Sustainable Development Update

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

www.albaeco.com/sdu/ Issue 3, 2008

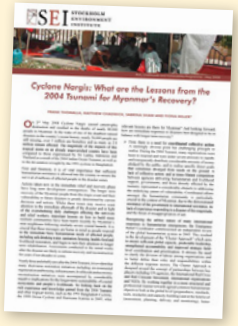
"The new report highlights our inability to value the world we are leaving to future generations...

Page 4>>

Complex soup of factors behind the growing food-price crisis

Rising demand, EU and US drive for biofuels, new diets, soaring oil prices and the negative effects of climate change are all in the complex soup of explanations behind the recent development putting food beyond the reach of the planet's poor.

Feature article, pages 3-4>>



Myanmar post-cyclone recovery should learn from the 2004 Tsunami, says new report.

Page 5>>

Scientists identify planetary boundaries: "Global leaders have to realize that we cannot negotiate with nature"

A number of leading scientists and global leaders recently presented the first results from a new research project to identify planetary boundaries, which humanity have to stay within to avoid catastrophic tipping points and avoid devastating climate change.

Leading scientists recently gathered in the Swedish village Tällberg to identify boundaries that will keep us safe from adverse and abrupt changes in climate and ecosystems.

Twenty world-leading scientists recently gathered in a small village in northern Sweden called Tällberg. The reason was the Tällberg Forum and a workshop taking place between 24-25 June to begin identifying the boundaries that will keep us safe from adverse and abrupt changes in climate and ecosystems. Keeping within these boundaries will act as a safety barrier for sustainable human development, according to the group of scientists. They also warn that we now rush towards boundaries that, if we cross them, will lead to irreversible disasters. This will imply sea level increases of several meters, a collapse of agricultural systems in dry regions, a total loss of coral reefs and fishing resources, and the dry up of the Amazon rainforest, they say.

– Global leaders have to realize that we cannot negotiate with nature. We need to revise our own societal systems, says Johan Rockström, head of Stockholm Environment Institute and Stockholm Resilience Centre at Stockholm University.

Ten possible boundaries discussed

Earlier the same week, some of these scientists together with politicians, business executives and many others signed an advertisement in leading international papers, such as the New York Times and International Herald Tribune, highlighting one important boundary: 350 parts per million (ppm) of carbon dioxide in the atmosphere. The group of scientists, discussed a list of ten possible Planetary Boundaries in Tällberg, including freshwater consumption, biodiversity, stratospheric ozone depletion and ocean acidification.

– Our work here at Tällberg Forum links to other efforts, specifically the Copenhagen process in 2009. At Tällberg, we will use these boundaries as input when we prototype a model for an optimal Copenhagen treaty, says Bo Ekman, founder of Tällberg Forum.

/Fredrik Moberg

More at:
http://www.stockholmresilience.org/newsandmedia/generalnews/scientistsidentifykeynaturalboundaries.5.39aa239f11a8dd8de6b80006722.html

"350 ppm is the safe upper limit for CO_2 in our atmosphere"

Page 5>>

THE QUOTE:

"The loss of biodiversity is an environmental crisis with profound economic and human dimensions. Nature's assets underpin the very lives and livelihoods of more than 6 billion people... A failure to act will imperil the Millennium Development Goals and ultimately impact all countries across the world."

UN Secretary-General Ban Ki-moon's message to the Ninth Conference of the Parties to the Convention on Biological Diversity in Bonn, Germany, 28 May 2008.

SDU contents, Issue 3, 2008:

editorial

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Talking about the weather and two very different types of climate sceptics

It is summer time here in Sweden and everybody talks about the weather as we tend to do in this country where the winters are exceptionally long, cold and dark. The weather is, however, changing as the UN Intergovernmental Panel on Climate Change (IPCC) concluded last year in their fourth large synthesis report. Climate change is "unequivocal and at least 90% likely to be driven mainly by human activities", they write. In research agencies, national science academies, governments and among the general public, more and more people are believing the evidence for climate change than are believing the sceptics. Just when I thought the sceptics had been driven to extinction a number of leading business representatives in Sweden showed to be part of this endangered species. It all started with a debate article in one of Sweden's largest business magazines where one retiring CEO wrote that "Carbon dioxide is the gas of life, essential to all life on Earth. Can the climate really be threatened by life's own gas?"

