

# Stories and Solutions

GRID-Arendal Annual Report 2015



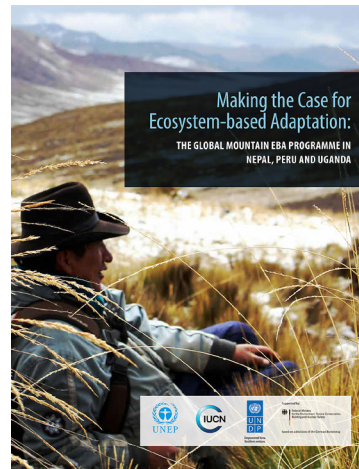
Established in 1989, GRID-Arendal's mission is to create environmental knowledge that encourages positive change. We do this by organizing and transforming available environmental data into credible, science-based information products, delivered through innovative communication tools and capacity building services targeting relevant stakeholders.

GRID-Arendal works closely with the United Nations Environment Programme (UNEP), other UN agencies and partners around the world to connect science to policy. Our goal is to shorten the distance between the emergence of new science and policy actions. We seek to influence thinking and action at the level of the global community on issues that require collective action because we cannot solve many problems through action at the national level alone.

### Acknowledgements

GRID-Arendal would like to acknowledge the support of the Government of Norway and its other funders, partners and supporters.

This report is dedicated to our dear colleague Øystein Halvorsen, who passed away in 2015. He was a highly respected employee of GRID-Arendal and his contributions to our organization during his 22 years of dedicated and selfless service were valuable.



*“Hear, hear! Top quality work by GRID-Arendal and these drawings a legacy product of the programme in their own right!”*

Extract from an email from the UNDP Biodiversity Programme (referring to the Making the Case for Ecosystem-based Adaptation report)

## Contents

Foreword	3
Message from the Managing Director	4
Who we are and what we do	6
Our Work	
Blue Carbon	8
Environmental Crime	10
Green Economy	14
Marine and Coastal Resources	16
Marine Spatial Planning	18
Polar and Mountain Environments	20
State of the Environment Reporting	24
Transboundary Waters	26
Special projects	28
Publications	30
Board Report	34
Financial Report	36

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# Foreword

GRID-Arendal's ability to turn complex scientific research into clear, practical knowledge underpins the evidence-based policies that are so vital in UNEP's work to create a healthy environment with healthy people. This latest Annual Report highlights our collaboration during 2015. It includes the publication of a new report on Waste Crime, the support to Sierra Leone with its first State of Marine Environment report, and the assistance provided to the Tehran Convention to select Baku as the location for its new secretariat.

More importantly, the report is the latest chapter in UNEP's relationship with a unique centre of excellence, which now spans more than a quarter of a century. Throughout that time, GRID-Arendal's scientific analysis of environmental issues ranging from the oceans to the Polar Regions has raised the profile of major global threats.

That is why I am so pleased that we will continue working together in the future. This will include initiatives like the Blue Solutions project to document effective environmental management, so that best practice can be captured, adapted and reapplied around the world. It will also include the continued growth of GRID-Arendal's Global Environment Facility (GEF) portfolio, through the International Waters Learning

Exchange & Resource Network (IW: Learn) and the Blue Forests project.

GRID-Arendal's ability to use language and techniques that are accessible and meaningful to decision makers accelerates the connection between emerging science and policy actions. This dynamic resource will be invaluable in delivering the environmental commitments integral to almost every goal of the historic 2030 Agenda for Sustainable Development, including the Paris climate change agreement.

I would like to take this opportunity to thank the Government of Norway for their continued support and everyone in the GRID-Arendal team for their continued dedication - I look forward to discovering the innovative solutions will emerge in the year ahead.



A handwritten signature in black ink that reads "Achim Steiner". The signature is fluid and cursive, written over a light background.

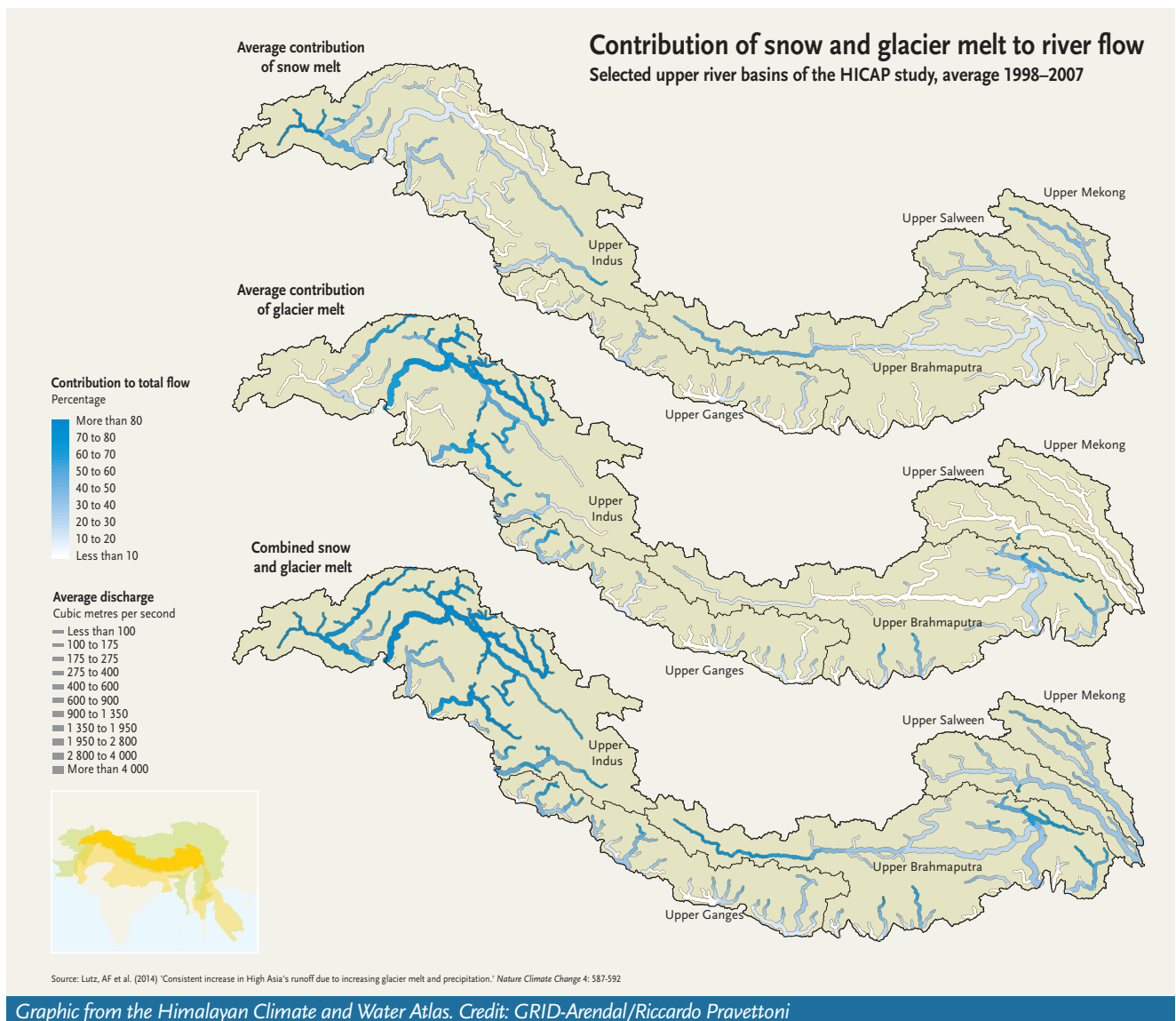
**Achim Steiner**  
UN Under-Secretary General  
and UNEP Executive Director

# Message from the Managing Director

At GRID-Arendal we believe that change will only come when people can connect and see the impacts of environmental and other changes through different eyes. One way to do this is through stories. Storytelling is an ancient art. It has been the foundation of human culture for millennia. Today, stories travel around the world in an instant. At GRID-Arendal we have stories to tell. And we're telling them in new and different ways.

Here are a couple of examples of what I mean. In 2015, GRID-Arendal helped tell the story of why mountain ecosystems are important. We did this through an excellent new publication called the Himalayan Climate and Water Atlas launched at a high level event at the United Nations climate change conference in Paris. The Water Atlas tells the story of the importance of glaciers and the river systems they feed in the Hindu Kush Himalaya region – and the threats they face from climate change.

In a world where climate change and environmental devastation are increasingly being seen as threats to global security, GRID-Arendal can highlight some good news when West African nations that came together last year to file a joint submission on the UN Law of the Sea Convention. GRID-Arendal worked with Cabo Verde, Gambia, Guinea, Guinea Bissau, Mauritania, Senegal and Sierra Leone for over eight years to help build the trust and capacity needed to make this historic submission.



A new Rapid Response Assessment report on waste crime told the story of the illegal trade of hazardous waste. Called Waste Crime – Waste Risks: Gaps in Meeting the Global Waste Challenge the report found that huge amounts hazardous waste is illegally traded or dumped each year. Prepared by GRID-Arendal for UNEP, Waste Crime highlighted the fact that the illegal e-waste trade is estimated to be worth US \$19 billion a year.

To tell a story in a different way, GRID-Arendal launched its first story maps last year. This is part of a new initiative that uses an old technology (maps) merged with new techniques and social media to attract attention to important stories. This innovative approach combines maps, graphics and video to communicate complex ideas in a simple story format. A good example is the story map about Sargassum seaweed produced for a Regional Expert Group Meeting held in Freetown, Sierra Leone, in November. In recent years Sargassum has been seen as a pest, washing up in vast quantities on beaches on both sides of the Atlantic. It is a major problem in West Africa.

GRID-Arendal's staff, consultants and interns have worked hard over the last year to bring our stories to the attention of politicians, policy makers and the general public. While our work is divided into eight different programmes, our small communications, finance and administration teams support all of our efforts. I want to acknowledge everyone for his or her dedication and initiative in 2015.

It is now a year since GRID-Arendal made a number of internal changes that have made us more efficient and helped focus our work with our most important partner, the United Nations Environment Programme (UNEP). Among these changes are regular meetings of a new UNEP–GRID-Arendal Steering Committee that ensures even closer collaboration and better coordination of our work.

Of course none of GRID-Arendal's work would be possible without the continued support and trust of the Norwegian Ministry of Foreign Affairs, the Ministry of Climate and Environment and many other contributors and funders. Other important collaborations include the University of Agder, the network of UN related organizations in Norway, the Municipality of Arendal and the County of Aust Agder.

Our goal is a more peaceful world where environmental values are a natural part of decision-making – whether those decisions are by government, business or individuals. Linking the global trends to national, regional and local concerns is an important element of our work.

I want to thank all those we have worked with – staff, partner organizations, governments and many others – for a successful year. Our collective efforts are making a difference. We look forward to continued cooperation and success in 2016.



A handwritten signature in blue ink that reads "Peter T. Harris". The signature is fluid and cursive, written over a light blue horizontal line.

Peter Harris  
Managing Director

# Who we are and what we do

GRID-Arendal is a centre of excellence that keeps an eye on our rapidly changing environment – at the poles and in mountain regions, in the oceans and river basins, on shorelines and on land. Our 34 staff and consultants grapple with interrelated challenges such as climate change, wildlife poaching, illegal waste disposal, joint management of rivers and seas, and the need for developing countries to be able to monitor and report on the state of their environment.

During 2015 GRID-Arendal worked on 100 projects organised in eight programme areas:

- Blue Carbon
- Environmental Crime
- Green Economy
- Marine and Coastal Resources
- Marine Spatial Planning
- Polar and Mountain Environments
- State of the Environment Reporting, and
- Transboundary Waters.



Our goal is nothing less than the transformation of the way we do business on this planet. This requires that society be transformed so that it understands, values and protects the environment on which it depends.

To get there we work closely with the United Nations Environment Programme (UNEP) and many other partners to support sustainable development – a future that recognizes the essential links between the planet, ecosystems and the people that depend upon them.

We take complex scientific information and turn it into material that is used in decision-making by political leaders, policy makers and the general population. This information comes in many forms: graphic reports, photographs, videos, social media and other innovative forms of communications. We are focused on results. GRID-Arendal's message is delivered by our small staff via presentations to international meetings and conferences, collaborations with universities and other learning institutions, articles and peer-reviewed scientific publications.



# Blue Carbon

Blue Carbon refers to the carbon linked to natural coastal and marine ecosystems. These ecosystems can help reduce the effects of climate change by fixing and storing carbon. Blue carbon ecosystems include tidal marshlands, mangrove forests and seagrass meadows, which are not only naturally beautiful but also provide important “ecosystem services”. Among other things, they filter pollution, provide fish nurseries and buffer shorelines against storms. The sustainable management of these ecosystems can improve livelihoods and help lessen climate change effects and increase resilience.



Wall mural in Guayas Region, Ecuador. Photo: Caroline Schwaner



Blue Forest Project Ecuador site visit. Photo: Caroline Schwaner

## Blue Forests

A major blue carbon activity for GRID-Arendal in 2015 was the continued implementation of the Blue Forests Project, a four-year global initiative focused on improved ecosystem management through harnessing the value of carbon and other ecosystem benefits of “blue forests” (blue carbon ecosystems). GRID-Arendal manages the project on behalf of UNEP with support from the Global Environment Facility and many partners.

The Blue Forests Project includes sites in Mozambique, Madagascar, Ecuador, Indonesia, United Arab Emirates, Thailand, USA, Central America and Kenya and involves 17 partners worldwide. Activities included field work, creation of a project website, twitter feed and organising meetings of the Project Steering Committee and Carbon Science Advisory Panel in Zanzibar as well as a regional Blue Carbon policy workshop in Guayaquil, Ecuador. The project was profiled at Stanford University’s Natural Capital Symposium, the 27th International Congress for Conservation Biology in Montpellier, the Blue Vision Summit in Washington D.C., the World Oceans Day in Paris, the Eye on Earth and Ecocity World Summits in Abu Dhabi, and the UN climate change negotiations in Paris in December (COP21).

