GRID ARENDAL

A Centre Collaborating with UNEP

Visualizing climate science and making it understandable to policy makers and the wider public: Atlases and other visual tools

Session Climate Change Risk and Vulnerability Assessment in Mountainous Regions

Björn Alfthan, GRID-Arendal

Outline of presentation

1. GRID-Arendal – who we are / what we do
2. Communicating science to policy makers through maps and graphics
   - State of the Environment Atlases
   - Himalayan Climate and Water Atlas
   - Outreach and Dissemination: looking beyond the product
3. Ideas for Andean glacier “Atlas” or similar products

1. GRID-Arendal

- Established by Norway Government 1989 to support UNEP and UN environment agenda

- Mission: To support environmentally sustainable development through UNEP and other partners by **communicating information that strengthens environmental management capacity and motivates decision-makers to act.**

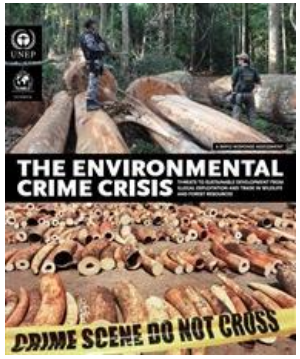
- Today's portfolio not limited to UNEP and includes projects funded through UNEP, GEF, EU (H2020), etc..

- 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.

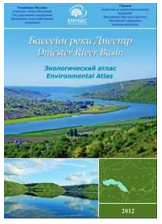
GRID-Arendal – 30 employees, 13 nationalities

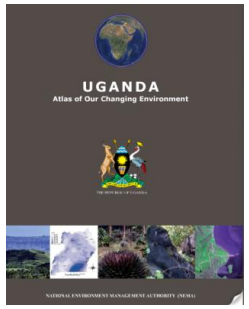
GRID-Arendal's
Communications & Capacity Building – some examples

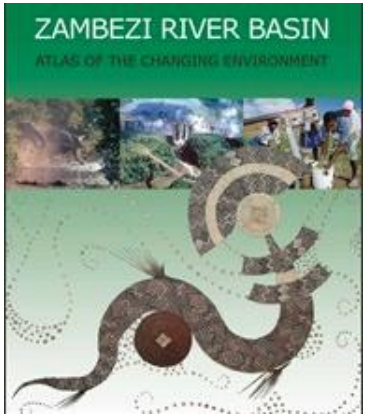


UNEP Rapid Response Assessments – getting emerging global environmental issues rapidly onto agendas (supporting UN Security Council resolutions; UNEP conventions and UN Environment Assembly Resolutions)

Capacity Building on State of Environment Reporting - supporting countries on regular reporting of the state of their environment e.g. through Atlases







Providing a holistic understanding of current environmental and climate issues in an accessible way for policy makers, providing evidence-based policy recommendations

GRID-Arendal's Mountain Portfolio

Himalayan Climate Change Adaptation Programme (HICAP)

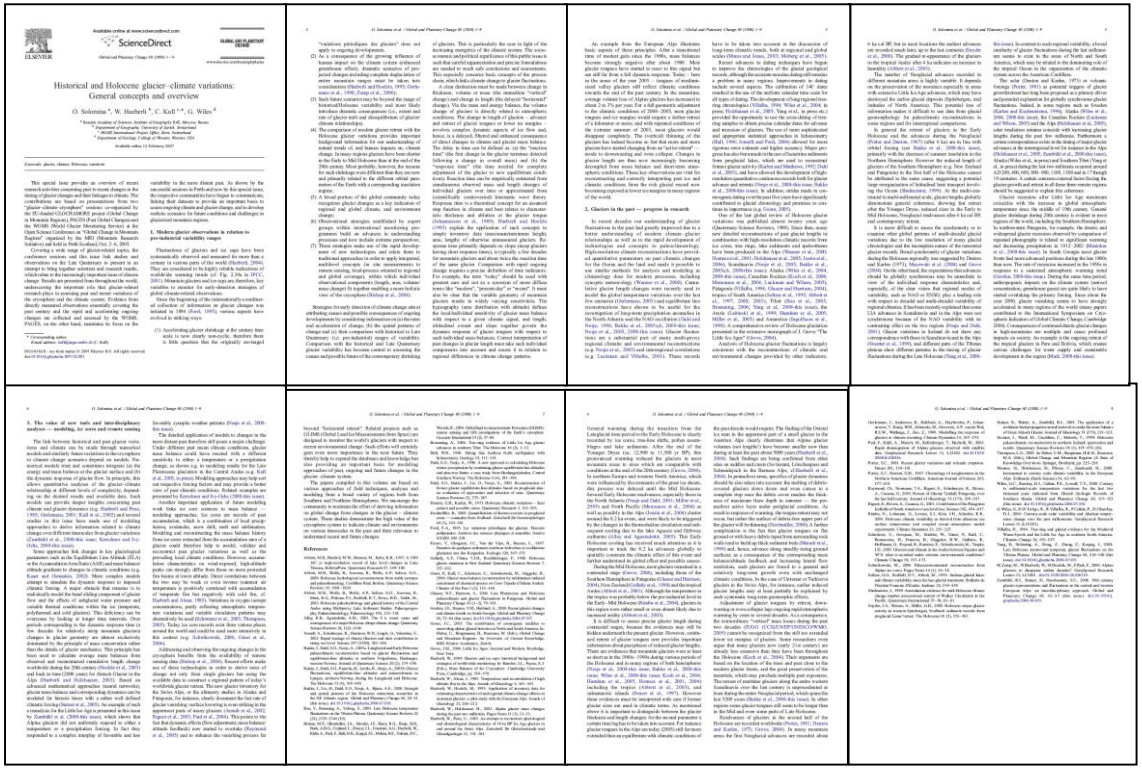
(On-going) In collaboration with ICIMOD, Centre for Climate and Environment Research Oslo (CICERO) and about 20 regional and local partners

(On-going) A series of **UNEP Adaptation Outlooks for Mountain Regions** which examine key climate risks for mountain regions, analyses adaptation policies and the extent to which they apply or are specific to mountain regions, and identifies existing gaps in policies to address key risks. In collaboration with UNEP-Vienna and regional mountain centres (CONDESAN, RMCCA) East Africa Community)

(new) Global Mountain Waste Management Outlook – will highlight waste issues and problems specific to mountain environments and identify opportunities for finance and investments. In Collaboration with UNEP-Vienna

2. Communicating Science to Policy Makers

Complex environmental data will not help guide sound environmental policy making if no one reads it!



