eye on earth

SUMMIT

ABU DHABI 12 – 15 DECEMBER 2011

REPORTED BY

SciDev Net

SciDev.Net

SciDev.Net – the Science and Development Network – is a not-for-profit organisation dedicated to providing reliable and authoritative information about science and technology for the developing world.

Through our free website (www.scidev.net) we give policymakers, researchers, the media and individuals information and a platform to explore how science and technology can reduce poverty, improve health and raise standards of living around the world.

Since its launch in 2001, SciDev.Net has posted more than 8,000 original news, feature and opinion articles on its website, and has become widely appreciated in the developing world for the accuracy, authoritativeness and balance of its coverage of science for development related issues.

Our message is that science can be a tool in helping people with all sorts of problems in the developing world, and we hope to inform people of how it can have an impact.

Our long term aim is to influence policy, and we are proud to have a few examples of where we have achieved this.

In addition we also support scientists working in countries where getting their messages out to a global audience may be difficult.

SciDev.Net was appointed media partner to the Eye on Earth Summit 2011, providing live coverage directly from the events in Abu Dhabi, 12–15 December 2011 via the *SciDev.Net Conference Service*.

SciDev.Net Conference Service offers editorial services to organisations holding conferences. SciDev.Net will retain independent editorial authority. For more details contact: development@scidev.net

Cover photography: UN Photo/Eskinder Debebe

Design: www.stevendickie.com/design

© SciDev.Net, March 2012

Readers are encourages to quote or reproduce material from this report for their own publication under a Creative Commons Attribution 2.0 licence, as long as the material is not being sold commercially. In all cases SciDev.Net must be acknowledged as the original author and, where possible, a link provided to the SciDev.Net website and the original article must be provided.

Contents

Foreword

Much of the world's wealth of environmental and societal information and data is warehoused in systems with incompatible standards, 'protected' by bureaucratic complexity, restrained by lack of open access or awareness of its existence. This situation represents a barrier to effective management of the planet's environmental assets; particularly in emerging economies as policymakers face the challenge of making informed decisions on development whilst safeguarding the future.

In December 2011, Abu Dhabi hosted the inaugural Eye on Earth Summit, a global summit focused on the critical issue of providing greater access to environmental and societal information by all those who need it. The Summit was hosted by the Environment Agency - Abu Dhabi (EAD) in partnership with the United Nations Environment Programme (UNEP) and facilitated by the Abu Dhabi Global Environmental Data Initiative (AGEDI).

Abu Dhabi was particularly well suited to host this globally significant environmental summit. In just four decades, the emirate has evolved from a small coastal desert settlement to a cosmopolitan city with a diverse economy and influence far beyond its geographic extent.

Global leaders, innovators and decision-makers from over 110 countries representing government, education, research and private sector organisations converged to share their knowledge. Such diversity demonstrated not only the geographic breadth of the Summit attendees, but more importantly the global importance of the environmental sector and societal data movement.

With the shared knowledge and understanding of the Eye on Earth Community, a suite of outcomes were committed to on the final day of the Summit. These included the endorsement of the Eye on Earth Declaration by 16 government delegations and eight Special Initiatives: five thematic and three foundation. The Special Initiatives address the most critical issues relative to the availability of timely, accurate and accessible environmental and societal data, and commit key stakeholders to associated programs of work over the next 2–5 years. The Declaration identifies principles by which such programs can be guided to engender collaboration resulting in success.

We look forward to facilitating and sharing the progress of these commitments over this period. We cannot, however, act alone. To achieve these results, we must all act as a Community. Commitments demand responsibility. I encourage you to reflect on the issues at hand and commit to action; to commit to the principles of the Declaration, and your participation in the Special Initiatives.

I invite you to join us at Eye on Earth 2014 where we will report on our achievements.

Cathrine Armour
Programme Manager, Abu Dhabi Global Data Initiative (AGEDI) and Programme Director, Eye on Earth

AGEDI

Eye on Earth Summit OVERVIEW

Data gaps that could scupper the green economy

Yojana Sharma

www.scidev.net/eoe/data

The information is out there. The data that would enable sound decisions on the environment and sustainable development exists in databases, repositories and desk drawers. Yet often it is not tapped, scientifically analysed, communicated or used for the benefit of the environment and the people who depend on it.

"By some estimates the amount of data held in the world is 315 times the number of grains of sand and continuing to grow," Achim Steiner, executive director of the United Nations Environment Programme (UNEP), told the Eye on Earth Summit in Abu Dhabi (12–15 December 2011).

"Managing, processing and making these volumes of data available in user-friendly ways and in the service of sustainable development is one of the global challenges of, and one of the issues for, Eye on Earth, and a key in assisting Rio+20 [the United Nations Conference on Sustainable Development in Brazil June]," he said.

Environmental and societal data is the real underutilised resource globally: that was the message of the four-day Abu Dhabi meeting, which brought together over 1,000 delegates including ministers, officials including those from the UN and World Bank, speakers from NGOs, the financial sector, companies such as Google and Microsoft, the geospatial industry and others.

"We are measuring virtually everything that changes and moves. We're able to handle big data sets like we've never been able to before," said Jack Dangermond, CEO of the US-based Environmental Systems Research Institute (ESRI), referring to technologies such as computer platforms in the 'cloud' and distributed processing. "And these computers are being connected," he said.

The measuring and analysis is aimed at filling gaps in the data and improving access to environmental information and its use, whether the information is technical, statistical, sociological or communicated orally by indigenous people.

A pressing need to develop networks to exchange vital information on the global ecosystem is also recognised. That information is stored in individual databases, as environmental issues do not respect geographical boundaries. But much of it may be inaccessible.

Access to existing data

For sound global environmental decision-making, gaining access to existing data is more important than developing new technologies, said Harlan Onsrud, a research scientist with the National Center for Geographic Information and Analysis in the US and co-chair of the conference's working group on technical infrastructure.

Rand Knight, senior vice president of technology consultants Critigen, emphasised that the data exists and so does the technology to access it, even for poorer countries, and it is getting cheaper. No one needs to wait for new tools, he added.

Several speakers pointed out that what was lacking was a vision on how to access and use the information, and as always, the political will.

"Technology is only a small piece, we need much more," said Dangermond. "We need open sharing policies to make this work, we need a global plan."

Former US president Bill Clinton fired up the conference with his eloquent point that lack of data was often used as an excuse for not taking environmental action. There was no need for more data to understand the value of improving efficiency, reducing green house gas emissions or recycling, Clinton said.

It was a hopeful message. But there is much work to do to remove the barriers standing in the way of good data gathering and sharing, the conference heard.

Special Initiatives

Delegates focussed on specific areas, dubbed 'Special Initiatives'. Eight initiatives were chosen from a list of almost 50 for discussion during the meeting. They included sustainable cities, disaster management and green finance. Four of the initiatives — Eye on Water, Eye on Biodiversity, Eye on Oceans and Blue Carbon, and Network of Networks — were singled out for further development at the end of the conference.

They were chosen to "further the Eye on Earth mission and vision," said Cathrine Armour, programme manager for the Abu Dhabi Global Environmental Data Initiative, which organised the Abu Dhabi meeting with UNEP.

First published by SciDev.Net on 21/12/2011

Students at Generation eYe - Education Day at the Eye on Earth Exhibition

AGEDI

The hurdles in the way of data collection and access are amply illustrated by the tasks faced by the chosen initiatives. For example, knowledge of the oceans is poor.

“Only five per cent of the oceans have been explored, the rest is less mapped. Although we have generated maps from satellites they do not reflect what is below [the surface],” said oceanographer Sylvia Earle.

Peter Gilruth, director of UNEP’s Division of Early Warning and Assessment, pointed out the huge gaps in information “not only about the status of biodiversity but also the economic cost of losing biodiversity on a local, national, regional or global scale”.

On water scarcity, public awareness is a problem. At the policy level, sharing water data, even within the same country, can be a sticky issue and can lead to poor decisions, the working group on water heard.

Water data is often kept secret by countries for geopolitical reasons, but information could help solve rather than exacerbate water conflicts, according to Faris Sayegh, senior consultant at GPS-GIS, a global network of information professionals.

Michael Wilson, programme officer at UNEP, told the conference the Eye on Water Special Initiative would focus on the specific data needed to improve transnational management of water, hopefully helping to break down some of the barriers for water-sharing, for the benefit of many.

The Network of Networks Initiative seeks to link diverse data networks by the use of common standards and by enabling individual networks to communicate with each other. This was an overarching theme of the meeting, but it may also be the hardest to achieve, with the challenge being how to keep networks together. The elephant in the room was the private sector. Will companies be willing to share their own data within a network, or will it be a one-way street of data from public to private?

“We must establish partnerships so that we can tap into commercial data and information sources to bridge data gaps,” said Sha Zukang, UN under-secretary-general, who is responsible for overseeing Rio+20.

Access for All

Other special initiatives that will continue to be developed in the wake of the Eye on Earth Summit include Resilient Cities, Environmental Education and Access for All, aimed at making environmental data available for all citizens.

Access for All had passionate advocates among conference delegates, notably Lalanath de Silva, head of the US-based World Resources Institute’s access campaign, formally called The Access Initiative (TAI).

“The Access for All initiative has allowed us to come together and build a platform,” he said. “It is a Special Initiative that is going to go from strength to strength in the future.”

Civil society organisations met the day before the Abu Dhabi meeting to prepare their own input to the Eye on Earth Declaration, an outcome which will be fed into Rio+20. Hence the support for Brazil’s call for negotiations at Rio+20 on a global convention of Principle 10 on access to data, and the inclusion of access in the Eye on Earth Summit Declaration.

De Silva stressed that human networks are at least as important as the technological networks involved. Public involvement and public access to environmental data and information is crucial, he said. But it is a political minefield, with some countries likely to oppose any mention of access to data as a ‘right’ and others likely to resist any legally binding convention.

Those battles are likely to be fought elsewhere. For now, the Abu Dhabi meeting has deposited its Eye on Earth Declaration with the Rio conference process, hoping it will make the agenda of Rio+20. This was seen as one of the main successes of the meeting.

Now all eyes are on Rio+20 and preparations for June. That meeting may well take up the suggestion of creating ‘sustainable development goals’ modelled on the Millennium Development Goals. If so, government agencies would need substantial information in order to measure sustainability and monitor changes on the road to a green economy.

The glaring gaps in environmental and societal data could well scupper the proper functioning of a green economy, says Gilruth. That, he says, is what makes the Eye on Earth Summit’s goals even more urgent.

Q&A

Millennium Development Goals and the need for data

Yojana Sharma

www.scidev.net/eoe/mdgs

Mohammed Al Madfaei, deputy manager of Environmental Strategy and Policy Coordination at the Environment Agency - Abu Dhabi, which is hosting the Eye on Earth Summit, tells SciDev.Net about the importance of access to information in the context of the Rio+20 talks.

AGEDI

How did the Eye on Earth Summit come about?

The idea of the summit goes back to 2002 when we launched the Abu Dhabi Global Environmental Data Initiative (AGEDI) at the Johannesburg World Summit on Sustainable Development as a UN type 2 environmental initiative. I was there and was one of the people that launched the initiative to the world.

It was a response to a need for quality environmental data. Access to updated data and the collaboration of social and environmental data is very important. It's also important for emerging markets, such as we are in the Gulf.

Why hold a summit on access to data now?

