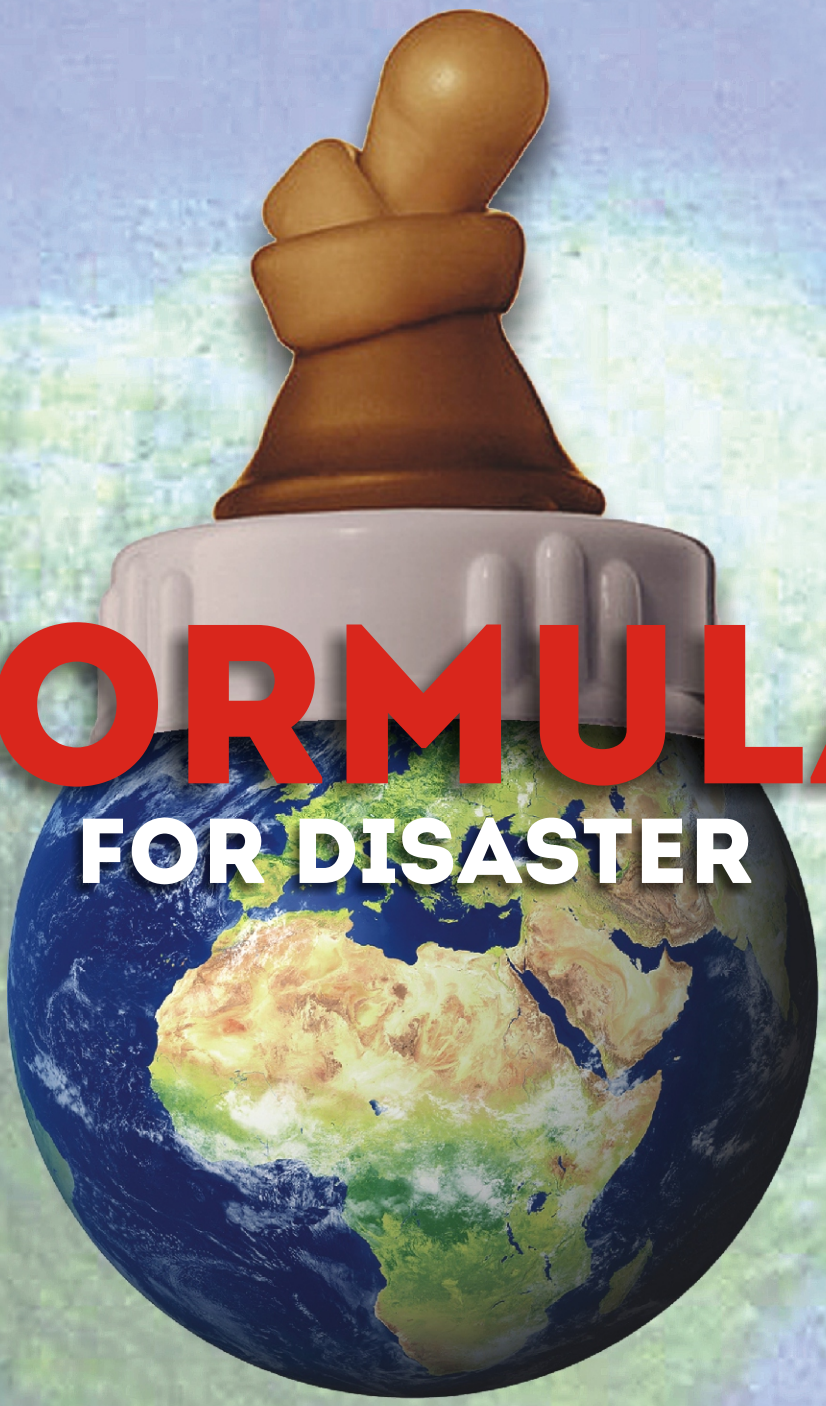

FORMULA FOR DISASTER

Weighing the Impact of

Formula Feeding Vs Breastfeeding on Environment

IBFAN
defending breastfeeding

bpni
putting child nutrition at the forefront of social change

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Formula for Disaster: weighing the impact of formula feeding vs breastfeeding on environment

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"I would challenge this august body to calculate the energy costs of the production of breastmilk substitutes - the amount of water used, the chemicals, the trees and the other resources used for packaging and promotion and finally the energy for sterilizing water for breastmilk substitute preparation."

Dr. Caleb Otto, Ambassador and Permanent Representative of the Republic of Palau, speaking at the United Nations[1]

1 Statement to the 9th meeting of the Open Working Group on Means of Implementation of the Sustainable Development Goals.

CONTENTS

FOREWORD

This paper attempts to gather scientific evidence that demonstrates how breastfeeding contributes to our healthy lives and environment. The United Nations Convention on the Rights of the Child also affirms the contribution of breastfeeding for the health of mothers and children. Breastmilk is neither industrially manufactured nor ultra-processed. Breastfeeding keeps the environment unharmed.

Given that infant formula production and consumption is one of the major threats to breastfeeding and to the environment, it is essential to increase environmental awareness about the impact of formula feeding. It also becomes a necessity to mitigate the damage caused to the environment due to the consumption of infant formula. This may be done through research, supporting calculations and statistical data on breastfeeding and adopting environment friendly infant feeding options.

It is crucial to build advocacy around the issue of breastfeeding and environment based on scientific evidence, which can only be possible through policy and country level investment.

It is essential to increase environmental awareness about the impact of formula feeding. It also becomes a necessity to mitigate the damage caused due to the consumption of infant formula by increasing breastfeeding rates

Dr Arun Gupta
Regional Coordinator, IBFAN Asia

INTRODUCTION

Breastfeeding - healthier mothers and children, healthier planet

"Human milk is not skimmed, processed, pasteurized, homogenized, packaged, stored, transported, repackaged, dried, reconstituted, sterilized or wasted. More important to many people nowadays, it is not genetically modified (GM). It requires no fuel for heating, no refrigeration, and is always ready to serve at the right temperature. In short, it is the most environmentally friendly food available."(Francis and Mulford 2000)

The following analysis aims to raise awareness of the positive impact of breastfeeding on our environment and throw light on the negative impact of formula feeding. It is vital to expand our knowledge base in the context of the advancement of Sustainable Development Goals, which are under discussion in the United Nations General Assembly Open Working Group[2].

