



AFRICAN ECOLOGICAL FOOTPRINTING CHALLENGE

Orientation Sheet

Introduction to the African Ecological Footprinting Challenge

An Ecological Footprint is an indicator of the sustainability of our lifestyles and activities. It is determined through a process of calculating the square area of land or sea needed to supply us with the resources we consume and absorb the waste we produce. Ecological Footprinting has been developed and popularised in countries like the U.K. and U.S.A. to assist ordinary people as well as companies and whole nations to have an understanding of their environmental impact and the steps they can take to address this. Accessible resources are available on the Worldwide Web, however, these have been developed based on European and North American statistics and for these audiences.

The IBIS Regional Environmental Programme recognised the value of Ecological Footprinting as a tool for education and awareness raising, but were searching for an accessible resource that addressed African reality. The Rhodes University Environmental Education & Sustainability Unit (South Africa) and Best Foot Forward (UK) were commissioned to develop the *African Ecological Footprint Challenge* based on African statistics. This game is the first to use African statistics in calculating ecological footprints based on household consumption patterns.

The *African Ecological Footprint Challenge* enables participants to use the tools of Ecological Footprinting to establish in what ways they impact most significantly on the planet's resources and what they can do to mitigate against the impacts of their activities.

This pack is aimed at facilitators and educators who will assist participants to take up the African Ecological Footprint Challenge!

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The following people have been involved in developing this game:



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Best Foot Forward

Best Foot Forward

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PRIVATE CONSULTANTS

Contents of this pack

A: THIS ORIENTATION SHEET

This includes an 'Introduction to Ecological Footprinting' to give you an overview of the footprinting concept and tools.

B: FACILITATOR'S NOTES

These provide information for the facilitator to use to present the components of EF to players as they play the game. Facilitator cards are divided according to the following components of a personal footprint and are colour coded:

1. **Energy** - red
2. **Materials and Waste** - grey
3. **Food** - orange
4. **Living space** - green
5. **Travel** - yellow
6. **Water** - light blue
7. **Biodiversity** – purple / dark blue

These sheets provide background information on each component theme regarding:

- the significance of this component to a person's ecological footprint
- facts and African scenarios regarding the theme
- Ideas for workshop activities

C: CD ROM: INTRODUCTION TO KEY ECOLOGICAL FOOTPRINTING CONCEPTS

This CD ROM contains a Power Point presentation to help you to present Ecological Footprinting to workshop participants. It has been designed in two parts:

The first serves as an introduction to the key concepts and definitions of ecological printing and includes a few examples of how certain footprints have been derived, introduces participants to some of the debates around Ecological Footprinting and biodiversity and also considers the role of Ecological Footprinting as an indicator rather than a conclusive measurement of ecological impact.



The second part can be used while the participants are playing the game to explain each component of the footprint. It includes explanatory graphics, some of the statistical information presented in 'Facilitators notes' and aspects of the 'worksheets'.

Please do look at the NOTES attached to slides to help you when using the PowerPoint presentation.

D: QUESTION CARDS

These are a series of cards that are themed and colour-coded in the same way as the 'facilitator notes' and are numbered in the order in which they will be used. Each card poses either a simple or compound question to which a range of answers has been given. Players need to decide on their answer to each question and record the 'score' allocated to that answer on their 'footprint calculator' worksheet.

The first six questions contribute directly towards the TOTAL ecological footprint score and the next three questions help participants to consider the impacts that some of their other lifestyle choices have on the environment.

E: "THINK ABOUT" CARDS

These cards provide ten questions which can be given to players so as to continue debate opened up by the African Ecological Footprint Challenge. These cards are intended to stimulate discussion around environmental sustainability, and especially aspects of this that are not addressed by Ecological Footprinting such as environmental justice and health.

The 'think about notes' at the end of this Orientation sheet can assist the facilitator with background to the quotes and questions in the cards.

F: ACTION OPTIONS CARDS

These cards represent the same themes as the question cards and have the same colour coding. On these cards there are a number of suggested individual action options for possible ways of directly decreasing individual scores.

Individual scores can also be reduced indirectly by lobbying for changes in systems of production, waste reduction, planning, policy, and more. Suggestions for these types of actions are listed under the 'systemic actions' sections of the action option cards.