The Eye on Earth Summit is to move it [the initiative] forward, to advance and make people more involved and [enable] more collaboration. It's not just about what is happening now. The need for access to data was important ten years ago, it's more important now and will be just as important in the future. And it's linked to the UN development goals and Agenda 21 – they are all linked to each other.

In the Millennium Development Goals there is one key element for all the goals, and that is easy access to sound data.

For example, there is the goal of cutting poverty by 50 per cent and [the goals of] access to sanitation, education, and so on. You need data to achieve all those goals. Without the data and without updated data you will not be able to achieve anything. Data has been produced in line with the Millennium Development Goals but is everyone getting access to it?

So you don't think there is enough access at the moment?

There isn't enough access. In the past ten years there has probably been more information data produced than was ever produced before. The data is there, but the access to it, the sharing of it, the updating of it, needs to be enhanced. So, one of the outcomes of this summit is to enhance data-sharing, data collection and data accessibility to key decision-makers.

There are always platforms that work that you can use to share that data. I believe it is a human right to have access to relevant data. You can have it published on a website, you can have it published in an annual yearbook. Academics can benefit from the data, decision-makers, students, policymakers need that data either to do proper analysis or to make decisions. So yes, it is a right.

What are the needs of your own region in terms of data?

We are considered an emerging market and we are focussing on green economies such as the renewable energy industry. We are an arid region with scarce resources – the only natural resource that we are rich with is oil. We lack resources of water, we have water security issues, we have an issue with air quality as we have a desert climate and there are all these sandstorms, so the data is important for us and crucial to make decisions.

We are an oil-producing country yet at the same time we are looking to renewable energies. We have a resource that we can use as well: the sun which we can use all the year round. Plus we

First published by SciDev.Net on 12/12/2011

know that at some point the oil will finish, in 100 years, 200 years. It's not an abundant resource. Renewable energy is the future, specially when we have one of the highest carbon footprints per capita in the region. We know that at some point our oil will finish so we need to diversify, so we are interested in environmental technologies and need the data.

At the same time we have a lot of endangered species living in this region, such as dugongs, the Arabian onyx, so we need to preserve our environment. We have rapid advancement in our urban development with all these megaprojects that are under way but at the same time we are limited in our natural resources. So having updated and available data is important for us and our future, in terms of not altering our environment.

We produced a State of the Environment Report which talks about some priority areas, like biodiversity, water, air, climate change. Abu Dhabi is the first in the region to do a State of the Environment Report, and it is the first published online. This is one key thing. We hope that other countries issue their own state of the Environment Reports - it is a kind of data-sharing and collaboration as well.

With regard to the environment, we all live in one area, everybody is linked to others. For example, a flood somewhere affects other areas, a decline in fish stocks affects other areas. So we are all interlinked.

What do you hope will come out of the summit?

Concretely, we are hoping everyone endorses the Eye on Earth declaration which will go to the Rio+20 Summit. The declaration talks about easy accessibility of environmental data for government and non-government entities. If everybody buys in to this idea then it will happen. I think we can get a global agreement on this. We have a global presence here that can make this summit successful.

The Abu Dhabi Pavilion – the Abu Dhabi model explains the story of Abu Dhabi
AGEDI

SUMMIT NEWS

Push for global information convention

Yojana Sharma

www.scidev.net/eoe/push

The issue of access to information could determine the success or otherwise of next year's UN conference on sustainable development, Rio+20, a member of Brazil's national preparatory committee told the Eye on Earth Summit, which opened in Abu Dhabi on Monday (12 December 2011).

"Eye on Earth is an outcome of Rio, Rio will be an outcome of Eye on Earth because information is the key issue," Aspacia Camargo, a former Brazilian deputy environment minister and now a Green Party MP, told the opening session.

"This Eye on Earth Summit will make the difference and will contribute to the success of Rio+20," she said, and, in turn, the Brazil conference in June 2012 could depend on "our ability to commit leaders and governments towards better information".

Information needs include the ability to measure the 'green economy', expected to be a key topic of discussion by world leaders in Rio, she said.

"We must approve some kind of legally binding initiative for green GDP, for green credits, for green accountability, but we also have to measure eradication of poverty," said Camargo.

Access to quality information on the environment and society was the focus of the four-day Abu Dhabi meeting.

H.E. Razan Khalifa Al Mubarak, secretary general of the Environment Agency - Abu Dhabi (EAD), co-organiser, with the United Nations Environment Programme (UNEP), of the meeting, told the opening session: "This summit is held in recognition that environmental and societal data should be collected in a concerted manner, at its source, made accessible and affordable and should be used to underpin reporting and support decision-making in order to achieve sustainable development.

"This is especially important to emerging economies, such as the United Arab Emirates, that often do not have access to data."

In November, Brazil filed a formal proposal at the UN for a legally binding global convention enshrining access to information on the environment, known as Principle 10. This move was followed by independent — though not necessarily conflicting — proposals from Chile and Jamaica calling for binding regional agreements on information access and sharing.

The Brazilian delegation hoped to drum up support for its access proposal during the Abu Dhabi meeting, which includes talks at ministerial level.

This might be an uphill battle. "We know there are some member states who would oppose any [legally] binding outcomes to Rio+20," commented Jeremy Wates of the European Environment Bureau, a federation of over 140 citizens' organisations.

But Brazil appears ready to stake its international reputation on its push for an access convention, as Carmargo made it clear Brazil wanted to take the lead on this and other environmental issues.

"Developing countries like Brazil and the [United Arab] Emirates are looking for a new role in world affairs - and why not by way of sustainability?" she said.

Lalanath de Silva, director of the Access Initiative at the World Resources Institute, who chaired one of the expert discussions at the conference, told the meeting there had been "a chorus of voices" around Principle 10.

"It is time that governments came to agreement and laid the foundations and legal infrastructures for access to information," he said.

Jack Dangermond, president of the US-based Environmental Systems Research Institute (ESRI), told the opening session that tools that make it easy for citizens to visualise data on maps were revolutionising the way the world used and understood information.

"Geospatial information will be a new language, a new nervous system for our planet," he said.

The new kind of geospatial infrastructure that was emerging supported conservation, planning, disaster mitigation and education, he said. The challenge was to migrate existing and future data to accessible systems, for the benefit of all.

During the day's discussions, several experts argued that government action on open data was lagging behind technological progress and that access to data was beginning to become more important than the data itself.

There are many new information platforms but "it does not necessarily mean that people can access information," said Lucy Wariuingi, of the African Conservation Centre in Kenya.

First published by SciDev.Net on 12/12/2011

Help plug data gaps – UN's Sha Zukang

Ochieng Ogodo

www.scidev.net/eoe/help

Support must be given to the efforts of developing countries to improve data collection, Sha Zukang, UN Under-Secretary-General for Economic and Social Affairs, told the Eye on Earth Summit in Abu Dhabi (13 December).

"We must establish partnerships so that we can tap into commercial data and information sources to bridge data gaps," he said.

"For policy to be based on science and facts, data and information must be widely and easily accessible. It must also be in formats usable for decision-making, and in public domains," he said.

The Abu Dhabi meeting is part of preparations for the Rio+20 conference in Brazil in June 2012, which marks the 20th anniversary of the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit.

Zukang, who is also Secretary-General of Rio+20, said 2012's UN Conference on Sustainable Development in Rio de Janeiro must focus on renewed political commitment for sustainable development, backed up by provision of resources and capacity building.

He said that accurate data collection would enable governments, civil society and business to make effective policies and decisions on sustainable production and consumption.

All governments, institutions and communities "must collect and maintain critical data and information for fact-based decision-making on sustainable development issues," he said.

Advanced technologies were now available for collecting and analysing data on ecosystems and societies. The advance in geospatial data collection and analysis, for example, was "of strategic significance".

Geographic information systems (GIS) could be used in areas such as food security, sustainable agriculture and sustainable energy and could be applied in land-use management and disaster preparedness.

Zukang said the UN had recognised the critical role of GIS in advancing sustainable development, and the recently established UN Committee of Experts on Global Geospatial Information Management would seek to improve the management and coordination of geospatial information around the world.

Zukang said the UN had recognised the critical role of GIS in advancing sustainable development

United Nations Information Service - Geneva

But while GIS was capable of measuring progress on economic, social and environmental issues, he said, there were no published reports bringing together these three pillars of sustainable development. This would have to change if the world was serious about following up on Rio+20.

"The future cannot wait. We all know this," he said.

Civil society representatives at the Abu Dhabi meeting told SciDev.Net that they supported the provision of financial and technical support for developing countries to build and use environmental data for sustainable development.

"There is great need to support developing countries to be able to collect and release data. A lot of them do not have good collections of data nor do they have good standards for doing that," said Carole Excell, senior associate, intuitions and governance, at the US-based World Resources Institute.

It was important to build national capacities for data collection and to empower citizens to use the data and hold government accountable.

Environmental lawyer Benson Ochieng', a director with the Nairobi-based Institute for Legal and Environmental Governance (ILEG), emphasised the need for a legal framework that would ensure that people had access to information arising from the data.

Citizens' right to access data, Ochieng' said, must be grounded in law.

"Whereas there has been some significant moves in constitutionalism in some African countries like South Africa and Kenya, there are policy reversals on what governments consider as a threat to security when it comes to access to information," he warned.

First published by SciDev.Net on 13/12/2011

SUMMIT NEWS

Abu Dhabi meeting approves declaration of intentions

Mićo Tatalović

www.scidev.net/eoe/abu

The Declaration of the Eye on Earth Summit in Abu Dhabi (12-15 December) was officially unveiled on Thursday.

It has been drawn up for inclusion on the agenda of the United Nations Rio+20 conference in Brazil in June 2012.

Despite the organisers' reluctance to use the word "negotiation" in order to limit the scope of last-minute changes to the document that has been through five drafts in recent months, several alterations were made to the text during the week.

Civil society representatives helped push through a mention of a proposed global treaty on public access to information, which Brazil wants to make a key outcome of Rio+20.

Other changes included inclusion of communities as key stakeholders in collaboration on data access, and the addition of a call for greater efforts to incorporate environmental information and programmes into education curricula at all levels.

The Declaration stops short of declaring access to information technology a human right. Provisions to set up mechanisms to help disadvantaged groups gain access to information, or for a new mechanism for technology transfer and capacity building for developing countries, were also rejected.

Changes included a call for the inclusion of environmental programmes into education at all levels

Dana Smillie / World Bank

Indonesia won support for a reference to recognition of the importance of the full implementation of the Bali Strategic Plan for Technology Support and Capacity Building, originally adopted by the United Nations Environment Programme's governing council in 2005.

Bambang Antarikso, from Indonesia's foreign affairs ministry, told SciDev.Net that strengthening data-sharing and ensuring equal access to data was even more important than creating new data: "To some extent we have it [the data], but that's why we also need capacity building so we can work together on this data."

Gilberto Câmara, director of Brazil's National Institute for Space Research, told SciDev.Net that the changes to the draft document had improved the Declaration.

He described it as "a declaration of intentions, very valuable and very important".

Delegates would not officially sign the Declaration at the end of the meeting on Thursday, he said, because "countries did not come here with the powers to sign and there were not enough countries at the drafting of the Declaration".

Jeremy Wates, secretary-general of the Brussels-based European Environmental Bureau, who led civil society groups at the Abu Dhabi meeting, said, "I'm generally happy. I think the changes that went in for the most part have been an improvement."

Jacqueline McGlade, executive director of the European Space Agency, told SciDev.Net, "In this event, you had people who for the first time are really trying to do things - not talk about it, but do things. It's a good example of how it is possible, if you have the willing in the room, to at least have a piece of paper that people can walk away with."