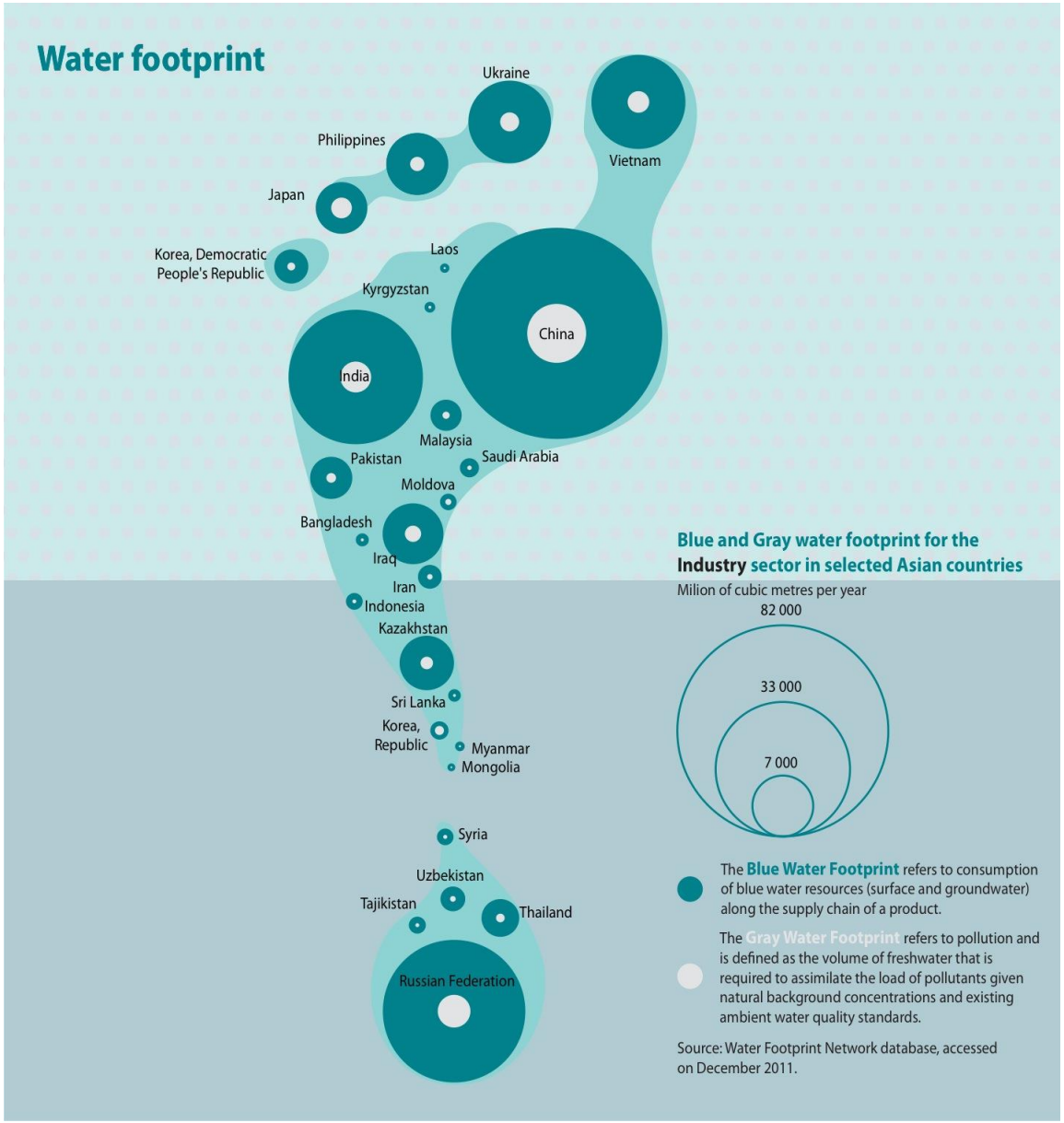
- Scientific Journals are written as communication within the scientific community
- Science in this form may reach very few policy makers and citizens.
- Condensing into a non-technical policy brief is helpful, but this still assumes that audience has an active interest in the subject

2. Communicating Science to Policy Makers – some approaches we use

INFOGRAPHICS:

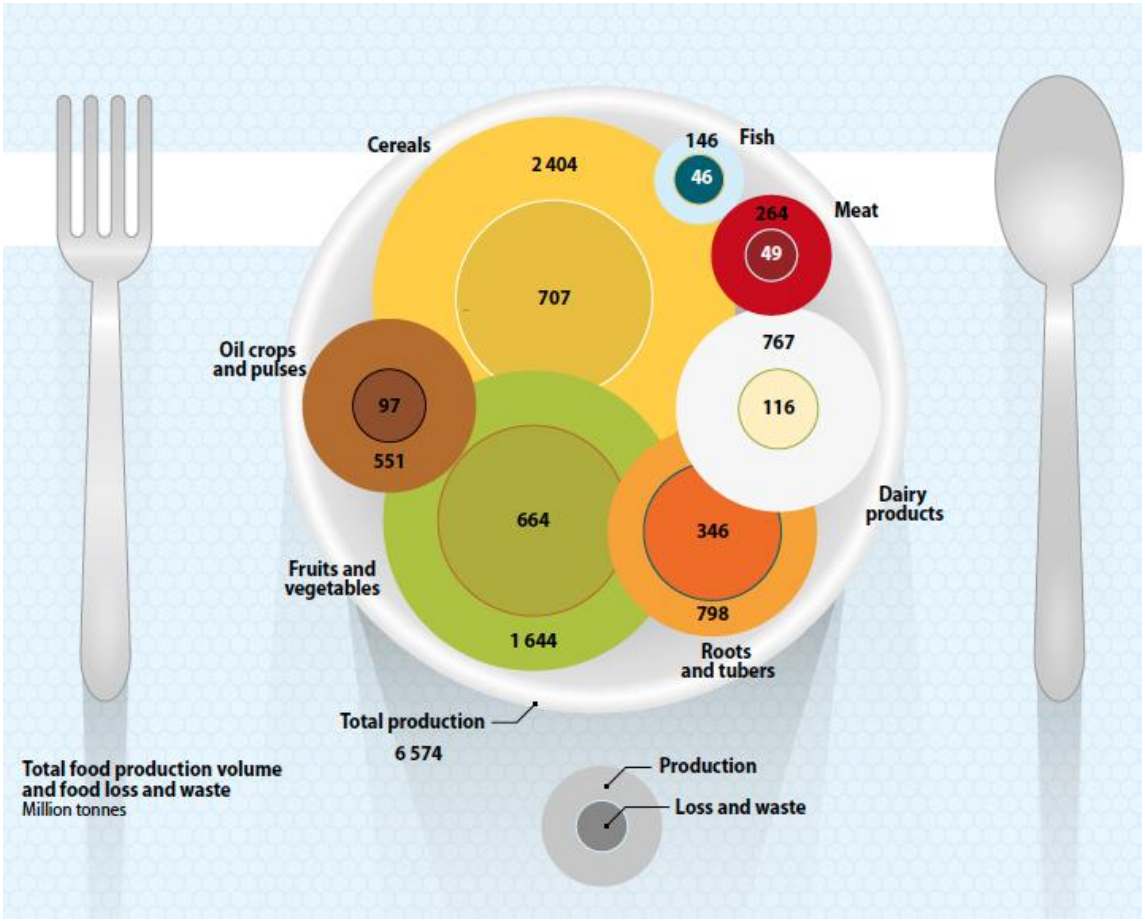
People can relate deforestation to the size of football pitches