"Just when I thought the sceptics had been driven to extinction a number of leading business representatives in Sweden showed to be part of this endangered species"

This could have been an isolated viewpoint, but as I told you we Swedes love to talk about the weather… all of a sudden a number of other Swedish business profiles gave him support. Meanwhile, another type of 'climate sceptics' are evolving and now challenge the view of the IPCC-reports. They have convincing scientific evidence indicating that climate change is happening much faster than the worst predictions of the IPCC. To claim that climate change is a conspiracy driven by some environmental geeks and politicians to be able to levy higher taxes is in this context so embarrassing that I want to change my citizenship.

On the other hand there are also many positive things happening in Sweden. For example in a small village in northern Sweden called Tällberg, where leaders from science, business and politics meet during the Tällberg Forum every summer. Before this year's forum Tällberg Foundation, the Stockholm Environment Institute and a group of 150 scientists, politicians, business executives and environmental advocates took out full-page ads in New York Times, Financial Times and International Herald Tribune. The group claim that the concentration of the main greenhouse gas, carbon dioxide, should be cut to below 350 parts per million (ppm) in the atmosphere to avoid runaway climate change. Well below current levels of 385 ppm! Until recently, scientific consensus set the safe zone at 450 ppm, but the latest science tells us that catastrophic effects are likely if levels above 350 ppm are maintained for a long time.

On top of all this we are heading toward a number of other "planetary boundaries", according to an interdisciplinary team of 20 world-leading scientists that met in Tällberg in order to try defining ten safe boundaries for everything from biodiversity and fisheries to freshwater and ozone. I don't know what the retiring Swedish CEO says about all this. Perhaps that the scientists are exaggerating and that this is yet another conspiracy of the doomsday sayers that want to plunge us back to the stone age… I'd say it is the opposite. If we understand where the planet's boundaries are and how to live within them we can maintain future options for human well-being! We might already have passed some of these boundaries, but we do have the technology and knowledge to go back. The big question is: do we have the political will?

Hope you enjoy the weather (and the talk about it) where ever you are in the world!

/Fredrik Moberg, Editor

Sustainability School:

"Carbonate saturation": increasing atmospheric carbon dioxide plunges world's coral reefs into "acid" crisis

Time to learn a new term: 'carbonate saturation'. The carbonate saturation in the oceans is decreasing because more CO_2 in the atmosphere elevates levels of carbonic acid in seawater. Eventually this can lead to erosion of coral reefs putting the livelihood and food security of many of the world's poorest people at risk.

Around half the carbon dioxide humanity has emitted over the past 200 years have been absorbed by the oceans. Without this long-term carbon storage the greenhouse gas concentration in the atmosphere would be much higher, and the planet much warmer. However, absorbing the CO_2 also causes changes in ocean chemistry by decreasing the pH of the surface water. Compared to pre-industrial times, average ocean pH has already decreased by 0.1 units, by 2100 it could fall by a further 0.5 according to the Intergovernmental Panel on Climate Change (the pH scale is logarithmic – one unit reflects a change of a factor of 10).

Millions of livelihoods at risk

Unfortunately, increased acidity reduces the amount of available carbonate ions, an essential building block used for shell and skeleton formation in organisms such as shellfish, plankton and corals. This will seriously change ocean ecology and potentially leading to drastic reductions in fish stocks. If the pH of the oceans decreases too much, this could even lead to corrosive chemical conditions for many marine organisms – in effect dissolving the calcium carbonate (limestone) in their shells and skeletons. Research indicates that parts of the Southern Ocean could reach this state within 50 years.