The chapters examine the facts, identify the action needed, the actors who should be involved, and suggest a policy framework about various aspects of infant feeding and environment. They also suggest ways to move from awareness to action at every level, through national and community research to provide evidence for policy and practice.

2 http://sustainabledevelopment.un.org/index.php?menu=1549

1 BREASTFEEDING
baby-friendly, planet-friendly

Breastfeeding helps protect our children and the environment

The Norm

The positive impact of breastfeeding on the health of mothers and their children and the economic burden that formula feeding imposes on families, communities and nations are now well-researched and better understood by decision-makers. However, for various reasons[3], society at large remains unaware. As the World Health Organisation (WHO) emphasises, "Breastfeeding is unparalleled in providing the ideal foods for infants. Breastmilk is safe, clean and contains antibodies which help to protect the infant against many common childhood illnesses ... Breastfeeding delays early return of fertility in the mother and reduces her risk of postpartum haemorrhage and breast and ovarian cancer" (WHO 2006).

While the recommendations of Global Strategy for Infant and Young Child Feeding help guarantee every child's survival, healthy growth and development, they also make sound ecological sense. The recommendations also contribute to fulfilling every child's right to the highest attainable standard of health and right to adequate food and nutrition.

The World Health Organization adopted Global Strategy for Infant and Young Child Feeding: "To achieve optimal growth, development and health, the WHO recommends that infants should be exclusively breastfed and given no other food or drink for the first six months of life. Thereafter, to meet their nutritional requirements, infants should be given adequate and safe complementary foods while breastfeeding continues up to two years of age and beyond."

(WHO and UNICEF 2002)

Photo: One of the participants at the World Breastfeeding Conference, India 2012

Tree of Life

In Asia, the Arab countries and many other regions of the globe, the *Tree of Life* is a powerful image. Trees such as the *banyan*, the *Bodhi*, the coconut and the date palm and *peepal* trees[4] symbolise the interconnection of all life on our planet. They give us much of our food, drink and medicines. They also give shade, shelter and building materials for humans, plants and animals, and provide a focus to our meeting points. Most of all, they absorb carbon dioxide, thus mitigating the climatic effects of greenhouse gas. They also emit oxygen, without which there can be no human life.

Trees charge no fee for all these services to humankind.

Just like the *Tree of Life*, every breastfeeding mother gives her baby nourishment, fluids and protection through the thousands of live immune cells acting as anti-infective agents. Breastfeeding can be sustained without any harm to Mother Earth. For all this the mother often receives only scant recognition, if any. It is proposed that every breastfeeding mother should be awarded a golden leaf to symbolise her contribution to the health of her baby and the health of our planet.

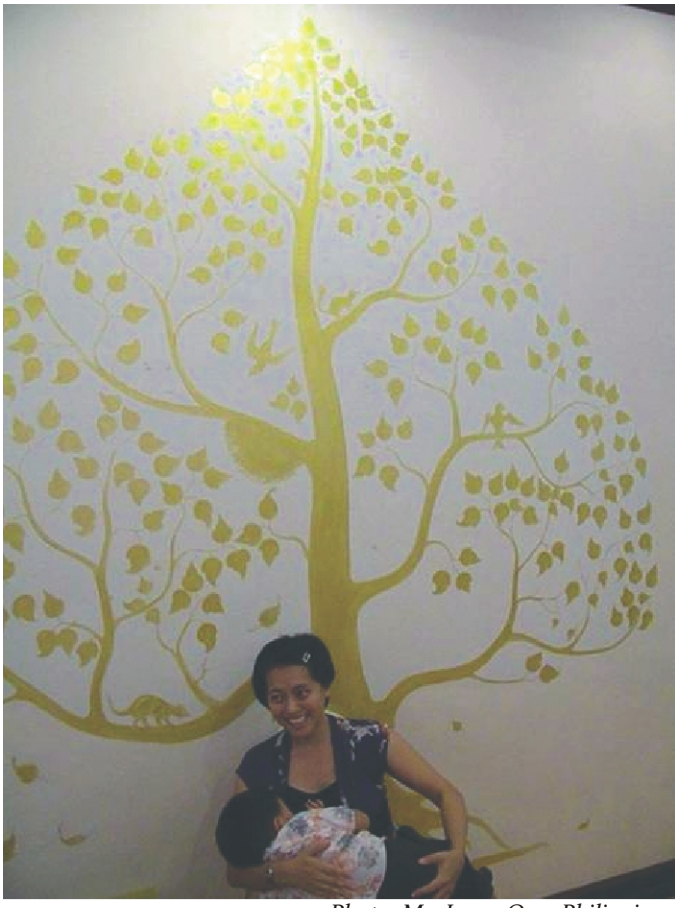

Photo: Ms. Jenny Ong, Philippines (courtesy: Ms. Vaniavan Fernandes)

A Breastfeeding mother contributes to both the health of her baby and the planet

3 There are various reasons for ignorance of the society. These include insufficient or distorted information in the media, often influenced by the baby food manufacturers, poor information provided by health care system as well as health care professionals who are inadequately educated and informed, often also influenced by the industry messaging and public relations techniques.

4 Banyan; an Indian fig tree, the branches of which produce wide-ranging aerial roots, which later become accessory trunks.
Peepal, Ficus religiosa or Sacred Fig is a species of fig native to India, Bangladesh, Nepal, Pakistan, Sri Lanka, southwest China and Indochina. It belongs to the Moraceae, the fig or mulberry family. It is also known as the Bo-Tree or Peepal or Pippal.

Sustenance
Solace
Security
Sovereignty
Sustainability
Spacing births

The Six "S" of Breastfeeding

Breastfeeding provides the six key "S" which are critical to the survival, health and development of children as well as to the health of their mothers.

Sustenance

Breastfeeding provides infants and young children with their first food, drink and immunisation. If a mother is supported and protected effectively against commercial pressures, then her breastmilk is constantly replenished and renewed. Breastmilk contains nutrients to nourish infants' growing bodies and developing minds, and calories to keep up their energy levels.

