

# Sustainable Development Update

– Keeps you updated on the interactions between ecological issues and social and economic development

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Issue 3, Volume 5, 2005

“Loss of biodiversity is a major barrier to achieving development goals, and poses increasing risks for future generations”

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He turned Bogotá into a leading model for sustainable urban design

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“We live in a very rich continent, but we do not manage our resources efficiently”



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“We can't say our generation didn't know how to do it. We can't say our generation couldn't afford to do it. And we can't say our generation didn't have reason to do it. It's up to us, we can choose to shift the responsibility, or as the professor proposes here, we can choose to shift the paradigm”

Pop star Bono from U2 in the foreword of “The End Of Poverty” by professor Jeffrey Sachs.

## Children and the environment

More than three million children under the age of five die every year due to environment-related diseases. Children suffering from poverty, conflict and malnutrition are particularly vulnerable.

If we are to care for future generations a good place to start is to actively improve the environments of this generation's kids.

More in the feature article, page 2-3



## Editorial: Is small always beautiful?

Small is beautiful say the producers of so-called nanomaterials. Nanoparticles measure only a few billionths of a meter and are already used in products like anti-aging creams, sunblocks, car bodies, food additives and pesticides.

Proponents of this new technology also claim that there are many potential benefits of “green nanotechnology”, such as more efficient filters for cleaning water and air; improved catalysts for cars and more efficient solar cells.

Unfortunately, research has indicated that when normally harmless materials are made into ultrafine particles they can become toxic. Generally, the smaller the particles, the more reactive and toxic their effect. One of the wake up calls was a study revealing that nanoparticles known as “fullerenes” or “buckyballs” caused brain damage in fish in a form, which has been linked to illnesses such as Alzheimer's disease in humans.

Some say a mandatory moratorium is now the only reasonable option. Others say it is better to allow individual regulatory agencies to weigh in on specific nanoproducts and applications before they are introduced to the market. No matter which approach you choose, it is about time to start debating nanotech now. Any technology can be used for good and for bad. Understanding of both the complex scientific and societal issues

surrounding nanotechnology must be improved. We will never be able to make wise decisions and use nanotechnology for environmental and social good without accurate information.

There is for example insufficient information about whether nanoparticles used in cosmetics penetrate the skin. Moreover, much of the research on the health effects of nanoparticles has been carried out by industry and not in the

## “Millions of children under the age of five die every year due to environment-related diseases”

open scientific literature. Noteworthy, potentially cancerogenic nanoparticles of titanium dioxide are already available in sunscreens intended for children.

This brings me to this issue's feature article on children and the environment. Millions of children under the age of five die every year due to environment-related diseases. Children suffering from poverty, conflict and malnutrition are particularly vulnerable. There is now a growing interest in developing countries for nanotechnology. Can this tiny science bring big solutions to the world's poor children? I hope small will be beautiful in both these respects and that the devil does not show up in the details.

/Dr. Fredrik Moberg, Editor

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## Children and the environment - a lethal combination?

**Sustainable development is much more than a vague responsibility for forthcoming generations. It's already this generation's ability to meet their needs that is jeopardised. More than three million children under the age of five die every year due to environment-related diseases. Children suffering from poverty, conflict and malnutrition are particularly vulnerable.**

Children are the greatest victims of environmental degradation. Nearly two million children die every year due to diarrhoeal diseases, and more than eighty percent of these cases are related to environmental conditions, such as contaminated water and inadequate sanitation.

Similarly, up to 90 percent of the one million children under the age of five who died of malaria in 1998 were attributed to environmental factors. Over 40% of the global burden of disease attributed to environmental factors falls on children

***"Up to 90 percent of the one million children under the age of five who died of malaria in 1998 were attributed to environmental factors"***

below five years of age, who account for only about 10% of the world's population (2).

### Curious and developing

Kids are not just little adults and are therefore much more vulnerable to environmental hazards. They are growing, consume more food, air and water than adults do in proportion to their weight, their immune, reproductive, digestive and central nervous systems are still developing and they spend their time



**Children breathe more air than adults and are more sensitive to air-borne pollutants. Photo: Children protest against traffic pollution by wearing gas masks, ©Angelo Doto/UNEP/Still Pictures.**

closer to the ground where most dust and chemicals accumulate (Box 1).