G: WORKSHEETS

Selections of these sheets can be photocopied for each player to work on during the workshop and take home afterwards.

Footprint Calculator

The handout explains how to play the African Ecological Footprint Challenge and provides spaces to fill in the scores for each question. Once component scores have been added this handout will enable players to compare their scores with the 'earthshare' to establish earth equivalents (number of planets needed to sustain the human population if all lived the lifestyle represented by the individual's EF) of their score.

Travel worksheet

This helps players to answer questions related to personal, holiday and work travel.

Environmental action plans

This handout can be used with the 'Action cards'. After reading the ideas for reducing ecological footprints, players decide which actions they can take to reduce their ecological

footprint or lessen their environmental impact on the Earth, its life support systems, and the animals and humans that inhabit it. Commitments to personal changes, and systemic issues they can lobby for, are recorded on the 'environmental action plan' worksheet. Having done this, players are encouraged to return to the 'footprint calculator' to see how these actions can reduce their component and overall Ecological Footprints.

Contribution to biodiversity

This worksheet is optional for those players who are interested in working out how much land they should be trying to have set aside to protect biodiversity. The worksheet guides one step by step but some players may find the calculations confusing. Remind players to bring calculators with them!

H: ADDITIONAL RESOURCES

This pack provides additional materials to assist the facilitator with background on Ecological Footprinting and component themes, as well as some practical resources for workshop activities. This information is presented as links to useful websites and a reading pack. References to readings in the 'reading pack' may be noted in the 'Facilitator's notes'. Useful readings can be copied for players to take home (but please ensure that credit is given to the original source of these).

In addition a set of more detailed 'Action Option' sheets are also included – these may be copied for players to take home.

Possible sequence for using this game pack

- Familiarise yourself with the 'Introduction to ecological footprinting' which follows and the 'Facilitators notes' (B).
- Plenary session using the first half of the Power Point presentation (C) to introduce ecological footprinting.
- Participants divide into groups of about four, and each group receives a set of 'Question cards' (D). The facilitator introduces each component theme using the 'Facilitator's notes' (B) and the second half of the Power Point presentation. As each theme is introduced participants select an answer to the question/s and record their respective score using the Ecological Footprint Calculator worksheet
- The TOTAL score for each person is calculated by adding all the scores (using the 'Footprint calculator' worksheet (G)). Each person can then read off the number of planet 'earths' that would be required if everyone on earth was to live the same lifestyle as them. Individual scores can then be compared with those of an average African or average "developed" country resident, and with the Earthshare.
- 'Think about' cards (E) are given to each group. They are given time to discuss the cards. In plenary, groups report back on and discuss the cards. These cards are intended to give participants some 'food for thought' that will help inform them for the next activity where they make decisions about the lifestyle changes that they could make. The 'Think

about notes' at the end of this Orientation Sheet give some extra information for the facilitator.

- Groups read and discuss the 'Action options' cards (F) and consider realistic personal possibilities for reducing their EF scores. Based on their selected action options participants can re-ask Questions 1 to 6 and record the scores associated with the proposed lifestyle change (these new scores can be recorded in the "My EF could change to" column in the 'Footprint calculator' worksheet (G). They can also consider how they can reduce their environmental impact for Questions 7, 8 and 9. It is important to remind participants that not all action options would reduce their EF, but are worth considering for the sake of reducing their impact in terms of human rights, environmental justice, health, biodiversity etc.
- Individuals record their action plans to address personal lifestyle and systemic issues on the 'Environmental action plans' worksheet.
- At appropriate stages, consider doing some of the activities suggested in the 'Ideas for workshop activities' section of the Facilitator's Notes (B) such as calculating the energy consumed during the workshop.

Introduction to ecological footprinting

An alternative indicator

Human life was radically transformed when we discovered how to use fossil fuels like coal and oil to produce energy to power machinery. This ability kick-started the industrial revolution and has shaped modern life as we know it. Utilisation of fossil fuels have also led to unprecedented economic and population growth through our increasing ability to extract and harvest resources, transport goods and feed crops artificially. This path has developed along a linear model: extract raw materials, refine, process, manufacture goods, sell and consume and then dispose of what is left. This system overlooks a critical issue: the ability of nature to supply resources into the chain and absorb the waste created at the end of it.