Solace

Breastfeeding provides solace and comfort to the child. The release of the hormone oxytocin during breastfeeding has a soothing effect on mothers as well.

Security

Breastfeeding provides food security for infants and young children specifically in emergency situations. Economic hardship, conflicts and calamities cause disruption, deprivation and severe stress for families, especially for mothers and their children. During such emergency situations, optimal breastfeeding is a lifeline to ensure survival, food and affection for infants and young children, in addition to providing anti-infective agents to protect against disease.

Sovereignty

Breastfeeding places the sovereignty of food on the families, communities and nations and helps uphold the right to health, adequate food and nutrition. Food sovereignty puts the individuals who produce, distribute and consume food at the centre of decisions on food systems and policies, rather than the corporations and market institutions that currently dominate the global food system.

Sustainability

Breastfeeding is a renewable, natural resource and therefore a sustainable feeding option. Breastfeeding requires no expensive resources like plastic or metal packing, fuel for distribution, sterilisation method and plastic feeding apparatus.

Spacing Births

Optimal breastfeeding[5] contributes to spacing births by delaying the return of menstrual periods. This child-spacing effect enables women to plan their families when contraception is unavailable, unaffordable or unacceptable for cultural or religious reasons. The health of both mother and child is improved when pregnancies are spaced at least two years apart.

Breastfeeding Leaves Zero Ecological Footprints

Breastmilk is environmentally sustainable. This means that the demands placed by breastfeeding on the environment can be met without reducing the capacity of our planet to allow all people to live well and healthily, now and in the future (UNICEF, 2013). Breastfeeding uses none of our planet's scarce natural resources or raw materials. Instead, breastmilk is a valuable natural resource in its own right, but one that is under threat from the ever-expanding market for commercial baby foods. According to market analysts, the market for formula and packaged baby food is set to more than double in the ten years between 2007 and 2017. The market was estimated to be worth USD 41.5 billion in 2012 and is forecasted to reach USD 63.6 billion in 2017.[6]

Breastfeeding, an Environment Friendly Option

- Breastfeeding is climate compatible; it is a low carbon and clean green solution. This is because breastmilk is neither industrially manufactured nor ultra-processed. Breastfeeding keeps the environment unharmed.
- In this day and age, zero waste does not occur spontaneously. Humans are the only living creatures on earth that produce abundant waste that cannot be reused or assimilated back into the natural environment, although some waste is now at last being recycled. The concept of zero waste is beautifully demonstrated in breastfeeding. Nothing is wasted or becomes unwanted at any stage.
- Breastfeeding also has zero water footprint. Water footprint is the volume of fresh water used for the goods and services produced by any activity or used by an individual or a community. All that a baby needs for the first six months of his or her life is breastmilk. Not a single drop of water is needed.
- Breastfeeding produces zero waste in comparison to formula feeding as there is no waste from the packaging or from plastic feeding bottles or plastic water bottles. Mothers who exclusively breastfeed their babies and then continue breastfeeding have delayed fertility, and experience delayed menstruation for an average of 14 months. This ensures that the mothers use fewer menstrual pads and tampons which end up in landfills or incinerators. Breastfed babies need less nappies or diapers, and thus use less disposable nappies to overload landfill sites and municipal incinerators. Even these small facts have a huge environmental impact.[7]

Breastfeeding produces zero waste in comparison to formula feeding as there is no waste from packaging or from plastic feeding bottles or plastic water bottles

5 Optimal Breastfeeding means early initiation within an hour of birth, and then exclusive breastfeeding for six months, followed by continued breastfeeding upto two years or beyond, with the addition of nutritious foods, locally produced through environmentally sound agriculture.

6 "The global baby food and paediatric nutrition market was estimated in 2011 to be worth USD 38.2 billion, growing from USD 28.1 billion in 2007". (Baby Food and Paediatrics Nutrition Market: Global Analysis and Forecast from 2007-2017)
http://www.researchandmarkets.com/reports/1991904/baby_food_and_pediatric_nutrition_market_global

7 This text is adapted from the presentation by Velvet C. Escario-Roxas for World Breastfeeding Week 2011, Kuala Lumpur, Malaysia

2 FORMULA FEEDING negative impact

Formula feeding is detrimental to the environment

In contrast, formula feeding is unsustainable and leaves a large, heavy ecological footprint.[8] The concept of ecological footprint includes the resources consumed by the human population as well as the waste left behind. The carbon footprint[9] of greenhouse gases[10] left behind contributes to climate change, while waste and garbage pollute our environment. All the resources and raw materials that are extracted cause the depletion of our planet's limited and non-renewable natural capital. In addition to these factors, formula feeding involves transportation at every stage of manufacturing and aggressive marketing.

Photo: The winning sculpture exhibited at the World Breastfeeding Conference 2012 under the theme "Babies Need Mom-made Not Man-made!" made by Mr Manoj Kumar (College of Art, Delhi University, India)

Formula feeding is unsustainable and leaves a large, heavy ecological footprint

8 **Ecological Footprint** or environment footprint is a measure of human demand on the earth's resources and the load imposed on nature by a given activity or population. To leave no ecological footprint means that a person or an activity replaces in the environment exactly what is taken out. By assessing the use of non-renewable resources it is possible to estimate how much of the Earth or how many Earth - are needed to sustain a particular level of consumption.

9 **Carbon Footprint** is "the total set of greenhouse gas (GHG) emissions caused by an organisation, event, product or person." GHG can be emitted through transport, land clearance, and the production and consumption of food, fuels and manufactured goods. The carbon footprint is often expressed in terms of the amount of carbon dioxide, CO_2, emitted or its equivalent comprised of other GHGs such as methane, (CH_4). These gases together contribute to global warming and are expressed in terms of CO_2 -e (equivalent).

10 **Carbon dioxide**, methane and nitrous oxide are examples of the greenhouse gases produced by anthropogenic or 'man'-made activities.