Children interact with the environment in a myriad of ways; some direct and others less obvious. Characteristics associated with children, such as their natural curiosity and lack of knowledge, are aggravating factors. Children can also be exposed to harmful environmental hazards before birth, for instance through maternal addiction to tobacco and other substances. Exposure to environmental risks at early stages of development can lead to irreversible damage.

Children's vulnerability to disturbance also means they are at greatest risk during natural catastrophes. The child death toll following the tsunami in Southeast Asia was a harsh reminder of how important a safe environment is. Children were unable to fight against the wave.

### Poor countries' kids most affected

In many poor countries malnutrition and diarrhoea form a vicious cycle. The organisms that cause diarrhoea harm the

walls of children's guts, which prevents them digesting and absorbing their food adequately, causing even greater malnutrition – and vulnerability to disease.

Moreover, millions of poor children work in agriculture, putting them at high risk of pesticide poisoning. Children in poor countries are also disproportionately vulnerable to global environmental problems, such as the impact of climate change, the depletion of the ozone layer and the loss of the planet's biological diversity.

### The case of organic pollutants

A major problem is that many of the toxic contaminants are persistent and spread via air, water and in animals, or in traded products such as food. For example, persistent organic pollutants as PCBs and dioxins are found in high levels in tissues of polar bears and indigenous people living far from sources of pollution. In this sense, pollutants ignore political and economic boundaries.

In Milan (Italy), for example, women's breast-milk was found to have fairly high levels of dioxin that most likely came from foods imported from countries where herbicides and pesticides still contain dioxin (4). In 1976, an accidental release of dioxin into the environment in northern Italy exposed the local population to the highest-ever recorded levels of dioxin. Even 26 years later, women's breast-milk in the area have dioxin levels twice those of women in Milan (4). It will take time to restore contaminated environments.

These compounds are known to cause cognitive and immunological deficiencies, growth retardation with delay of puberty, reduced birth weight and increased perinatal mortality (4). The last two should remind us that children are affected by their mothers' environment,

#### Box 1:

### Six reasons why children are more vulnerable to environmental hazards

1. They have a larger intake of food, air – and their contaminants – per kilo bodyweight than adults
2. ...are in a dynamic and sensitive state of growth, with cells multiplying and organ systems developing at a rapid rate
3. ...are curious, spend much time outdoors and often play close to the ground
4. ...have more time to develop environmentally-triggered diseases with long latency periods, such as cancer.
5. ...are weaker and less able to resist or escape from physical disturbances such as floods
6. ...have less knowledge to protect themselves

# 6



both when in the womb and when breastfeeding.

Many of these toxic persistent organic chemicals have been phased out in the west with conventions, but they continue to be used in herbicides and pesticides in much of the developing world. While some of them make their way back to us via imported foods, the bulk of these impacts remain in the poor countries of the South.

### Do kids care about the environment?

Ironically, while children have little power to choose their environment they often have a clear understanding of the environment and its values. A study of children in Brazil and in USA (1), for instance, found that children in both cases valued the environment, were aware of environmental degradation and did not approve of it, even when the latter was provided a living, such as logging in the Amazon.

Both anthropocentric and biocentric values were found and there were very few differences between the two groups of children. This suggests that children's

moral reasoning may extend to the biotic community, and that nature is not just a cultural convention but part of the reality that bounds children's cognition.

Not only are they more likely to have moral views of the way the environment is treated, children are also more open to information and learning about the environment. This is why there is so much effort put into education of our children and environmental awareness. If unused, however, this knowledge – like any other – will disappear. If we as parents, teachers and (willing and unwilling) role-models are not willing to practice the lessons taught to our children we have

**"Children are more open to information and learning about the environment"**

little hope of moving towards sustainable development.

### Learn from kids

It is we, as adults and society, who choose their environment. We can do this by selecting a good environment and/or by taking care of the environment.