This is very bad news for coral reefs as they are made up of thin layers of calcium carbonate slowly secreted by billions

of coral polyps. If emissions of carbon dioxide continue to grow, coral reefs could be gone by 2050, researchers say. Reefs are home to twenty-five percent of identified marine species, including 700 species of coral species and more than a quarter of all known marine fish species.

Moreover, millions of livelihoods which depend upon reef ecosystem services are also at risk. Threatened food supply, lost coastal protection and diminished biodiversity are some of the implications if these changes in ocean chemistry continue. World leaders must act now to save these vital ecosystems from the combined pressure from global warming and acidification projected for later this century.

/Fredrik Moberg

More at
www.yaleclimatemediaforum.org/features/0608_ocean_acidification.htm

Orr, JC. and others. 2005. "Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms". *Nature* 437: 681-686.

Food price crisis: more complex than first thought and putting food beyond the reach of the planet's poor

Food prices are skyrocketing. Initially, many put the blame on the rising demand of biofuels in the transport sector, but bio-ethanol is far from the only thing driving up food prices. New diets, soaring oil prices and climate change are all in the complex soup of explanations behind the recent development putting food beyond the reach of the planet's poor.

The price of rice (staple food of 3bn people) has risen by as much as 70% during the past year. On the picture rice from Vietnam is unloaded in Manila the capital of the Philippines. Photo: Raymond Panaligan/IRRI/azote.se.

More than 800 million people are still undernourished in the world today. The Haitian riots over soaring food prices in April this year were a startling reminder of the inequalities between developed and developing countries – with the latter feeling the impact of the growing global food crisis in ways that go beyond the imagination of most people living in developed countries.

"It's not a good time to be burning what can otherwise be eaten. But there is no good reason to say that biofuels are the one and only problem"

The price of wheat has doubled in less than a year and prices for milk and meat have more than doubled in some countries. International nominal prices of all major food commodities are at the highest levels in nearly 50 years. While this crisis is real – so much so that the UN's Food and Agriculture Organisation (FAO) recently held a High-Level Conference on World Food Security: the Challenges of Climate Change and Bioenergy – its causes are not so clear.

The price of wheat has doubled in less than a year. Photo: Wen-Yan King/ medapt.org/azote.se

Initially, many put the blame on bio-ethanol and claimed that food prices were surging because we have chosen to feed our cars instead of feeding human beings (see SDU Issue 4/2007). Lately, however, the discussions have broadened to also include a whole set of other explanations.

A recent post on the ecogeek weblog was right to the point: "All-in-all, it's not a good time to be burning what can otherwise be eaten. But there is no good reason to say that biofuels are the one and only problem. SUV's are certainly limiting the future of the world, but not by burning hungry people's food."

Even more recently, however, the British daily "The Guardian" claimed to have obtained a confidential World Bank report that claims that biofuels are the main cause and have forced global food prices up by 75% – far more than previously estimated (at the other extreme, the US Government says it is less than 3%).

Key causes of the soaring food prices

Until recently global production of food matched demand. In fact, for a rather long period of time there has been an excess of production in many parts of the world. These surpluses have often been "dumped" at low prices in developing countries with disastrous impacts on national farmers who could not compete with the low prices offered. This was until recently. Demand now seems to have passed the tipping point where it exceeds production, according to several experts.

Another key aspect to consider when trying to understand the food price crisis is drought, which is predicted to increase in frequency and severity as the climate changes. In 2007, prices soared to a large extent due to failed crops in the drought stricken fields of Australia's food bowl that are central to the worldwide price of grains.