Ecological footprinting quantifies this resource use and waste production to provide us with an indicator of how much of the earth we need to sustain our current lifestyles compared to how much is available. It serves as an alternative tool to other accepted indicators for measuring the success of a nation, such as Gross Domestic Product (GDP), which only measures economic activity.

What is an ecological footprint?

An ecological footprint is a measure of the area of 'bio-productive' land and sea needed to:

- produce the natural resources we consume, and
- absorb the waste we produce.

'Bio-productivity' is a measure of nature's biological productivity in an area on the planet's surface. As some places may be more productive than others, the actual physical area in hectares is multiplied by an 'equivalence' factor to adjust for differences in the land's ability to produce biomass. For example arable land is usually the most productive and would be more productive than the world average for all land types, while a desert may be less productive than average.

Ecological Footprints are measured in '**global**' **hectares (gha)**, a standardised unit representing one hectare of biologically productive space with world average bioproductivity.

Remember Ecological Footprinting is simply an indicator

The footprint deals with demands placed on the natural environment, and essentially accounts for the use of the planet's renewable resources. Non-renewable resources are only accounted for in their impact on, or use of, renewable bio-productive capacity. For example the use of coal is accounted for in the amount of new forest needed to absorb the carbon generated when the coal is burnt. Footprinting does not attempt to include the social or economic dimensions of sustainability, or deal with issues such as thresholds over which the environment will not be able to deal with toxic substances.

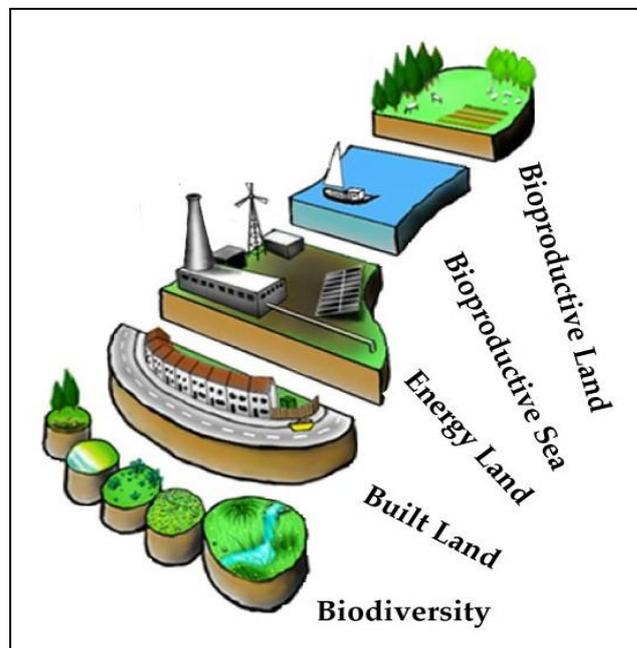
Despite careful calculations using actual data, an ecological footprint remains an indicator of consumption, rather than a comprehensive calculation of our exact impact on the environment. The footprint is a 'snapshot' estimate of demand usually based on data from a

single year and assuming current prevailing use of technology. Both available supply (the biocapacity) and the eco-efficiency of the economy (affected by production methods and technology) can change over time. For this reason it is not possible to 'forecast' or 'backcast' footprints from current data although it is possible to make assumptions about future consumption and thus create informative, but speculative, scenarios.

Different area types

To calculate footprints our activities and products and the resources they draw on are allocated to 4 basic types of area:

1. Bio-productive land – including arable land for grains, vegetables and pulses, pasture land for grazing animals, and forestland for timber etc. Use of these land types is usually calculated separately because of differences in bio-productivity.
2. Bio-productive Sea – the sea area required to provide fish and other seafood.
3. Energy land – used to distinguish the land needed to sustainably manage our energy demands. This can be approached in different ways, including taking into account the absorptive capacity of the oceans, or 'fuelwood equivalence' which calculates the amount of land required to replace fossil fuels with wood biomass. Most often energy land represents the amount of land needed to plant the 'new' forests required for the absorption (sequestration) of carbon emissions in order to stabilise CO₂ levels in the atmosphere.