A Quilt of Greenhouse Gas Emissions

While it is important to examine **the inputs or resources** needed for producing formula milk powder, it is vital to also investigate **the outputs or waste products** that are left behind in these processes. These outputs have a **direct impact** on greenhouse gas emissions or GHG. Carbon dioxide, methane and nitrous oxide are examples of the greenhouse gases produced by anthropogenic or 'man'-made activities. They are named greenhouse gases because they act like the glass of a greenhouse and trap the heat of the sun's rays. They are also compared to a blanket or a thick quilt which "absorbs heat heading out from the earth and re-emits it in a random direction; the effect of this random redirection of the atmospheric heat traffic is to impede the flow of heat from the planet, just like a quilt." (Mackay, 2009)

Calculating the carbon footprint of infant formula use can be done either at the industry level or at the home level. While it is possible to calculate the ecological footprint of formula production for each country independently, much of the data required is not easily available. For instance, if formula is produced nationally, where is the milk sourced from? How many cows are needed to produce the milk? How is the dairy managed? How distant are these milk collection centres? Is the milk transported by road or by rail? If formula is imported, then it is even more difficult to calculate these factors, as they occur in distant countries and all involve transport.

According to the Food and Agriculture Organisation of the United Nations (FAO), the average global GHG emissions from milk production, processing and transport are estimated to be **2.4 kg CO_2-eq. per kg of FPCM** (fat and protein corrected milk) at the farm gate. In 2007, globally 553 million tonnes of milk was produced, processed and transported generating 1328 Million tonnes CO_2-eq of GHG. Globally, from every 100 kg raw milk produced and processed, only 20 Kg (that is 20%) is used for producing powdered milk leading to production of 2.2 kg powdered milk. This means, for each 1 kg of powdered milk production and processing, 21.8 kg CO_2-eq.of GHG is emitted. This figure may be used to estimate GHG emissions caused by production of formula milk powder at country level if the amount of such products produced in the country is known.

Growing deforestation has resulted in higher green house gas emissions. Comparing the total emission of green house gas to the total milk production across the world, the amount of emission is more than double the milk production. Green house gas emission becomes even higher after adding the emissions caused due to transportation of milk across different parts of the world. The growing burden on the environment is a point of concern

Heavy Burden for our Planet and its People

To estimate the total ecological footprint of formula feeding products, it is necessary to focus on the whole process of manufacturing the formula feed, including milk production, industrial manufacturing, transportation and preparation. Formula feeding also increases the manufacturing of associated products such as tin for cans, cans for packing the formula, plastic for bottles and teats, labels and printing for marketing and distribution, and sterilisers for sterilising the bottles. This puts a burden on the planet additional to that of manufacturing formula from liquid milk.

Besides that, babies, especially those under six months of age, cannot take milk in any form except liquid. Producing formula involves turning liquid milk into a powder, and then adding water to turn it into a liquid again for consumption. So, at each stage- production of formula, transporting of formula, manufacture of feeding bottles, reconstituting formula into a liquid that the infant can consume- there is a huge requirement of energy, most often causing irreversible damage to the environment.

The processing of milk into powder, its packaging and transportation also results in emissions of carbon dioxide and other greenhouse gases, leading to global warming. Emissions are relatively high if coal is used in energy production, as is the case in many developing countries. No less important are the **indirect impacts** of formula feeding such as deforestation, loss of woodlands and wetlands and of biodiversity, as well as depletion of the water table. Finally, the processing and packaging of formula milk produces waste as well as of chemicals, pollutants and toxins, all of which have a detrimental effect on our environment.

Use of Scarce Water Resources

Some research studies have tried to estimate the water usage on dairy farms that give an idea of the extent of water footprint produced in the production of formula.

A research study estimated the indirect water usage on dairy farms in Michigan, USA and found that it is colossal (Thomas C. 2002). Indirect water use includes: milking system clean-up, milking parlour clean-up, milk bulk tank clean-up, prepping cows for milking, milk pre-cooling, and staff facilities. The paper estimated an upper limit of 82,620 litres and a lower limit of 74,698 litres of indirect water usage per 1000 head of cattle.

Apart from this, the drinking water supply for cows should also be taken into consideration. A look at research studies shows that figures on drinking water for dairy vary, but the most accepted number is that 800 litres of water is utilised to make a single litre of milk. (Blundell, 2007)

A study on the external costs of dairy farming in New Zealand concluded that the quantity of clean water needed and deterioration of water quality due to faecal contamination, degradation of lowland streams and damage to air resources lead to significant economic costs which are

not reflected in the price of a litre of milk (Tait P and Cullen R, 2006)

The global average water footprint of whole cow milk is about 940 litres of water per kilo of milk. One kilo of whole milk gives about 200 grams of milk powder. So, the water footprint of milk powder is 4700 litres of water per kilo of milk powder. Cultivation of soy plants for soybean feed cakes for cattle and oil palms for palm oil used for infant formula are also water-intensive processes and depletes water table.

For calculating water footprints in greater detail, M M Mekonnen and A Y Hoekstra provide the methods for calculating blue water footprint (volume of surface and ground water footprint), green water footprint (volume of rain water footprint) and grey water footprint (volume of fresh water footprint) used to produce a product. (Mekonnen, 2012)

Use of Scarce Raw Materials for Packaging

Aluminium, cadmium and other metals are used in manufacturing, storage and packaging of formula products. The processing and recycling aluminium are both energy intensive.

Apart from being energy intensive processes, the contamination caused by aluminium for packaging of formula is also a cause of concern. A research paper on this subject states: "The aluminium content of infant formulas is between 10 and 40 times higher than the aluminium content of breastmilk and will contribute significantly towards the body burden of aluminium in infants... There is evidence of immediate and delayed toxicity in infants, and especially pre-term infants, exposed to aluminium ... Many of the formulas were packaged for sale using aluminium-based materials. The high content of aluminium in the soya-based formula probably reflects its prior concentration in the soybean plant ..." (Burrell and Exley, 2010)

In 2009, the Lancet reported that while breastfeeding is a thoroughly eco-friendly feeding practice, the carbon footprint created by the formula milk industry from sourcing, producing and packaging is massive. The paper further stated that in the USA alone, more than 32 million kW of energy is used every year for processing, packaging and transporting formula and 550 million cans, 86,000 tons of metal and 364,000 tons of paper are added to landfills every year. (Coutsoudis and Coovadia, 2009)

Use of Scarce Energy Resources

According to USFDA, powdered infant formula is manufactured by more than a dozen firms in 40-50 processing plants worldwide (USFDA, 2013). The manufacturing processes of powdered infant formula with dry blending include: dry blending to mix ingredients from different producers in many countries, sifting, transferring to bags or drums for

storage, filling large cans that are flushed with inert gas, then seamed, labelled, coded and packed into cartons for transport. Wet blending requires spray drying. Both these processes are energy intensive processes at high temperatures.