"The problems of reduced production is further exacerbated by the increased global demand for meat and dairy products"

The problems of reduced production is further exacerbated by the increased global demand for meat and dairy products. This is because the production of meat requires large areas both for the animals themselves but also to produce their inputs: feed (soya, cereals, oils), grasslands, and the water that goes into all of these. Producing 1 kg of beef uses 8 kg of grain, and for every kilogram of grain produced, 1000 kg of water is required. While occurring globally, increased demand in China and India are particularly significant due to the sizes of their populations but also steadily increasing per capita meat consumption. In China it has grown from 20 kg a year in 1980 to today's 50 kg. It is, however, important to note that the per capita consumption of meat still lies well below that of the North, and a large portion of the global population rather need to increase meat

Six major factors behind the soaring food prices

Soaring fossil-fuel prices (needed to produce fertilizers, pesticides and for transportation)

Emerging economies and Westernisation of diets (rich people eat more and buy more meat and milk that increase demand for grains to feed livestock)

Population growth (food demand growing faster than supply)

Climate change (drought, more frequent flooding etc already beginning to have significant impact on agricultural production)

Use of crops for fuel (shifting production from food to biofuels)

Market speculation (investors from traditional markets now focus on financial products tied to agriculture commodities as food prices increase)

6

consumption in order to improve their diets. The goal should not, however, be a western consumption of meat!

Yet another factor is the current increases in oil prices, which have increased the production cost of agricultural produce as many of the inputs – e.g. industrially produced fertilisers – are fossil fuel-dependent. Fertiliser prices are also predicted to increase in the future due to a shortage of phosphorous (see SDU 2/2007).

Winners and losers

High food prices tend to hit poor urban people the most, while it benefits farmers in US, Brazil, Argentina, Canada and Australia, who now get more paid for their harvests than ever. Many also hope that the rural poor who earn their living by growing and selling food can take advantage of the raised prices. Others hold that this will not be the case as the poorest farmers tend to be net buyers, rather than net sellers, due to small landholdings with low productivity. In addition, the cost of production, particularly for fertilisers that require large amounts of energy, has accelerated much more than gains in food prices.

What can be done about it?

Without direct and effective action, the world's poor and hungry face great suffering due to the soaring global food prices. FAO's director-general Jacques Diouf recently claimed that $30 billion a year is needed to relaunch agriculture in the developing world and avert future food conflicts. Moreover, a growing number of countries are subsidising the price of food, and the World Bank has called for targeted subsidies to help the poor. The UN World Food Programme says it needs another $500 million to make up the gap in emergency food aid and many international aid agencies have called for more money to support food production. World farm production will need to rise by 50 per cent by 2030 to meet growing demand, according to the UN.

Removing misguided agricultural subsidies, mitigating and adapting to climate change, shifting the diets of the emerging middle class in India and China and reducing oil and fertiliser prices (or replacing them with organic methods) are no easy tasks. Even though many observers now do their best to find one single cause, there seems to be no easy solution to the food crisis. There are apparently a number of limitations of thinking along simple cause and effect lines in this case.

Another key aspect to bear in mind is that the world now needs more food at the same time as the environmental impacts of agriculture needs to be diminished. Several recent studies have also shown that it is possible to increase harvests in sustainable ways, through farming based more on biological diversity and ecosystem services than fossil fuels (see SDU6/2007).

Any progress achieved in reducing hunger and poverty is unlikely to be sustained if it comes at the expense of the ecosystem services on which both agriculture and humanity relies.

/Fredrik Moberg & Miriam Huitric

More at:
www.fao.org/worldfoodsituation/isfp/en/

Declaration on World Food Security:
www.fao.org/fileadmin/user_upload/foodclimate/HLCdocs/declaration-E.pdf

http://www.guardian.co.uk/environment/2008/jul/03/biofuels

The first major report on the economic impacts of biodiversity loss: "Loss of biodiversity threatens livelihoods of world's poorest"

The first major report on the economic impacts of biodiversity loss has been released. It is similar to the Stern Review, which revolutionized the way people look at the economics of climate change. The report entitled "The Economics of Ecosystems and Biodiversity" makes a comprehensive and compelling economic case for conservation of ecosystems and biodiversity.