2. Communicating Science to Policy Makers - some approaches we use



Water footprint of Asian countries, 2011

2. Communicating Science to Policy Makers

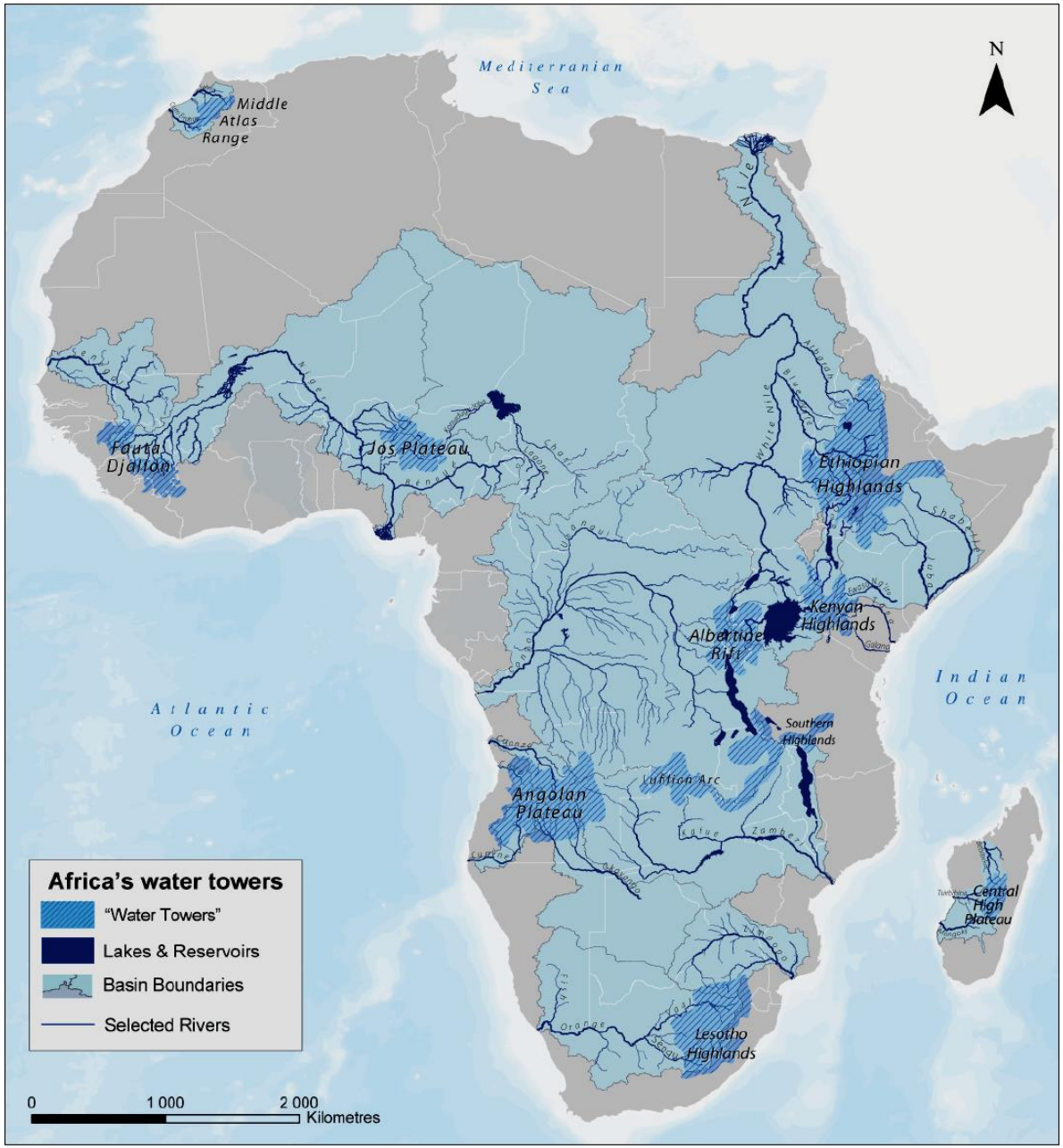


INFOGRAPHICS:

Food produced and food wasted on your plate

<u>Maps</u> make environmental science and environmental issues accessible to policy makers and the public.

