between home and work; mobility on foot, human-powered, on bicycles and rickshaws; the use of animal power with bullock carts, camels, elephants, small motor vehicles such as scooters, mobikes and autorickshas; intensive use of an efficient mode of transport, such as the network of railroads running through the country.

Figure – The autoricksha is one of the many modes of transport adopted in dense cities, with low occupation of space, compact and suited to the tropical climate. Delhi, 2007. Social organization also helps to lighten the ecological footprint: in extended families, a single kitchen serves many people from various generations. The vegetarian culture is relevant because vegetarianism causes less impact on the environment and climate than other dietary habits: the amount of water, the amount of agricultural inputs and the area of land needed to feed vegetarians is much smaller than those required to feed non vegetarians. Energetic ecology studies reveal the superiority of vegetarian food regarding energy productivity and less emission of greenhouse gases. Vegetarianism is based on the principle of...
ahimsa, nonviolence extended to the animal world. Unlike European and other carnivorous societies, India never needed to colonize other countries in order to extract resources to sustain their lifestyle.

Figure – A typical South Indian dish. The vegetarian diet is an expression of non violence against animals and against the environment. It is energetically efficient and emits less greenhouse gases. There are many outdoor activities. There is a functional architecture with the use of natural light and ventilation, without the use of mechanical air conditioning systems.

Figure – Many activities are performed in the open air. Body postures reduce the demand for furniture. Delhi 2013.
Figure - Architecture finds solutions for environmental comfort, shadow and air, with the use of natural light and air, without the need for air conditioning. Udaipur 2013. There is a reduction in demand for furniture and fixtures. People educate postures to sit on the floor and do not use chairs. The furniture at home and in work places is therefore reduced.

reduces demands for furniture. Tapestry, Udaipur, 2013.
Objects such as cutlery, plates and other utensils are not necessary for the use of the hands to meet the needs. The right hand, for example, is used to carry food to the mouth, dispensing silverware, while the left hand is used for personal hygiene. All these habits, followed by millions of people, significantly reduce the consumption of natural resources. Many forests are not cut, a lot of energy is not consumed, much water is saved by the fact that many material objects are not used by almost a billion people who have frugal habits and who intensively use the body. Regarding clothing, predominantly for women, the classical models of saris, comfortable, do not undergo variations of fashion. For men, it is usual the dothi, a rectangle of cloth wrapped around the body. The lack of sophisticated and complex modeling maximizes the use of fabrics, garments and is well suited to the tropical climate. The use of appropriate footwear of equally comfortable and durable material, coupled with the tradition of walking barefoot within the home also reduces the use of cleaning materials and facilitates daily human work.

Figure – The traditional sari is a rectangle of cloth, with no cuts. Udaipur, 2013. The communal livelihood also makes lighter the ecological footprint. India has thousands of ashrams, communities of people who are dedicated to a common purpose. There are a variety of motivations for people to live in such communities: to receive teachings from a guru or spiritual master, to study the purpose of life, to practice communal services, to develop cultural activities, practicing yoga, music, physical and spiritual exercises. Thousands of existing ashrams in India are perhaps the clearest references of a form of social organization and a lifestyle with a light footprint. A common denominator in the structure of the ashrams is their frugality and simplicity. Normally the accommodation is comfortable, clean and simple for visitors and residents. The distances are short and can be traveled on foot or by bicycle. Meals are cooked in a single collective kitchen at
predetermined times with a vegetarian menu. The trays are washed by the users, after meals. There is much shared volunteer work. The use of solar water heaters has become frequent, taking advantage of a source of renewable energy. Ashrams and this kind of communal arrangements lead to high energy efficiency, low wastage of food and low emission of greenhouse gases. The basic needs of feeding, shelter are met with few resources and labor. Residents and visitors need not work all the time to sustain themselves economically and have free time for study and reflection, research, learning, consciousness expansion. The standard physical design and organization of the ashrams is frugal and environmentally friendly. The reduction in the use of natural resources, consumer goods, food, clothing, space, energy is a valued minimalist lifestyle that preserves nature from the damage of unbridled consumption. In India a light footprint results both from the network of thousands of semi self-reliant villages, the structuring of the pattern of community life in ashrams and similar collective arrangements and even the pattern of the extended families. Summing up, it results from the ecodesign of the society, which minimizes the use of natural resources, consumer goods, food, clothing, space and energy as well as waste generation. Simplicity in lifestyle and non-consumerism are pillars of ecological economics. Frugal behaviors derive from non-utilitarian values and ideas - such as the sacredness of animals and plants - and ecological awareness, that a person learns culturally from the cradle and becomes part of the customs and social uses. Only in part, they derive from privations and poverty, which are not a voluntary and conscious option. Only a small portion of the ecological footprint is due to the physical needs of the body. The greater weight of an ecological footprint is due to conditionings of the spatial organization where people live and also to demands generated to fulfill mental and emotional longings. The light ecological footprint is enabled by ecological-economic behaviors and lifestyles which are, in turn, influenced by environmentally friendly philosophy, ideas, concepts, myths. There are lessons to be learnt from the light ecological footprint of India. Frugal habits and the light per capita ecological footprint result in part of a conscious option, such as in the case of ashrams and similar communities. They also result from inherited traditions, from an ancestral collective consciousness, such as vegetarianism and the social and ecological-economic ecodesign practiced in hundreds of thousands of villages.