At COP21, GRID-Arendal was invited by the Australian Ministry of the Environment to be a founding member of the International Partnership for Blue Carbon, an initiative that “brings together governments, non-profit

organisations, intergovernmental agencies, and scientists to increase understanding of, and accelerate action on the important role of coastal blue carbon ecosystems in climate change action”.<sup>1</sup>

GRID-Arendal and the Blue Forests Project also supported development of the Norwegian Blue Forests Network (NBFN) and the Blue Guardians initiative.

## Norwegian Blue Forests Network

The NBFN is a partnership between the Norwegian Institute for Water Research, the Institute for Marine Research and GRID-Arendal. Its goal is to improve Norwegian understanding of the importance of blue forests that play a role in storing carbon (which affects climate change) and that provide ecosystem services both in domestic and international contexts.

## The Blue Guardians Initiative

Blue Guardians aims to protect oceans and encourage development of blue economies through projects that support climate resilient communities for Small Island Developing States (SIDS). Blue Guardians partners include SIDS DOCK, the Clinton Climate Initiative, DigitalGlobe, the World Bank, The Nature Conservancy, Conservation International and others. As a core partner, GRID-Arendal attended its official launch by former U.S. President Bill Clinton at the Clinton Global Initiative annual meeting in New York City in September.



*“Just wanted to quickly say thank you – the content was rich, interesting, and engaging. [...] I really hope that we’ll have another chance to collaborate soon! I enjoyed it immensely!”*

Extract from an email from the Kinship Foundation, June 2015, regarding the webinar *Blue Carbon and Beyond: Linking Marine Ecosystem Services with Markets and Decision-Making*

### Oceanic Blue Carbon Initiative

GRID-Arendal developed an “Oceanic Blue Carbon” initiative to answer the UN’s call for innovative solutions to address the climate change challenge and prevent global biodiversity loss. This initiative focuses on the potential role that all marine life – from large vertebrates, such as whales, sharks and tuna to smaller invertebrates, such as krill and squid – can play in reducing the effects of climate change. These animals fix carbon in surface waters and transport it to deep waters through multiple carbon-related processes. In November, GRID-Arendal was invited to present this concept at the Global Ocean Commission’s High Seas Meeting. New proposals are being developed and funding has been secured from the Abu Dhabi Global Environment Initiative (AGEDI) for an educational video to be produced in 2016.

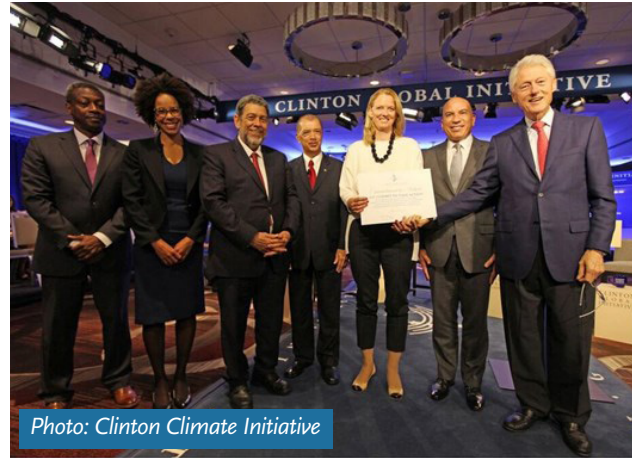
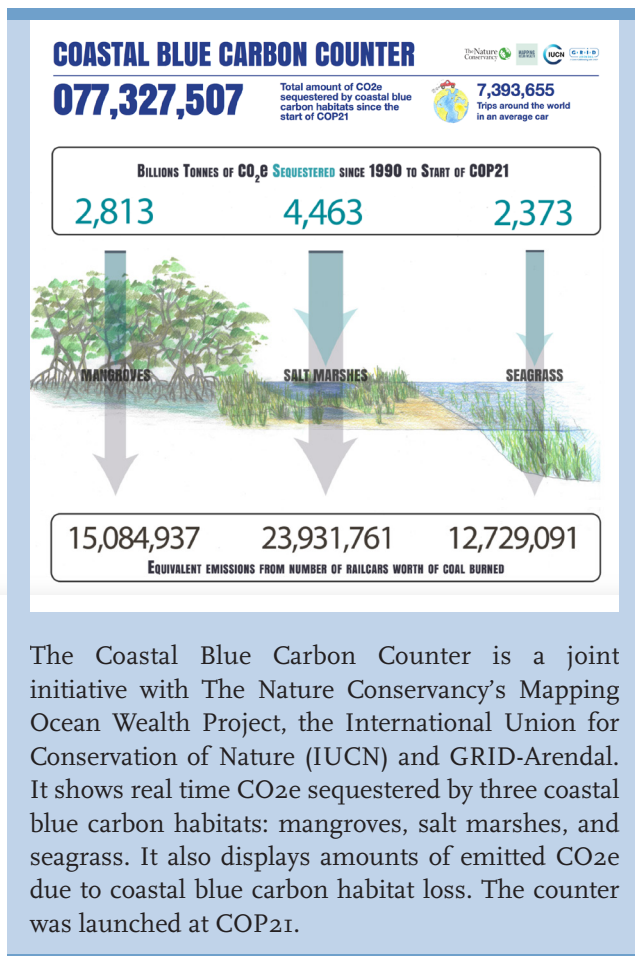


Photo: Clinton Climate Initiative

*“The best climate and geospatial technologies often are prohibitively expensive for many of these nations. So today, Digital Globe with their partners in Blue Guardians [Clinton Climate Initiative] and including SIDS DOCK, Conservation International, GRID-Arendal, and World Bank, and the Global Environment Facility are committing to provide the key elements necessary for these states to develop national resilience strategies and to build a pipeline of investment projects to increase coastal resilience [...] Through this commitment [...] Blue Guardians will drive a wave of sustainable development into these economies, increase the resilience of the islands in the face of a changing climate, and hopefully spur others to follow suit.”*

Former U.S. President Bill Clinton speaking at the launch of the Blue Guardians initiative, New York City



The Coastal Blue Carbon Counter is a joint initiative with The Nature Conservancy’s Mapping Ocean Wealth Project, the International Union for Conservation of Nature (IUCN) and GRID-Arendal. It shows real time CO<sub>2</sub>e sequestered by three coastal blue carbon habitats: mangroves, salt marshes, and seagrass. It also displays amounts of emitted CO<sub>2</sub>e due to coastal blue carbon habitat loss. The counter was launched at COP21.

### Reports and Publications

GRID-Arendal is conducting a feasibility study for blue carbon in West Africa – Blue Carbon West Africa – in conjunction with the Abidjan Convention<sup>2</sup> Secretariat. The intent of the report is to allow the Abidjan Secretariat to evaluate where projects might be easily started, or included in on-going efforts. Case studies will highlight success stories and lessons learned from the region. This report is being completed in partnership with Coastal and Ocean Policy Programme at the Nicholas Institute for Environmental Policy Solutions at Duke University. A full draft will be submitted to the secretariat in June 2016.

# Environmental Crime

Transnational organised environmental crime is a rapidly growing threat to the environment, revenues from natural resources, state security, and to sustainable development. It involves everything from logging and deforestation, fisheries, mining and trade in minerals, dumping and trade in hazardous and toxic wastes and trade in and poaching of wildlife and plants.



*A private aqua-farm where sturgeon caviar is produced. Photo: iStock/Pro-syanov*

## Caspian Sea Media Tour

GRID-Arendal supported a group of 16 journalists who went to Astrakhan, Russia in May 2015 on a media tour to examine the sturgeon-poaching situation in the Northern Caspian. Participants met with representatives of the main government bodies responsible for the management of sturgeon stocks and poaching control, including the Volga-Caspian territorial department of the Ministry of Fisheries (Rosrybolovstvo), the Office of Internal Affairs of Russia and the department of Agriculture and the fishing industry in the Astrakhan region. The journalists toured an area known for its high poaching activity and visited the Astrakhan Nature Reserve and a private aqua-farm where “Beluga” sturgeon caviar is produced. A follow-up media tour for journalists to the leading Russian sturgeon breeding company “Russian caviar house” in Kaduy, Vologda, was organised in December.

The journalists’ tours produced 10 stories on the topic in local and national print media, and 23 online publications. A 25-minute report on sturgeon poaching was included in a prime time TV Channel 1 show in Russia, and a 15-minute report for the environmental programme “Territory Tomorrow” appeared on Russian state TV, ORT Channel.

An outcome of the media campaign was a high-level meeting held in the Moscow Public Chamber on the legal aspects of trade in sturgeon products in Moscow, where much of the illegal sturgeon is consumed. Organised by GRID-Arendal in partnership with WWF-Russia and the “Union of Sturgeon Breeders”, the meeting led to policy decisions on the issue by the Government of Moscow. Recommendations were forwarded to the Russian State Duma calling for poaching to be included in parliamentary hearings of the Committee on Environment scheduled for March 2016.

## The Fight Against Poaching and Forest Crime

Lack of effective law enforcement is a major problem for countries battling poaching and illegal logging. GRID-Arendal's Combating Transnational Organised Forest Crime and Corruption (ORGFORC) project fights illegal logging by training forest officers, investigators, and prosecutors on forest crime, anti-money laundering and asset recovery in Asia and East Africa. It also supplies information on illegal logging to improve international law enforcement. Project partners are the UN Office on Drugs and Crime (UNODC) and the Pasiansi Wildlife Training Institute in Tanzania. The Pasiansi Institute trains game scouts and park rangers to counter illegal logging for timber and charcoal in forest reserves. UNODC runs courses for prosecutors, police and customs officials in East Africa, Myanmar, Cambodia, Lao PDR, Vietnam and Thailand. Last year GRID-Arendal compiled a report based on the Institute's work in forest reserves where illegal activity takes place. The draft report looked at the effectiveness of training using case studies and included estimates of how this work contributes to reducing deforestation. It includes information on the impact of forest crime on development and its cost to the budgets of countries where it occurs. The report will be finalized and released in 2016.

## Losing the Tsar Fish

In August, findings of the draft report on sturgeon poaching and illegal caviar trade in Russia and Kazakhstan entitled *Losing the Tsar-Fish* were presented at an international conference – Tehran Convention and Stakeholders Interaction in Addressing Environmental Problems of the Caspian Sea – held in Astrakhan, Russia. The report focuses on sturgeon poaching in the Northern Caspian, which costs the Russia and Kazakhstan economies approximately US \$130-230 million a year. The report notes that this money funds criminal activities in the region.

## Investigative Journalism

Last year GRID-Arendal began working with the Norwegian Foundation for a Free and Investigative Press (SKUP) and the Global Investigative Journalism Network (GIJN). The goal of this new collaboration is to increase the number of investigative stories about environmental crime in the international media. The two organizations sponsored and participated in the 9th Global Investigative Journalism Conference in Lillehammer in October. The conference drew 950 participants from 121 countries and received coverage in at least 14 languages. GRID-Arendal and SKUP established two Environmental Investigative Journalism grants of NOK 25,000 NOK each, which were announced at the conference. Two grant winners were selected at the end of the year.



Volga Delta Media Tour participants. Photo: Tatyana Sorokina

## Climate Change and Security

Climate Change and Security was established at the request of UNEP's Regional Office of Europe (ROE) and funded both by the European Union and ROE. It is being carried out by a consortium that includes GRID-Arendal, UNEP, UNDP, the Organisation for Security and Co-operation in Europe (OSCE) and Resource Efficient Cities (REC). The project consists of three assessments focusing on the effects of climate change on regional security in Eastern Europe, the Southern Caucasus and Central Asia. GRID-Arendal and Zoi Environment Network are working together and have prepared three draft reports that were circulated to partners. Regional consultations on the adoption of the reports are being prepared and will be held in 2016.

The United Nations Security Council and General Assembly included natural resources crime in a number of resolutions and mandates, including the unanimous adoption of a resolution A/RES/69/314 on "Tackling illicit trafficking in wildlife". The resolution referenced the decisions at UNEP's 2015 Environmental Assembly based on a previous report prepared by GRID-Arendal for UNEP and INTERPOL.

The resolution expressed concern that "...in some cases, illicit trafficking in protected species of wild fauna and flora is an increasingly sophisticated form of transnational organised crime, recalling Economic and Social Council resolution 2012/19 of 26 July 2012, in which the Council recognized that organised crime had diversified and represented a threat to health and safety, security, good governance and the sustainable development of States, and therefore underlining the need to combat such crimes by strengthening international cooperation, capacity-building, criminal justice responses and law enforcement efforts..."<sup>3</sup>

## Reports and Publications

GRID-Arendal produced a Rapid Response Assessment report for UNEP entitled *Waste Crime – Waste Risks: Gaps in Meeting the Global Waste Challenge*. The report was launched in May in Geneva at the Conference of Parties to three major conventions addressing the global waste issue - the Basel, Rotterdam and Stockholm Conventions. Its findings were also presented at the National Waste Management Conference in Oslo in June.