One of the key issues addressed at the 2002 World Summit for Sustainable Development in Johannesburg was the links between health, environment and poverty, and many did acknowledge the special vulnerabilities of children. A number of initiatives were launched to improve children's environmental health, for example the WHO-led Healthy Environments for Children Alliance.

If we are going to care for our future generations then we need to actively improve their environments – at school, at home, at play and on the way to these ac-

tivities. Given their susceptibility to many of the pollutants in the environment, we cannot afford to shun their presence by hiding behind the view that "it is beyond me". It is not – it is all around you. Public

**"Awareness on children's special vulnerability to environmental health risks is still low"**

awareness on children's special vulnerability to environmental health risks is, however, still low.

Join your children on their adventures on land or at sea, learn from their own insights and knowledge of the environment and think about how you can cut down your own impacts on the environment. It will make watching them grow up all the better.

**/Miriam Huitric  
Fredrik Moberg**

### Sources:

(1) Howe DC and others. 1996. Along the Rio Negro: Brazilian Children's Environmental Views and Values. *Developmental Psychology* 32 (6): 979-987.

(2) WHO: Children's Environmental Health. <http://www.who.int/ceh/en/>

(3) WHO: The environment and health for children and their mothers. Fact sheet No. 284. February 2005.

<http://www.who.int/mediacentre/factsheets/fs284/en/index.html>

(4) R. Zetterström, 2003: Industrial and agricultural pollution: a threat to the health of children living in the Arctic region. *Acta Paediatrica* 92: 1238-1240.

## Sustainability School: Bio-piracy

**Bio-piracy** (or bio-colonialism) refers to the hijacking of natural products by "bio-prospectors" without recompensing the country of origin, or when invalid patents are granted. The term "biopiracy" was launched in 1993 by the NGO RAFI (today ETC - Action Group on Erosion, Technology and Concentration).

Prospectors looking for natural compounds that can be used in biotechnology are often helped by indigenous peoples with knowledge of for example the medicinal effects of plants. Many prospectors have come to the biodiversity-rich developing countries in the tropics, exported organisms, identified active compounds, patented them and sold them for large profits - without recompensing the indigenous peoples or the country of origin.

### Theft of intellectual property rights

This "theft of intellectual property rights" is of course an ethical issue, but also an economic one, as these peoples and countries could have benefited greatly from the income generated by their knowledge and natural resources. Measures proposed to prevent bio-piracy have been requested by indigenous peoples or countries,

while many call for the banning of the patenting of life.

The patenting of life-forms and living processes is covered under Article 27.3(b) of the TRIPS-agreement (trade-related aspects of intellectual property rights), under the WTO.

TRIPS has, however, been heavily criticised for not protecting against biopiracy and looking more into protecting industrial, technical innovations produced by individuals or companies, rather than traditional knowledge.

**/Miriam Huitric**

### More at:

<http://www.vshiva.net/archives.htm#biopiracy>  
<http://www.wto.org>

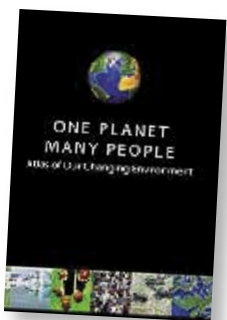


**Drugs derived from the rosy periwinkle are used to treat childhood leukaemia and bring in revenues of US\$160 million per year. The country of origin, Madagascar, has received nothing in return.**



Two of the satellite images from *One Planet Many People: Atlas of our Changing Environment* clearly show how protecting an area can stop deforestation. Iguazú National Park, located in Argentina near Brazil and Paraguay, contains remnants of highly endangered rain forest.

**The rapid rise of shrimp farming in Asia and Latin America, the deforestation in South America and the enormous growth of cities like Delhi, Beijing and Mexico City can now be seen from space. This is made apparent in a new collection of satellite images from the United Nations Environment Programme (UNEP).**



The new collection of satellite images in *One Planet Many People: Atlas of our Changing Environment* reveals how the environment has changed dramatically in recent decades. It compares and contrasts satellite images of the past few decades with contemporary ones. We already knew that rain forest deforestation in Paraguay and Brazil was visible from space, but now we have a new list of illustrative pictures, probably worth much more

than thousand words, showing the impact man has had on the planet's life-supporting ecosystems.