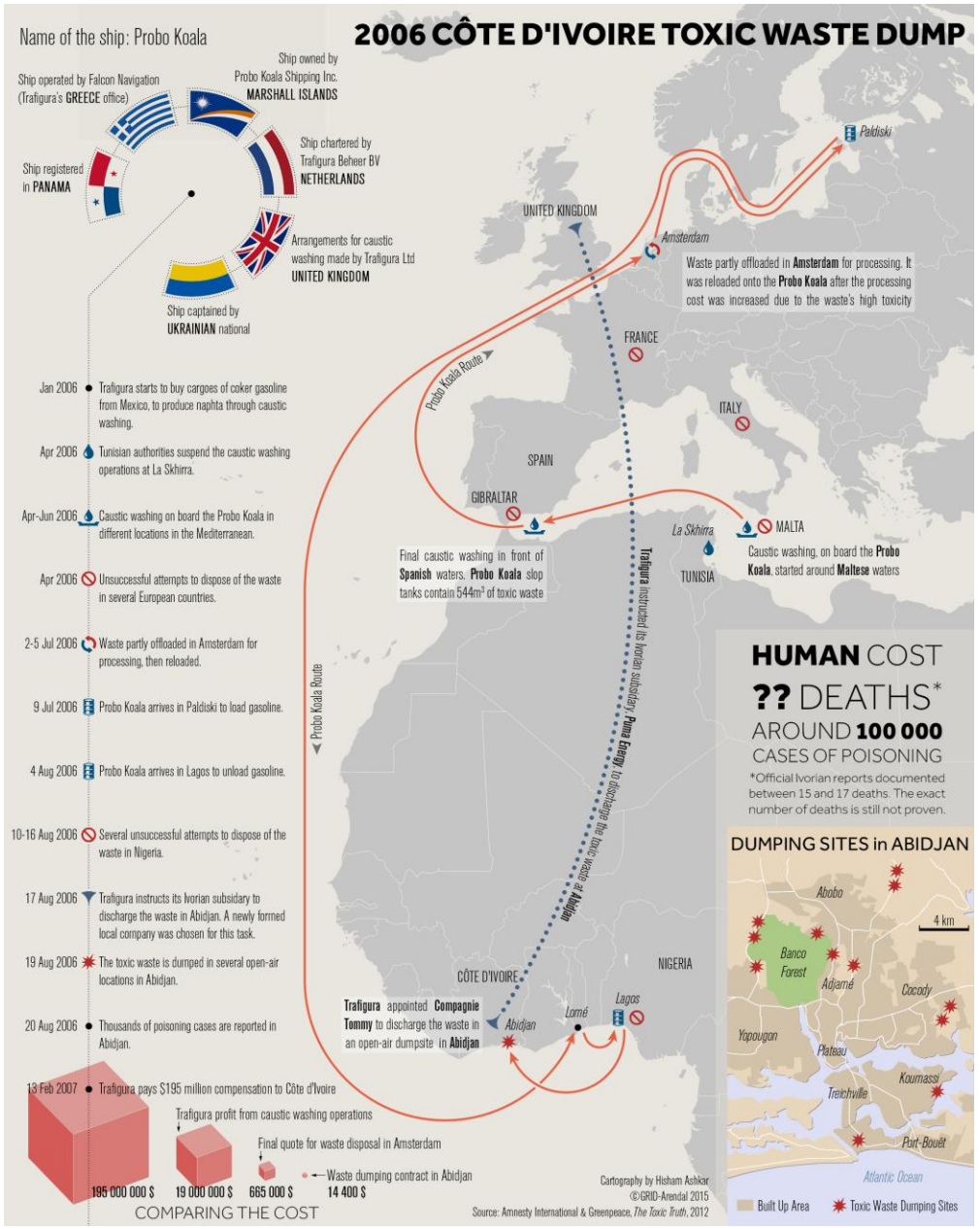
Mountains and highlands in Africa are crucial sources for many of Africa's great rivers.



Cartography gives us the freedom to integrate and include not only geo-referenced data but:

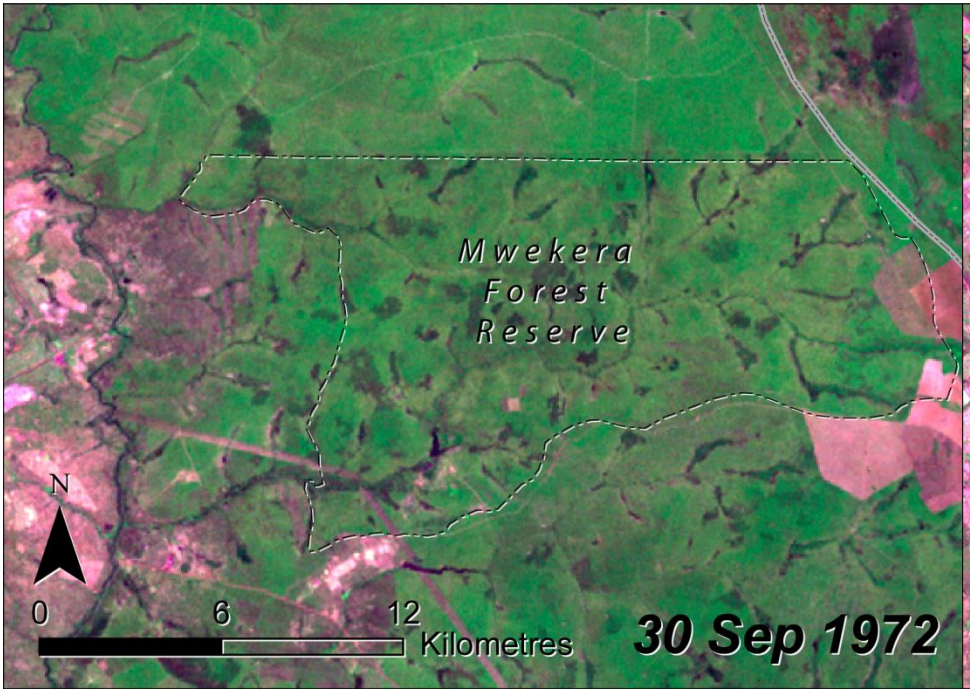
- Local information e.g. interviews/workshops
- Investigative journalism
- Other “grey” / non-academic sources of information

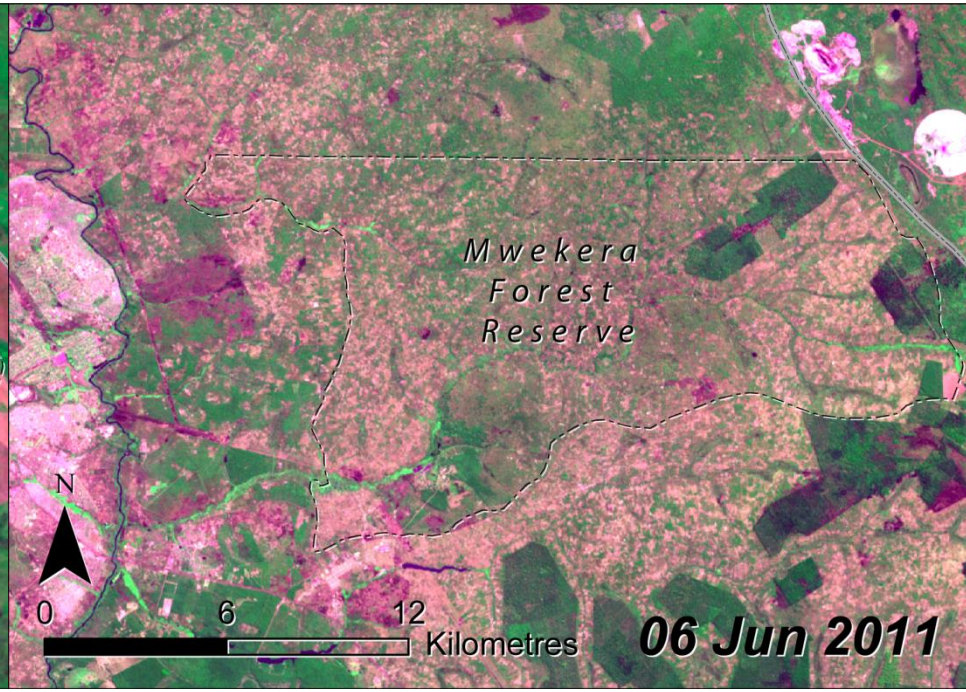
Adding multiple layers can build a story that is engaging and visual