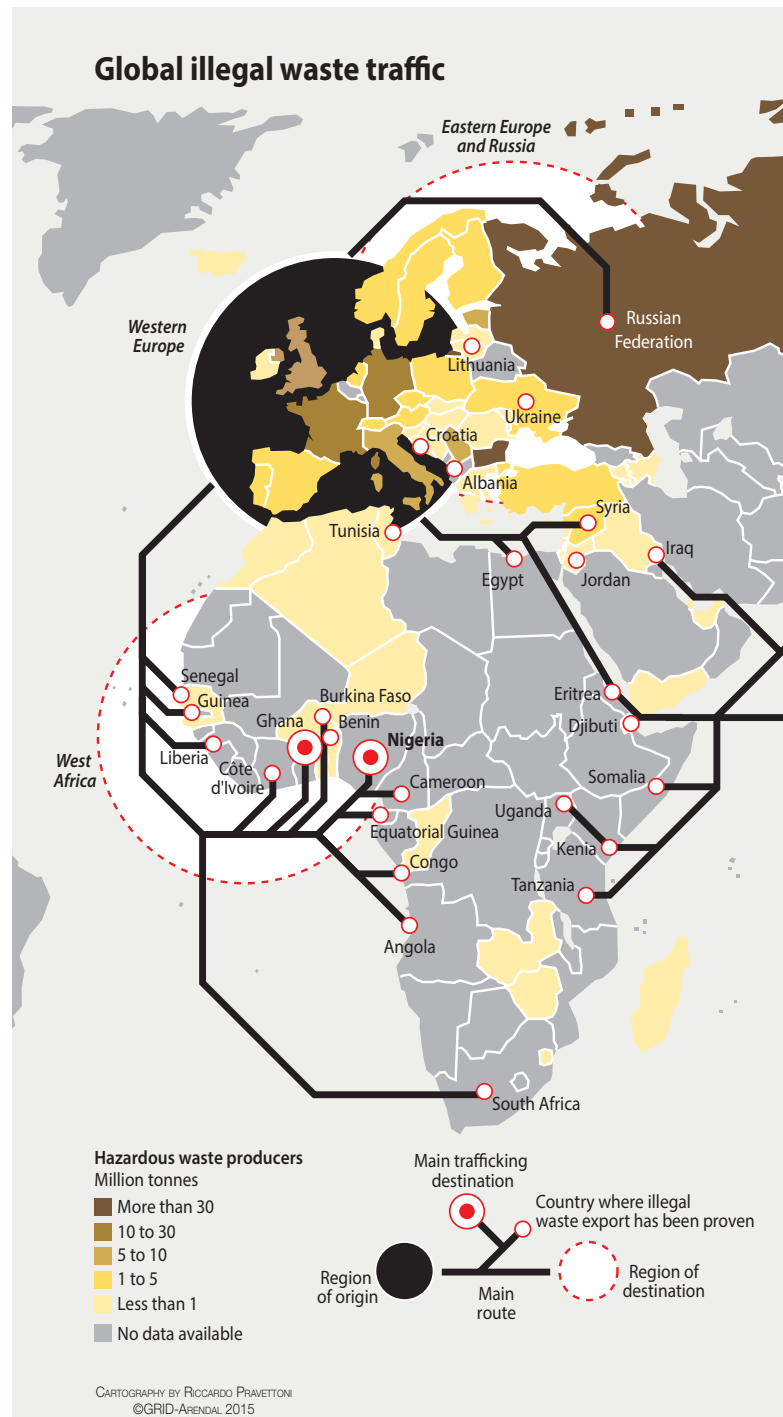
Between 12 May and 13 May 2015, approximately 350 news articles referencing the report were published across 28 countries globally. Articles were in The Guardian, NBC News, German Press Agency DPA, Swiss public broadcaster RTS among others.

The publication was presented at the office of the Auditor General of Norway and the Agency for Public Management and eGovernment in August. It was also presented at the European Enforcement Network meeting of the Environmental Network for Optimizing Regulatory Compliance on Illegal Traffic and the Regional Enforcement Network for Chemicals and Waste in Asia.

Norway is currently involved in updating the International Organization of Supreme Audit Institution guidance on auditing waste management, which was first published in 2004. The updated guidelines will consider threats of hazardous waste crime including dumping and trafficking. The Waste Crime report was used as supporting material at a meeting in Cairo where the draft guidelines were presented. The new guidelines will include findings, maps and graphics from the report, and other GRID-Arendal publications.

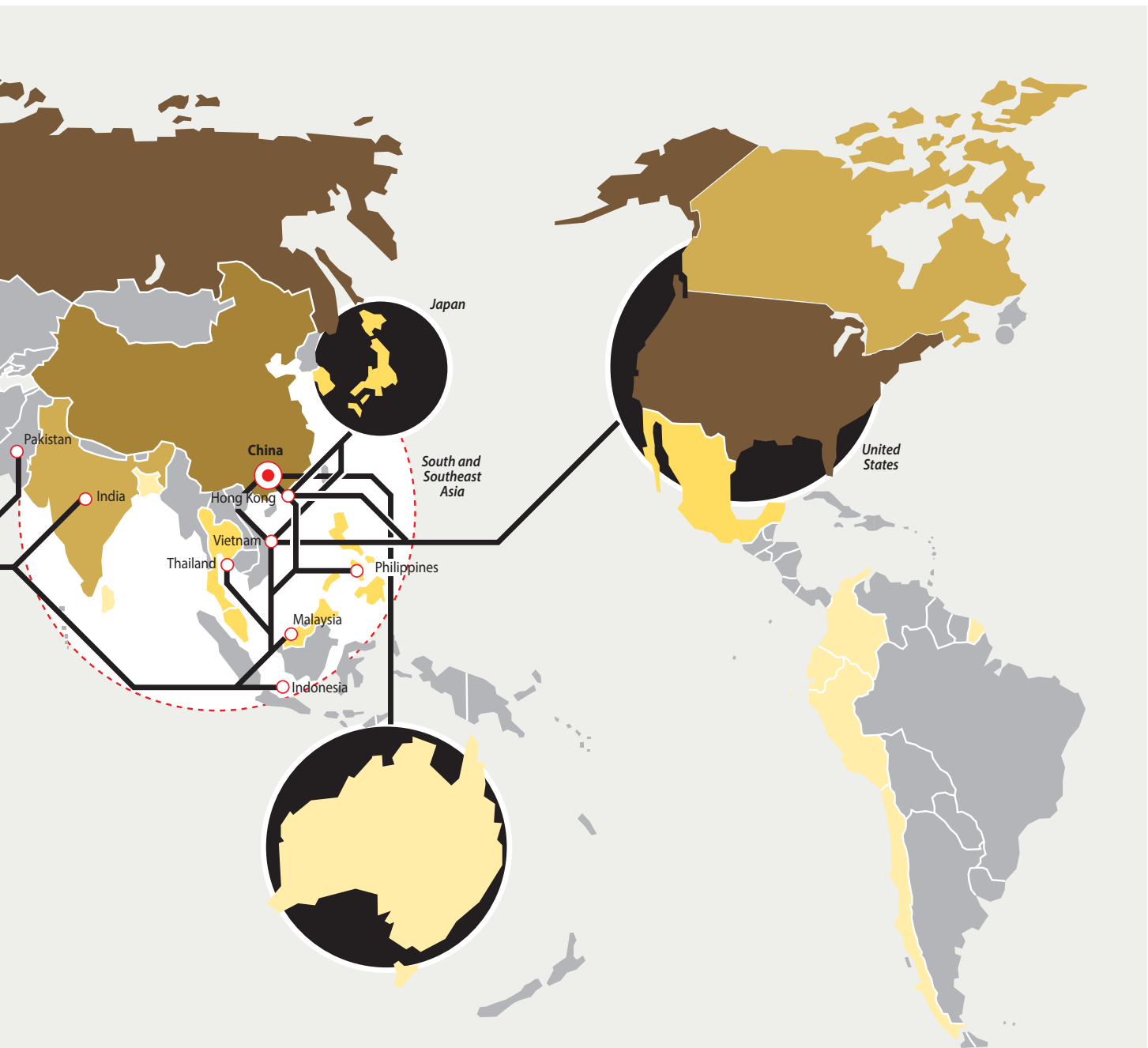


A worker sorts through used lead acid batteries, Kenya. Photo: Blacksmith Institute.



*“We received a lot of helpful feedback on the draft guidance at the meeting in Cairo. Waste crime is a great concern for many of the countries represented at the meeting, amongst others India and the Philippines. Many were pleased that this was elaborated on in the new guidance. I also handed out the Waste Crime - Waste Risk report to those interested.”*

Extract from an email from the Office of the Auditor General, Norway



Map from *Waste Crime – Waste Risks*.  
 Credit: GRID-Arendal/Riccardo Pravettoni

Sources: United Nations Statistical Division, 2011; UNODC, Transnational Organized Crime in East Asia and the Pacific, 2013; Impel-TFS, 2006, Threat Assessment Project, and World Customs Organization (2009) Operation Demeter final report, supplemented with data from the Dutch national audit, appeared in the Coordinated audit on the enforcement of the European Waste Shipment Regulation

In June, Norwegian Minister Børge Brende and INTERPOL Secretary General Jürgen Stock launched a parliamentary white paper called Global security challenges in Norway's foreign policy. The report featured and described in maps and numbers the significant challenge in development, peace and security posed by environmental and natural resource crime and cited resolutions at the Security Council and the reports from UNEP, INTERPOL and GRID-Arendal.

Photo: Christian Nellemann



# Green Economy

The idea that an economy can be transformed and made “green” is an important evolution in global economic thinking. A major challenge, however, is to move these ideas from the fringes into the mainstream. GRID-Arendal’s Green Economy Programme supports UNEP to meet policy, modelling, capacity building and reporting goals for its Green Economy work. This also builds internal capacity for Green Economy across programmes at GRID-Arendal in order to support our clients’ and partners’ needs.

## Building Green Economies In Africa

In Cairo last March, UNEP Executive Director Achim Steiner, Environment Ministers from South Africa, Egypt, Uganda, and representatives from the African Development Bank presented GRID-Arendal’s report *Building Inclusive Green Economies in Africa: Experience and Lessons Learned 2010–2015*. The synthesis and eight country briefs summarized UNEP’s work to support emerging Green Economy progress across Africa focused on Burkina Faso, Egypt, Ghana, Kenya, Mauritius, Rwanda, Senegal and South Africa. The report features summaries of good practices and trailblazing policies to illustrate the prospective gains that can be made by investing in a Green Economy.

The report included many concrete examples of the benefits of this changed approach to investment. Two examples include renewable energy investment scenarios projected to save up to 100,000 hectares of forest area by 2050 in Burkina Faso. This corresponds to a reduction of about 16 thousand tons of CO<sub>2</sub>. Billions of tonnes of water will be saved in South Africa through investments in natural resource management.

## Learning Through Games

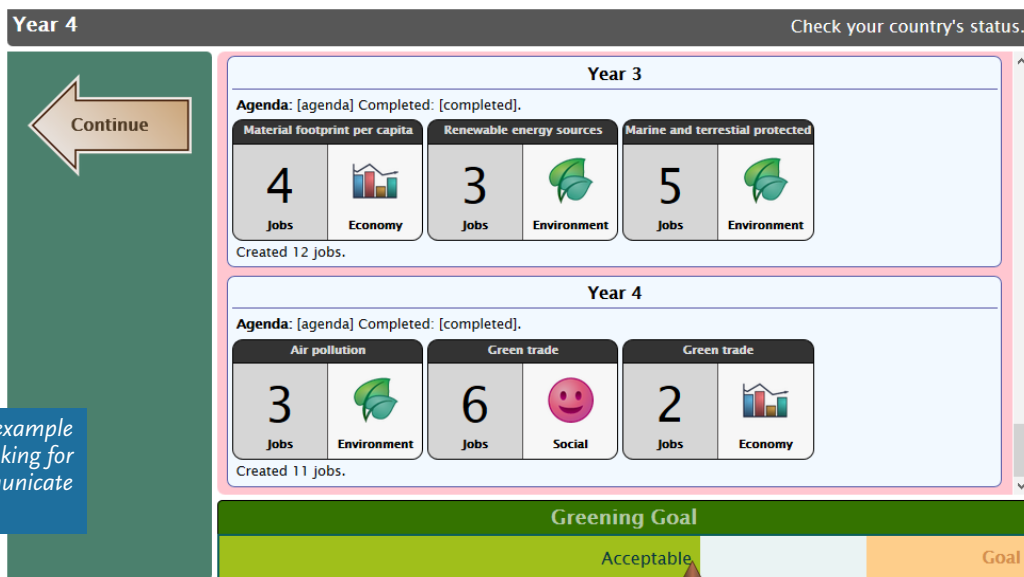
GRID-Arendal hosted two interns from the Multimedia and Educational Technology department at the University of Agder. While in our office they created two e-learning



UNEP Executive Director Achim Steiner and African Environment Ministers at the Cairo meeting. Photo: UNEP

game-based prototypes for teaching, not just pure entertainment. The first game explores Marine Ecosystem Services. The second provides an introduction to UNEP’s forthcoming Green Economy Progress Index, and helps game players consider how they might both create jobs and improve social, environmental, and economic features of the economy. These games are an example of how GRID-Arendal is looking for innovative ways to communicate complex information.

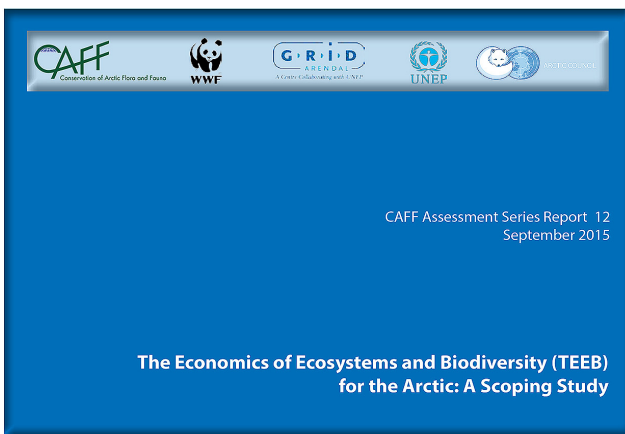
E-learning games are an example of how GRID-Arendal is looking for innovative ways to communicate complex information.