"Baby milks are the end product of a number of industrial processes. The energy used to create the right degrees of temperature and the mechanical procedures cause air pollution (acid rain and greenhouse gases) and uses natural resources in the form of fuel." (Radford, 1997)

Ecological concerns for the planet due to the impact of formula feeding on environmental resources may be calculated at country level to highlight the harmful effects of formula feeding on environment.

Food Miles

We have seen that there are only about 40-50 processing plants in the world, all are concentrated in few milk producing and exporting countries such as Ireland and New Zealand. As a result, many countries import powdered milk for formula from these countries which results in increased fuel and energy requirements for transportation. The energy costs and carbon footprints of these import and export journeys need to be investigated.

In calculating the fuel and energy requirements for transportation of formula at the country level we have to take into account national differences such as size or topography of the country and the common mode of transportation. The calculations of the carbon emissions, which are produced by transporting milk from farms to the factories and then the formula from factories to stores to homes, will depend on the size of the country. For example, in a tiny country such as Switzerland the distances travelled are smaller and so the carbon footprint is less heavy.

The same calculations need to be made for complementary foods introduced after six months, when these are not made from local foods produced using sustainable agricultural methods. Unlike traditional indigenous foods, these processed, packaged, transported or imported complementary foods leave a large ecological footprint as they travel from farm - or factory - to plate.

Household Level

It is stipulated that to prepare the feeds for a three months old baby, the parent or the carer use a litre of water per day, plus two litres to boil the bottles and teats and more to wash and rinse the bottles. Further more, to prepare 6 feeds correctly every day, bottles and teats must be boiled for 10 minutes. This totals a boiling time of up to 60 minutes per day. It takes 200 grams of wood to boil one litre of water, so feeding a child artificially for one year will use up to 73 kilos of wood. (Linnecar A, 1989)

These figures are, however, more than two decades old and need recalculating in the light of changing consumption patterns and the change in the amount of energy used in product transportation.

Piling on of Toxic Chemicals, Waste and Garbage

Every stage in the life cycle of powdered or liquid formulas, from their production to

consumption, can help us assess the impact on our environment. The greenhouse gases such as carbon dioxide, methane and nitrous oxide emitted by dairy farming and manufacturing of infant formula contribute to global warming. Clearance of land and forests for dairy farming, soy cultivation and huge plantations of oil palms causes environmental degradation and leads to deforestation, increase in flooding and loss of biodiversity. Clearing and burning of land causes clouds of gases and pollution of the air that we breathe. The waste produced by the intensive agricultural practices that are required to produce formula, especially the run off from fertilisers, pesticides and herbicides, causes pollution of the water we drink. The garbage from the materials from packaging and non-biodegradable plastics accumulates in landfill sites, or is burned in open fires or in incinerators which produce toxic emissions, especially when incinerators are over-burdened by waste, causing malfunction.

Impact on Human Health and Wellbeing

What will be the impact on our planet if the practice of breastfeeding keeps declining? Currently, out of the 136.7 million babies born annually, only 39% of children aged less than six months were exclusively breastfed in 2012 (UNICEF, 2013). So, every baby who is not breastfed will add an additional baby for the market who will be fed on formula. The planned

Currently, out of the 136.7 million babies born annually, only 39% of children aged less than six months were exclusively breastfed in 2012 (UNICEF, 2013). So, every baby who is not breastfed will add an additional baby for the market who will be fed on formula. The planned expansion of the baby food market will thus bring severe consequences for infant health as well as for the environment

expansion of the baby food market will thus bring severe consequences for infant health as well as for the environment. In 2010, global infant milk formula production was estimated to be 1.8 million metric tonnes with global annual average growth of 6% per annum[11].

The stranded polar bear on a shrinking ice flow has become a worldwide symbol of climate change, global warming and the imminent disaster they portend. But what does an infant or a young child have to do with stranded polar bears? To communicate the message that our planet and the survival of all its inhabitants is under threat, we need an image that also focuses on human health and well-being.

"How is the Earth's changing environment harming human health and what can be done to mitigate these effects? ... Our health is not something we can guarantee as individuals by taking vitamins or jogging. We are dependent on having clean air, clean water, safe foods and a safe environment for our health." (Ring W, 2013). This is true for all human beings, but its significance is of particular importance for infants and young children.

At individual and family level, many of us try to adopt a 'green' lifestyle. We buy eco-cleaning products, we eat locally produced and organic food or we recycle our trash. But, we need to do more to protect the future of our children and grandchildren. "To date, the parenting literature has been largely silent about climate change, even though it is the most important issue in our children's future...The reason it is so important is because none of these other things will matter if our children do not inherit a stable climate that can provide food and water security. Thus, the benefits are enormous if parents decide to take actions to ensure that we leave our children and our children's children a habitable planet." (Chatterjee, 2013)

This action at individual and family level is vital, and every gesture counts. However, ultimately we must act together for the common good that benefits all peoples of the earth, and for our common future. We need to spur action at every level of international, regional and national policy setting, implementation and monitoring.

The scientific evidence and vital health considerations outlined in this paper therefore require urgent action by all members of our societies to safeguard the health of our environment. National and community initiatives are indispensable to spur action to protect the health of families and their children and the health of the planet we all live on. This is the 'groundwork' and it is only in this manner can we convince policy makers about the need for an international policy framework to guide and sustain action at every level. Some elements of a policy framework are already in place; others need to be developed. All of them need translating into concrete measures, which can be enforced and monitored.