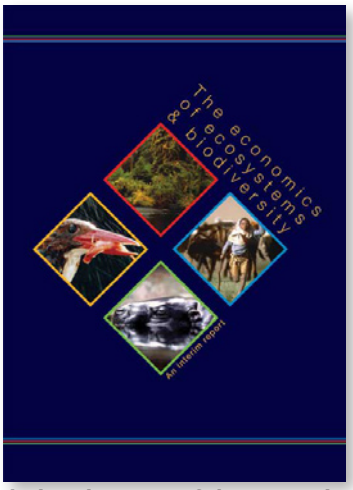
– We are trying to navigate uncharted and turbulent waters with an old and defective economic compass and this is affecting our ability to forge a sustainable economy in harmony with nature, says economist Pavan Sukhdev of Deutsche Bank. He is the author of the new study that was recently presented in Bonn at the 9th Conference of the Parties of the Convention on Biodiversity.

Nature provides human society with a vast majority of so-called ecosystem services, benefits such as: food, fibers, medicines, clean water, healthy soils, mitigation of climate change, and protection from floods. These services are, however, predominantly public goods with no markets and prices, and therefore not detected by our current economic compass. As a result of human pressure, such as population growth, changing diets, urbanization and also climate change, biodiversity is in decline, meaning that our ecosystems are constantly being degraded and, in the end, it is we humans who are suffering the consequences.

Loss of forest biodiversity costs €28 billion yearly

The new report shows that in the first years between 2000 to 2050, due to the loss in biodiversity, the estimated forest ecosystem services that are lost are worth over €28 billion each year. If we include the future loss of service flow from forests it is calculated that we will lose a value between €1.35 and € 3.1 trillion every year.

– The loss of biodiversity is as threatening as climate change and needs to be addressed comprehensively. The new report shows how biodiversity loss has a disproportionate effect on the poor. It also highlights our inability to value the world we are leaving to future generations, says Stavros Dimas, European Commissioner for the Environment.



The interim report of The Economics of Ecosystems and Biodiversity (TEEB). A study inspired by the Stern Review and proposed by the German Government.

The Next Steps

The new report is, however, not only doom and gloom. It also presents a number of promising policies being tried out in some countries, including payments for Ecosystem Services in Costa Rica, so-called habitat banking (for example mitigation banking, where it's possible to buy and sell habitats in order to preserve wildlife) in USA and revenue sharing for protected areas in Uganda. More work will be carried out in Phase II of the study with the goal to be able to examine in greater detail how we can improve our economic models and policies to secure the flow of ecosystem services.

/Alexander Ingvar

More at:
http://ec.europa.eu/environment/nature/biodiversity/economics/index_en.htm

Myanmar cyclone: the lessons from recent disasters must not be forgotten

Lessons learned from the 2004 Tsunami recovery should benefit post-cyclone Nargis recovery, say researchers in a new report.

Cyclone Nargis caused catastrophic destruction and resulted in the deaths of nearly 100,000 people in Myanmar earlier this year. Nearly 60,000 people are still missing, over 1 million are homeless and as many as 2.4 million remain affected.

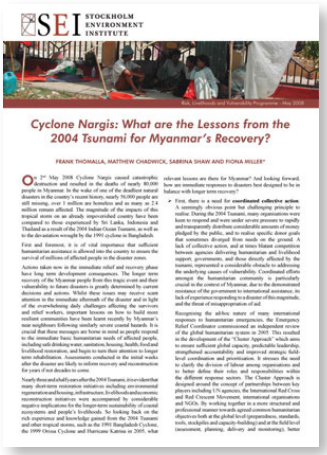
The longer term recovery of the Myanmar people from this tragic event and their vulnerability to future disasters is examined in a new working paper from the Stockholm Environment Institute (SEI). The paper entitled "Cyclone Nargis: What are the Lessons from the 2004 Tsunami for Myanmar's Recovery?" has been compiled by SEI-researchers Frank Thomalla and Matthew Chadwick, Sabrina Shaw of IISD and Fiona Miller of the University of Melbourne.

– We argue that important lessons on how to build more resilient coastal communities have been learnt by other countries recently affected by coastal hazards, says Frank Thomalla, with special reference to another recently published SEI-report "Vulnerability in the context of post 2004 Indian Ocean Tsunami recovery: Lessons for building more resilient coastal communities".

– In our view, it is crucial that these messages are borne in mind as people in Myanmar begin to turn their attention to longer term rehabilitation and resilience-building, he says.