## Reports and Publications

GRID-Arendal worked with the Arctic Council<sup>4</sup> working group CAFF (Conservation of Arctic Flora and Fauna), the UNEP TEEB (the Economics of Ecosystems and Biodiversity) office and WWF (World Wide Fund for Nature) to produce a scoping study – Valuing the Arctic – exploring the Economics of Ecosystems and Biodiversity (TEEB) in the Arctic. This assessment serves as a first step towards including Arctic biodiversity and ecosystem services into policy and decision-making processes across the region. The final report was submitted to the CAFF Board for approval and was sent to the Arctic Council Senior Arctic Officials to be included in the Arctic Council's biannual Ministerial meeting scheduled for 2017. The report will be featured at the Arctic Observing Summit (AOS) in Alaska in March 2016.

A journal article in *Climatic Change* – Climate change implications in the northern coastal temperate rainforest of North America – synthesizes climate change implications for water and terrestrial ecological systems in the rainforest, including potential future conditions and adaptive capacity. Consequences for a range of ecosystem services such as water provision, subsistence hunting and fishing, commercial fishing, tourism and other staples of coastal Alaskan sectors are summarized. The work was featured by the Nature Conservancy and the US Department of Agriculture Forest Service in outreach publications.



The 2015 scientific article “Ecosystem Services or Services to Ecosystems? Valuing cultivation and reciprocal relationships between humans and ecosystems”, published in the *International Journal of Global Environmental Change*, received special citation from Science Direct reference platform for achieving 2145 downloads in the first three months of publication. The article describes an important modification to existing ecosystem service theory to account for not only the valuable services ecosystems provide to people, but also for the myriad ways that humans service ecosystems. It was conducted in collaboration with researchers from the University of Oxford.

In 2015 GRID-Arendal supported the UNEP Regional Office of Europe in the production and publication of several reports on emerging Green Economies in Eastern Europe and Caucasus.

The report *Sustainable Consumption and Production Policies and Initiatives in Eastern Europe and the Caucasus: Review of Progress and Way Forward* (English and Russian versions) reviews sustainable consumption and production related policies, in Eastern Europe and the Caucasus (Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine). Analysis, cases and policy recommendations are aimed at specific stages of the production-consumption lifecycle, in particular food, housing and transport. Examples contribute to the global shift toward Green Economy by illustrating possibilities to decouple economic growth from environmental degradation and resource depletion.

The *Green Economy Scoping Study: Republic of Moldova* (English and Romanian versions) offers modelling results, policy and sectorial analysis for Moldova, with a focus on agriculture and energy sectors. The report was launched in June by UNEP during a Special Session on Organic Agriculture in Chisinau.

In addition, GRID-Arendal authored forthcoming reports on Green and Decent Jobs in Waste Recycling in Serbia, furthered work on Green Economy simulation modelling assessments for Belarus, Ukraine, and presented early reporting on emerging Green Economy in Bosnia & Herzegovina.

Several GRID-Arendal staff members co-authored a chapter called “Greening the Ocean Economy: a progress report” in the *Rutledge Handbook of Ocean Resources and Management*.

# Marine and Coastal Resources

The UN Convention on the Law of the Sea entered into force in 1994. From that time on, coastal states had 10 years, from when they ratified, to make a submission on the limits of their continental shelf beyond 200 nautical miles. GRID-Arendal's Shelf Programme has assisted a number of developing states with their submissions. The assistance varied from providing data and advice to a more extensive help by offering multi-year capacity building workshops, and technical and scientific support.



Photo: iStock/Ian McDonnell

## Success in West Africa

Seven West African States<sup>5</sup> presented a historic joint submission to the UN Commission on the Limits of the Continental Shelf in August. The Shelf Programme helped these nations to prepare their submission and GRID-Arendal staff members met with country representatives for three days in New York to refine their presentation. As a clear reflection of this combined effort over the last four years, all countries' representatives spoke and presented parts of the joint submission.

GRID-Arendal also prepared a Law of the Sea submission on behalf of Somalia and provided a week-long training session for the country's representative. The session included briefings on concepts used to establish the possible extension of Somalia's continental shelf, the arguments in the submission and the software used to analyse the geoscientific data in the documents.

## Blue Solutions

Blue Solutions is a partnership project between the German Agency for International Cooperation (GIZ), GRID-Arendal, IUCN and UNEP. The project was set up to collect and promote successful and inspiring approaches to overcome the challenges of marine and coastal management. Focusing on the themes of ecosystem services,<sup>6</sup> conservation finance, marine protected area governance and marine spatial planning, the project supports sharing experiences that can be expanded and used in other places. It focuses on exchanges between countries in the southern hemisphere – online as well as in actual meetings.

Blue Solutions convened a second Regional Forum on Solutions for Oceans, Coasts and Human Well-Being in April in Cancún, Mexico. The forum was hosted in partnership with the Mexican Environment Ministry and its Protected Natural Areas Commission for participants from Latin America and the Caribbean region. It was organised in collaboration with the Convention on Biological Diversity and its Sustainable Ocean Initiative. Over two-and-a-half days, more than 100 policy makers and practitioners from 17 countries discussed coastal and marine solutions relevant to marine spatial planning, ecosystem services, sustainable finance, climate change adaptation and disaster risk reduction.

*“The forum was highly productive; firstly, sharing so many diverse experiences in coastal and marine ecosystems in the region among different stakeholders (i.e. local actors, government, NGOs, academia), provided vast ideas of solutions and their building blocks which can be useful elsewhere, and adapted to different contexts. Also, the ‘solutioning approach’ allowed comparing these diverse cases in a concise, practical and interactive way, making the learning and sharing processes very dynamic.”*

Extract from an email from the IUCN office for South America



“Being asked to present as a Solution Provider gave me a sense of appreciation for the work that I am doing.”

Comment from a participant from the Solomon Islands



17 countries in Latin America and the Caribbean attended the Blue Solutions Forum in Cancun. Photo: Rob Barnes

### Training for the Future

GRID-Arendal provided a week of training on Integrating Ecosystem Services into Marine and Coastal Planning (Blue IES) for 20 participants from 12 Caribbean countries. Representatives from government, NGOs and private sector learned how goods and services that are provided to people by healthy marine and coastal ecosystems are integrated into development planning. Like food, coastal protection or cultural values.

A “training the trainers” session was conducted with the Coral Triangle Centre in Bali in June to enable staff of the centre and participants from Fiji and Kiribati to hold the Blue IES training. The agenda included learning how to hold training sessions, planning and designing workshops and how to integrate them into wider activities.



Training session on IES in Cancun, Mexico. Photo: Christian Neumann

### Sustainable Oceans Lab

The Sustainable Oceans Lab is a year-long leadership programme, which provides leaders and others active in the management and governance of oceans with an opportunity to exchange ideas and for learning. The first lab was held in Berlin in March and involved 30 participants from civil society, government and business communities from 14 countries who discussed the challenges they face in conservation and sustainable use of marine and coastal ecosystems.

### Coral Reefs on the Edge of Darkness

With the global climate heating up, shallow coral reefs are predicted to experience increasing levels of catastrophic bleaching. GRID-Arendal launched a study on mesophotic coral ecosystems in 2015 – the hottest year on record in modern times. Mesophotic coral ecosystems exist almost on the edge of darkness and are proving to be much more extensive and complex than ever imagined. The study will look at the role they play in the existence of shallow reefs, and whether they can provide a “life boat” for shallow coral reefs that may suffer decimation from bleaching. This work supports improved ocean management by anticipating the problems associated with climate change and seeking solutions.

The review was commissioned by UNEP and brought together information on the geology, biology, distribution and socio-economic aspects of mesophotic reefs in order to examine their potential resilience. Thirty five scientists from around the globe contributed to the study, which found that some deep mesophotic coral ecosystems may be removed from the most extreme ocean warming, but other ecosystems are just as vulnerable as their shallow counterparts and cannot be relied on to act as “life boats”.

### Reports and Publications

In January GRID-Arendal’s Shelf Programme celebrated its 10th anniversary by publishing *The Shelf Programme: A decade of successfully helping to secure maritime rights of developing Coastal States*. The report highlights GRID-Arendal’s role in ensuring the peaceful resolution of conflicting ocean boundary claims.

GRID-Arendal also produced a study called *The Ocean and Us* that highlights the essential role healthy marine and coastal ecosystems play for achieving the UN Sustainable Development Goals. The document was launched at the 2015 Eye on Earth Summit in Abu Dhabi in partnership with the Abu Dhabi Global Environment Initiative (AGEDI), the UNEP-World Conservation Monitoring Centre (WCMC), The Nature Conservancy (TNC) and the Marine Ecosystem Services Partnership (MESP).

# Marine Spatial Planning

The marine environment supports a wide range of human uses and activities including fisheries and aquaculture, shipping, mineral resources, energy, tourism, recreation and cultural heritage. There is increasing competition for access to these resources to support both livelihoods and economic development, resulting in conflict and negative effects on the marine environment. Marine spatial planning is a science-based process that brings together stakeholders (including users and managers) to build an understanding of these human uses, resource distribution and natural values. It develops scenarios for resource use that minimise conflict and improve sustainability.

## Bluebridge

The Marine Spatial Planning team was part of a successful Horizon 2020 bid called BlueBRIDGE, which will develop web based analysis and reporting tools to support improved management of fisheries, aquaculture and the marine environment. GRID-Arendal will work with a range of partners to develop a method to report on how well marine protected areas represent a range of environmental features including ecologically ones such as seagrasses, mangroves, coral reefs and undersea mountains, or seamounts. GRID-Arendal will also be involved in developing a tool to examine the interactions between mangroves and aquaculture sites.

## Story Maps

The marine spatial planning group also launched a new communication method for GRID-Arendal called story maps, which allows projects to be highlighted through interactive story-based maps. A story map on the spread of sargassum seaweed in West Africa was prepared in response to a request from the Abidjan Convention

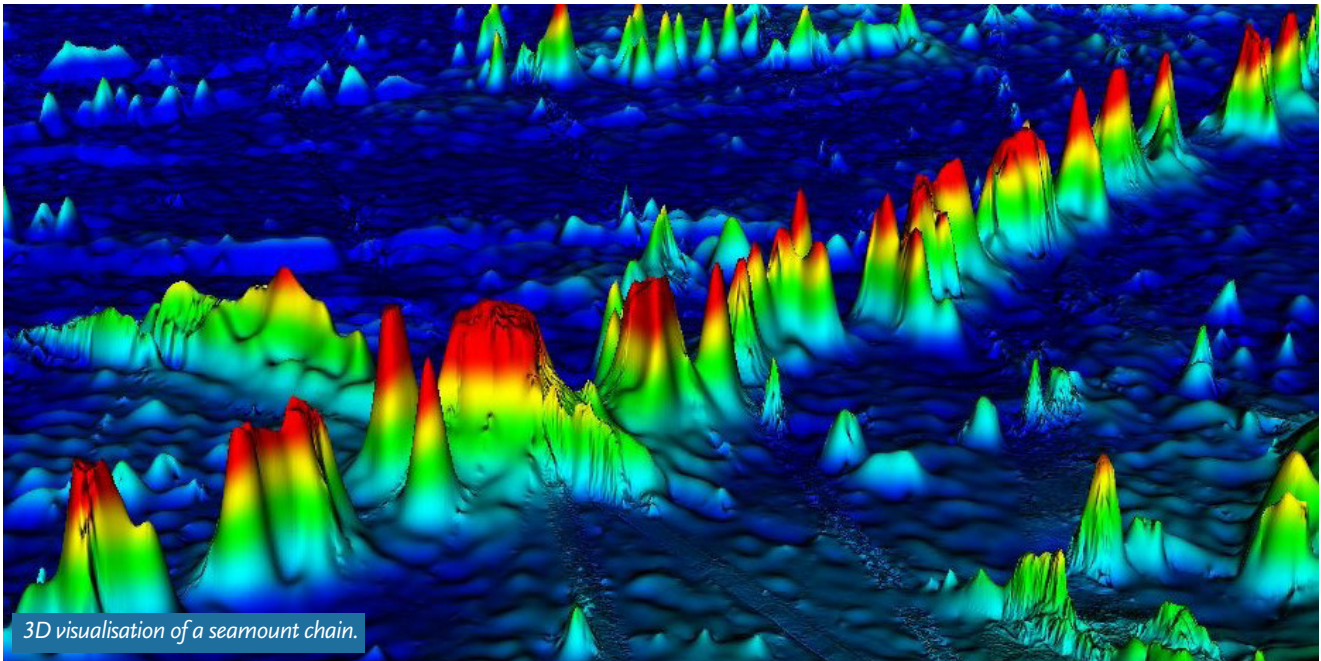
Secretariat to support a Regional Expert Group Meeting on Sargassum, held in Sierra Leone in November. Sargassum has been washing up on beaches in West Africa due to changes in seasonal currents creating a significant problem for coastal habitats and coastal tourism. Other story maps published in 2015 cover ecosystem services of the Okavango River basin, blue carbon ecosystems and seamount morphology.

The Coastal Ecosystem Mapping and Media Viability Project is an Abu Dhabi Global Environmental Data Initiative (AGEDI) led initiative in partnership with GRID-Arendal and the environmental consultancy group Five Oceans Environmental Services. The project is also supported by the Sharjaah Environment and Protected Areas Authority (EPAA), Dubai Municipality, and the GEF Blue Forests Project.

The project uses drones to measure mangrove forest volume to accurately predict their biomass and carbon sequestration capabilities. Drones are the new survey



*Drone view of Hove, Arendal, Norway. Photo: Rob Barnes*



tools of the 21st century. These four-bladed flying engines come mounted with a camera and can fly up to several hundred metres high for over 20 minutes, making them the ideal tool to efficiently map mangrove forests.