The atlas, released to mark World Environment Day, was produced by UNEP in collaboration with other agencies such as the US Geological Survey and the US space agency (Nasa). World Environment Day was established by the United Nations General Assembly in 1972 to mark the opening of the Stockholm Conference on the Human Environment. It is celebrated each year on 5 June. This year's World Environment Day was hosted by San Francisco and focussed on ways to make cities more environmentally friendly and resource-efficient.

#### Growing cities in developing countries

– Cities pull in huge amounts of resources including water, food, timber, metals and people. They export large amounts of wastes including household and industrial wastes, wastewater and the gases linked with global warming. So the battle for sustainable development, for delivering a more environmentally stable, just and healthier world, is going to be largely won and lost in our cities, said Klaus Toepfer, UNEP's Executive Director.

The dramatic growth of Nairobi, Kenya, is one example shown in the new atlas. The city's sprawl is

clearly depicted when comparing satellite images from 1979 and the present. Nairobi's population at independence in 1963 was 350,000 and is now home to well over three million making it the largest African city between Johannesburg and Cairo.

The growth of development along the edge of Nairobi National Park and out to Jomo Kenyatta International Airport is also underlined.

Not surprisingly, the satellite images also underline the tremendous growth of Beijing, China's capital city, and Delhi, India's capital. Beijing has mushroomed from a small central area to one that has turned towns some distance away, such as Ginghe and Fengtai, into suburbs. This expansion has also eaten up the deciduous forests to the west and the rice, winter wheat and vegetable plots that once surrounded the city.

Similarly, a huge expansion is seen for Delhi, that had a population of 4.4 million or 3.3 per cent of India's urban population in 1975. By 2000, the city had well over 12 million inhabitants. By 2010, it is set to rise to nearly 21 million.

#### A conspicuous impact?

Researchers hope that *One Planet Many People Atlas of Our Changing Environment* will have a conspicuous impact on governments, private business, non-governmental organisations and the private individual by highlighting how globalisation is driving local and regional change.

/Fredrik Moberg

#### More at:

<http://www.na.unep.net/OnePlanetManyPeople/>



These two images illustrate the increase in coverage by shrimp farms in the Gulf of Fonseca, Honduras, between 1987 and 1999.

**Within three years he transformed his city from a congested and dangerous mess, where the poor did not have access to transportation, into a leading model for sustainable urban design. Enrique Peñalosa, former mayor of Bogotá, was one of the most appreciated speakers at the *Life in the Urban Landscape Conference* in Gothenburg, May 29th – June 1st 2005.**

It might be rare to have an active idealist with a concrete vision as city mayor. But that is what Bogotá (Columbia) seems to have opted for with Enrique Peñalosa, who was the mayor there from 1998 – 2001. His vision? To develop a city based on social justice, environmental sustainability and economic growth. This raises the question: whom are our cities built for? It seems that we build cities for cars, which are used by the wealthier minority. They also have access to nature and culture, while the poor rarely do. With this city structure, we diminish the environmental and social quality of public spaces, which are the majority's space for leisure.

### A political choice – not a technological one

Peñalosa used his term to begin a transformation in Bogotá including: reducing car travel, developing bus infrastructure, building and restoring parks, establishing pedestrian streets and building sidewalks. He has pointed out that urban transportation is a political choice, not a technological one.

During his administration the City of Bogotá developed a highly efficient mass transportation system which cost is 1/10 of a metro system. He also developed high quality pedestrian public space and a 300-kilometer long bicycle network. Moreover, 52 new schools were built in the poorest



**Enrique Peñalosa, former mayor of Bogotá, wanted to develop a city based on social justice, environmental sustainability and economic growth.**

neighborhoods of Bogotá as well as nurseries. Three major libraries were built creating a network with 11 new small ones, and 1,000 parks were built or rebuilt.