4. Built land – the land covered over by buildings, roads and other infrastructure - is included as a separate category because in effect, it is land that has been taken out of production.
5. Biodiversity land - in addition a fifth type of land is described, but due to the complexity of the calculation and controversies over the proportion it should represent, this land cannot be taken directly into account in the *African Ecological Footprint Challenge*. Biodiversity land is the area of land and water that must be set aside to ensure the protection and ongoing healthy existence of the planet's approximately 15 million non-human species. How much space is needed to preserve the complex ecosystems that maintain biodiversity and regulate our planetary systems is the subject of hot debate – estimates go up to 75% of the planet. Let us assume we follow the World Commission on Environment and Development's recommendation that an absolute minimum of 12% must be set aside for our fellow creatures. We would then have the remaining 88% to share equally amongst all the people on the planet.

Different footprinting approaches

Ecological footprinting can be a determination of a particular activity or the lifestyle of a particular person or larger group of people in a particular place. In the *African Ecological Footprint Challenge* we calculate the footprint of an individual based on consumption and activities at a household level. In other cases, for example the biennial '*Living Planet Report*', the ecological footprint of an average individual in a country or in the world is calculated based on analysis of the nation state's trade flows, energy use and biomass production.

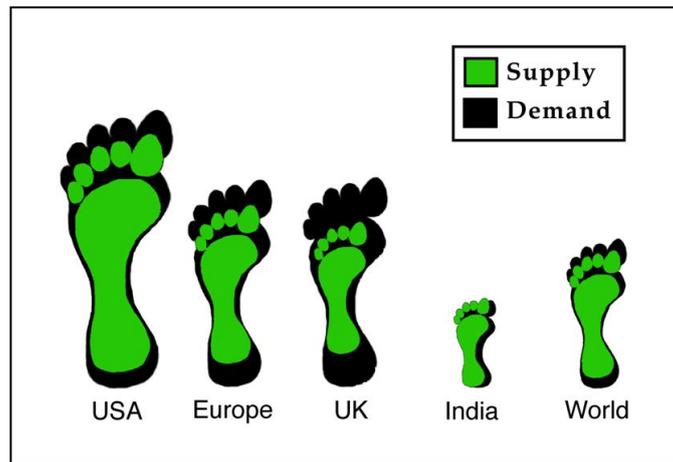
Living off nature's interest

The WWF calculates and presents countries' and the world's ecological footprint in the '*Living Planet Report*'. This reveals that by 1999 our world footprint had already grown to 1 and one-fifth planets! You are probably thinking that this doesn't make sense – how can we already consume more than our planet has? Think about it this way:

'One planet' consumption happens when all living creatures are in a dynamic equilibrium, where renewable bio-productive capacity is utilised sustainably – in other words, when living off 'nature's interest'. We have now entered a phase where we are no longer living off the surplus created through regeneration but are harvesting nature's capital – the minimum reserve bio-productivity that must function to generate the surplus. We can utilise this capital reserve and not notice, as we are doing now. However, there comes a time when we will have used up so much that the system is no longer able to reproduce and it will be completely depleted. At this point habitats collapse and species go extinct – a trend we can see is increasing worldwide.

With a current world population of about 6 billion people, we are each entitled to 1.9 global hectares (\pm 2 rugby fields) (Loh, 2002). This has been called our 'earthshare'. To calculate an earthshare, the total available land and sea area of the planet is divided equally among the current global population. If everyone lived within their earthshare, we would achieve One Planet Lifestyles. This would mean living off our interest in stead of our capital! Would you be able to supply all your needs from land this size?

Ecological footprinting clearly shows that we are living in a critical time when we must take radical action to reverse our impact and return to one planet consumption!



Compiled by V. Black (2005) from: Chambers, Simmons and Wackernagel (2000). SHARING NATURES INTEREST – Ecological footprints as an indicator of sustainability. London, Earthscan Publications.