The Coastal Ecosystem Mapping and Media Utility project provides international exposure for the United Arab Emirates' Blue Carbon efforts and is linked to other international Blue Carbon efforts and projects, such as the GEF Blue Forests Project.

### Reports and Publications

A review of the status (baseline) of current policies, strategies and implementation plans of countries and regions incorporating the ecosystem approach to management of marine and coastal ecosystem services was finalised for UNEP. This report outlined the global status of progress towards adopting ecosystem based management, with particular focus on the countries of East and West Africa and the Caribbean regions.

International practices on setting criteria for favourable conservation status and baseline status of marine habitats was submitted to Estonian partners as part of the European Environment Agency (EEA) funded project on The Implementation of the Project Inventory and Development of Monitoring Programme for Nature Values in Estonian Marine Areas (NEMA).

As part of the NEMA project the team produced a draft map of marine habitats in Estonia. This map will support the designation of Natura 2000 habitat protection areas under the European Union Habitats Directive.

The Norwegian Sea bathymetric model was updated as part of the second release of the European Marine Observation Data Network Bathymetry project. The

bathymetry model is available to support standardisation of marine information.

A chapter on the “Classification of Seamount Morphology for Decision-Making and Conservation Planning” will be included in the upcoming second edition of an ESRI Press Book called Ocean Solutions: Earth Solutions. An accompanying story map was developed for this chapter and for wider dissemination. The story map is featured in the Living Atlas of the World and has been viewed over 2200 times since its launch. This publication is a continuation of the successful work on seafloor geomorphology that has been conducted by GRID-Arendal over the last three years.

GRID-Arendal with Conservation International and Geoscience Australia published a digital map of global seafloor geomorphology in 2014. The map has since been used to support the identification of Ecologically and Biologically Important Areas (EBSAs) under the Convention of Biological Diversity. It has also been used in marine spatial planning in the Pacific under a joint French Marine Protected Area Agency and Secretariat of the Pacific Community. Additional publications arising from this work include a classification of canyons in the Mediterranean Sea, classification of the continental shelves of the world and an examination of the distribution of seamounts based on their morphology. The underlying data for the maps has been downloaded over 350 times and has been used in applications including university courses, marine planning and identification of marine mammal areas.

*“What an amazing site and data set!”*

Extract from an email from the University of Auckland, New Zealand

# Polar and Mountain Environments

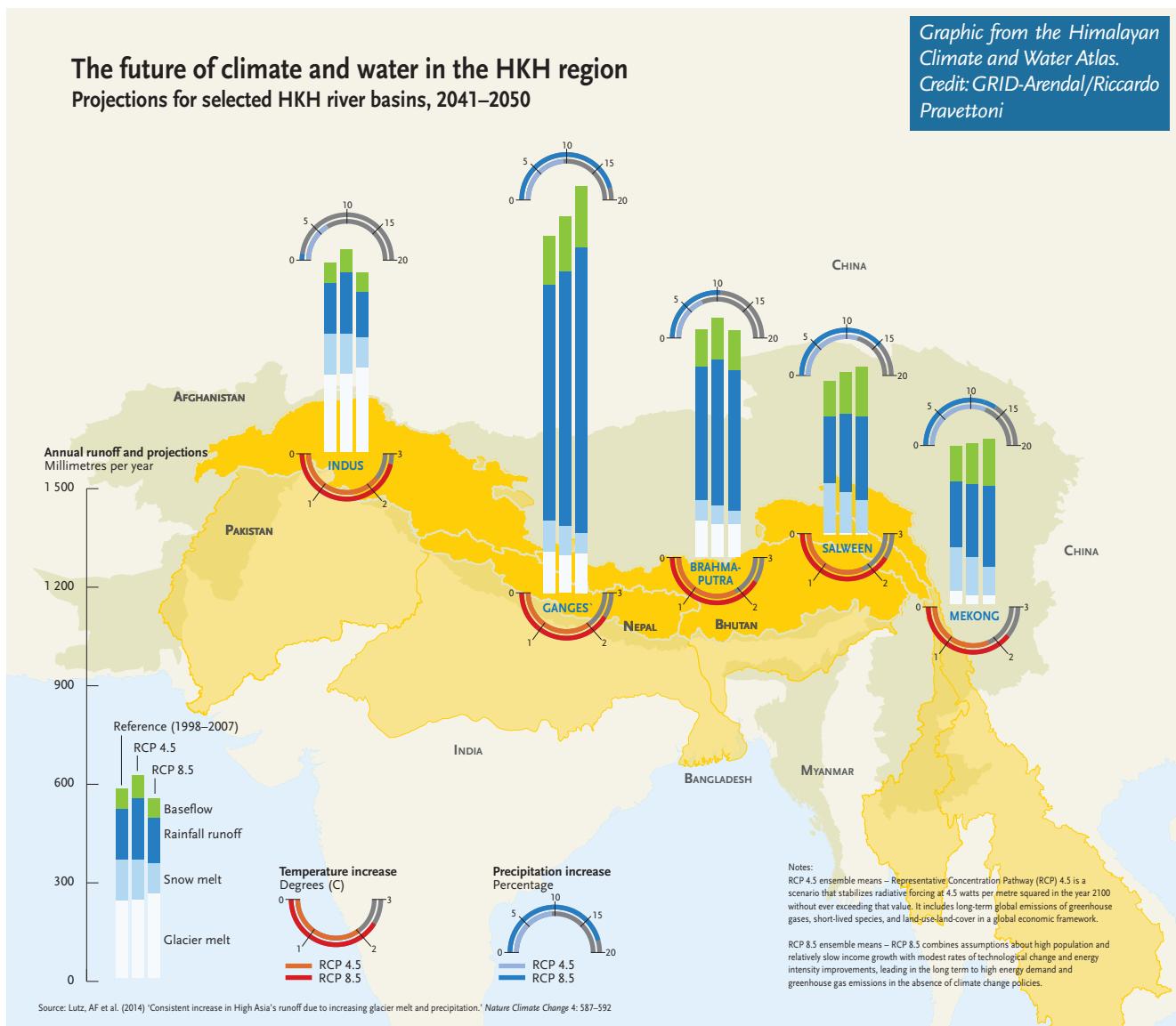
The polar and high mountain regions of the world play an important role in the Earth’s climate system, including helping to regulate global temperatures, drive ocean circulation, and store water in the form of glaciers and ice sheets. In many ways, these regions are the planet’s barometer, telling us a great deal about the present and future effects of climate change. In 2015, GRID-Arendal worked to draw attention to some of the most critical environmental and climatic challenges facing these regions, providing policy makers with the latest scientific evidence on climate change and options for adaptation.

## Climate Change Adaptation in the Himalayas

In 2015, GRID-Arendal continued its successful collaboration with ICIMOD and CICERO in the Himalayan Climate Change Adaptation (HICAP) programme. Highlights included the production and launch of the *Himalayan Climate and Water Atlas: Impact of Climate Change on Water Resources in Five of Asia’s Major River Basins*. The report received significant media attention in the region – including in national daily newspapers in India, Pakistan and Nepal – following its

launch at a side event during the Paris climate change negotiations. GRID-Arendal and ICIMOD also continued their communication collaboration to complete a series of short video films on climate change and adaptation in the region.

The Water Atlas will be reviewed in an international, peer reviewed journal called Mountain Research and Development published by the International Mountain Society in Switzerland.





HICAP journalist workshop. Photo: John Crump

### Regional Journalist Workshop

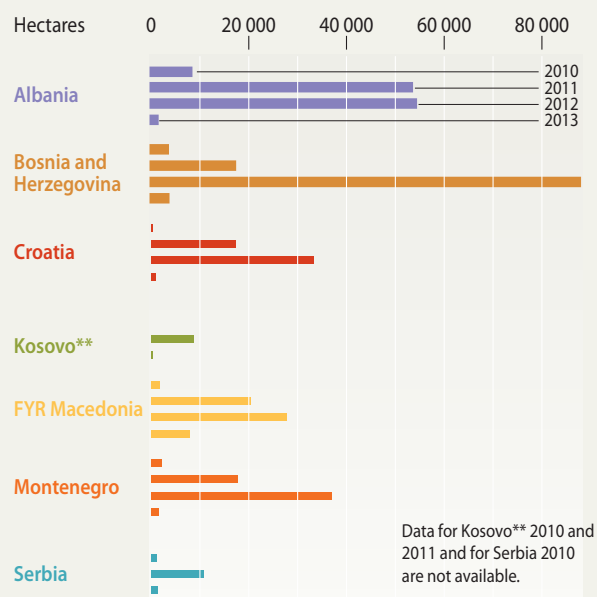
In September, GRID-Arendal and ICIMOD, as part of the HICAP project, ran a successful regional journalist training workshop in Kathmandu and the surrounding foothills. The training session brought together 15 journalists from Nepal, India, Pakistan and China. The training session focused on strengthening the reporting on climate change issues within the region and led to numerous news articles being published. One participant was awarded a UNDP scholarship to attend the Paris Climate change negotiations based on her HICAP article. Four of the journalists were awarded additional grants through HICAP to pursue investigative journalism in the region. GRID-Arendal also co-sponsored a training session for developing country journalists run by the Climate News Networks in Paris on the climate change negotiating process.

### Mountain Policy Assessment

GRID-Arendal worked with UNEP on a new project focused on climate change adaptation in mountain regions. The goal of the project Climate Change action in developing countries with fragile mountain ecosystems from a sub-regional perspective is to support mountainous developing countries to integrate climate change adaptation into their development policies, plans and strategies and to enhance mountain cooperation between countries. A series of Mountain Adaptation Outlooks was produced, which analysed existing policies and identified opportunities and knowledge gaps. The series was launched on World Mountain Day in Paris during the COP21 climate change negotiations at a high-level side event organised by GRID-Arendal and UNEP. The event included several Ministers of Environment and focused on how mountain countries can enhance adaptation action including through the Green Climate Fund.

## Forest fires

Area burnt by fires between 2010 and 2013\*



\* Estimates derived from satellite imagery for burnt areas of at least 40 ha or above.

\*\* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/99 and the ICJ Opinion on the Kosovo declaration of independence.

Sources: European Commission Joint Research Centre, "Forest Fires in Europe Middle East and North Africa", 2010, 2011, 2012 and 2013.

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Cartografare il presente/Nieves López Izquierdo

Forest fires in the western Balkans. Climate change is increasing the intensity and frequency of forest fires in the region, as highlighted in the Outlook on Climate Change Adaptation in the Western Balkans mountains. Credit: GRID-Arendal/Nieves López Izquierdo

# Mont Everest : Risque d'Inondations éruptives de lacs gl Mount Everest: Risk of Glacial Lake Outburst Floods in the



Le mont Everest est le plus haut sommet du globe (8 848 m) ; il se situe dans le Parc national de Sagarmatha, un site du Patrimoine Mondial de l'UNESCO au cœur de l'Hindou-Koush-Himalaya.

Les glaciers de l'Himalaya et ses calottes glaciaires sont considérés en Asie comme un véritable « château d'eau » ; les quelque 1,3 milliards de personnes vivant en aval utilisent cette eau pour l'agriculture, pour leur consommation ainsi que pour la production d'énergie.

Le Parc national de Samargatha abrite un des bassins hydrographiques les plus densément glacés du Népal, le bassin du Dudh Koshi. Les glaciers de la vallée reculent et la surface totale couverte par les glaciers du bassin du Dudh Koshi a diminué de 143 km<sup>2</sup> entre 1980 et 2010, ce qui équivaut à une perte de surface de 27 %.

La fonte des glaciers entraîne le développement rapide de lacs glaciaires dont les berges sont couvertes de glace fragile et

d'éboulis instables. Les inondations éruptives de lacs glaciaires (IELG) font peser une lourde menace sur la population, les infrastructures et les ressources environnementales de l'Hindou-Koush-Himalaya. Elles se produisent lorsque les berges d'un lac glaciaire cèdent et que l'eau se déverse le long des vallées.

## Mountain Exhibition in Paris

GRID-Arendal and UNESCO developed a photo exhibition on mountain glaciers and climate change called Mountains: early warning systems for climate change, which was launched at UNESCO Headquarters in Paris in November and was displayed at the Cité de Paris and on the site of the Paris climate change negotiations in December. A short film and a catalogue accompanied the exhibition.

## Arctic Cooperation

The Inuit Circumpolar Council asked GRID-Arendal for support during the global climate change negotiations in Paris in December. A GRID-Arendal staff member assisted in the drafting of press releases and chaired a leaders' panel called Climate Knowledge and Solutions from Arctic Voices held at the Indigenous Peoples' Pavilion.

*"I would like to thank you for your invaluable support and participation in the "Indigenous Peoples' Pavilion" organized ... on the occasion of the twenty-first Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change in Paris.... Your participation in the Indigenous Peoples' Pavilion offered the unique opportunity to stand together for the rights, culture, and traditional knowledge of indigenous peoples as a sustainable solution to climate change. All Pavilion activities further contributed to advocacy efforts in favor of indigenous peoples with positive results in the Paris Agreement."*

From a letter from Hindou Oumarou Ibrahim, Co-chair, International Indigenous Peoples' Forum on Climate Change

# Glaciers dans la région region



Mount Everest, the highest peak in the world (8,848 m), is located in Sagarmatha National Park, a UNESCO World Heritage Site in the Hindu Kush-Himalayas.

The Himalayan glaciers and ice caps are considered a "water tower" for the 1.3 billion people downstream in Asia who use it for agriculture, drinking and power production.

The Sagarmatha National Park houses one of the densely glaciated basins of Nepal, the Dudh Koshi Basin. The glaciers in the valley are retreating and the total area covered by glaciers in the Dudh Koshi Basin declined by 143 km<sup>2</sup>, which is equivalent to 27% area loss between 1980 and 2010.