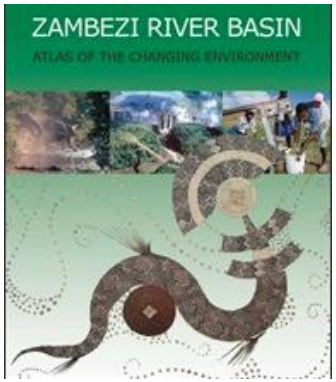
Seeing is believing, and remembering

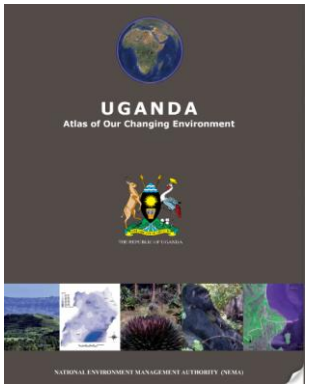
"Before and After Satellite Images" commonly used in our Atlas work





Overcomes the "shifting baseline" and failure to notice gradual change over time



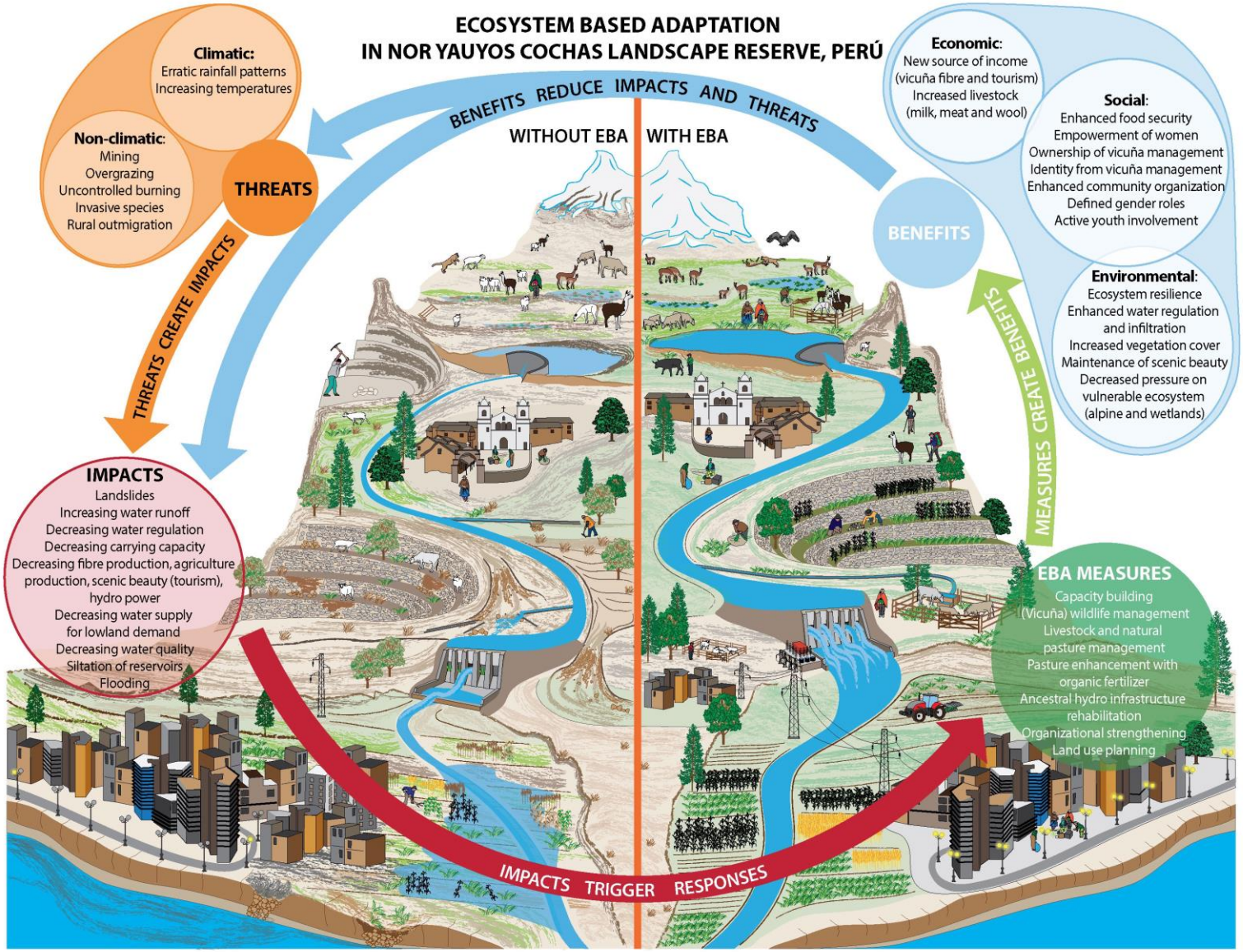


Seeing is believing, and remembering

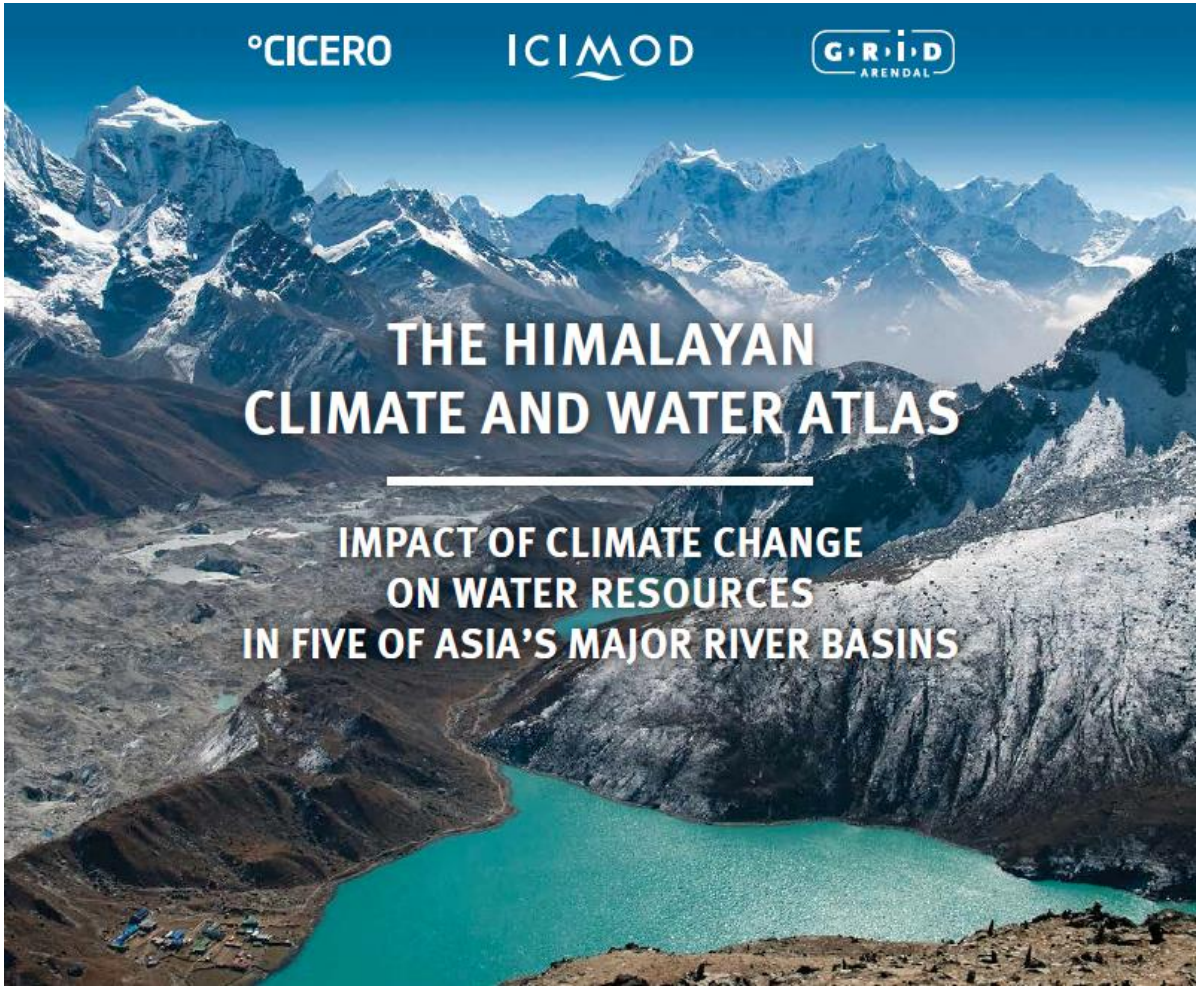
Fritz Müller and Erwin Schneider took this photo of Imja Glacier, Nepal, in 1950s

Alton Byers took photos in the same location in present day

Illustrations as communication tools, an example here illustrating the benefits of ecosystem-based adaptation approaches



Water-specific Atlas: process and lessons from developing the Himalayan Climate and Water Atlas (late 2015)