11 http://www.aak.com/Global/Investor/Infant%20Nutrition%20presentation%20111115.pdf

ADDRESSING "CLIMATE INJUSTICE" 3

Action ideas for ensuring climate justice through breastfeeding

Towards an International Policy Framework

The concept of "climate justice" uses the human rights framework to address the problem of climate injustice. Climate injustice means that those least responsible for causing climate change are the most vulnerable to its devastating effects. This is the true inequality of climate and global environmental change: the poorest communities, the most disadvantaged nations are always the hardest hit. Economic development and recovery are compromised by disasters and calamities. These now occur more frequently and are not always caused by natural events. Instead, they are increasingly occurring due to the impact of human activity.

The United Nations Convention on the Rights of the Child (UNCRC) that was ratified in 1989 provides the starting point to examine relevant human rights instruments. State parties, which ratify the Convention, are obligated to enact a legal framework to guarantee the rights of every child stipulated in the Convention. As noted by the Ambassador and Permanent Representative of the Republic of Palau, "No breastmilk substitute ever made comes anywhere nears the perfect natural food for the infant. Breastmilk contains, on a daily basis, the right amount of fluid, all nutrients and protective antibodies

The United Nations Convention on the Rights of the Child (UNCRC)

The UNCRC was adopted in 1989 and is the most widely ratified Convention of the United Nations. As many as 193 countries ratified the CRC, with the exception of Somalia, South Sudan and the USA. It is a key legally binding policy document. Every child's right to the highest attainable standard of health and a healthy environment is enshrined in article 24, by which States Parties recognize the right of the child to the enjoyment of the highest attainable standard of health and undertake to pursue full implementation of this right by taking appropriate measures to diminish infant and child mortality.

Article 24 (d) specifies these measures To ensure that all segments of society, in particular parents and children, are informed, have access to education and are supported in the use of basic knowledge of child health and nutrition, the advantages of breastfeeding, hygiene and environmental sanitation.

Article 24 (c) includes a warning about the dangers and risks of environmental pollution: To combat disease and malnutrition, including within the framework of primary health care, though, inter alia, the application of readily available technology and through the provision of adequate nutritious foods and clean drinking-water, taking into consideration the dangers and risks of environmental pollution; "

Article 29 (e) specifically addresses the need for environmental education: States Parties agree that the education of the child shall be directed towards development of respect for the natural environment.

States Parties to the CRC are obligated to respect, protect and fulfil these rights of every child.

Annex 2 provides further examples of texts from international policy documents.

required by an infant at any stage of his/her life. So, with respect to rights and dignity, how can we let our infants be denied their rights to the best food and lose their dignity only because they cannot speak for themselves?"[12]

Who can take action?

In summary, the greenhouse gases - carbon dioxide, methane and nitrous oxide emitted by dairy farming and manufacturing of infant formula contribute to global warming and climate change through environmental damage, degradation and pollution. Formula feeding is an unnecessary use of the earth's precious resources and energy supplies. It produces the waste materials from packaging and non-biodegradable plastics which accumulate in landfill sites, or are burned in open fires or in incinerators which produce toxic emissions, especially when incinerators are over-burdened by waste. National assessments provide information about all stages in the life cycle of powdered or liquid formulas can help us assess the impact on our environment.

To stimulate action and build momentum, all actors of society need a clear rationale supported by independent and up-to-date science. These actors include:

- Pregnant women and parents of infants and young children, their families and communities;
- All those who care for infants: physicians, health professionals and health visitors and their professional bodies;
- Providers of education at all levels: teachers, academics, economists and researchers;
- Activists in the breastfeeding and environmental movements;
- Religious and community leaders;
- All those who take decisions and impart information affecting our lives: programme managers, policy-makers and the media.

All parties have a role to play in creating awareness and sustaining momentum for action at every level. Governments should define goals, promulgate effective regulatory mechanisms and prepare road maps. In 2002, the European Parliament took steps in this regard and passed a resolution that urged the Commission and the Member States to agree by 2013 on clear, robust, and measurable indicators for economic activity that take account of climate change, biodiversity and resource efficiency from a life-cycle perspective. For example, a basket of four resource use

indicators, namely land footprint, water footprint, material footprint and carbon footprint, can be considered. The European Parliament also resolved to use these indicators as a basis for legislative initiatives and concrete reduction targets and underlined that this process has to be transparent and include key stakeholders.

The commercial actors - the baby food and feeding products industry - also have a very important role to play and contribution to make. They must comply with the International Code of Marketing of Breastmilk Substitutes and subsequent relevant resolution of the World Health Assembly (the Code). It is only after they stop violating the provisions of these international public health instruments that the commercial pressure on mothers, families, health professionals and policy-makers will be substantially reduced and unnecessary formula feeding is eliminated.

Action Ideas for Ensuring Climate Justice through Breastfeeding

1. Sensitising policy-makers about the heavy ecological footprint of formula feeding and the positive contribution of breastfeeding on the environment.
2. Sensitising ecologists, religious leaders, journalists and decision-makers involved in setting the Sustainable Development Goals.
3. Calculating country level data for the external costs or externalities of formula feeding, in terms of the environmental burden it places on the planet.
4. Orienting mothers, families and caregivers about the positive effect of breastfeeding on our environment which is being increasingly contaminated and degraded.

12 Statement to the 9th meeting of the Open Working Group on Means of Implementation of the Sustainable Development Goals.

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Previous IBFAN/WABA publications

IBFAN has been working with WABA since 1987 to raise awareness of the ecological value of breastfeeding. The following publications provide a sound basis for further analysis.

1. Radford A (1992). The Ecological Impact of Bottle Feeding. Breastfeeding Review May 1992: 206, and http://www.reducepackaging.com/impact-bottlefeeding.html
2. WABA (1997). Breastfeeding – Nature's Way, World Breastfeeding Week Action Folder: http://worldbreastfeedingweek.net/webpages/1997.html
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Annex 1

Glossary

CARBON FOOTPRINT is "the total set of greenhouse gas (GHG) emissions caused by an organization, event, product or person." GHG can be emitted through transport, land clearance, and the production and consumption of food, fuels and manufactured goods. The carbon footprint is often expressed in terms of the amount of c**arbon dioxide or CO_2** emitted, or its equivalent comprised of other GHGs such as **methane, (CH_4)**. These gases together contribute to global warming and are expressed in terms of **CO_2 -e** (equivalent). We all need to reduce our carbon footprint and lessen the impact of our ecological footprint.