Asked whether the negotiations had neglected what some delegates saw as the key issue – finance – she said, "I sometimes think that financing gets in the way of a good idea.

"I am not saying that money magically appears, but I think you've got to have content before money is there."

First published by SciDev.Net on 14/12/2011

Conference resolves to push for data access at Rio+20

Yojana Sharma

www.scidev.net/eoe/conference

A conference pushing for greater access to environmental and societal data ended 15 December 2011 with a Declaration recognising that every individual should have appropriate access to information on the environment held by public authorities.

The declaration, drawn up by governments and civil society organisations from around the world at the four day Eye on Earth Summit, will form part of the input to the United Nations Conference on Sustainable Development (UNCSD) to be held in Rio de Janeiro, Brazil, in June 2012.

According to Peter Gilruth, director of the early warning and assessment division of the UN Environment Programme (UNEP) in Kenya, which co-organised this week's conference together with the Environment Agency – Abu Dhabi (EAD), the declaration adds political weight to concerns about access to data.

He said it expressed the political will of "a wide mix of people aiming for a common objective", which was that sustainable development could not occur without relevant information and public access to it.

"The Summit was very successful in defining the moment and did that by bringing together a wide variety of discussions, not just experts," said Gilruth.

But the bigger challenge, he added, was "converting that moment into a movement [towards better data access] and a common mission. People here at this summit want that, but that is going to be the true test of the conference."

UNEP and EAD were the first to sign the Eye on Earth Declaration which is now open for signature by governments, organisations and individuals.

The conference included luminaries of the global environmental community, including Achim Steiner, UNEP executive director; Sha Zukang, UN under-secretary-general for economic and social affairs and secretary-general of UNCED; the heads of the Convention on International Trade in Endangered Species, Global Environment Facility, European Environment Agency and International Union for Conservation of Nature; and representatives of the World Bank, International Telecommunications Union and other UN organisations, who threw their weight behind the importance of sharing global environmental data.

Also present among the 1,000 participants at the conference – billed as a preparatory meeting for Rio+20 – were local government organisations, companies such as Microsoft and Google, and representatives of the geospatial industry.

Working groups on biodiversity, blue carbon, water, disaster management, and the urban environment said they would continue their work in the run-up to Rio+20.

These sectors received additional impetus by being designated 'Special Initiatives' by the conference and will be the focus of efforts to gain momentum on the way to Rio. Thematic areas such as environmental education, inter-regional data networks and universal data access were also named as Special Initiatives.

Through the Abu Dhabi Global Environmental Data Initiative (AGEDI), the Abu Dhabi government said it would provide support to help the groups develop global and regional information systems geared towards their particular needs.

Gilruth emphasised that Rio would be only one milestone: "The work that is going on here must go on whether or not Rio is there. Nonetheless, the value of Rio is its accelerator, turbo-charged effect.

"It is politically important to have the role of environmental and societal information cemented as part of the results of Rio, whether as part of governance or the green economy," two of the major Rio+20 themes.

Mohammed Al Madfaei, deputy manager of EAD and a member of the working group on water, described the declaration as "a good start" on the road to Rio.

"We will be working now to make sure it will be accepted at Rio," he added.

Daniel Reifsnyder, of the US State Department, who, like a number officials arrived at the meeting directly from the international climate change negotiations in Durban, South Africa, said the United States strongly supported the aims of the Eye on Earth Summit. US delegates "have been here in force".

First published by SciDev.Net on 16/12/2011

Q&A

Achim Steiner on expectations for Rio+20

Yojana Sharma

www.scidev.net/eoe/achim

Achim Steiner, UN Environment Programme executive director, discusses the green economy.

UNEP

RYAN MCCUNE/PatrickMcMullan.com

Looking towards Rio+20, what are your expectations?

At the moment, Rio is an open invitation for the world to look at a summit of this kind as either an opportunity or simply another conference. From my perspective, given the economic turmoil we are witnessing in the world at the moment, we should view Rio as a world summit on the economy, or a world economic summit - but with a very important difference compared to a G8 or G20 summit, or an IMF/World Bank annual meeting.

In Rio, equity and sustainability will be central parameters of thinking about the future of our economies. That allows us to address some of the crises before this [current economic] crisis. Some of the problems we are facing did not begin with the banking, financial or debt crises; they were beginning to be visible and driving our economies and societies beforehand.

We have to make the link between the broader sustainable development agenda, which to some may seem a little bit abstract, and the very real crises of the moment but also not to simply get stuck in the symptoms. That's why I think both themes that have been chosen for Rio are potentially extremely relevant: the green economy because it really does seem to be a more focussed accelerated transition in our economic systems; and also the institutional framework for sustainable development – that's the second theme – which is essentially multilateral code language for how on Earth are we going to actually work together in the architecture we have built up since the Second World War?

Can the idea of a green economy take root worldwide?

Let's acknowledge first of all that we live in economic times, and that economics in the broader sense of the word is one of the key means by which we make decisions in our society, whether you call it GDP growth, or you call it inflation or money supply or return on investment.

How do you capture the value of nature and its services in an economic context? Our systems of national accounting are so narrow and crude that they would actually value a forest fire possibly higher – because of all the emergency services' expenditures and the reconstruction of houses – than the actual loss of that forest ecosystem because of that fire, because we have no way of capturing the value of natural wealth to our economies.

You might well say we have done rather well without that in the last 200 years or 1,000 years where we could always turn to the next forest, the next valley, the next river. But the world today with 7 billion people has run out of places to turn to and therefore it needs to start managing, the priority being on sustainability.

So will that mean a debate in Rio on a new definition of GDP: green GDP?

Definitely. As usual, I don't think they will reach a single definition right there. But I think they will set a new system in motion in two, three, five years time. A lot of work needs to be done, but it's less than many think, because GDP is actually a remarkably crude indicator.

First published by SciDev.Net on 15/12/2011

What will be the role of the private sector in pushing for this new green economy?

While still competing very much on good ideas, technologies and patents the private sector is actually very conscious that in the context of climate change there are so many risks now inherent in terms of the impact of climate change but also the uncertainty. Is it going to be a low-carbon economy? Do we invest in coal-fired power stations or rather adapt to wind?

On the natural resources front, supply chains are becoming more and more vulnerable. Risk is becoming more pronounced for many businesses. Food-price markets are fluctuating violently because of extreme weather events.

People recognise the risks of environmental degradation: climate change, loss of ecosystems, scarcity of water and land to produce food. These are all factors that are putting the economy on a more unstable path, and that is why businesses with a degree of longer-term vision and strategy are increasingly looking to governments to address those risks. And they can be addressed only through the kind of scalable responses, such as moving from fossil fuels to renewables, that no individual business actors can actually bring about.

A well-functioning market is actually a regulated market, funnily enough, and not a Milton Friedman notion of 30 years ago of the less government the better. That is definitely emerging.

Some say managing a global green economy will require a different type of organisation from UNEP.

The debate about international environment governance is one example that we focus on in particular, because increasingly our [UNEP] governing council member states have said the system for environmental governance is simply not adequate, is fragmented, very costly, and in need of reform.

Notions such as coherence, efficiency and more effective governance have led to people putting the motion on the table: do we need a United Nations environment organisation – a specialised agency to more effectively develop policy in a coherent sense – because at the moment, climate change, biodiversity and other issues are all separate conferences of the parties.

I would not see UNEP graduating into a cross-breed between the World Bank and the UNDP because you have the World Bank as our development finance institution together with the regional development banks. You have UNDP, UNIDO, WHO, and much of the objective of strengthening of environmental sustainability is to ensure it is promoted in the health sector and the agriculture sector in development decisions.

In order to strengthen environmental sustainability in international and national policy you also need a very effective advocate. Virtually every country has a ministry for the environment or an environmental agency which often began as a little department tucked within the ministry of agriculture or energy. Gradually, over time, environmental issues have become more important, and I think the international system is at that point where it needs to make a decision: do we want to have a more effective international environmental governance or do we want to leave it, at a moment where we are not happy?

My question is how do we strengthen the role of ministers responsible for the environment in the international policy process. The way our system is set up today is that if you have a specialised agency you have your own governance platform. That means when you meet and decide something, it has locus standi [legal standing]. So they make policy in the WTO, they make policy in the WHO. But when they discuss policy proposals in UNEP, they then have to send it to the [UN] General Assembly. And that's partly where the discussion is meant to go.

Do you think this will be achieved at Rio+20?

Most difficult negotiations began with a no–no and ended up with a Yes, OK I'll go along with it. I'm not second guessing what the outcome on 23 June [in Rio] will be but the fact of the matter is that over 122 countries in their submissions on 1 November called for a specialised [UN Environment] agency. So in Rio it needs to be discussed.

Maybe it will not be adopted. But even the United States has made it very clear they want to see a strengthening of environmental governance and a strengthening of UNEP. They are very concerned not to get into treaty threshold negotiations and they are not alone. But, then, a large number of countries actually want to go in that direction, so this is nothing new. It's on the table and that's a good thing because simply to shut your eyes and say we don't want to talk about it is what we've done for the last 10–15 years. In Rio it's on the table. Let's talk about it, let's see what the world can come up with.

Rio is not about negotiating a treaty in the broadest sense but a cooperative agreement between governments with some big–ticket items being discussed, perhaps the most interesting being beyond GDP and a new measure of wealth and the externalities of pollution and environmental damage so that you can go 'Right, let's bring that into the economic calculation of wealth of a nation and therefore a world'.

What are your hopes for Rio+20?

Basically that environmental policy will increasingly be viewed not as a constraint on development but really the enabling factor for future development and that when we talk about environmental standards, pollution standards, and efficiencies, that they will be appreciated for what they really are – a driver for greater economic efficiency, productivity, while creating fewer risks for society.

Special Initiatives

The Eye on Earth Summit discussed almost a dozen Special Initiatives. At the end of the four-day conference the Special Initiatives to be carried forward for further development in the months leading up to Rio+20 were announced. The initiatives were: Eye on Water Security, Eye on Disaster Management, Eye on Community Sustainability (cities), Eye on Blue Carbon (oceans), and Eye on Biodiversity. Work will also continue on the overarching themes Environmental Education, Global Network of Networks, and Access for All to environmental and societal data. SciDev.Net writers take a closer look at selected Special Initiatives.

“ Lalanath de Silva, World Resources institute.

The Access for All Initiative has allowed us to come together... it is a Special Initiative that is going to go from strength to strength in the future

Flickr/ NASA/NPP Team

Scarce data in a water-scarce region

Rehab Mohsen

www.scidev.net/eoe/scarce

Water is potentially a matter of conflict and death as well as life in the Arab region, which is why it is such a sensitive subject – on the ground and in negotiations for United Nations conferences such as the Eye on Earth Summit in Abu Dhabi (12-15 December) and next year's Rio+20 meeting in Brazil.

Negotiators for the countries in the region have many concerns, but it almost always comes back to water, they say.

Fittingly, water was selected as one of the Eye on Earth's "Special Initiatives" that the meeting recommends should be taken to Rio+20.

Arab world concern with water is not surprising, because the region is one of the driest in the world. A report by the Arab Forum for Environment and Development, based in Beirut, says that more than 70 per cent of the land is dry and rainfall is sparse and poorly distributed. And it's likely to get worse: "Climate change will exacerbate the situation," says the report.