Melting glaciers cause the rapid expansion of glacial lakes which are surrounded by banks of unstable ice and loose debris. Glacial Lake

Outburst Floods (GLOFs) constitute serious risks for the population, infrastructure and environmental resources in the Hindu-Kush Himalayas. These occur when the lake bursts and water cascades down mountain valleys.

Mountain Exhibition poster

The Norwegian Research Council asked GRID-Arendal to contribute its expertise to the development of EU white papers on polar policy – EU Polar Net – including developing a section on stakeholder needs. GRID-Arendal will become further engaged with the EU Polar Net in 2016.

The University of the Arctic (UArctic) is a cooperative network of universities, colleges, research institutes and other organizations concerned with education and research in and about the North. The university's president, Lars Kullerud, is hosted at the GRID-Arendal office and directs a leadership team of six vice presidents based in Alaska, Newfoundland, Finland and Russia. In 2015, UArctic attracted over 170 members to its annual meeting held in Ulan-Ude, Buryatia, Russia. In all, the network provides direct access to over 350 Arctic experts – a remarkable resource.

The UArctic president gave the keynote speech at the founding meeting of the Himalayan University Consortium Summit in October in Kathmandu, Nepal. The consortium is an international network similar to UArctic consisting of higher education institutions in the Himalayan region. It has asked for support to help build its organisation. This is a direct contribution to the GRID-Arendal HICAP project referred to earlier.

## Reports and Publications

*Himalayan Climate and Water Atlas: Impact of Climate Change on Water Resources in Five of Asia's Major River Basins.*

*Mountain Adaptation Outlooks Series* – Outlook on climate change adaptation in five regions: East Africa, South Caucasus, Central Asia, Balkans/Dinaric Arc, and the Tropical Andes.

# State of the Environment Reporting

It is fundamental to marine environmental management that countries have the capacity to monitor the condition and trend of ecosystems in their marine jurisdictions. Undertaking integrated assessments can be expensive and time consuming, but sound information is critical to decision-making and maintaining healthy oceans. Experts from developing countries have identified the lack of capability to undertake State of the Marine Environment (SOME) reporting as a major challenge. While there are experts available with knowledge of their marine environments, there is a lack of reporting skills among the government agencies responsible for this task. GRID-Arendal's State of the Environment Reporting programme was set up to help fill this gap.



## Secretariat of the Abidjan Convention

GRID-Arendal is working with UNEP helping the Abidjan Convention Secretariat to support member states to improve governance mechanisms, secure needed resources and create opportunities to improve the management of marine and coastal resources. This will be done in a number of ways using the latest coastal management and habitat protection techniques. It will also require a good understanding of the society and economies of the West African Coast and its marine and coastal communities. Finally, it will enable firsthand marine research by young marine scientists from the Abidjan Convention region.

## Marine Plastic is Everywhere

In cooperation with UNEP-GPA (Global Programme of Action), GRID-Arendal is developing a "UNEP Vital Graphics" report on Marine Plastic Debris and Microplastics. The report is scheduled for completion in early 2016 and a large collection of graphics will be presented and used to prompt discussion at the second United Nations Environmental Assembly (UNEA 2) meeting to be held in Nairobi in late May 2016.

Developing this project required GRID-Arendal staff to take part in several international meetings, including the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)<sup>7</sup> Working Group on Microplastics in Rome in April and Guayaquil, Ecuador in November, the National Marine Litter Seminar in Oslo in January, the Norwegian Microplastics Workshop in April and Talking About Plastic Garbage in Zurich in October.

GRID-Arendal was also involved in the preparation of several project proposals at European and national level, continued its local initiative on beach clean-ups and explored new local and international partnerships.

Towards the end of 2015 GRID-Arendal was approached by the Norwegian Ministry of Climate and Environment who requested support to prepare and implement a high-level side event on Marine Litter during the 2016 UNEA meeting.

Formal cooperation was established with the Stockholm Resilience Centre through hosting a Master's student from the University of Stockholm who is working on issues related to marine plastic pollution.



*“The current SoME report is part of the regular process in assessing the state of the global marine environment. This assessment is also in response to the identified threats facing the country’s coastal and marine environment and attempts to address the causes and effects of such threats and other emerging issues. [...] My government remains committed to providing the political leadership towards addressing the issues and challenges confronting the marine and coastal environments of Sierra Leone.”*

Dr. Ernest Bai Koroma, President of Sierra Leone, in the Preface to Sierra Leone – State of the Marine Environment



Children in Freetown, Sierra Leone. Photo: iStock/Abenaa

## **A Home for HOME**

GRID-Arendal is leading the development of a two-year Masters Programme in Holistic Ocean Management (HOME) with the University of Agder and Nelson Mandela Metropolitan University in South Africa. HOME is intended to provide a place for students to explore and specialize in ocean governance while taking into account different social and cultural perspectives that influence how decisions are made. Graduates of the programme will have an ability to think and collaborate in a way that generates a more holistic approach to decision making than a conventional academic education can produce.

## **Be ResponSEable**

ResponSEable – Ocean Literacy in the EU supports the emergence of an effective and dynamic European ocean knowledge system that contributes to raising awareness about everybody’s responsibility and interest in a healthy and sustainable ocean. The kick-off meeting was held in Plymouth, England in May and the project runs until 2019.

## **Reports and Publications**

Tackling complex environmental issues means countries need new policies based on up-to-date and concrete information on the state of their environment, the threats they face, and how they can be reduced. This is exactly what a new report called *Sierra Leone – State of the Marine Environment* achieves, which was the result of the workshop held in Freetown, Sierra Leone in 2014. In this publication, Sierra Leone’s marine habitats, biodiversity, and physical and chemical processes are described and assessed.

Draft online State of the Environment reports for Cote d’Ivoire, Gabon and Congo have been produced based on a workshop held in Cote d’Ivoire in 2013. GRID-Arendal has

been developing an “expert elicitation” (EE) approach to gather the necessary environmental data for these reports. The EE approach is essentially a scientific consensus methodology, aimed at generating an assessment of any chosen set of parameters by synthesising information available in existing assessments, scientific publications and data in conjunction with the subjective judgment of experts across a broad base of evidence related to those parameters.

A scientific paper is in preparation reporting on an assessment of the environmental status of the proposed Raet National Park, located in southern Norway, based on an expert elicitation (EE) workshop conducted during August 2014, facilitated by GRID-Arendal. The workshop was conducted using software developed by GRID-Arendal, which applies the EE methodology in real time.



Expert elicitation workshop hosted by GRID-Arendal.

# Transboundary Waters

With nearly 90 per cent of the world's population living in countries where freshwater resources cross borders, the peaceful cooperation and sustainable use of shared waters is critically important. In Africa alone there are 63 shared river basins – important hubs for economic development and regional integration. Last year GRID-Arendal's Transboundary Waters Programme focused on three water basins in Africa – Lake Victoria, Okavango and Limpopo – and the Caspian Sea basin in Eurasia. GRID-Arendal also continued to support the Interim Secretariat of the Tehran Convention,<sup>8</sup> which is the first legally binding regional agreement between all five Caspian littoral States.<sup>9</sup> The convention lays out the general requirements and the institutional mechanism for environmental protection in the Caspian region.



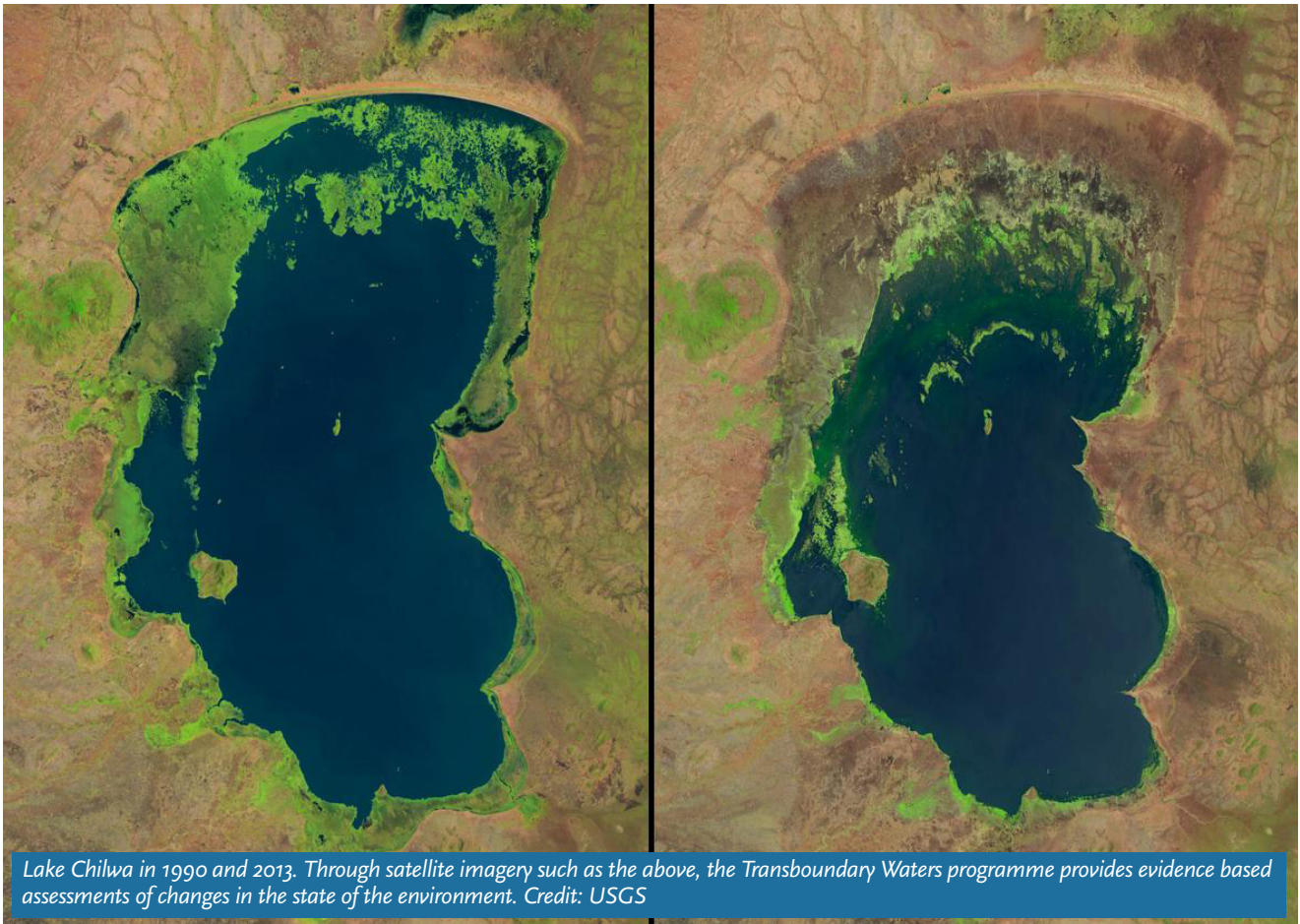
*Congo River Basin's dense forests in Dzanga-Ndoki National Park. Photo: Peter Prokosch*

## Refocus Africa

The project to Refocus Africa's Environmental Information Management and Networking continues to strengthen its networks in Africa. Through the website [africaein.net](http://africaein.net), the project profiled in detail the state of the environment and trends in 21 out of Africa's 54 countries. The profiles provide quick environmental overviews of the countries and the web site provides access to copies of recent national state of environment reports (where they are available). The goal is to build a single environmental information portal for Africa. The project was financed by the Norwegian Ministry of Foreign Affairs and received in-kind and technical support from UNEP's Regional

Office for Africa where a Junior Professional Officer seconded by Norway to UNEP had activities under the project as part of her tasks.

The 15th session of the Africa Ministerial Conference on the Environment held in March acknowledged the positive impact of Refocusing Africa's Environmental Information Management and Networking through its decision 15/7.<sup>10</sup> It called upon UNEP and its collaborating partners (including GRID-Arendal) to support African countries in building and strengthening national and regional capacities in environmental information management through the Africa Environment Information Network.



Lake Chilwa in 1990 and 2013. Through satellite imagery such as the above, the Transboundary Waters programme provides evidence based assessments of changes in the state of the environment. Credit: USGS

### Tehran Convention Work

One of the main activities of 2015 focused on the establishment of the Permanent Secretariat of the Framework Convention for the Protection of the Marine Environment of the Caspian Sea (Tehran Convention) in Baku, Azerbaijan and the preparation of the 6th Conference of the Parties (COP6). The Second and Third Preparatory Committee meetings for COP6 of the Tehran Convention were held in June and November in Baku, Azerbaijan. The meetings were attended by representatives of all five Caspian states, and co-chaired by Convention Secretariat staff employed through GRID-Arendal.

### Reports and Publications

GRID-Arendal, UNEP, the Southern Africa Regional Environmental Programme, and the Okavango River Basin Commission Secretariat undertook a study on the value of ecosystem services in the Okavango River Basin. The study produced a detailed story map that locates some of the ecosystem goods and services found in the basin, including food, freshwater, wildlife habitat, groundwater recharge. The study also identifies threats arising from natural causes and human activities. Praised by project partners as an innovative way of communicating, the story map builds a case for the need of a Payment for Ecosystem Services<sup>11</sup> approach as a way of ensuring harmony in the way resources of the basin are managed and accessed by the three riparian countries – Angola, Botswana and Namibia.

A draft copy of the Limpopo River Basin Atlas has been compiled together with a sub-contractor, where GRID-Arendal has identified data needs for the atlas. GRID-Arendal is working with the University of Eduardo Mondlane in Mozambique to assemble datasets to analyse and visualise the vulnerability of the basin to the impacts of climate change.

Significant progress has been made on the Lake Victoria Basin Atlas, including production of a first draft set of satellite imagery on various sites in the basin where significant environmental change has occurred. Analysis of the satellite imagery was supported by GRID-Arendal with help from UNEP. Local experts were trained to develop and analyse images that show change in the region.