The Himalayan Climate and Water Atlas is a product of the

Himalayan Climate Change Adaptation Programme (HICAP)

HICAP is funded by Govnts. Norway and Sweden and involves ICIMOD, GRID-Arendal, CICERO and about 20 regional and local partners

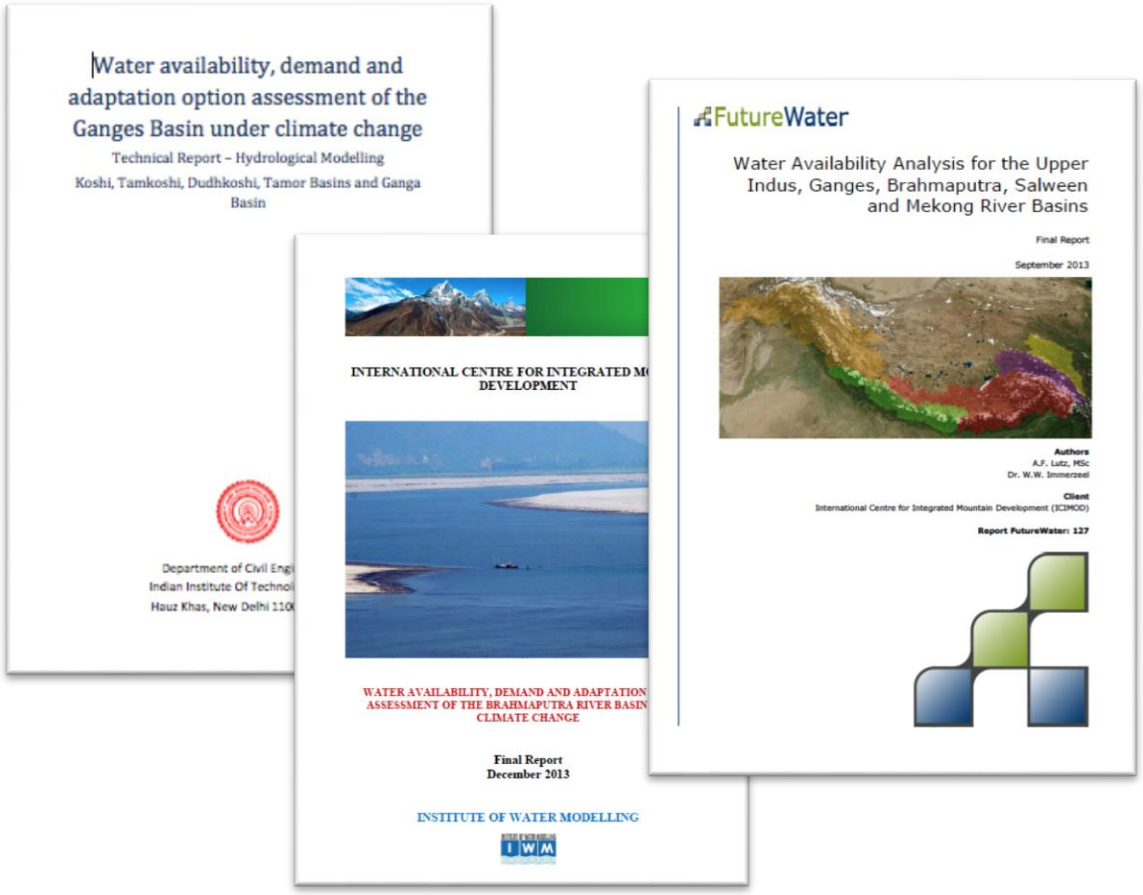
HICAP: Interdisciplinary adaptation research

- What are the **potential impacts** (positive and negative) of change, and how can the capacity to monitor them be enhanced?
- What are the **vulnerabilities and adaptive capacities of human and natural systems** in the Hindu Kush Himalayan region?
- What evidence of potential risks and opportunities can be provided to decision makers in order to increase the adaptive capacity of mountain people, particularly women?