It quotes climate change models that suggest that by the end of the century Arab countries will see a 25 per cent reduction in rainfall, and a similar increase in evaporation rates: "As a result, rain-fed agriculture will be threatened, with average yields estimated to decline by 20 per cent."

Bringing the message home to the Eye on Earth participants, the secretary general of the Arab Forum for Environment and Development (AFED), Najib Saab, said, "Almost three years from now, the average share of renewable water in the UAE will be 26 cubic metres a day for every person … and the annual per capita share in the Arab world will be less than 500 cubic metres, which is below one-tenth of the world's average of 6,000 cubic metres."

This is a real and growing crisis. One of the responses is a feeling that the challenge can be met only by the sharing of data and cooperation. No country can face this alone.

Public awareness

This is the view of most delegates from the region at Abu Dhabi. But agreeing a regional approach is not always easy.

There is another problem, too: that water professionals are concerned that public awareness of the full extent of water problems, present and future, is limited.

In a panel discussion during the Eye on Earth Summit, Mohammed Al Madfaei, deputy manager of environmental strategy and policy coordination at the Environment Agency - Abu Dhabi, identified the lack of a regional approach to awareness of water problems as key.

People don't know how to use water carefully, he said: "Water awareness programmes seek to create a global network to support co-ordination, and they seek to educate people."

He cited the examples of the Heroes of UAE campaign, which focuses on educating children on environmental issues including water (so that they can influence their families), Clean-UP UAE, and the country's national Paper-Less Day on 3 June.

And awareness is not simply a top-down matter. "Governments need some awareness too," Najib Saab told SciDev.Net.

Governments could take responsibility by establishing policies to encourage greater efficiency in the use of water resources. This would send a strong message to the public that using water costs money.

Bad decision-making

Policy is also a concern of Rachael McDonnell, a Dubai-based water specialist with the International Center for Biosaline Agriculture. She told SciDev.Net that a "limited policy development process" was part of the water scarcity problems in the Middle East and North Africa region: governments, she said, thought mainly in terms of short-term policies.

She also pinpointed the problems that inevitably arise when it comes to sharing data.

First published by SciDev.Net on 15/12/2011

"There are big difficulties in getting water data or sharing it, even within the same country, and this leads to bad decision-making," she said. She summed up the problem as "Scarce data in a water-scarce region."

There are good examples of sharing, however. "Our water data are available online," declared Al Madfaei. "We don't hide any of them."

Nevertheless, Al Madfaei told SciDev.Net that he agreed that "with water security, it is very difficult." In the Gulf, he said, countries tend to cooperate, and there is no water conflict. The problem occurs mostly between countries that share water, such as Egypt and other countries along the Nile.

"A lot of countries have conflicts with regards to water, and with quotas and water-sharing as well. Maybe that's a challenge but in the end it is up to people's political will to try to find a compromise," he said.

Faris Sayegh, senior consultant at GPC-GIS, "a global network of information professionals", said that some countries took national security as a reason to hide water information, but it was a wrong approach: information could help solve, rather than exacerbate, water conflicts.

"The conflict between Egypt and Ethiopia over the waters of the Nile is a good example of how sharing data is important," he explained.

"Egypt claims that new Ethiopian dams will significantly affect its water share, and Ethiopia is underestimating the impact of building the dams. So in this case, sharing data with independent institutions capable of analysing the statistics could help solve this conflict."

It sounds promising. But, as already indicated, the path to sharing and cooperation is never straightforward. Mohamed A. Dawoud, manager of the water resources department at the Environment Agency - Abu Dhabi, injects a note of reality: "Making all the water data available is not correct. Countries should allow access only to relevant data."

"Mohammed Al Madfaei, Environment Agency -Abu Dhabi

A lot of countries have conflicts with regards to water. Maybe that's a challenge but in the end it is up to people's political will to find a compromise.

Flickr/NASA Earth Observatory

Why city resilience will be an issue at Rio+20

Daniela Hirschfeld

www.scidev.net/eoe/why

Once, the word of the moment was 'sustainability', and within years sustainable development became a widely-used concept. Now, the popular term is 'resilience', and the resilience of cities to environmental and social pressures is seen as a major issue for governments and peoples around the world.

This concept underlaid many of the events at the Eye on Earth Summit in Abu Dhabi (12-15 December), culminating in a panel discussion, 'Innovative Cities: Designing for Resiliency and Change', in which the role of technology, green building and access to information were highlighted.

On this showing, discussion of sustainable and resilient cities will be an important part of the UNCSD Rio+20 conference in Brazil in June 2012.

Resilience is crucial "because it is a flip side of disaster" and "a key component on the path to sustainable development that will become one of the driving forces for the next 30 years as we try to build our own future," said the panel moderator, Jan Hartke, from the Clinton Foundation in the US.

"We want to carry this message to Rio+20," he emphasised.

"Cities will be very visible in Rio+20," forecast Susanne Salz, head of the secretary general's office at Local Governments for Sustainability (ICLEI), an international association of local governments, and their associations, that have made a commitment to sustainable development.

"In the past we focused on climate change but now it's resilience because cities are affected by disasters and local governments have to respond. When a city is hit by disasters it needs to bounce back, and people and governments have to learn how to do it," said Salz.

Aspasia Camargo, a Brazilian Green Party MP, a member of the Rio+20 National Committee and a former deputy environment minister, told SciDev.Net, "Cities will be a very important chapter in Rio+20 because they are generally treated as if they were not important."

Camargo emphasised the importance of "institutions that communicate with each other and share information" at both local and global levels.

Sophisticated system

"At Rio+20 we have to commit to empower cities because they are now in a very weak position and we have to assure them that they will be heard," she added.

She said she expected Rio+20 to make a commitment "to planning and geographical information and hi-tech".

"It is impossible to build green cities with millions of people without a very sophisticated system of information that can use all layers of data in order to produce participatory movements. If the population aren't involved, you cannot go ahead," she said.

Camargo said cities were an important issue not only because they were the main source of air pollution or because they were home to half the world's population.

"Cities also have been built up against Nature, and occupation and infrastructure were conceived as if Nature didn't exist. Cities need to become friendly with Nature, and this requires a re-think of the relationship between Nature and human occupation to avoid the disasters and accidents that now dominate our cities," she said.

Cities are the main source of CO_2 emissions

Flickr/ sheilaz413

First published by SciDev.Net on 15/12/2011

Brazilian Green Party MP Aspasia Camargo addresses the conference

AGEDI - resolution

"I would like to bring environmental resilience to cities, but also social resilience, because social resilience is indispensable if people are to adapt and protect themselves, and create planning and strategic maps to know what is going on in the different parts of a city," she explained.

Urban areas now consume over two-thirds of the world's energy and produce 70 per cent of global carbon emissions. On current forecasts they will accommodate 75 per cent of the global population by 2050.

Green buildings

But cities are also vulnerable to natural and man-made disasters, which in 2010 affected more than 15 million urban dwellers.

"Green buildings give us an opportunity to fix this, but only if buildings perform," said Richard Fedrizzi, president of the World Green Building Council and a member of the Abu Dhabi conference panel.

The Green Building Council has formulated a rating system to evaluate the design, construction and operation of high performance green buildings, homes and neighbourhoods .

"In the past we didn't know what was going on with our buildings, but now information from the system helps us make better decisions," said Fedrizzi.

Former US president Bill Clinton, who addressed Eye on Earth participants, also referred to green buildings: "Seventy-five per cent of [carbon] emissions come from buildings," he said, so increasing their efficiency was the most economical way to begin tackling climate change.

Naeema Al Zarouni, geographic information systems (GIS) manager at Abu Dhabi Urban Planning Council (UPC), told the panel audience about the green building rating system, Estidama, launched in 2010, which sets out mandatory sustainable practices for all new construction in the emirate.

"It started one year ago and we have reduced water consumption by 31 per cent", said Al Zarouni.

Angela Fandino, managing director of Engineering Sustainable Futures, an Abu Dhabi company, who attended the conference, told SciDev.Net, "In Dubai, collecting data about energy, water consumption and waste generation – some of the basic variables for analysing CO_2 emissions – is difficult because people are afraid of being punished or measured against benchmarks.

"But in Abu Dhabi this is a little bit different, although still there is a lot of missing data for benchmarking. It is different because of Estidama, which is doing a very good job in terms of collecting information."

Avoid tragedies

All four members of the panel agreed that access to information and technology have an important role to play in creating sustainable cities.

"Resilience implies the capacity of a city to respond to a challenging situation, so we need environment and infrastructural information in order to avoid tragedies, or to act when it is necessary," said Camargo.

"Neighbourhood networks are indispensable for collecting data and helping people to act or make decisions," she added.

On technology, Al Zarouni said that geospatial information could help decision-makers compare urban scenarios or visualise future contexts.

And Fedrizzi said that mobile phone apps "will be useful to access [environmental and infrastructure] information about cities.

"But although we are talking about data, technology and resiliency," said Fedrizzi, "the most important [player] is the human being who will bring [these things] together in an agenda for action.

"A person can make a difference, and the information they have will empower them to work towards a better result."

In disasters, information saves lives

Ochieng Ogodo

www.scidev.net/eoe/disasters

When disaster strikes, data and information are crucial but rarely available, Juliana Rotich, executive director of Ushahidi, a Nairobi-based online open source software developer, told the Eye on Earth Summit in Abu Dhabi (12–15 December).

"Reliable information saves lives," she emphasised. It was part of the solution in humanitarian emergencies but the existence of information was not enough: it had to be accessible.

"We can collect data but we need to digitise and leverage its use through technologies like cell phones," she said.

Accessibility was a theme of the Abu Dhabi conference, the deliberations and recommendations from which will feed into Rio+20, the UN Conference on Sustainable Development in Brazil in June 2012.

Accessibility was also tackled by many of the delegates from governments, international bodies and nongovernmental organisations who spoke on disaster management during the meeting – where the topic was featured as a 'Special Initiative'.

Impacts of disasters may be reduced by better access to local information

Abdul Majeed Goraya / IRIN

Participants in the special initiative discussions wanted to establish an 'Eye on Earth disaster forum for mutual sharing and advice' that would include donor agencies and the private sector. Its aims would be to reduce risk of disasters, to improve response rates and to accelerate recovery.

Crucial issues for discussion at Rio+20, said Helena Molin Valdes, director of the United Nations International Strategy for Disasters Reduction, included improving access to knowledge that people had learned by experience, and making data and information available to decision-makers.

Poor neighbourhoods

"There is a communication gap that leaves people, especially the poor, vulnerable to natural disasters," she said. One of the biggest problems in urban centres, for example, was that city managers lacked systems that worked with people to leverage information during floods – particularly in poor neighbourhoods.

"We need to study environmental cycles, listen to historical information and then put the information into mapping for disaster preparedness and management," she said.

Taking up a constantly recurring issue in the Abu Dhabi discussions, Milen Dyoulgerov, a specialist in adaptation and disaster risk management with the Global Facility for Disaster Reduction and Recovery (GFDRR), said one of the challenges for disasters response was building capacity to absorb and access information and turn it into guidance for responding to disaster.

He also called for help in enabling policymakers to access tools demonstrated during the conference: "From satellite stations you need sensors on the ground, but even more crucial is the acquisition of the right technologies and their maintenance for management of disasters." It was, for example, "ridiculous" for equipment worth millions of dollars to lie idle because of lack of electricity when disasters struck.

Warnings and action

Such technologies needed to be specific to their location and appropriate for users: "Solutions must come from local communities, local and national governments" he said.