A draft paper on the Impact of Large-scale Land Investments in Africa was prepared and submitted to the Council for the Development of Social Sciences Research in Africa (CODESRIA). The paper is now being considered for publication in the organisation's journal. Preparation of the paper was jointly funded by MoFA and CODESRIA and additional support was provided through Noragric (International Environment and Development Studies), which seconded a student intern to GRID-Arendal to undertake field research in Tanzania and draft a report.

# Special projects

## Illustrating Adaptation to Climate Change

GRID-Arendal provided support to the Global Mountain Ecosystem-Based Adaptation Programme of the United Nations Development Programme (UNDP) by developing visual illustrations that help make the case why nature-based solutions should be a vital part of a broader climate adaptation strategy in the face of climate change. These illustrations were used in a series of learning briefs about ecosystem-based adaptation and in the report *Making the Case for Ecosystem-based Adaptation: The Global EbA Programme in Nepal, Peru and Uganda* jointly published by UNDP.

*“GRID-Arendal has done an outstanding job in translating all our guidance into stunning visual descriptions of the very complex dynamics between threats, impacts, EbA measures and benefits generated in our three pilot countries [Peru, Uganda and Nepal].”*

Email from UNDP Mountain EbA Programme



Preparing coal burner stove, Liberia. Photo: iStock/MickyWiswedel

## Household Air Pollution

GRID-Arendal completed a report called *Survive Breathing – Reduce household air pollution to save lives and help the climate* for the Norwegian Ministry of

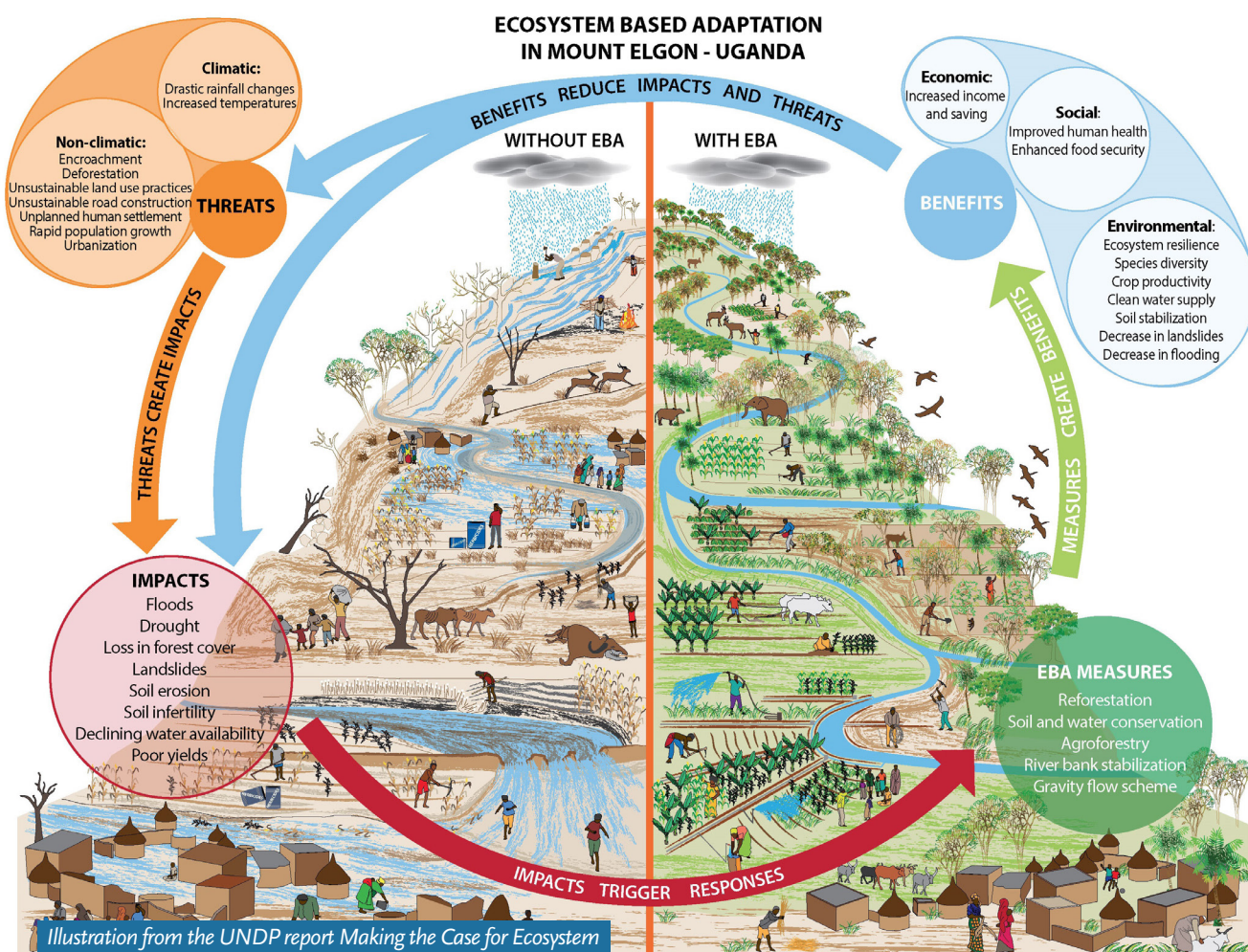


Illustration from the UNDP report *Making the Case for Ecosystem Based Adaptation*. Credit: GRID-Arendal/Nieves López Izquierdo

Foreign Affairs. It focused on the health, economic and development effects of household air pollution. Nearly 3 billion people still lack reliable, affordable and sustainable access to modern energy services. Most of these people live in low- and middle-income countries and they have to rely on various forms of solid fuel – animal dung, crop residues and waste, wood, coal and charcoal – to heat and light their homes and cook their food. The report provides an overview of the science and our knowledge of household air pollution and its effects on human health, development and climate change. The Executive Summary was presented at a side event during the 68th World Health Assembly held in Geneva, in May.

### Helping UNEP Monitor the State of the Global Environment

GRID-Arendal experts are contributing to UNEP’s Global Environmental Outlook (GEO) report in three areas: regional report for Africa, gender-GEO and the polar and oceans sections. During 2015, significant progress was made in the regional report for Africa, whereby the text has been submitted for peer review by UNEP. GRID-Arendal experts will continue to contribute to other parts of the GEO report during 2016.

### Traditional Foods in the North

The Communications Team provided support to McGill University to develop the Traditional Animal Foods of Indigenous Peoples of Northern North America web site which describes and references the published literature on traditional animal food resources known and used by Indigenous Peoples of northern North America. It presents information on the locations of the cultures whose peoples have used, and often continue to use, these foods. The publication focuses on Canada, Alaska, Greenland and the northern United States of America, but many of the animal species presented also occur in the northern latitudes of Europe and Asia. It presents data for 527 species of animals, drawing information from 489 ethnographic sources, an additional 88 unique sources reporting nutritional information, and 357 sources containing basic biological information.

This is a reference guide that will be useful to a variety of users – Indigenous Peoples and the education of their youth, public health professionals, wildlife resource managers, nutritionists, ethnographers, wildlife enthusiasts, the variety of organizations serving Indigenous Peoples, and the academic audience in several disciplines. It will be released in 2016.

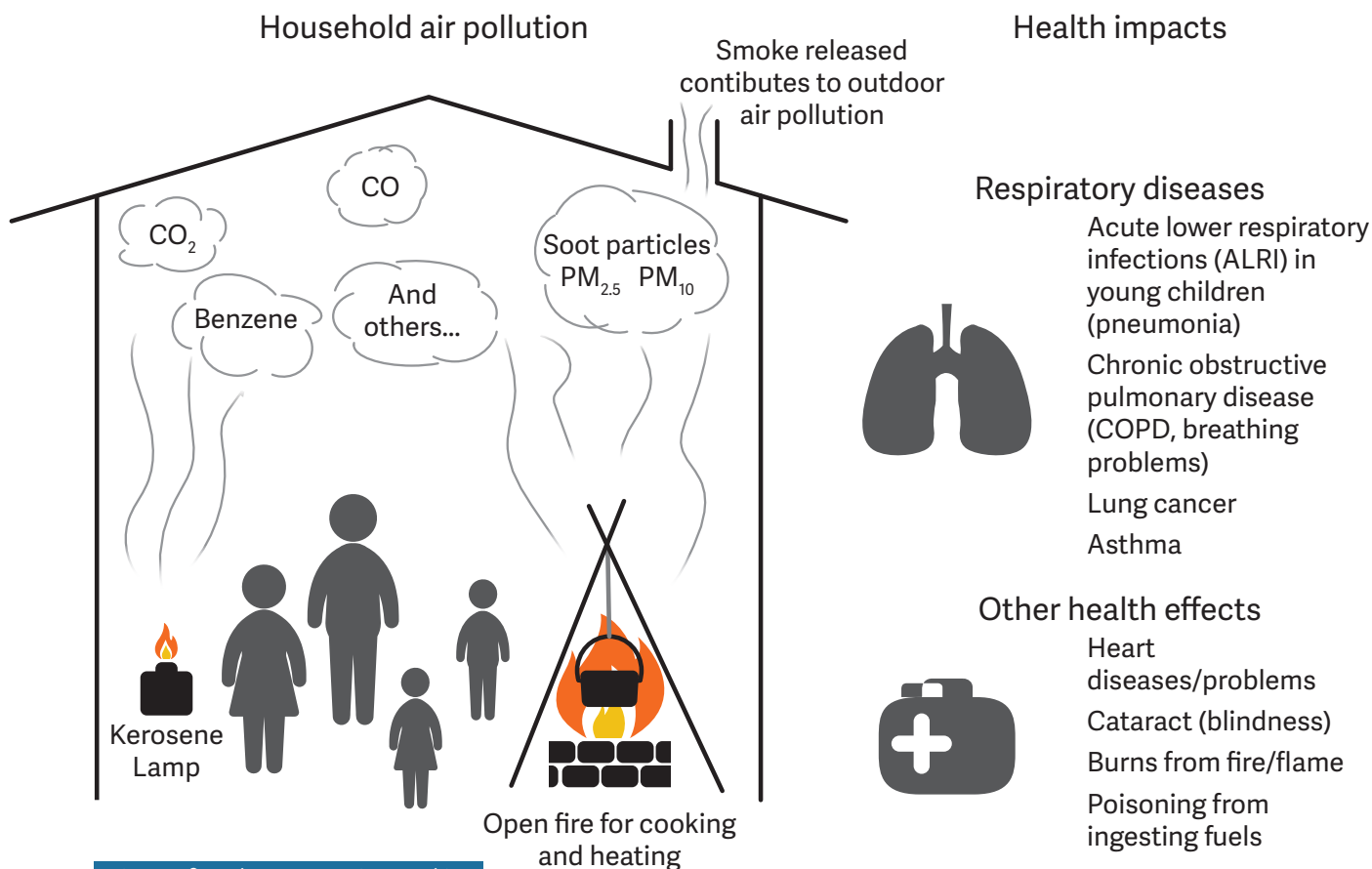
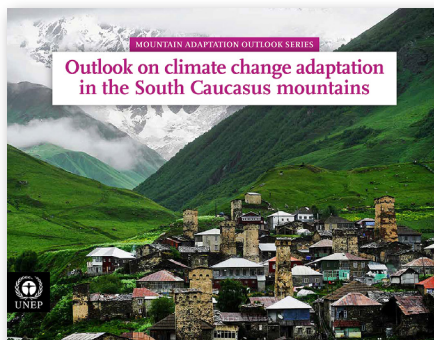
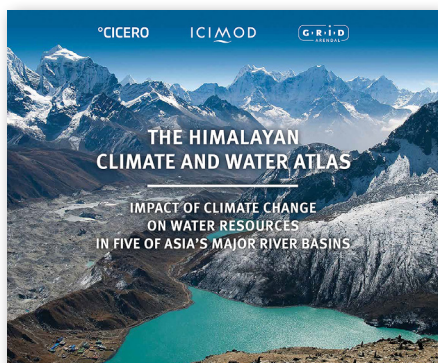


Diagram from the report *Survive Breathing*. Credit: GRID-Arendal/Hugo Ahlenius

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[www.unep.org/roe/Portals/139/documents/EaPGreen/Green%20Economy%20scoping%20ostudy%20Moldovan.pdf](http://www.unep.org/roe/Portals/139/documents/EaPGreen/Green%20Economy%20scoping%20ostudy%20Moldovan.pdf) (Romanian)

## Story maps

*The Spread of Sargassum Seaweed*  
[www.grida.no/publications/default/6599.aspx](http://www.grida.no/publications/default/6599.aspx)

*Mapping, Classifying, and Protecting Seamounts*  
[www.grida.no/publications/default/6596.aspx](http://www.grida.no/publications/default/6596.aspx)

*The Okavango River Basin*  
[www.grida.no/publications/story-maps/map/6325.aspx](http://www.grida.no/publications/story-maps/map/6325.aspx)

*Blue Carbon*  
[www.grida.no/publications/story-maps/map/6364.aspx](http://www.grida.no/publications/story-maps/map/6364.aspx)

# Notes

1. [www.environment.gov.au/minister/hunt/2015/pubs/mr20151206a.pdf](http://www.environment.gov.au/minister/hunt/2015/pubs/mr20151206a.pdf)
2. The Convention for Cooperation in the Protection, Management and Development of the Marine and Coastal Environment of the Atlantic Coast of the West, Central and Southern Africa Region (Abidjan Convention).
3. UN General Assembly, Resolution adopted by the General Assembly on 30 July 2015. Sixty-ninth session, 69/314. Tackling illicit trafficking in wildlife. [www.un.org/en/ga/search/view\\_doc.asp?symbol=A/RES/69/314](http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/69/314)
4. The Arctic Council is a forum for cooperation on Arctic environmental issues and consists of eight Arctic States, six Indigenous Peoples Organizations and observer countries, intergovernmental bodies and NGOs. UNEP is an observer to the Arctic Council.
5. Mauritania, Cabo Verde, Senegal, The Gambia, Guinea Bissau, Guinea, Sierra Leone
6. The 2005 Millennium Ecosystem Assessment describes ecosystem services as “the benefits people obtain from ecosystems.
7. GESAMP advises the United Nations system on the scientific aspects of marine environmental protection.
8. The Framework Convention for the Protection of the Marine Environment of the Caspian Sea
9. Republic of Azerbaijan, Islamic Republic of Iran, Republic of Kazakhstan, Russian Federation and Turkmenistan
10. [www.unep.org/roa/Portals/137/AMCEN15Docs/Decision%20\\_7\\_AEO\\_AEIN%20\\_Advance.pdf](http://www.unep.org/roa/Portals/137/AMCEN15Docs/Decision%20_7_AEO_AEIN%20_Advance.pdf)
11. Payment for ecosystem services is a conservation and management paradigm that recognizes: (1) the need to bridge the interests of communities connected by ecosystems, (2) the costs of securing and maintaining the provision of different ecosystem services and (3) that those who benefit from these services need to pay for these costs (Bhatta et al 2014)



**Board report**

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**Financial report**

# Board report

2015 has been a successful, busy and rewarding year for GRID-Arendal's staff and partners. A new structure was introduced last year and saw the creation of eight programme areas that each address global environmental challenges. The programmes are Environmental Crime, Transboundary Waters, Polar and Mountain Environments, Blue Carbon, Green Economy, Marine Spatial Planning, State of Environment Reporting and Marine and Coastal Resources.