Programme Components

1. Water Availability and Demand Scenarios
2. Climate Change Scenarios
3. Ecosystem Services
4. Food Security
5. Vulnerability and Adaptation
6. Women and Gender in Adaptation
7. Communication and outreach

Over 2012 to 2014, work under Component 1 (Water Availability and Demand) and 2 (Climate Change Scenarios) had managed to generate a wealth of academic articles and technical reports:



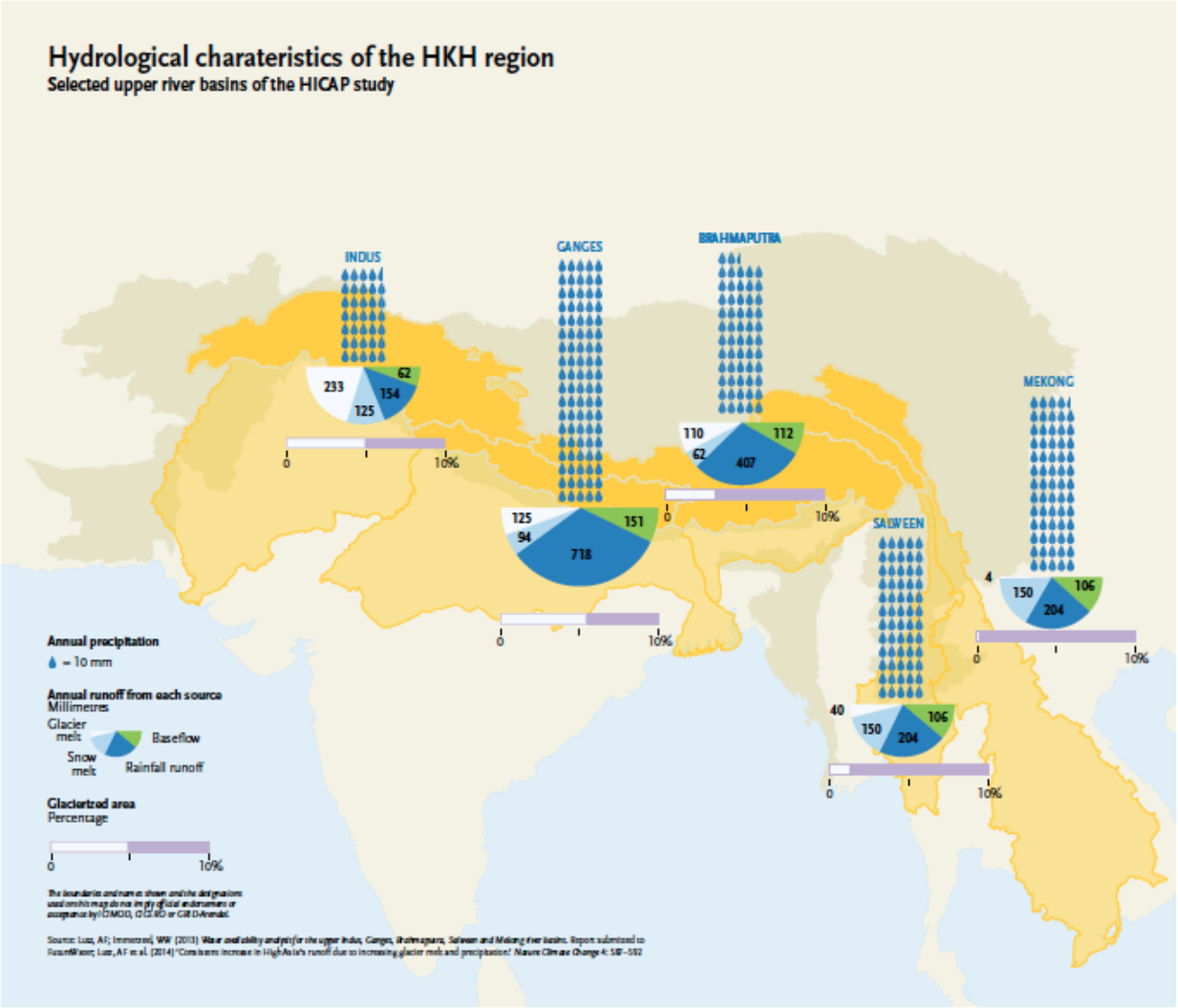
Included a Nature Climate Change article:

Lutz, AF et al. (2014) 'Consistent increase in High Asia's runoff due to increasing glacier melt and precipitation.' Nature Climate Change 4: 587–592

Article was considered a high "success" and got significant attention in the media and in academic circles – but what next?

Could we make this info more accessible to policy makers and the general public?

Focus of the Atlas is on 5 major river basins which have their source in the Hindu Kush Himalayas: Indus, Ganges, Brahmaputra, Salween, Mekong



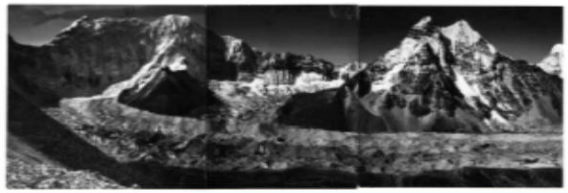
Includes projections of glacial extent to 2050