His long-term goal is that the money now spent on maintaining infrastructure for a wealthy minority be used for the needs of the poor. Equally encouraging is that for this model to work, a high population density is desirable.

Enrique Peñalosa was one of more than 400 urban professionals, policy makers and researchers from all continents that met at the *Life in the Urban Landscape Conference* in Gothenburg, May 29th – June 1st 2005.

**/Fredrik Moberg and Miriam Huitric**

### For more information:

<http://www.urbanlife2005.com>

Project for Public Spaces: <http://www.pps.org/>

In Spanish: <http://www.porelpaisquequeremos.com/>

## Planting trees for peace, the environment and democracy

**Last month, Wangari Maathai came to Stockholm to discuss her view on peace with representatives from NGOs, the government and academia. With her infatuating enthusiasm, she walked us through the challenges she has confronted and gone on to solve with enticingly simple solutions.**



*When asked: "What should we do?"  
She replies: "Plant trees!"*

– Planting trees is simple, attainable and guarantees quick, successful results within a reasonable amount time, says Wangari Maathai. The over 30 million planted trees provide fuel, food, shelter, income, habitat for wildlife and improved soils and watersheds. While a simple solution, behind these trees are thirty years of work with peace, the environment and democracy – the three pillars that

Maathai has identified as necessary for a healthy society.

The message from the Nobel Committee's decision was: we should not have to wait for a conflict in order to address the issues for peace. Many of the conflicts in the world today stem from unsustainable management of natural resources, indeed Maathai reminded us that:

*"We live in a very rich continent [Africa]...  
...but we do not manage our resources efficiently."*

To avoid conflict, resources need to be managed efficiently, distributed equitably and accountability for those using and controlling the use of resources. In other words, a democratic

space where all groups' rights are respected and they have equal standing. Sadly, this is not always the case.

### "...the North in the South..."

This refers to the minority in developing countries that lives as at the same level as people in the north. They are informed, educated, wealthy and powerful, while the majority are poor. This is even true at the global scale where a minority is having a greater environmental impact and has power over the majority. These minorities usually forget about, marginalize or, at best, do things *for* this majority rather than *with* them. But, empowerment is only possible if you do things with people, which is why aid often fails to solve problems.

When asked if warning signs exist for when there are problems with the three pillars, Maathai pointed out that there have been many warnings. In Kenya land-use change has led to the loss of ecosystem services and the creation of ecosystem dis-services, such as loss of erosion control and the increase in dry land cover from 30 to 80%, with direct social and economic repercussions. The challenge for Maathai has been to teach people to *see* these changes and understand their part in them.

She has gone on to help empower them to take action. This has required commitment, persistence, patience, time and political will from all involved. It is hard to comprehend that these initiatives have led to imprisonment and torture; a reminder that the solution is not always as easy as it seems, though it should be. *This* is where we all need to put our efforts.

**/ Miriam Huitric**

### More at:

<http://www.greenbeltmovement.org>

Listen to Maathai's lecture in the *Stockholm Seminars*:

<mms://wmedia.it.su.se/lecture.wmv>

**At least 50,000 tonnes of obsolete pesticides, as well as tens of thousands of tonnes of contaminated soil, have accumulated in African countries. These pesticides pose serious threats to the health of both rural and urban populations, especially the poorest of the poor, and contribute to land and water degradation.**

The Africa Stockpiles Programme aims to clean up and safely dispose of all obsolete pesticide stocks from Africa and establish preventive measures to avoid future accumulation. It is a strategic partnership with several international agencies including FAO, WHO, UNEP and the Basel Convention Secretariat. The Swedish International Development Cooperation Agency (Sida) has become a partner and will make a commitment of US\$3 million. This was declared at the First Meeting of the Conference of the Parties of the Stockholm Convention on Persistent Organic Pollutants (POPs) in Punta del Este.

#### Weak import control

There are several reasons for the chemical stocking up: many countries suffer from weak import controls, people lack training on appropriate pesticide use, inappropriate donations and aggressive sales practices, poor storage and stock management, pressure to stockpile for unforeseen emergencies, and a lack of safe destruction technologies.