First published by SciDev.Net on 21/12/2011

But for technologies to succeed, said Matthias Schmale of the International Federation of Red Cross and Red Crescent Societies, behavioural changes were needed, including the need for policymakers to heed warnings and take action.

For instance, an appeal for humanitarian assistance for the Horn of Africa last year generated no response until famine killed many people and livestock. Information could exist alongside lack of action, he warned.

Or, in the language of a conference 'white paper' on tackling disasters, "Over the past 20 years, as GIS [geographic information systems] technology has become more pervasive across the world, governments, regions, and various communities of interest have developed mechanisms for the effective coordination and sharing of geospatial information across traditional political and institutional boundaries for mutual benefit. The concepts and principles that underlie this sort of 'Spatial Data Infrastructure' are well established, but as yet there is no comprehensive worldwide information-networking programme in place to support more effective disaster reduction and recovery planning or response support."

Schmale also warned that lifestyle changes among some vulnerable groups might be required.

"Are we going to wait for droughts to happen every two to three years and then help pastoralist communities cope and return to their own lifestyles, or are we going to engage in sensitive negotiations about the need to change lifestyles to better cope with inevitable emergencies?" he asked.

On information, Matthias said it was there in abundance: the real challenge was to properly analyse and process information and convert it into action. Like Molin-Valdes, he supported the use of indigenous knowledge built up over centuries – such as the experience of Bangladeshis in responding to regular flooding – as well as the use of science. It was, he emphasised, a partnership.

Juliana Rotich, exective director, Ushahidi
AGEDI

A positive aspect of the discussions on disaster was highlighted by Peter Gilruth, director of the UN Environment Programme's division of early warning and assessment, who pointed out that information and communication technologies such as cell phones were now widespread in Africa and other developing countries. This would facilitate warning systems, which, together with information on coping, should be a priority of governments and other stakeholders.

"Mohammed Al Madfaei, Environment Agency -Abu Dhabi

There is a communication gap that leaves people, especially the poor, vulnerable to natural disasters

Rob Holden / Department for International Development

More science needed to give blue carbon a place at Rio+20 table

Mićo Tatalović

www.scidev.net/eoe/more

Oceans are one of the least studied areas of the global environment and although 'blue carbon' – carbon dioxide stored in the oceans – is an emerging issue, if oceans are to make an impact at 2012's UN Conference on Sustainable Development (Rio+20) as part of a global push for a Green Economy, more science is needed.

"Oceans is an obvious focal area for Rio," Peter Gilruth, director of the UN Environment Programme's (UNEP) early warning and assessment division, told SciDev.Net at the Eye on Earth Summit in Abu Dhabi (12-15 December 2011). "But data systems are not always there," he added.

"You may have data systems that are strong on the fisheries side but you might not have as much information on the changes in acidity or the effects of plastics in the food chain."

Oceans have many functions. They are the largest long-term carbon sink, with 90 per cent of CO_2 recycled though them. Three coastal ecosystems – mangroves, salt marshes and seagrass beds – play a particularly important role in carbon storage, and they also help provide food security and protect coastal communities from tsunamis and floods.

H.E. Henry Puna, Prime Minister, Cook Islands speaking at the Summit

AGEDI

Experts say that, metre for metre, coastal ecosystems are often more efficient at sequestering carbon than many tropical forests, and unlike many terrestrial systems, they continue removing carbon from the atmosphere and oceans for centuries. The soil below seagrasses, salt marshes and mangroves can hold 2-15 times the amount of carbon in comparable tropical forest soils, according to a paper prepared for the Abu Dhabi meeting.

Rolph Payet, special advisor to the president of Seychelles and president of the University of Seychelles, said, "Blue carbon … will hopefully help to stimulate a lot of research.

"There is a lot of debate on which systems sequester the most carbon, or which release the most carbon. There is a lot biochemistry and geochemistry involved. And there's a lot of science lacking: a lot of areas are unknown, a lot of chemical processes are unknown, a lot of animal trophic structures are still not understood."

Robust case studies

Carl Gustaf Lundin, director of the global marine and polar programme at the International Union for Conservation of Nature, made a similar point in Abu Dhabi. About one-third of the CO_2 that humans had emitted was in the oceans but we knew almost nothing about it, he said.

"People don't talk about it, there's been very little policy focus on it and that's what we're trying to address with the whole blue carbon question," he said.

"Science has to be stronger, more convincing," agreed Louisa Wood, head of the marine assessment and decision support programme at UNEP's World Conservation Monitoring Centre, in Cambridge, United Kingdom. "We don't really have enough robust case studies yet of [blue carbon]," she told SciDev.Net. "Because the science is emerging, the data are also largely missing."

Although there is some local data on carbon sequestration rates of some seagrass, salt marsh and mangroves ecosystems, a global overview is lacking.

First published by SciDev.Net on 21/12/2011

An overview is important if the blue economy, of which blue carbon is a part, is to be a key component of the green economy that will be high on the agenda of Rio+20. For now, scientific information is lagging far behind other sectors of the green economy and behind carbon locked in land forests.

"What we want to do is to put the oceans on the balance sheet. We have only an estimation of what carbon storage is conducted by the oceans, and it is just an estimate," Sylvia Earle, oceanographer and founder of the US National Geographic Society, told SciDev.Net.

Protect now, study later

Yet while supporting the need for research, Pacific island delegates from the Cook Islands, Kiribati, Samoa and Seychelles in Abu Dhabi stressed the urgency of preserving ocean ecosystems. Faced with a lack of data about ocean protection, the best action was to preserve now and study later, they told SciDev.Net.

And in his message to the conference, Kiribati president Beretitenti Anote Tong gave a reminder that even where data and information existed, it still had to be accessed and distributed in ways that could lead to practical policies and programmes.

"The lack or non-existence of environmental information ... is due not to the lack of data but fundamentally because of the lack of capacity in these countries to collect, process and convert this data into usable and relevant information and in a format that is useful for decision-making," he said. "This is the heart of the problem, and this is where partnership plays a key role."

This urgent need to improve and use knowledge of blue carbon and the oceans in general was why the topic was made one of nine 'special initiatives' discussed in working groups at the Abu Dhabi meeting, and was one of four initiatives selected alongside the meeting's final Declaration to feed into the negotiations for Rio+20 in June 2012. The other topics were biodiversity, water, and a network of networks.

The focus of the Blue Carbon Special Initiative is on seagrasses, salt marshes and mangroves, the three ecosystems that together may account for 70 per cent of ocean carbon sequestration capacity.

"There's a big focus at the moment on developing the science to justify the case for using carbon sequestration and storage as a means to justify conservation of those areas as well as potential set-up of carbon credits for payment for ecosystem services," said Wood.

Thabit Zahran Al Abdessalaam, of the Environment Agency Abu Dhabi

AGEDI

Habitat mapping

Thabit Al Abdessalaam, director, Biodiversity Management Sector, Terrestrial and Marine Biodiversity, of the Environmental Agency - Abu Dhabi said in his report to the conference on the oceans and blue carbon special initiative that the challenges were not just to improve the data gathered but to "deal with the data using the technologies we currently have."

For example, he said, there was a need for dynamic habitat mapping. "We need to come up with a measure of the oceans' capacity to ensure these [ocean based] services continue."

That is vital, because the threats to the oceans are diverse and growing. A recent UN report, 'Oceans at Rio+20' said at least 40 per cent of the global oceans were "heavily affected" by human activities and that 60 per cent of the world's major marine ecosystems had been degraded or were being used unsustainably.

The Eye on Earth special initiative, said Wood, would give impetus to looking at how different initiatives fitted together and to identify common gaps.

"It's been important to bring everyone together and then collectively look at what we're doing and what's missing," she said.

"It is implicit that any data collected would be made available – that goes without saying, but there are really big gaps. There are local datasets on the national and provincial level: there has been some mapping of these ecosystems, but they haven't necessarily been mapped in a consistent way and they haven't been brought together."

Q&A

The planet's blue engine

Tracy Irvine

www.scidev.net/eoe/planets

Sylvia Earle is an oceanographer and explorer, president and CEO of Deep Ocean Technology and Deep Ocean Engineering in California, US; founder of Mission Blue; and former chief scientist of the National Oceanic and Atmospheric Administration. After speaking at the Eye on Earth Summit she told SciDev.Net about her oceanic hopes and fears.

Flickr/ tedxgp2

What do you hope to achieve from the Eye on Earth Summit?

The Eye on Earth Summit has achieved a gathering of people to look at the data gap for informed decisions on the way forward. We need to learn more about our place in the universe, what we are losing, how to value our natural systems.

Are any global agreements being sought on the oceans at Rio+20, the UN Conference on Sustainable Development in Brazil in June 2012?

I am not familiar with any of the Zero Draft representations [for a document to be approved by Rio+20] but what we want to do is to put the oceans on the balance sheet. We have only an estimation of what carbon storage is conducted by the oceans, and it is just an estimate.

Focusing on the green and not the blue is a serious mistake. With REDD (the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries] we need Blue. The world functions as it does because of the ocean system. It controls the chemical system, the oxygen system, the water cycle, the climate system and represents 97 per cent of our biosphere.

Clues can be found in that 20 per cent of oxygen comes from a single kind of microscopic organism, prochlorococcus. Although not visible to the eye it is the single most abundant species in the oceans.

Valuing natural systems for carbon and REDD are complemented by the Blue movement; I am confident this will be on the agenda.

Are you concerned that governments do not seem to be taking Rio+20 seriously?

Economic collapse, poverty, water, food, a place to live, are all totally anchored in the environment. As a good friend of mine said, "The economy is a subsidiary of the environment".

For the first time we have the power of knowledge on a large scale. At the 1982 World Environment Summit [in Nairobi], we did not have knowledge on the scale we have today. At the time, a nuclear holocaust was thought to be the biggest threat to mankind. At the 1992 Rio Summit [on environment and development], the next three [threats] were thought to be population, poverty and environmental degradation – our fundamental life support systems.

Poverty is linked to a degraded environment with more people than the system can sustain. Population is a problem - it is common sense. The Earth will only hold so many of us, as we are dependent on the natural world. That understanding is not embedded in education. We are drawing down the assets: the capacity of the Earth to support us has a limit. We have to take care of nature.

Rio is a rare opportunity. Is it enough to assemble the world leaders once every ten years? We need to deliberate on our relationship with the natural world.

How critical are the oceans to sustainable development?

Fundamentally, no ocean, no life. It is the blue engine of the planet. Rio can be the turning point: what we decide in the next ten years will determine the next 1,000 years.

First published by SciDev.Net on 18/12/2011

What are the critical points we are likely to see if no actions are taken to protect the oceans?

Loss of fishing by 2050. Carbon dioxide at the point of no return by 2050.

We need to protect what works and shift our baseline to 1,000 years ago.

We need to stop eating tuna: we have choices and have the gift that we are versatile. It is a myth that we are dependent on the sea for food: it is our appetite for luxury foods – snapper, lobster, oyster, tuna, shark. There is no place on Earth where fish are safe.

We need to look at the ocean as a life-support system. Preceding history set the stage for now: the industrial scale is not working. Imagine feeding people on songbirds, owls and small mammals – how long would that last? With seven billion people how long would birds last if people ate them? People gave that up thousands of years ago for agriculture, except in a few places in Africa and the Amazon. We cannot feed Chicago, London, Abu Dhabi, with wildlife. Wildlife is more valuable to us alive than dead. We become increasingly vulnerable as we degrade these systems. Every fish counts.