These programme areas delivered specific, agreed, funded outputs to the satisfaction of clients in United Nations Environmental Programme (UNEP), the Global Environmental Facility (GEF), the Norwegian Ministry of Foreign Affairs, the Ministry of Climate and Environment and many other contributors and funders. Each of GRID-Arendal's programmes has produced several products during the year. Each product is carefully prepared and planned to attain maximum impact in its target audience. Highlights of these products are shown in the main text of this report.

GRID-Arendal and UNEP have agreed to hold bilateral discussions for programme planning twice each year under the auspices of a framework agreement signed in August 2014. Under that agreement, this steering committee meeting is between the Executive Director of UNEP and Chair of our Board, but the task is delegated to UNEP's Mette Wilkie (Director of the Division of Environmental Policy Implementation) and Jacqueline McGlade (Director of the Division of Early Warning and Assessment) and GRID-Arendal's Managing Director, Peter Harris, and Chief Scientist, Yannick Beaudoin. Two meetings of the committee were held in March and October 2015, and matters such as GRID-Arendal's support for the production of UNEP's next Global Outlook (GEO) report, UNEP's request for assistance for production of a "story map" on Sargassum and priority areas for reporting and engagement were discussed, among other topics.

GRID-Arendal, the Norwegian Institute for Water Research (NIVA) and the Institute of Marine Research (IMR) founded the Norwegian Blue Forest Network, a new initiative to strengthen and share national competence on "blue forest" habitats. The network is now engaging and educating Norwegian stakeholders on the importance of blue forests. An event was held during Arendalsuka in August at GRID-Arendal where the former Minister of Climate and Environment, Tine Sundtoft, officially launched the Network.

GRID-Arendal has updated its project planning tools and management software in order to more effectively manage projects from their inception through to delivery of final

products that adhere to Results-Based Management (RBM) principles. The software was developed in-house by our Communications Unit and includes a "traffic light" system for tracking project milestones, information on staff allocations to projects and a planning template with a built-in budget calculator and prompts for all essential RBM information including outcomes, performance indicators, and milestones.

Strategic plans for polar environments and communications were produced in 2015. These areas are core business for GRID-Arendal and it was deemed necessary to review their strategic goals and directions given the new structure and how the staff profile of the organisation has evolved in recent years. These two separate strategic plans have been presented to the Board and they will be incorporated into a new organisational strategic plan for 2017-2021 to be developed during 2016.

The Board congratulates GRID-Arendal on very prudent financial management given a difficult liquidity situation caused by delays in approved public funding. The Board applauds reaching the set target and can report a financial result for 2015 of NOK 2.673.535, which will be added to last year's equity, thereby creating a new equity balance of NOK 10.006.353. This results in an equity ratio of 33% by end of 2015, and the overall target of building a NOK 10.000.000 equity reserve is finally accomplished. Due to healthy operations, budget discipline related to projects and administration costs, and a significant currency gain from projects funded with US Dollars and EURO, the overall 2015 budget was achieved. While the Board is optimistic about the outlook for 2016 because of the overall satisfactory funding situation at the end of 2015, it is aware that higher governmental budgets due to the humanitarian crisis in Europe may affect new funding for the coming year. A new Framework Agreement between GRID-Arendal and the Norwegian Ministry of Foreign Affairs will continue to provide the organization with a financial basis for focused work in key areas to support UNEP.

GRID-Arendal recruited new staff last year and bolstered its capacity to manage projects of various scope and complexity, with a wide range of expertise, in all its programme themes over a wide geographic area. This work was backed up by an excellent network of consultants.

During 2015, new policies were implemented which covered staff travel, anti-corruption, procurement and new code of conduct (including confidentiality agreement and harassment policy). Many of these policies are designed to improve programme funding through enhanced focus on project management skills and guidance towards clear ownership of projects, results and expected impacts.

The working conditions within GRID-Arendal are good. During 2015, GRID-Arendal created an online Health Security & Environment manual available for staff members. Four meetings were conducted by the Working Environment Committee and regular meetings were held between staff and management where issues concerning work conditions were discussed. Continuing efforts are being made to reduce stress, improve teamwork and provide more effective feedback to staff. Long-term sick leave in 2015 amounted to 3.8% of the total working days, while short-term sick leave constituted 2.3%. There were no injuries to staff in 2015, and there was no significant damage to the equipment of the organization.

At the end of 2015, the Board was comprised of 3 women and 4 men. The staff consisted of 26 staff members of whom 10 are women and 16 are men. Six students successfully completed their internships at GRID-Arendal. During December 2015, four new staff members were recruited for employment in January 2016.

GRID-Arendal's environmental policy is based on the foundation's "green" values and commitment to operate

in an environmentally responsible and resource efficient manner. The foundation is a certified Miljøfyrtårn (environmental) organization. Through targeted measures, internal health, safety and environmental work and the awareness of both employees and our partners, the Board believes that the foundation's ecological footprint is minimized. Employee travel poses the greatest environmental impact. The foundation minimizes this by requiring its employees to travel only when necessary. When travel is required, carbon offsets are purchased that help finance concrete environmental projects in other countries.

The Board concludes that GRID-Arendal's activities are consistent with its charter purposes and that it has a competent staff for continuing operations and for planning further strategy-relevant operational activities in the future. The financial statements are based on the assumptions of continued operations, as the Board is aware of no factors that indicate otherwise. The Board considers the financial statements to give a true and fair view of assets and liabilities, financial position and results.

Arendal, 01.03.2016



Olav Orheim  
Chair



Peter Townsend Harris  
Managing Director



Randi Eidsmo Reinertsen  
Deputy Chair



Nils Audun Karbø



Berit Lein



Klaus Jürgen Liedtke



Yngvild Lorentzen



John Patrick Crump  
Staff Representative

# Financial report

## Balance sheet (NoK)

Assets	Note	2015	2014
<i>Tangible fixed assets</i>			
Machinery and equipment	2	20 207	47 147
Total tangible fixed assets		20 207	47 147
<i>Financial fixed assets</i>			
Investments in subsidiaries	5,8	9 012 000	7 012 000
Total financial fixed assets		9 012 000	7 012 000
<b>Total fixed assets</b>		<b>9 032 207</b>	<b>7 059 147</b>
<i>Current assets</i>			
<i>Debtors</i>			
Accounts receivables		3 298 796	3 486 034
Other receivables		844 720	608 987
Total debtors		4 143 516	4 095 021
Cash and bank deposits	6	17 091 126	13 377 093
<b>Total current assets</b>		<b>21 234 642</b>	<b>17 472 114</b>
<b>Total assets</b>		<b>30 266 849</b>	<b>24 531 261</b>
<b>Equity and liabilities</b>			
Restricted equity		500 000	500 000
Total restricted equity		500 000	500 000
Retained earnings			
Other equity		9 506 353	6 832 818
Total retained earnings		9 506 353	6 832 818
<b>Total equity</b>		<b>10 006 353</b>	<b>7 332 818</b>
<i>Current liabilities</i>			
Trade creditors		2 839 165	2 192 620
Public duties payable		1 199 759	1 416 104
Other short term liabilities	8	16 221 573	13 589 719
Total short term liabilities		20 260 496	17 198 443
<b>Total liabilities</b>		<b>20 260 496</b>	<b>17 198 443</b>
<b>Total equity and liabilities</b>		<b>30 266 849</b>	<b>24 531 261</b>

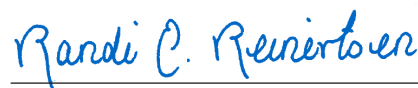
Arendal, 01.03.2016



Olav Orheim  
Chair



Peter Townsend Harris  
Managing Director



Randi Eidsmo Reinertsen  
Deputy Chair



Nils Audun Karbø



Berit Lein



Klaus Jürgen Liedtke



Yngvild Lorentzen



John Patrick Crump  
Staff Representative

## Income statement (NoK)

Operating income and operating expenses	Note	2015	2014
Operating income		55 841 011	51 971 561
Project costs		18 893 822	9 000 954
Personnel costs	3	22 615 199	28 160 495
Depreciation	2	26 940	53 721
Other operating expenses	7	12 231 339	14 194 149
Operating expenses		53 767 299	51 409 319
Operating result		2 073 712	562 243
<i>Financial income and expenses</i>			
Other financial income		1 562 662	849 291
Other financial expenses		962 839	994 636
Net financial income and expenses		599 823	-145 345
Annual net profit		2 673 535	416 897
<i>Brought forward</i>			
Net brought forward		2 673 535	416 897

### Note 1

#### Accounting principles

##### Basic principles – assessment and classification – Other issues

The financial statements, which have been presented in compliance with the Norwegian Companies Act, the Norwegian Accounting Act and Norwegian generally accepted accounting principles in effect as of 31 December 2015 for small companies, consist of the profit and loss account, balance sheet and notes to the accounts. The financial statements give a true and fair view of assets, debt, financial status and result. In order to simplify the understanding of the balance sheet and the profit & loss account, they have been compressed. The necessary specification has been provided in notes to the accounts, thus making the notes an integrated part of the financial statements.

The financial statements have been prepared based on the fundamental principles governing historical cost accounting, comparability, continued operations, congruence and caution. Transactions are recorded at their value at the time of the transaction. Income is recognised at the time of delivery of goods or services sold. Costs are expensed in the same period as the income to which they relate is recognised. Costs that cannot be directly related to income are expensed as incurred.

When applying the basic accounting principles and presentation of transactions and other issues, a

“substance over form” view is taken. Contingent losses which are probable and quantifiable are taken to cost.

#### Accounting principles for material items

##### Revenue recognition

Revenue is normally recognised at the time of delivery of goods or services sold.

##### Cost recognition/matching

Costs are expensed in the same period as the income to which they relate is recognised. Costs that cannot be directly related to income are expensed as incurred.

##### Fixed assets

Fixed assets are entered in the accounts at original cost, with deductions for accumulated depreciation and write-down. Assets are capitalised when the economic useful life is more than 3 years, and the cost is greater than 15.000 NOK. Operating lease costs are expensed as a regular leasing cost, and are classified as an operating cost.

##### Depreciation

Based on the acquisition cost, straight line depreciation is applied over the economic lifespan of the fixed assets, 3 years.

##### Accounts Receivables

Trade receivables are accounted for at face value with deductions for expected loss.

**Note 2****Machinery and equipment (NoK)**

Book value 01.01.2015	47 147
Addition 2015	0
Depreciation 2015	-26 940
Book value 31.12.2015	20 207

**Note 3****Salary (NoK)**

	2015	2014
Salary and holiday pay	16 405 240	20 183 090
Employers contribution	2 558 942	2 911 993
Pension costs	1 459 988	1 274 926
Other personnel costs	2 191 029	3 790 485
Total	22 615 199	28 160 495

Average number of employees	30	36
Salary of Managing Director	755 080	
Fee to Chairman of the Board	44 000	
Fee to other Board members	104 100	

Stiftelsen GRID-Arendal has entered into a pension agreement with the former CEO that can lead to future payments. There are accruals set aside for the most likely outcome of this obligation.

The company has subscribed to a pension scheme which meets the requirements of the obligatory pension scheme.

**Note 4****Pension obligations**

The pension premium to the contribution plan for the employees is NoK 1 459 988,- and the premium is charged to the personnel costs.

**Note 5****Long term investments (NoK)**

Shares subsidiaries: Teaterklassen AS  
 Owners share: 77%  
 Purchase cost: 9 012 000,-  
 Share of equity 31.12.2015: 15 479 317,-

**Note 6****Petty cash and bank accounts**

NoK 691 614,- of the total cash is restricted to meet the liability arising from the payroll taxes withheld.

**Note 7****Auditors fees**

The audit fee for 2015 is split into two parts:  
 The audit as required by law Nok 71 031,-.  
 Other services provided by the auditor Nok 135 657,-.

**Note 8****Balances with subsidiaries**

As of 31.12.2015 GRID-Arendal has a debt of NoK 5 500 000 to Teaterklassen AS.





A Centre Collaborating with UNEP

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