ECOLOGICAL FOOTPRINT or environment footprint is a measure of human demand on the earth's resources and the load imposed on nature by a given activity or population. To leave no ecological footprint means that a person or an activity replaces in the environment exactly what is taken out. By assessing the use of non-renewable resources it is possible to estimate how much of the Earth – or how many Earths - are needed to sustain a particular level of consumption.

GREEN HOUSE GAS(GHG) is a gas in the atmosphere that absorbs and emits radiation within the thermal infra-red range. This process is the fundamental cause of the greenhouse effect. The primary greenhouse gases in the Earth's atmosphere are water vapour, carbon dioxide, methane, nitrous-oxide, and ozone. For graphics see: http://en.wikipedia.org/wiki/File:The_green_house_effect.svg

GLOBAL WARMING refers to the continuing rise in the average temperature of Earth's atmosphere and oceans, their surface temperatures. Global warming is caused by increased concentrations of greenhouse gases in the atmosphere, resulting from human activities (anthropogenic) such as deforestation and burning of fossil fuels. A large proportion of the energy from the sun is thus prevented from being reflected back into space, leading to a rise in temperatures and contributing to global warming.

CLIMATE CHANGE includes global warming and everything that the increasing levels of greenhouse gases will affect. Climate Change is a significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years, not an oscillation such as El Niño. Climate change maybe limited to a specific region or may occur across the whole Earth.

GREEN HOUSE GAS MITIGATION is one way to reduce carbon footprints through the development of alternative projects, such as solar or wind energy or reforestation. It can be argued that breastfeeding provides some mitigation of green house gas emissions, thus contributing to reducing carbon footprint.

METHANE (CH_4) is a relatively potent greenhouse gas. It has a high global warming potential compared to carbon dioxide, because it is more efficient at trapping heat. The comparative impact of methane on climate change is over 20 times greater than carbon dioxide over a 100-year period. Methane is emitted by human activities such as agriculture and raising livestock. Methane has a net lifetime of about 10 years, and its lifetime in the atmosphere is much shorter than carbon dioxide. It is primarily removed by reaction with hydroxyl radicals in the atmosphere, producing carbon dioxide and water. Methane also affects the degradation of the ozone layer. For graphics see:
http://en.wikipedia.org/wiki/File:Airs_methane_2006_2009_359hpa.png

FOOD MILES are a way to measure how far food has travelled before it reaches the consumer. It is a way of looking at the environmental impact of foods and their ingredients and includes transport of foods from 'farm to fork' and also taking waste foods to the landfill.

LIFE CYCLE ASSESSMENT (LCA) is a technique to assess environmental impacts associated with all the stages of a product's life from-cradle-to-grave (from raw material extraction through materials processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling). LCA is also known as life cycle analysis, eco balance and cradle-to-grave analysis. In Sweden as life span assessment. LCA can help avoid a narrow outlook on environmental impacts.

SUSTAINABLE DEVELOPMENT is defined in the 1987 report of the Brundt land Commission: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Despite some perceptions that associate sustainable development mainly with the natural environment, it focuses on ways of meeting people's social and economic needs within natural resource limits – so that human development can be both sustainable and sustained. This means the continuing the advance of poverty eradication, human rights and equity while also realizing more sustainable patterns of consumption and production, stabilizing climatic forces, and sustainably managing our common natural resource base. (quoted from UNICEF- A Post-2105 World Fit for Children: Sustainable Development starts and ends with safe, healthy and well-educatedchildren, May 2013).

BIODIVERSITY is the degree of variation of life forms within a given ecosystem or an entire planet. Biodiversity is a measure of the health of ecosystems and greater biodiversity implies better health. Biodiversity is in part a function of climate and tropical regions are typically rich, whereas the Polar Regions support fewer species.

ENVIRONMENT: The natural environment is the air we breathe, the water we drink and the soil that we cultivate to grow the food we eat. It includes all living and non-living things that occur naturally on Earth and interact with each other.

ECOLOGY is the interdependence of living things. It comes from the Greek words which in English mean "house" and "study of". It is the scientific study of the relations that living organisms have with respect to each other and their natural environment in our "house", that is, planet Earth.

ECOSYSTEMS are fragile because they are composed of inter-dependent parts. An example is a coral reef, a hierarchical system that is organized into a graded series of regularly interacting and semi-independent parts, such as coral species. These aggregate into higher orders of complex integrated wholes, such as communities.

ECO-LABELS: Who decides what is "green" and how do they decide? Eco-labels identify a product that meets specified environmental standards, and should be awarded by an independent third-party organization to products or services that is determined to meet these standards.

Annex 2

International policy documents

It is important to examine environmental health through the lens of human rights instruments. The following United Nations human rights documents concern our environment and the health of our planet and all its inhabitants:

1. Committee on the Rights of the Child: General comment No. 15 (2013) on the right of the child to the enjoyment of the highest attainable standard of health (art. 24)*
"35. States should put particular emphasis on scaling up simple, safe and inexpensive interventions that have proven to be effective, such as community-based treatments for pneumonia, diarrhoeal disease and malaria, and **pay particular attention to ensuring full protection and promotion of breastfeeding practices.**

44. **Exclusive breastfeeding for infants up to 6 months of age should be protected and promoted and breastfeeding should continue alongside appropriate complementary foods preferably until two years of age, where feasible.** States' obligations in this area are defined in the "protect, promote and support" framework, adopted unanimously by the World Health Assembly*. **States are required to introduce into domestic law, implement and enforce internationally agreed standards concerning children's right to health, including the International Code on Marketing of Breastmilk Substitutes and the relevant subsequent World Health Assembly resolutions**, as well as the World Health Organisation, Framework Convention on Tobacco Control. Special measures should be taken to promote community and workplace support for mothers in relation to pregnancy and breastfeeding and feasible and affordable childcare services in **compliance with the International Labour Organisation Convention No. 183** (2000) concerning the revision of the Maternity Protection Convention (Revised), 1952."
*See WHO and United Nations Children's Fund (UNICEF), Global Strategy for Infant and Young Child Feeding (Geneva, 2003).