On land we are maintaining the wildlife – by the mid-century we will see extinction of fish and seafood. Although Abu Dhabi has banned trawling, this is not the case throughout the world.

I can forgive ignorance but not now, with our eyes wide open.

What are the critical areas for data-gathering?

Only 5 per cent of the oceans have been explored, the rest is less mapped. Although we have generated maps from satellites, they do not reflect what is below. Mapping and exploration of the ocean is essential. We could start by looking at the deep ocean hydrothermal vents. Look at what is in the Arctic. There are fishing vessels ready to hoover up the Arctic, and we haven't even explored it.

When speaking to politicians, I'm speaking as a scientist, focusing on more than the next election or the next quarter. How do we find equilibrium? Those in power today will put in motion the future of the world. My job is to inform all those in power where we are and what we are at risk of losing.

What can we do on our watch? Policies subsidising fishing and logging are undermining our future.

"Sylvia Earle, oceanographer

Focusing on the green and not the blue is a serious mistake ... the world functions as it does because of the ocean system

Flickr/NASA/GSFC/Landsat

Closing the data and information gaps

Daniela Hirschfeld & Tracy Irvine

www.scidev.net/eoe/closing

A new 'union' of international scientific, governmental, nongovernmental and private organisations will share data on biodiversity and ecosystem services on an open source platform, whilst at the same time having their ownership of the data acknowledged, it was announced at the Eye on Earth Summit in Abu Dhabi (12–15 December).

Under the Eye on Biodiversity Special Initiative that emerged from the four-day Summit on improving environmental information, proprietary data will be tracked as it is shared, so that contributing partners are recognised for the vital data collection work they do.

"The benefit to global sharing is that you add your data into it, it stays on your system, but becomes discoverable and easily consumable by any others for incorporation directly into decision-making, or further analyses," a paper prepared by the conference working group on biodiversity said.

"Despite significant international efforts to enable and promote data sharing, the systems that do exist are often under-used and lack incentives. This results in decisions based on incomplete information, duplication of monitoring effort, and a high cost to discovery of information and data," the paper said.

Policy lagging biodiversity decline

National and international policies have not kept up with the increasing complexity of databanks and the ability to analyse the datasets, so that global biodiversity is declining at a faster rate than conservation efforts based on the data can be put in place.

"Barely 15 per cent of the world's species are logged in databases today," Julia Marton-Lefèvre, director general of the International Union for the Conservation of Nature (IUCN) told the conference, adding that it had taken "over 300,000 experts over 1000 years to put them in the catalogue of life".

But she stressed: "It is not necessary to know everything about all the 8.7 million species living on our planet before we take action."

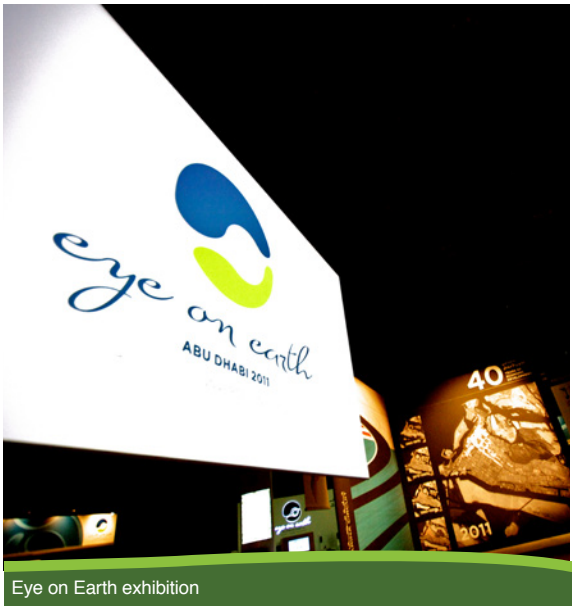
"We need to listen to what the data we already have is telling us," she said, pointing out that 41 per cent of amphibians, 13 per cent of birds, and a quarter of known mammals are in danger of extinction according to the IUCN's Red List, which she described as a "barometer of life".

Jon Hutton, director of the United Nations Environment Programme's World Conservation Monitoring Programme, told the conference the Eye on Biodiversity Special Initiative aimed to share the best data on key natural resources to improve decision-making.

"The challenge we face is to create a lot of new data and to unlock what we already have – existing long term data sets are not effectively put to work for the purpose," said Hutton.

"There are many international organisations with a great deal of information, but we need to bring it together," he said. "One of the areas the Special Initiative will work on is 'harvesting' more data on the environmental impact of biodiversity decline," he added.

Partners in the union will include "the main institutions leading global collation and sharing of information and data on biodiversity. Together they manage the majority of existing work and networks", according to the conference paper.



Eye on Earth exhibition

AGEDI

First published by SciDev.Net on 21/12/2011

Large global data sets on biodiversity and ecosystem services are held by a range of scientific, public and private organisations.

These include UNEP; the Convention on Biological Diversity, through the CBD Clearing House Mechanism; the Global Biodiversity Information Facility which provides biodiversity data as a free open access resource through the GBIF partnership; the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES); IUCN; Conservation International; NatureServe; and private sector companies undertaking environmental impact assessments.

Incentives

Incentives for sharing data would be provided for organisations that have painstakingly collected biodiversity data over many years, the conference's working group on biodiversity agreed.

Measures include encouraging governments, funding bodies, and academic and research institutions to reward and require sharing.

Although sharing involves some costs, incentives outlined in the Special Initiative are not primarily financial but focus more on tools for simplifying data management.

Under the data-sharing union being proposed, "you determine to what extent your resources are available to others: for example, you may default to sharing metadata only, but allow public sharing of complete dataset with a single click. You can link and keep track of your existing information and data, complementing existing cataloging tools", the conference paper said.

Applications

Two application demonstrate the effectiveness of the suggested approach. They are Unlocking EIA (environmental impact assessment) data, and providing data for the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES).

The Unlocking EIA project is working with the International Association of Impact Assessment (IAIA), which has published best practice guidelines for the private sector on capturing data in a standardised format.

EIA data sets are already used by government planning authorities for developing infrastructure for biodiversity management.

IPBES is encouraging increased accuracy, dissemination and coverage of biodiversity data as part of the move to include a global inventory of biodiversity and its economic value in the global Green Economy agenda for Rio+20, the United Nations Conference on Sustainable Development in Brazil in June 2012.

Although work on creating these biodiversity knowledge platforms will continue in advance of Rio+20, several speakers pointed out that existing data has not been used to secure the world's biodiversity, despite knowledge of its decline.

"Saying to each other that we just don't know enough, let's keep studying, is just a delaying tactic. And lots of people are doing that about climate, too," Marton-Lefèvre told SciDev.Net, adding that on the road to Rio+20, IUCN is prepared "to strengthen its position and the role of the environment in the governance system of the world, locally, nationally and globally, whatever can be done to not keep the environment as an isolated side subject.

"We are making progress. However, I don't think it is fast enough", she added "The only thing that we cannot do is say 'we didn't know", Marton-Lefèvre concluded.

Neil Palmer/CIAT

Bridging the gap between geeks and suits

Smriti Mallapaty

www.scidev.net/eoe/bridging

Steven Ramage, director of marketing and communications at the Open Geospatial Consortium (OGC), an international industry consortium of companies, government agencies and universities developing interface standards says "We need to bridge the gap between the geeks and the suits".

Ramage, a self-described geek in a suit, was explaining the challenges facing the creation of a Network of Networks initiative that would enable environmental and social information to be shared across platforms and cultures.

"There is a gap between the people technically doing the work and the policymakers. And there is this translation requirement but there are very few translators," he said at the Eye on Earth Summit in Abu Dhabi (12–15 December).

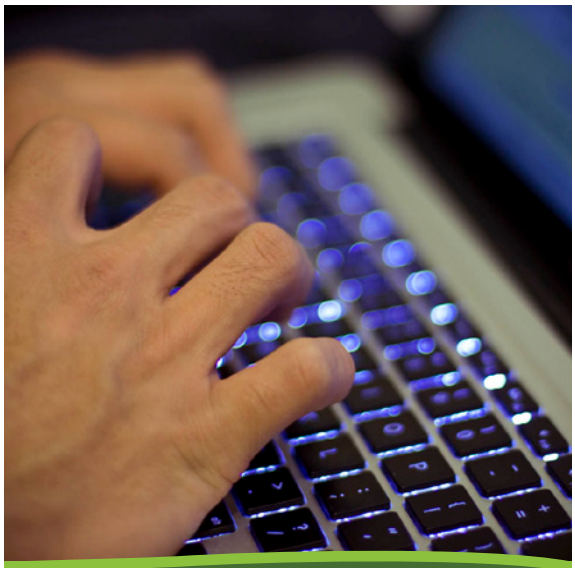
"If the gap between the geeks and the suits is not filled we may get into no-man's-land and people may get lost," he warned.

The Network of Networks idea was discussed by the conference's working group on policy, governance and institutional networking and adopted as a "Special Initiative" to be taken forward to Rio+20 – the United Nations Conference on Sustainable Development in Brazil June 2012.

"In a nutshell," said the working group's 'white paper', "the key problem is that the many current networks, which directly or indirectly address environmental issues, are not connected and thus the enormous advantages for monitoring environmental changes, understanding the drivers behind these changes and developing appropriate and more environmentally sustainable policies and implementation programmes are not being realised.

"A Network of Networks would begin to overcome the lack of data, network and human connectivity which currently exists and in so doing create scope to realise the monitoring, understanding and implementation opportunities."

The paper describes the three main components as: institutional cooperation and partnerships; common content; and shared infrastructure and tools.



Policymakers need better access to environmental and societal data

Flickr/racheocity

Biodiversity hotspots

The white paper stressed that the integration of environmental networks regionally and globally "is of particular importance for developing countries, given the prominent role they can play in safeguarding the integrity of key biodiversity hotspots across the globe".

More colourfully, José Achache, secretariat director of the Group on Earth Observations (GEO), the Switzerland-based organisation coordinating efforts to build a Global Earth Observation System of Systems (GEOSS), commented: "It is a little bit like the Biblical situation of the tower of Babel.

"They can't communicate, they can't talk to each other and they can't work together."

For example, Ramage told SciDev.Net, "there are 740 different ways of explaining water."

The use of any one meaning must be understood across all networks, which requires a more complex understanding of meaning than available search engines can achieve.

First published by SciDev.Net on 21/12/2011

"It is all about data integration. If you search the word 'jaguar' in Google you may get an image of a car or of a large animal," Michael Wilson, programme officer at the United Nations Environment Programme (UNEP), told SciDev.Net.

A similar search would not "make the connection between 'greenhouse gas emissions' and 'carbon dioxide'".

Ultimately, a communication system is needed that can relate similar concepts and underpin them with the relevant data. Standards like those developed by Ramage's organisation for, say, aviation, are an example of the way forward.

Problem of semantics

"We need to solve the problem of semantics and the question of making sure that whatever way the query is formulated it is understood by the system and provided with the appropriate answer," said Achache.

Achache said the idea took root at the International Conference on Sustainable Development in Johannesburg, South Africa, in 1982, where a vision was articulated of "a world where decisions and actions were informed by coordinated, comprehensive and sustained observation".

This led to the formation of GEO and GEOSS. The aim now is for the Network of Networks to be extended to include not only governments and international organisations, but also nongovernmental organisations and the private sector, and to make services accessible at the level of individuals.