Recent trends

For thousands of years India has been able to adapt to foreign invasions, absorbing and assimilating their desirable aspects and discarding non desirable effects. India did that in the fight for independence and used some old principles, such as ahimsa or nonviolence, as a useful resource in that struggle. It become free from the British but added the english language to the many others that are spoken in the country, a fact that facilitates its insertion in the globalized world. During other waves in the past the strength, tolerance and resilience of the old culture resisted to the pressures from outside. Nowadays, opposing forces are at work which threaten this light footprint based on the soul of India, on its history and culture. Opposite forces are in action and the result of this conflict will point to the way that will be followed by India. Nowadays, the wave of external influences is not based on military forces or in the political occupation, or by the economic dominations. The present wave is more subtle, it comes in through the mass media and from the globalized interconnections and it acts directly upon mental and emotional aspirations of each individual. The aspirations of people to be connected to the world through the TV and internet are very strong and their mental and emotional needs are highly influenced by what they see. Mental models and propaganda in the TV have a strong effect on aspirations and wants. The TV networks are guided by commercial interests. The industry of propaganda and advertisements influence the minds of people with pro-consumption messages. Mass media are powerful and impact in the disseminations of consumerist values. But there are also non consumerist messages, in a large production of very popular Indian movies and programs. The growing urban middle class has a mindset open to influences from societies with a heavier ecological footprint. This part of society adopts lifestyles with extremely high levels of consumption, which tend to produce heavier ecological footprints compared to that of poor people. Because they are thousands of millions, they can have an impact on the unsustainability of the world. Many upper class Indians imitate British and American ways of life and many poorer people, influenced by the media, aspire to be like the rich. This kind of aspiration is not only unsustainable in itself, but makes a model of aspiration for the poor, many of whom aspire to be just like the rich when they gain higher incomes. Life styles are changing in rural India with the increase in the use of TVs, plastics, cars and motorbikes. The celebrated days of frugal India may come to an end if the forces of the wasteful consumption of the elite prevail. With the growing of cities, and the change in aspirations and mental models, India is testing its ability to continue to be sustainable as it has been for thousands of years. In an historical perspective we don't know yet how this dichotomy and these opposing forces will behave and what will be the result of such tension. In order to sustain frugality and consciously simple lifestyles, there is a great work to be done through education and cultural values and also through economic incentives and penalizations. This must be done while eradicating poverty forced upon people and deprivation from basic needs in an unequal society. In the present context, the cultural heritage of frugal India will be able to contain the wave of material aspirations, the pleasures of a carnivorous diet, the increasing use of appliances to alleviate domestic work? The soul of frugal India will die under the pressures of the globalized world? India will be able to answer creatively to this pressure, with the strength of its culture and of the collective intelligence that accumulated there for a long time?
order to reduce desires that demand natural resources and make heavier the ecological footprint. A strategic question is how to work with the mass media, the TV, the movies and the internet. Differently from other societies, India has already a strong frugal culture and this can be helpful in the formulation of mental patterns. Reminding past values and reshaping them in new versions may be suitable. Democracy at the local and national levels, participatory budgets and economic incentives can also be used in order to reduce aggressive consumption and to sustain a light ecological footprint. Contact

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