‘Think about’ Notes

Discussion Card	Facilitator’s notes
1. Consider whether the EF takes into account how sustainably resources are being used? If one person eats 2kg of food harvested from soils that are over-utilised and abandoned when they can no longer produce (as in slash and burn agriculture) and another person eats 2kg of food harvested from a multi-cropped, sustainable system, will they have the same footprint?	They will have the same footprint in the African Ecological Footprint Challenge - unless the food was grown locally and organically or not. This card emphasises that EF measures how much we use but not how well we use resources, which is also important for sustainability. Firewood is another example – it can be harvested sustainably by collecting fallen wood or unsustainably by chopping down trees.
2. People using a pit toilet or the bush as a toilet will have a low score for this component of water use. Should we thus recommend that all people revert to using pit toilets? What alternative has not been suggested in the game?	This question is about the right to a healthy environment and human dignity. Dry composting toilets are a healthier alternative with low environmental impact. However, consideration needs to be given to the fact that wealthy communities often have flushing toilets and therefore composting toilets may be viewed as inferior.
3. When Ghandi was asked what he thought of Western civilisation he replied “It would be a good idea”.	This card critiques the ideology of ‘progress’, which is dominated by Western thinking that values individuality, competitiveness, scientific analysis and economic success.
4. When asked by a British colonial whether he hoped to approximate Britain’s standard of living after India achieved independence, Ghandi replied: ‘It took Britain half the resources of the planet to achieve this prosperity; how many planets will a country like India require?’	This card points out the inequality inherent in a world where consumption is the measure of ‘prosperity. It challenges us to minimise consumption by pointing out that consumerism is unsustainable because the people enjoying that lifestyle are robbing others of needed resources.
5. All governments today are united in their efforts to achieve a Western standard of living for their people. And in this process they are ready to sell their nation’s soil, water, forests, minerals, air, and even women and children to the merchants and money lenders of the West (Thijs de la Court, 1990 – Beyond Bruntland).	Many countries are pressured to follow western development models by international aid and regulatory institutions, foregoing indigenous knowledge suited to local conditions and at great cost to indigenous culture and resources. An example is the ‘green revolution’ where the pursuit of increased crop yields has increased dependence on expensive chemical inputs. Participants should consider in what way this is happening in their country of residence or work.
6. Consider whether the EF takes into account how sustainably resources are being used? E.g. Debts that they cannot pay force African countries relying on commodity sales to overuse their fragile soils, thus turning good land into desert (Bruntland report – Our Common Future, 1987).	Often countries are forced into mono-cropping and intensive agricultural practices in order to export food to service foreign debt. This in turn deepens local poverty.
7. Some of us are Luddites and shun technology seeing it as mere dependence. And some of us like to mix it all up and live in a teepee with a laptop and a cellular modem. However we get there is ok, just so long as we are on the path. Mostly it is the elimination of the unnecessary. (Quad Cities Sustainable Living Society)	This card aims to open up discussion amongst participants as to which response they might take and why.
8. “Live simply so that others may simply live” Mahatma Ghandi	Again, this card is about lifestyle choices and calls for sensitivity to environmental and social injustices that may result from the things we choose to consume.
9. In a recent interview Nafis Sadik, executive director of the UN Population Fund stated that ‘many environmentalists think [that the carrying capacity of the earth] is four billion, maximum. But now we have six billion people’ (<i>The Environmental Magazine</i> , 1999). How do you think this is possible?	This card encourages debate about how we are living off natural ‘capital’ rather than ‘interest’ (see ‘Introduction to EF’) and ways to use resources more sustainably to increase the carrying capacity of the earth. This card may also generate debate about whether population growth is the cause of problems or not: are there too many people, or are some countries like the USA over-consuming while others are denied access to basic resources?
10. Considering the poor socio-economic conditions under which many Africans live,	This links to choices of quality of life. Do we encourage those that participate in the footprint

<p>should the size of our footprint be our right or our responsibility?</p>	<p>challenge to make all choices that have the lowest EF, or do people have the right to make the choice which they consider to reflect an improved quality of life?</p>
<p>11. If we do not fly to meetings and conferences, or visit other places and cultures, perhaps we miss potential contacts and experiences, and consequently have less influence in human society. If the people who care most about the environment stay at home, those who do not care will have a free reign to run the world.</p>	<p>This card is about the importance of networking and communication in terms of responding to environmental and development issues of crucial importance.</p>