

By Dr SUMATHI SETHUPATHI

ECOLOGY plays a major role in life on earth in terms of natural, social and built environments.

We need to cherish and sustain it for the future. However, not many of us are aware of the amount of damage that we inflict on our environment or how big our ecological footprint is.

The ecological footprint (EF) is a measurement on the impact of human activities on the natural environment that sustains humans and other living beings. The ecological footprint helps to measure progress towards sustainable development and it is a guide in the formulation of policies. The footprint articulates the area of land and sea that is required to provide resources to feed us and accommodate our daily needs, assimilate and re-absorb solid waste, greenhouse gases and wastewater that we create and lastly to produce energy. This approach uses land as its 'currency', and provides a notional figure of global hectare (an area equivalent to a normal hectare but adjusted for average global productivity) to quantify the area required to support an individual, a community or a nation's population at its present standard of living.

One might ask, what is the use of the ecological footprint count? An ecological footprint generally tells us about our impact upon the natural world that sustains us and provides us with a "time-bound" snapshot of our demand upon nature.

Moreover, it expresses our available global biocapacity (productive land and sea area) and alerts us whether we are meeting the minimum requirements for sustainability. It can also be used to compare our nation footprint to the world.

The ecological footprint is calculated based on biocapacity. Biocapacity is the capacity of ecosystems to produce useful biological materials and to absorb waste materials generated by humans, using current management schemes and extraction technologies.

The biocapacity of an area is calculated by multiplying the actual physical area by the yield factor and the appropriate equivalence factor. Biocapacity is usually expressed in global hectares (gha).

There were about 12 billion hectares of biologically productive land and water on this planet in year 2011 and about 7 billion people survived on it at that particular year. Thus, by dividing the number of hectares to the number of people alive in that year it gives 1.72 gha/per person. This is for humans alone, assuming that no land is set aside for other species that consume the same biological material as humans.

In 2012, WWF has reported that Malaysia's ecological footprint was 3.87 gha/per person, which is double the amount of the world's biocapacity.

Another substitute?

If an earth's biocapacity is 1.72gha/per person, where would we get the second earth to support our needs? Is there another earth to

Human demands on nature, a major threat

There is an urgent need to reduce the pressures we are placing on our planet and its ecosystem. Failure to do so would be unfavourable to future human development and well-being.

Breakdown of ecological footprint components for Malaysia

The amount of forest land required to absorb CO₂ emission from burning fossil fuel.

Carbon
2.01 gha
(51.9%)

The use of land for grazing livestock to produce meat, dairy, hides and wool.

Grazing
0.26 gha
(6.7%)

The use of land to supply lumber, pulp, timber products and fuel wood.

Forest
0.47 gha
(12.1%)

The use of marine and freshwater areas to support the consumption of fish and seafood.

Fishing
0.45 gha
(11.6%)

The use of land to produce crop for human and animal feed and biofuel production.

Cropland
0.61 gha
(15.8%)

The use of land through coverage by human infrastructure and hydropower reservoirs.

Built-up land
1.8 gha
(0.07%)

* gha - Global hectare

Source: Living Planet Report, WWF, 2014

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substitute?

It was reported that on average, people throughout the world use the equivalent of 1.5 planets to support their activities. The size and composition of a nation's per capita ecological footprint reflects the goods and services used by an average person in that country, and the efficiency with which resources, including fossil fuels, are used in providing these goods and services.

The calculation is based on six major categories and the table below shows the data for Malaysia. A nation's footprint can exceed its own biocapacity; that is, when it operates with an ecological deficit.

Directly, it means harvesting ecosystems faster than they can regenerate, drawing on resources that have accumulated over time; by importing products, and thus using the biocapacity of other nations; and/or by using the global commons.

Malaysia is a developing country, thus we need to explore new areas for future development.

Therefore our footprint for carbon is higher compared to other elements as shown in the table

below.

Malaysia is not among the top five countries with the highest ecological footprint. However, we were placed 35th and for the fishing sector, we were placed 13th and our EF is above World average.