**A representative from the UK Pesticide Action Network is investigating pesticides stored in Ethiopia. Photo: PAN UK**

Less responsible companies may export hazardous chemicals, a subject highlighted after the tsunami catastrophe, as it stirred up buried waste (SDU 1/2005).

Another global action regarding chemicals is the UNEP Strategic Approach to International Chemicals Management decided on in Johannesburg 2002. Many developing countries are eager to get this strategy; they see it as a tool for increasing control of chemical trade and use. It will be adopted at the "International Conference on Chemicals Management" (ICCM) scheduled for Dubai, United Arab Emirates, from 4 to 6 February 2006.

**/Louise Hård af Segerstad**

#### More at:

<http://www.africastockpiles.org>  
<http://www.chem.unep.ch/saicm/>

## 'Magic' mushroom to fight malaria

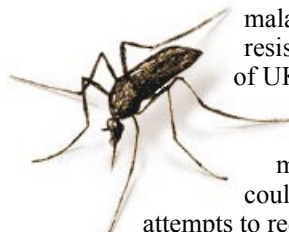
**It sounds magic. It is said to be cheap** (as little as 20 US cents to treat a house), environmentally friendly and the malaria mosquitoes have not yet developed resistance against them. This refers to a group of UK researchers who have found that an oil-based fungal treatment could lead to an 80-fold reduction in the number of mosquitoes able to transmit malaria. This could become an alternative to the many other attempts to reduce the spread of the fearful disease: the spraying of insecticides such as DDT, distributing bednets, and possibly releasing genetically modified mosquitoes that cannot carry the disease. The fungal spray might replace or supplement chemical insecticides, particularly in areas of high insecticide resistance, say the researchers behind the study.

Any drawbacks? Fungal treatments might not last as long as the chemical treatments, so finding out how long the fungal treatments will last is key for its future applicability.

Malaria kills more than one million people every year, and finding new ways to stop it would reduce much suffering. It is, however, also important to tackle the underlying causes for malaria's spread, including poverty, hunger, lack of sanitation and public health access, land-use changes, biodiversity and climate change.

#### Source:

Blanford S., and others. 2005. *Science*, 308. 1638 - 1641.



## Biodiversity our future life insurance

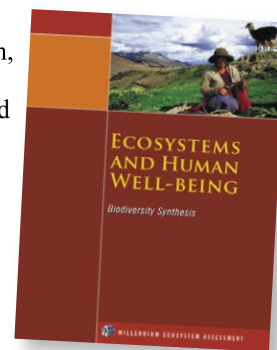
**"Biodiversity is life insurance** for our changing world," said Hamdallah Zedan, Executive Secretary to the Convention on Biological Diversity when the second Millennium Ecosystem Assessment report, was launched. It is called *Biodiversity and Human Well-being: A Synthesis Report for the Convention on Biological Diversity* and shows how human actions have the last 50 years changed the diversity of life on the planet more than at any other time in history.

Many people have been lifted out of poverty during the same period, but at the price of a loss of biodiversity. If we continue down this road, we will reduce biological diversity and put the well-being of future generations at risk, says the new report.

Biodiversity provides the materials we need for food, clothing and shelter, and gives us security, health and freedom of choice.

"Loss of biodiversity is a major barrier to achieving development goals, and poses increasing risks for future generations," said Walter Reid, Director of the Millennium Assessment. "Management tools, policies and technologies do exist to dramatically slow this loss."

<http://www.maweb.org/>



The Sustainable Development Update focuses on the links between ecology, society and the economy. It is produced by Albaeco, an independent non-profit organisation, in cooperation with the Center for Transdisciplinary Environmental Research (CTM) and the Department of Systems Ecology, both at Stockholm University; the Beijer International Institute of Ecological Economics; the Resilience Alliance; and the Stockholm Environment Institute (SEI). It is produced with support from Sida, the Swedish International Development Cooperation Agency, Environment Policy Division. **Feedback:**

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