Specific lessons to be learned

After the 2004 Tsunami, it is evident that many short-term restoration initiatives including environmental regeneration, infrastructure, livelihoods and economic reconstruction initiatives have had considerable negative implications for the longer-term sustainability of coastal ecosystems and people's livelihoods. Looking back on the experience gained from the 2004 Tsunami and other recent tropical storms, the new report sees a need for Myanmar to:


SEI STOCKHOLM ENVIRONMENT INSTITUTE

Cyclone Nargis: What are the Lessons from the 2004 Tsunami for Myanmar's Recovery?

1) Improve collective action between different actors engaged in the relief and recovery process;

2) Develop approaches that balance short-term humanitarian relief with medium and long-term sustainability considerations;

3) Re-examine the role of coastal buffer zones (e.g. mangroves);

4) Improve the self-help capacities of those affected through the establishment of simple and easily accessible micro-credit schemes;

5) Undertake vulnerability assessments to inform and direct future reconstruction efforts in a fair, transparent and impartial manner.

/Sturle Hauge Simonsen

More at:
http://www.sei.se/pubs/Nargis_20080527d.pdf

http://www.sei.se/pubs/Tsunami_vulnerability_LarsenThomalla_20080318b.pdf

"Environmental degradation and resource depletion can lead to cooperation"

Many experts and commentators assume that environmental degradation and resource depletion will lead to conflict, however, environmental problems can also lead to cooperation reminds World Resources Institute on their portal 'Earthtrends'. Here they review some recent research in the area of using environmental negotiations toward peace. Two examples mentioned are: (1) that the Israeli and Jordanian governments are promoting joint water projects as a way of cementing peace between their people; and (2) the signing by Ecuador and Peru of a treaty creating a jointly managed Transboundary Protected Area or "peace park" in an area in dispute for decades.

However, Earthtrends also admit that many hurdles to environmental peacemaking remain. Ecological resources have often "factored into national conflicts – either through competition for scarce resources or greed to exploit plentiful ones", they write. Nonetheless, environmental negotiations toward peace seem to hold promise for conflict resolution in a future world even more strapped for resources: "Resources managed jointly can quell regional hostilities, or better, keep lines of communication open so that a conflict never starts".

http://earthtrends.wri.org/updates/node/312

SDU-numbers

350 ...is a number you should remember for the rest of your life! This was the message in a full-page advertisement published in the Financial Times, the International Herald Tribune, the New York Times and two Swedish dailies, on June 23. In it a group of 150 scientists, politicians, business leaders and others claim that the concentration of the main greenhouse gas, carbon dioxide, should be cut to below 350 parts per million (ppm) in the atmosphere to avoid runaway climate change. Well below current levels of 385 ppm!

The ads were backed by the Stockholm Environment Institute and the Swedish Tällberg Foundation – and directed towards nations involved in the negotiations leading up to and beyond the Copenhagen Climate Change Conference next year. Signatories included leading environmental scientists (e.g. James Hansen, Robert Corell and James Lovelock), the EU's Environment Agency, ex-Swedish Prime Minister Göran Persson and Jose Maria Figueres, former President of Costa Rica.

Several earlier proposals for an upper limit for carbon dioxide have suggested 450 ppm. However, now there is growing evidence that 350 ppm should be our target instead, but this has not yet been reflected in the negotiations, say the group of advocates.

http://www.350.org

Sida

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 Stockholm Resilience Centre 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:** We welcome comments, questions, and article ideas. **Editor:** Fredrik Moberg, fredrik@albaeco.com **Want to subscribe?** Go to: www.albaeco.com/subscribe **Want to read the newsletter at our website with clickable links?** www.albaeco.com/sdu **Thanks to** the following individuals for their thoughtful comments and/or assistance: Lisa Deutsch, Eric Langenskiöld. **Contributors:** Miriam Huitric and Alexander Ingvar, Albaeco; Sturle Hauge Simonsen, Stockholm Resilience Centre.