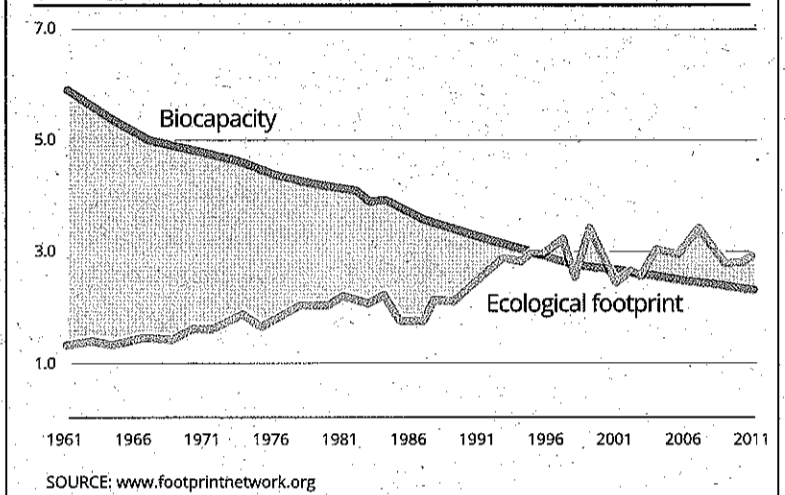
This sounds alarming. The chart on this page tracks the per-person ecological footprint and biocapacity measured in global hectares for Malaysia since 1961.

Biocapacity per person varies each year with ecosystem management, agricultural practices (such as fertiliser use and irrigation), ecosystem degradation, weather and size of the population.

Moreover, footprint per person also varies with the consumption amounts and production efficiency. This footprint data was taken from United Nations' (UN) statistical sources (the quality of results provided from the source may vary).

With world population projected to reach 9.6 billion by 2050 and almost 11 billion by 2100, the amount of biocapacity available for each of us will decrease further; not to mention soil degrada-

Malaysian Ecological Footprint versus Available Biocapacity (Global hectares per capita)



tion, freshwater scarcity and increased energy costs.

At present, we are not proving to be good stewards of our only planet. We are making excessive demands on the natural world, and our Earth's ecosystems are suffering as a result. The way we meet our needs today is compromising the ability of future generations to meet theirs and the very opposite of sustainable development.

If we do not act, the challenge of providing everyone with the food, water and energy they need is impossible and it is already a daunting prospect.

We need to take significant steps to reduce the pressures we are placing on the planet's climate and natural processes, protect nature and use its resources responsibly for future human development and well-being.

As we all know there is only one world and there is no other substitute or additional planet.

There are 10 simple things we can do to reduce our personal EF such as:

- Use the public transport or car pool to reduce fuel consumption and walk or use the bicycle whenever possible instead of driving.
- Reduce the usage of air conditioning at home or increase your thermostats by 2-3°C temperature to reduce electricity consumption.
- Instal energy efficient lights and turn them off when you walk out of the room. Turn off the stereo, TV, computer and power bars when not in use.
- Have a compost bucket for your organic waste which can be recycled into fertilisers.
- Adopt water saving habits; disconnect the downspout of the roof gutter from the drain and instal a barrel underneath the spout to collect the rain water to water your

garden and lawn.

- Use only sustainable building materials, furnishings and cleaning products which last longer and reduce costs on replacements.
- Buy less and replace items only when you really need to.
- Recycle and buy recycled products.
- Eat more vegetables.
- Choose foods with less packaging which indirectly reduces our solid waste and the usage of non-biodegradable products.

To date, more serious concerns and commitments have yet to be raised at national and international levels on ecological footprint issues. Nevertheless, when humanity responds to warning signs and acts collectively, we can achieve great results like the Montreal Protocol which provides an excellent model of a science-based, precautionary response to an environmental threat on the depletion of the ozone layer.

The Protocol was adopted and implemented internationally and it was deemed as a very successful international agreement. Perhaps a similar agreement could be adopted on ecological footprint. We need an even greater, all-inclusive effort to safeguard the health of our environment, welfare of our society and the earth, for us for our children into the future.

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