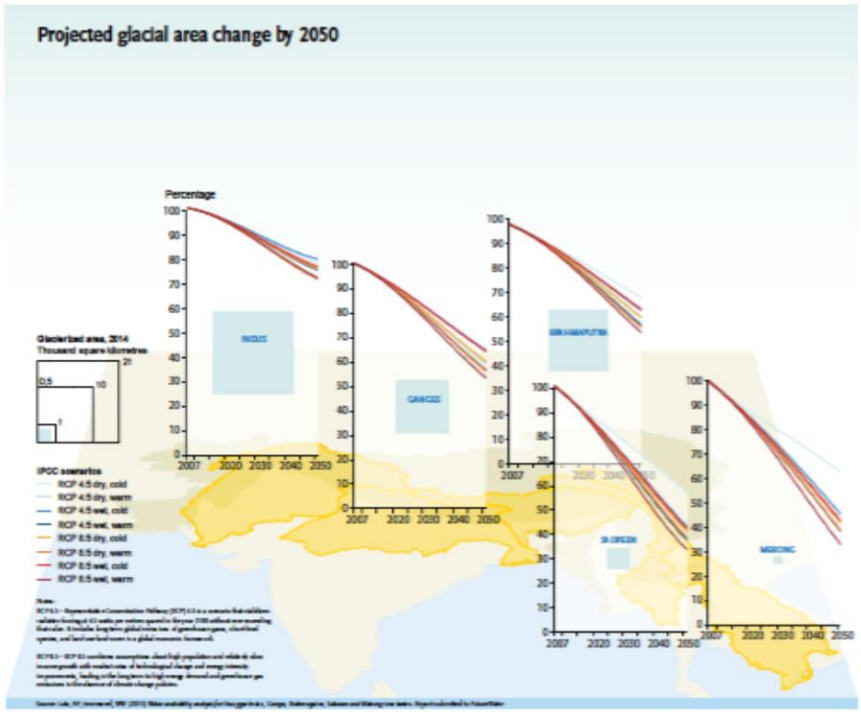
Projected trends in glacial melt

There has been an almost worldwide recession of glaciers since the last ice age, including within the Himalayas.[106] Most Himalayan glaciers have both retreated and lost mass since the mid-19th century, with some exceptions in the Karakoram and northwestern Himalayas.

Most models project substantial glacial mass and area losses in the coming decades for most parts of the Hindu Kush Himalayas.[107] At the upper river basin scale, the Indus, Brahmaputra, Ganges, Salween and Mekong are projected to lose considerable glacial area by 2050.[108] The greatest relative reductions in glacial area are likely to be for the Salween (−44 to −67%) and Mekong (−39 to −68%), as their current glacial areas are the smallest. For the Indus basin, a change in glacier extent ranging from −20 to −28% is projected. Although the Indus basin shows the smallest decrease in percentage because it has the largest glaciated area, the absolute loss is likely to be the greatest in this basin. Changes in glacier area in the Ganges and Brahmaputra basins show similar trends (−35% to −45%).

Even the glaciers in the highest mountains of the world will not escape the effects of climate change. For example, even if today's level of emissions are greatly reduced, glaciers within the Everest region (Dudh Koshi basin, Nepal) are projected to lose between, on average, 35% of their ice by 2050 and around 83% by 2100. For extreme RCPs, the average loss is projected to be much higher. Temperature increases will be the most important determining factor driving glacial mass loss in this region.[109] As temperatures rise, more glaciated area will be exposed to above-zero temperatures. These warmer temperatures will cause the glaciers to melt and will also mean that more precipitation will fall as rain rather than snow, resulting in melting ice not being replenished.





Combines text, historical photographs and graphics and stories from the ground

Water stories

Changing growing seasons in the upper Indus valley

Tor H Aase, CICERO, Norway & Sher Ahmed, Mountain Agricultural Research Centre, Gilgit-Baltistan, Pakistan

Mild weather does not necessarily imply a longer growing season in the upper Indus valley. The winter of 2014 was particularly mild in the Hindu Kush mountains, raising optimism among farmers along the Sai river in Gilgit, Pakistan of an early spring and a long growing season with rich harvests. Gilgit is a semi-arid cool region where summer cultivation is dependent on gravity-fed irrigation. Irrigation canals divert water from streams that originate in the high mountains and ultimately feed into the Indus river. Because precipitation is modest in the settled valleys, water discharge in streams is conditioned by snow melt in the higher reaches. Irrigation water is particularly important in spring when summer wheat is sown. An early spring allows for a second crop of maize after the wheat is harvested in June, while a late spring may cause damage to ripening maize, which should be harvested before frost nights occur in November.

Contrary to expectations of good crops, 2014 turned out to be a particularly difficult year. The mild winter brought cloudy weather in March and April, which prevented sunshine from melting the snow in the high mountains. The snow melt started two weeks later than usual and the wheat sowing had to be postponed accordingly. Some farmers harvested green wheat and used it for livestock fodder in order to allow for an autumn maize crop, while others faced damage to their maize in late autumn. Indeed, several years of late snow melt has motivated many farmers to grow wheat for fodder and buy flour for consumption from the market. Villagers increasingly prefer to make bread using high-quality wheat flour brought to Gilgit from Punjab via the Karakoram Highway, while the locally grown wheat is given to livestock.

The mild winter of 2014 had another effect on local livelihoods. Historically, villagers have collected firewood from the Sai river, which has been more or less sufficient for a full year. Winter avalanches cut down trees in the high mountains, which are brought to downstream villages by the spring floods. The mild winter decreased avalanche activity in the mountains and less branches and logs flowed down the river. The decreased amount of firewood available for household use was compensated for by an increase in the use of gas and kerosene.

Farmers in the Hindu Kush have learnt that there is not necessarily a correlation between temperature and the length of the growing season, and that the timely availability of water must also be taken into account.

What did the Atlas bring (so far)

- Extended “lifetime” / second-wind to the research findings. Re-packaging!

- Presented findings in a much more holistic way than any one scientific publication could; paints a regional understanding of change

- Forced the scientists involved to think about the broader implications of their work

- Generated interest beyond academic circles
  - Wide media coverage and more interest *within the* region than before
  - National TV coverage

- Interest from regions and NGOs not seen before:
  - Offers of national launches of the Atlas by other organisations (e.g. Pakistan, India)
  - Invitations for policy dialogues with regional governments

- Long shelf life of material available for presentations/lobbying/etc.

- Provides ICIMOD (as regional intergovernmental organisation) a tool to initiate discussions on future water-related work and addressing needs

Lessons learned and designing for IMPACT

- **Know your key messages before you start and what you policies/decisions you want to influence**
  - Keeps it targeted and manageable (fatigue with heavy "brick" publications)
  - Addresses real needs
  - Avoids/limits temptation of scientists to put in their "favourite" graphs or pet projects/issues

- **Ownership: get it right from the beginning**
  - National and/or local ownership (depending on target audience) is key to getting the "product" out there
  - Will extends lifetime of findings, create further discussions, local launches

- **Have an outreach strategy/plan (relevant from large projects down to individual products)**
  - Assuming you have a "great" product isn't enough
  - Concerted effort needed at getting the product out
  - E.g. through well-timed, high-profile launch, engaging media/press packages, through social media channels,etc. etc.

- **Design for spin-off products for further outreach:**
  - Flexibility to pull out elements of the Atlas e.g. for presentations etc.

In Conclusion:

- GRID-Arendal is interested in further discussing possibilities and scope for an water-related Atlas (or similar product) depending on interests and needs of UNESCO and other partners. Possibility to bring UNEP into discussion too.

Thankyou!

Contact: Björn Alfthan

Please visit http://www.grida.no/publications/
to access the Himalayan Atlas and other publications