Describing how the Network of Networks would function, Jack Dangermond, CEO and president of the California-based Environmental Systems Research Institute (ESRI), said in Abu Dhabi, "Geography will be the integrating principle, spatial information and standards will bring them together".

Networks would maintain their autonomy, functioning as isolated nodes linked by a standardised language, he said. Different levels of sharing and access to information would be made available to specific user groups.

Nightmare

The idea is to solve the problem of data incompatibility without having to merge all the data into one huge source of information. Achache pointed out that each source of geospatial data was non-linear and trying to couple even two non-linear systems "is a nightmare".

A few specialists are still attempting to create such a centralised super-machine that could be the source of all data, in contrast to a decentralised networks concept.

"Basically, I think that Google is not a network. Google is a central node where people put their data," said Dangermond in an interview with SciDev.Net. "So in one case there is the central model and in another case there is the distributed model. The distributed model is actually a network of services, the Google model is 'put your data into Google'."

Networks often form spontaneously, as will, in the opinion of many technology experts, a Network of Networks.

"In every field of development you have different groups that form networks organically and will sooner or later group together," said Nickolai Denisov, senior associate at the Zoï Environment Network based in Geneva. "If you want to organise the movement of data and to make it long-lasting then you need to look at what makes this data move and find people who can make it move."

Little effort

Lalanath de Silva, director of the World Resources Institute's Access Initiative, believes that "a network works best when it supplies a need. When you force people into networks, it works for a while then peters out," he said.

The necessary incentives are in place for the organic emergence of a Network of Networks, said Dangermond, and technology would facilitate progress: "It does not require policy-enabling. It is going to happen with very little effort."

Despite the technological push, a major challenge will be to overcome communication barriers between other stakeholders in environment decision-making.

"Really, there are two communities here at the conference - people who have a very technical orientation and are at the peak of expertise and another community dealing with access rights," said Jeremy Wates, secretary general of the European Environmental Bureau, a federation of citizen organisations. "When we talk about networks I think there are functioning networks on both sides of the divide but to what extent there are networks between the divide is questionable."

Work towards a Network of Networks did not finish with the Abu Dhabi meeting. On the final day, the Abu Dhabi Global Environmental Data Initiative (AGEDI), co-organisers of the meeting with UNEP, said it would continue to support the concept in the run-up to 2012's Rio+20 conference.

Quality control challenges for citizen science

Yojana Sharma

www.scidev.net/eoe/quality

With mobile phone users becoming ubiquitous in the developing world, harnessing citizen science from networks of phone users could provide valuable environmental data for use in scientific analysis, the executive director of the United Nations Environment Programme (UNEP) has said.

But data experts caution that data quality and reliability issues need to be resolved before 'crowdsourced' data collection can become more widespread.

"The public and their cell phones could, if encouraged, become early warning systems of droughts and floods, as well as forest fires and wildlife poaching," Achim Steiner, UN under-secretary-general and UNEP executive director, told the Eye on Earth Summit in Abu Dhabi (12-15 December 2011).

"Managing, processing and making these volumes of data available in user-friendly ways and in service of sustainable development is one of the global challenges and one of the issues for Eye on Earth – and a key input to assisting Rio+20 [the UN conference on sustainable development] in June 2012," he said.

The Eye on Earth Summit, co-hosted by UNEP, looked at the importance of access to environmental and societal data.

Use of citizen-gathered data was discussed by the working group on technical infrastructure where providing the technical platforms and ensuring the reliability of harnessing crowdsourced data was described as an ambitious goal.

"Such crowdsourced data will be of greatest use in tracking and modelling environmental change at all scales, specifically for trends and instantaneous phenomena, when associated metadata adhere to standards that have emerged for widespread global use across governments, industry and science," a working group white paper prepared in advance of the meeting said.

Climate benefits

Crowdsourcing is already being used to gather important data. In India, Project Suraya, linked to UNEP's Atmospheric Brown Cloud initiative, is using special mobile phones in villages to measure levels of black carbon emitted by cooking stoves.

Crowdsourced environmental data is being used in measuring black carbon emissions from cook stoves in India

Dan Tunstall / World Resources Institute

"The project is also linking to satellites with the aim of measuring how more efficient stoves are simultaneously improving public health while providing climate benefits in the atmosphere" Steiner said.

Also being introduced in many countries is the inputting of rain gauge data by farmers.

"It can be useful for data gathering, such as reporting on the weather. You can give farmers a rain gauge and they text in once a week – it is far cheaper than government officials keeping a rain gauge. It is data at a very low cost," said Lalanath de Silva, director of the data Access Initiative at the World Resources Institute in Washington DC and a passionate advocate of open information and data in developing countries.

Citizen science, often dismissed in the past as uncontrolled and inaccurate, is beginning to be recognised as a valuable resource, with technical experts at the Abu Dhabi meeting discussing how it can be effectively used as new platforms for gathering crowdsourced information are developed.

For example, Microsoft's Eye on Earth platform is explicitly focussed on gathering environmental data.

Meanwhile, Google's Earth-mapping applications allow citizen input from anywhere in the world.

First published by SciDev.Net on 18/12/2011

"Android smartphones with open data kit, have been empowering local communities all over the world to collect their own data and participate in the mapping and monitoring," Rebecca Moore, founder of Google Earth Outreach, told the conference.

Interview villagers

"It has turned out to be a very good way to engage with local communities in mapping, monitoring and protecting their own landscape," she said, adding that Google had conducted training on forest monitoring in Tanzania, Colombia and elsewhere.

In Rwanda, after a government project mapping village boundaries, secondary school students were trained to interview villagers and upload information into a National Institute of Statistics of Rwanda database, using the ArcGIS server to structure the information.

The project is also helping verify government information with on-the-ground observation in advance of the country's 2012 population and housing census.

"Crowdsourcing is bolstering accumulation of much richer observational archives for all parts of the world; archives that may be tapped by scientists globally to achieve better understanding of the dynamics of our environment," the working group document said.

"We anticipate that scientists, the public, and decision-makers will have increasing opportunities to take advantage of crowdsourcing," it added.

But use of citizen data for science is still hampered by reliability considerations and the need to ensure the quality of all data.

Falsify data

De Silva admitted that there is an element of suspicion about citizen-collected data for scientific purposes.

"Those who post data have an obligation to determine their accuracy," he said. "There will be a minor percentage of data that is inaccurate or malicious.

"Even if you have only trained scientists gathering data, you will have those who falsify data. The question is, How do you minimise that?"

Lalanath de Silva

AGEDI

John Calkins, of the Environmental Systems Research Institute (ESRI), told SciDev.Net, "The amount of citizen reports is rising, but slowly. That's because of the challenge of quality control. Some of the citizen data is going to be good and some of it bad. You will have to make sense of some of it so that if it appears absurd you will have to mark it as not likely. There is a whole analytical process that goes on to say 'Is that good data?'" And citizen data cannot be relied upon over time. Low-cost citizen science output, while agile and able to respond to changing needs, is almost entirely voluntary, and continued availability of data contributions may not be guaranteed, the working group said.

Moore said it was improbable that people would ever be completely comfortable with the notion of citizen science.

In addition, ensuring data input is not the only aim. Harlan Onsrud, of Global Spatial Data Insfrastructure Association and co-chair of the working group, told the conference, "A lot of this information won't have value unless we have more efficient ways of documenting and recalling the context of the data being gathered."

Huge amounts of unused and unanalysed data already exist. "The citizen science brain is just a storage bin," said Peter Gilruth, director of UNEP's early warning and assessment division.

The sense and sensitivity of technology for all

Smriti Mallapaty

www.scidev.net/eoe/sense

The dazzling prospect of environmental information technologies available to everyone in the world was conjured up at the Eye on Earth Summit in Abu Dhabi. The vision, however, comes with a caution.

The optimistic scenario arises from a combination of geospatial technology and new online services, said Jack Dangermond, CEO and president of the US-based Environmental Systems Research Institute (ESRI).

"In our field of geospatial and environmental information systems we are seeing the emergence of much easier to use technology that is accessible, and through web and cloud computing will be available to everyone in the world," he told the meeting (12-15 December 2011).

Geospatial technology uses the Earth's spatial location as a reference point for collection and processing of data, such as maps. One tool, the Eye on Earth network (no relation to the Abu Dhabi conference) was launched by ESRI, Microsoft and the European Environment Agency (EEA) at the recent round of climate talks in Durban, South Africa, to share environmental and geospatial data and make it publicly accessible.

Users can create and share their own maps, explained Dangermond, and "on top of these intelligible webmaps, which are going to be accessible to everyone on the planet, we can sketch different alternatives, draw around an area for additional protection and then quickly understand the impacts of that on the rest of society".

Special watching services – WaterWatch, AirWatch, NoiseWatch – have also been designed as part of the Eye on Earth network to directly involve citizens in environmental monitoring.

Sensing applications

People can rate water, air, and noise quality to "get a sense of the community feeling," Giacomo de' Liguori Carino, project manager for Eye on Earth at the EEA, told SciDev.Net.

NoiseWatch includes an application where anyone with a smartphone can measure noise levels and report readings onto the database.

Google has developed similar smartphone sensing applications that have been used to aid developing countries in monitoring their forest and carbon resources.

"As you know, mobile phones are ubiquitous in the developing world," explained Rebecca Moore, founder of Google Earth Outreach, in a conference presentation. "It has turned out to be a very good way to engage with local communities in mapping, monitoring, and protecting their own landscape."

Moore said tools such as Google Earth and Google Maps had "brought a new era of geoliteracy, not just among intellectuals, but also among some of the poorest people on Earth – for example to secure their land rights".

Google Earth Outreach is working on tools that can harness the company's capacity for analysing and storing data to further support developing countries that do not have advanced technological infrastructure. One such tool, Google Earth Engine – a large public catalogue and powerful processor – was recently used to create the "finest scale map of Mexico's forests ever produced". The mapping involved analysing 53,000 Landsat images in 15,000 computation hours.

Eye on Earth exhibition

AGEDI

First published by SciDev.Net on 14/12/2011

"Because we ran it on 1,000 computers in parallel, we got the result in less than a day. Otherwise it would have taken almost three years", said Moore.

Forest map

Although industrialised countries have taken the lead in collecting and processing geospatial data, it can be used to capture information all over the world, including developing countries. However, many of the tools require other types of data that may not be as freely available to overlay onto maps.