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2. United Nations Press release for International Mother Earth Day, April 19 2013, contains statements from UN Experts on Human Rights:
http://www.unric.org/en/latest-un-buzz/28394-if-we-fail-our-environment-we-fail-to-protect-our-human-rights-warn-un-experts-on-earth-day

i) **UN Independent Expert on promotion of and equitable and democratic international order:** "When we pollute the earth and waste resources, we violate the rights of future generations and undermine an international order based on democratic participation and equitable sharing of the planet's wealth. International solidarity by governments and civil society is required to safeguard the Earth, including by seeking the development of penal measures under international law."
ii) **UN Special Rapporteur on right to health:** "The right to health is an inclusive right that extends to such underlying determinants as healthy environment."
iii) **UN Special Rapporteur on toxic waste:** "When toxic substances are dumped or leak and people living near the waste sites become ill and even die, those individuals' human rights, such as their rights to life and health, are infringed."
iv) **UN Special Rapporteur on the Right to Food:** "When our rivers are being depleted and polluted, the livelihoods of many vulnerable groups are being out in jeopardy, including the ability for those groups to access sufficient and safe drinking water, grow food and harvest from traditional fisheries."
v) **UN Special Rapporteur on human right to water and sanitation:** "When untreated human waste which is threatening our environment is killing and making millions of people, in particular children, sick, the right to sanitation, which includes the safe disposal of human waste, is being violated."

3. The preliminary report by the Independent Expert on human rights and environment to the Human Rights Council provides more detailed explanations (emphasis added in these excerpts):
http://www.ohchr.org/Documents/HRBodies/HRCouncil/RegularSession/Session22/A-HRC-22-43_en.pdf

"GENEVA (7 March 2013) – The United Nations Independent Expert on human rights and environment, John Knox, **highlighted the urgent need to clarify the human rights obligations linked to the enjoyment of a safe, clean, healthy and sustainable environment.** Such clarification, he said, "is necessary in order for States and others to better understand what those obligations require and ensure that they are fully met, at every level from the local to the global."

"Human rights and the environment are not only interrelated, they are also interdependent," Mr. Knox noted during the presentation of his preliminary report to the Human Rights Council. **"A healthy environment is fundamentally important to the enjoyment of human rights, and the exercise of human rights is necessary for a healthy environment."**

"All human rights are vulnerable to environmental degradation, in that the full enjoyment of all human rights depends on a supportive environment," underscored the Independent Expert.

"However, when governments around the world fail to restrict emissions of greenhouse gases leading to global climate change, they fail to protect many human rights, including rights to life, health, property, development, and self-determination, of people living in vulnerable communities such as those in low-lying coastal areas and in the polar region."

"The lack of a complete understanding as to the content of all environmentally related human rights obligations should not be taken as meaning that no such obligations exist. Indeed, some aspects of the duties are already clear," he said. "Applicable human rights obligations are not lessened merely because the environment is concerned."

Mr. Knox's preliminary report identifies many issues that need to be addressed in moving forward, **including those regarding transboundary and global environmental harm, such as climate change; non-State actors, such as multinational corporations; and vulnerable groups, including children, the displaced, the extremely poor and indigenous peoples.**

4. The Stockholm Convention on Persistent Organic Pollutants (POPs), and International Labour Organisation Convention 184
These two UN Conventions address "the dangers and risks of environmental pollution" which are referred to in the Convention on the Rights of the Child.

- The POPs Convention was adopted in Stockholm in 2001 and entered into force in 2004. It is also widely ratified, but not by all countries, for example Italy. The document states, "It is an international treaty that aims to protect human health and the environment from the harmful effects of chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have adverse effects on human health or to the environment. Exposure to POPs can lead to serious health effects including certain cancers, birth defects, dysfunctional immune and reproductive systems, greater susceptibility to disease and even diminished intelligence. Given their long range transport, no one government acting alone can protect its citizens or its environment from POPs." In 2009, nine new POPs were added to the initial list of 12 and in 2011, endosulfan and related POPs were included. [1]
- In 2001, the International Labour Organization (ILO) adopted the Safety and Health in Agriculture Convention No. 184 and its Recommendation No. 192. This Convention also addresses the problem of environmental exposures of vulnerable populations. The Convention aims to protect all agricultural workers against exposure to the harmful chemicals used in agriculture (fertilizers, pesticides,

herbicides or weed killers). Articles 13, 16 and 18 afford special protection to pregnant and breastfeeding women in hazardous work as well as to all young workers: "Measures shall be taken to ensure that the special needs of women agricultural workers are taken into account in relation to pregnancy, breastfeeding and reproductive health".[2]

5. NGO documents: The Health and Environment Alliance has published this letter to the Director-General of World Health Organisation, Dr Margaret Chan, with the Doha Declaration developed at Conference of Parties- COP 18- and the 2012 United Nations Framework Convention on Climate Change's global climate change negotiations: http://www.env-health.org/IMG/pdf/letter_to_margaret_chan_who_may_2013_final_.pdf

The letter states: *"Human health is profoundly threatened by our global failure to halt emissions growth and curb climate change. As representatives of health communities around the world, we argue that strategies to achieve rapid and sustained emissions reductions and protect health must be implemented in a time frame to avert further loss and damage. We recognise that this will require exceptional courage and leadership from our political, business and civil society leaders, including the health sector; acceptance from the global community about the threats to health posed by our current path; and a willingness to act to realise the* ***many benefits of creating low carbon, healthy, sustainable and resilient societies.***"

The Doha Declaration provides many arguments: http://dohadeclaration.weebly.com/

* Adopted by the Committee at its sixty-second session (14 January – 1 February 2013).
[1]http://chm.pops.int/TheConvention/ThePOPs/TheNewPOPs/tabid/2511/Default.aspx
[2]http://www.ilo.org/dyn/normlex/en/f?p=1000:12100:0::NO::P12100_INSTRUMENT_ID:312329

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