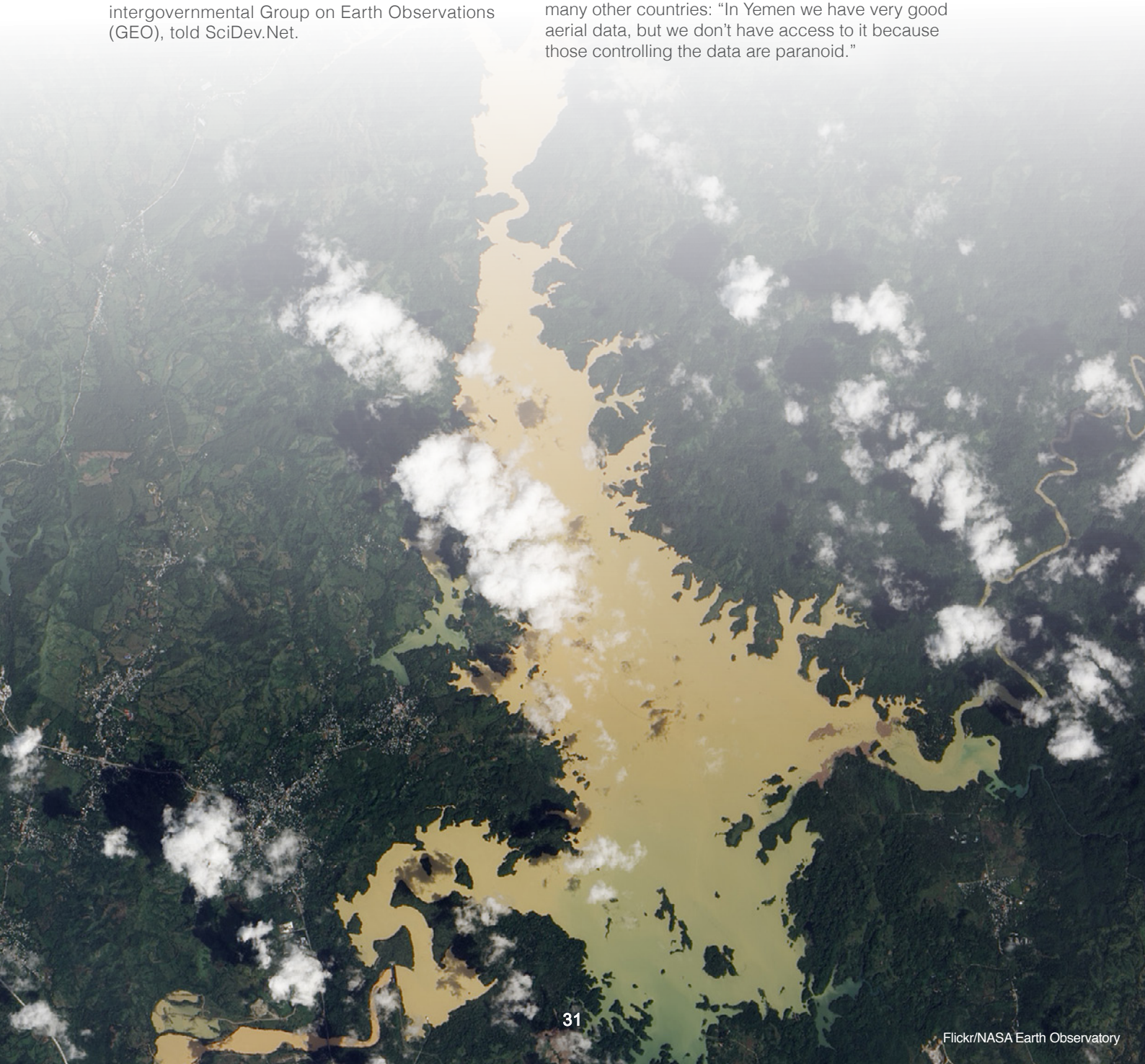
"There is a lack of in-situ observational data available in developing countries," Jose Achache, secretariat director of the Geneva-based intergovernmental Group on Earth Observations (GEO), told SciDev.Net.

"Like we say 'garbage in, garbage out'," commented Abdul Al Eryani, director of the Socotra Conservation Fund. "Developed countries have solved the problem of data and are more concerned with the tools. Developing countries have not reached that point yet."

In the midst of the technological possibilities and big hopes, came two reminders that certain types of data may be considered too sensitive to share.

"For example, two key areas in Europe are sources of drinking water and locations of endangered species," said Stefan Jensen, head of the EEA's shared environmental information system and spatial data infrastructure group.

And Al Eryani reflected a problem that applies to many other countries: "In Yemen we have very good aerial data, but we don't have access to it because those controlling the data are paranoid."



Flickr/NASA Earth Observatory

Geospatial initiative shows the way

Daniela Hirschfeld

www.scidev.net/eoe/geospatial

GeoSUR, a Latin American and Caribbean (LAC) open access and web-based initiative for geospatial data-sharing, has received a boost at the Eye on Earth Summit in Abu Dhabi (12-15 December).

The conference 'Networks of Networks' working group accepted GeoSUR – one of the first such regional networks in the developing world – as a "case model".

"This could help to use the lessons we learned as a starting point to build similar networks in other developing regions," Eric Van Praag, coordinator of GeoSUR, told SciDev.Net.

"We can help kickstart a network like this in other parts of the world and probably get some funding or support," explained Van Praag.

Established in 2007 by the Development Bank of Latin America (CAF) – a multilateral financial institution that supports sustainable development and comprises 16 LAC countries, Spain and Portugal and 14 private regional banks – the initiative is the first portal to offer access to spatial information for all the countries of the region in one place.

The information is generated by more than 60 participating LAC agencies, from ministries, research centres, nongovernmental organisations (NGOs), geographical institutes and private companies, and includes regional base maps; infrastructure, land use, land cover and protected area maps; and aerial imagery.

Presenting its five-year report to the Abu Dhabi meeting, the initiative said that 80 per cent of institutions using GeoSUR searched and accessed data, and between 30 and 40 per cent consulted it to support government and institutional decision-making and to download data.

GeoSur has been used in Haiti after the 2010 earthquake

Flickr/ euronews

Examples of how the system had been used included locating suitable areas to build shelters in Haiti after the 2010 earthquake, visualisation of Peru-Bolivia border maps to evaluate the feasibility of undertaking cross-border projects, assessment of the impact on infrastructure projects on protected areas and indigenous communities in Colombia, updating drainage network maps in Ecuador, and development of a flood and landslide hazard map in Venezuela.

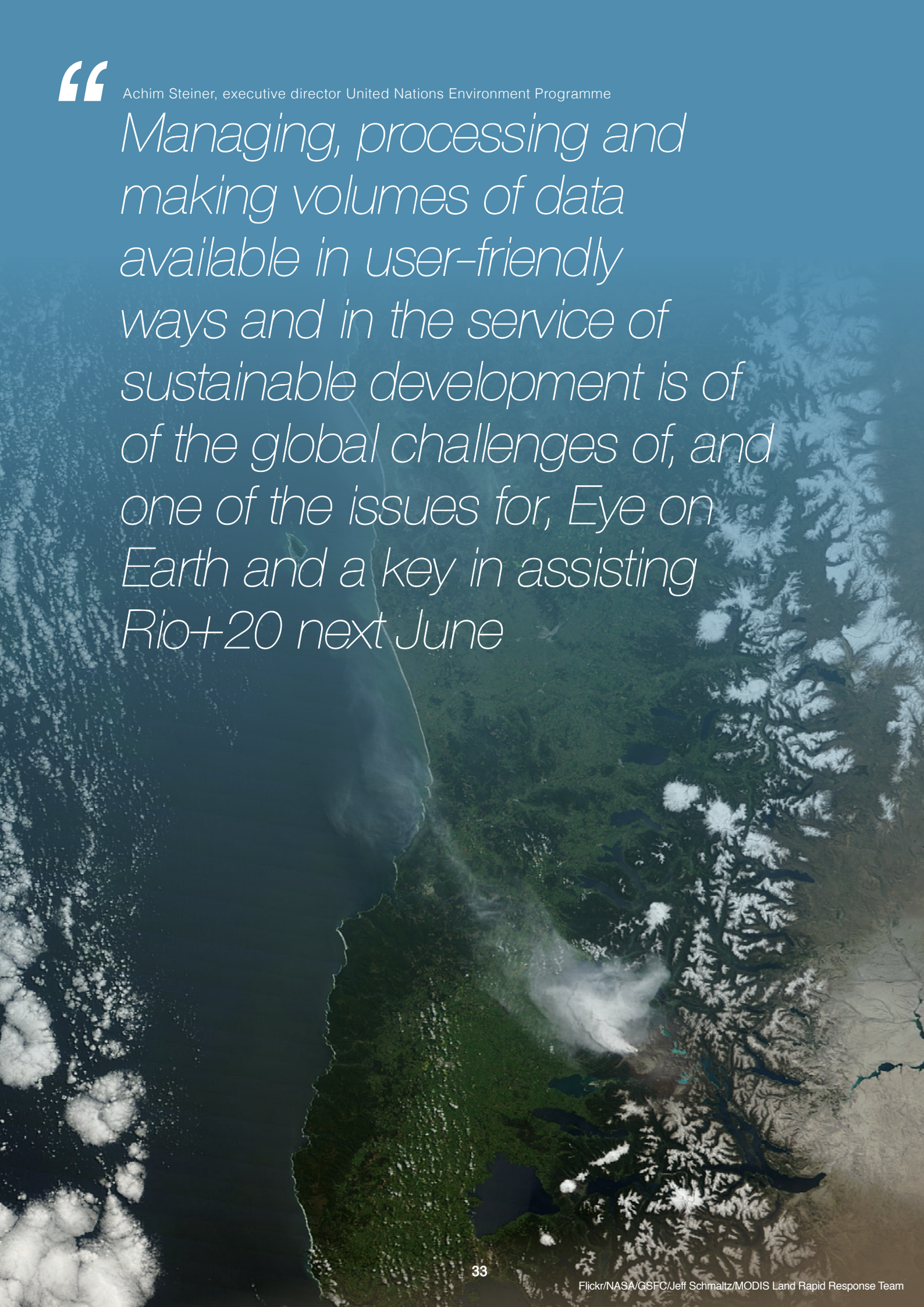
"This is an evolving network, and we are putting more and more information into it," said Van Praag.

"GeoSUR is a public tool, so if you have your own GIS system and you want to do some analysis you can actually download it to your computer," he said. "This could give scientists the chance to collaborate and hopefully build things from the information they download and give the result of their work back to GeoSUR so it can be shared with other users."

First published by SciDev.Net on 15/12/2011

Achim Steiner, executive director United Nations Environment Programme

Managing, processing and making volumes of data available in user-friendly ways and in the service of sustainable development is of of the global challenges of, and one of the issues for, Eye on Earth and a key in assisting Rio+20 next June



Flickr/NASA/GSFC/Jeff Schmaltz/MODIS Land Rapid Response Team

About Environment Agency – Abu Dhabi (EAD)

The Environment Agency – Abu Dhabi (EAD) was established in 1996 to preserve Abu Dhabi's natural heritage, protect our future, and raise awareness about environmental issues. EAD is Abu Dhabi's environmental regulator and advises the government on environmental policy. It works to create sustainable communities, and protect and conserve wildlife and natural resources. EAD also works to ensure integrated and sustainable water resources management, to ensure clean air and minimise climate change and its impacts. For more information, visit www.ead.ae

About Abu Dhabi Global Environmental Data Initiative (AGEDI)

Conceived by the Environment Agency – Abu Dhabi and launched by the Abu Dhabi Government in 2002, under the guidance and patronage of His Highness Sheikh Khalifa bin Zayed Al Nahyan, AGEDI provides user-friendly access to high-quality environmental information, through a variety of information products. While EAD champions AGEDI locally, the United Nations Environment Programme (UNEP) champions it regionally and globally. AGEDI's objectives include; to enhance environmental data collection and assessment, to increase data capacities for local, national, regional, and global environmental decision making, to ensure sustainable development planning is based on quality, timely, useable, and updated data and information, to provide accessibility of data and information to all stakeholders, to enhance national and international mechanisms of information processing and exchange and to enhance national capacities in information handling and communications. For more information, visit www.agedi.ae

About United Nations Environment Programme (UNEP)

UNEP is the designated authority of the United Nations system in environmental issues at the global and regional level. UNEP's mission is to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations'. UNEP is headquartered in Nairobi, Kenya. For more information, visit www.unep.org

هيئة البيئة - أبوظبي
Environment Agency- ABU DHABI

AGEDI

UNEP