

South Africa Risk and Vulnerability Atlas

Feedback from the Users Workshop

17 June 2009

CSIR Convention Centre, Pretoria

1. CONTENT: WHAT INFORMATION SHOULD BE INCLUDED IN THE ATLAS?

- Initially the focus should be placed on primary data, which should be synthesised from a variety of sectors to provide climate change lens for existing data.
- There needs to be three dimensions to the Atlas; environmental, social and economic.
- **Policy relevant information** that can feedback into the system. For example, The Department of Energy needs information to guide the future planning of on the ground energy processes. **Case studies** with a policy perspective are required.
- **Spatially explicit information** that can be used to create indicators and index systems of sensitivity. For example, frequency maps of climate extremes, such as the number of frost days. Where available national, regional and local scale data needs to be included.
- **Climate change scenarios** (process for bridging downscaled models to user community).
- Long term climate shifts and short term variations need to be included in order to deal with the probability of occurrence and to understand thresholds.
- Climate change induced changes in **vegetation patterns**.
- **Demographic data** (age, gender and income profiles, level of disease loads, and morbidity). The 2001 Census information needs to be included in order to determine a baseline of vulnerability.
- **(MCM) Basemaps** of population growth, residential, economic activities, and physical parameters which influence coastal sensitivity; such as beach types, geomorphology, coastal zones, sensitive ecosystems, protected areas, and accessibility (for disaster management and clean-up projects).
- Projections of sea level rise and coastal erosion (**basic meteorological data** and **hydrological models**) to guide land-use planning and EIAs. This information should be linked to maps of areas prone to sea level rise and storm surge events. Current monthly weather information was highlighted as important.
- Ecological impact data needs to be included and the **results of EIAs** need to be shared.
- The Atlas should provide **links to SANBI B-GIS** and **SAEON databases** and should **combine monitoring data** from the South African Weather Service, Agricultural Research Council and the Water Resource Commission. All available data for monitoring should be included, for example indicators of ecosystem health.

- **Risk indices** – for example the likely increases in certain health risks such as malaria. Indices of drought risks were also highlighted as important information by the users.
- Maps of current and possible future **high risk areas for flooding**. It was said that the most useful maps would classify areas in terms of severity and be at sub catchment level. Rather done on ad hoc basis. Maps of infrastructure risk due to climate variability, for example damage to roads and stormwater systems from heavy rains. Other social factors such as areas of infrastructure backlog, low income, and high population need to also be included.
- Inclusion of the **Klip River/Klipspruit hydrological and hydraulic assessment** which involved mapping areas at high risk from flooding within 1:100 year flood line. This hydrological modelling has provided updated floodlines for a large part of the Klip River catchment and the data is being used to identify flood risk areas and inform planning and development decisions in the City of Johannesburg. There is currently no comprehensive up to date set of floodlines for the whole Johannesburg city and the methods for determining the floodline can differ from one engineer to the next.
- **City of Johannesburg municipality spatial data** - Stand and township information, proposed townships, aerial photography, lidar points, contours, street addresses, zoning information, administrative boundaries, topographical information, wetlands and open spaces, refuse sites, and landfill sites.
- **Social networks** (and the role of institutions both formal and informal) need to be included and can be illustrated in the form of narratives and diagrams.
- **Hind-casting** should be incorporated.
- **Food security** – for example, the percentage change in production of locally grown crops.
- Data and maps of **biodiversity** (ecosystem goods and services), urban expansion, existing corridor networks, land degradation, wetlands, and protected areas that can be used in the biodiversity planning and protected areas planning. Included in these should be maps of current and future biodiversity loss.
- Maps detailing relevant pollution data, for example oil spill events, location of marine outfalls, and location of dump sites at sea. The Department of Water and Environmental Affairs uses the Coastal Sensitivity Atlas to identify areas of risk in the case of an oil spill event and this needs to link in with the Atlas.
- **Energy** demand, emission **inventories** and deposition surfaces data as well as information on renewable and alternative energy resources.
- Maps of all **forest resources** (natural forests, woodlands, commercial forestry plantations) and maps of Fire Protection Associations boundaries. Current and future maps of areas vulnerable to fire would also be required.
- Registered users should be able to access **specialist tools** and methods that can be used to assess vulnerability.

- There needs to be a directory of researchers and projects.
- Detailed existing vulnerability maps showing the risks on specific sectors need to be included.
- The included content should help reduce duplication.
- Value added products are of principal importance.
- There should be a platform for end users to add their own value to the base data.
- The Atlas should facilitate understanding based on first level of information.
- The Atlas could highlight gaps in research.
- Users need to be advised about the nature of the data that is in the Atlas (fitness of use). The data included in the Atlas needs **quality assurance** as well as **guidelines** on whether the data provides a credible source of 'truth'. These could be expressed as probabilities similar to those in the IPCC reports.
- There needs to be a clear **scope of Atlas** as the policy issues extend beyond just climate change. The terms of reference therefore need to be outlined and there needs to be a clear conceptual framework.

2. WHAT FORMAT SHOULD THE DATA BE PRESENTED IN?

- It was apparent that not all users require data in GIS format (such as ARC and ESRI shape files) and as such a variety of formats would need to be provided; jpegs, pdfs, graphs, tables, and other diagrams.
- In terms of the architecture of the Atlas, it was emphasised that established databases and spatial portals should be used instead of 'reinventing the wheel'.

3. WHAT SORT OF DECISIONS WILL BE SUPPORTED BY THIS INFORMATION?

- **Top level (national) decisions** – for example revised management strategies and legislation.
- **Infrastructural development needs** – such as where to build (approval of development applications), the risks associated with specific developments, no-go areas or highly sensitive areas which preclude development (for example mining), and local and provincial housing planning. A lay out design criteria for development that can cope with climate change can be produced from this information.
- Spatial information as well as community based data can be used in the **City of Johannesburg's RSDF** (Regional spatial Development Framework) process, which influences development decision-making.

- **Short term disaster risk reduction planning and response**– such as coastal setback lines for building linked to storm surges.
- The **updating** of The City of Johannesburg 1:100 and 1:50 year **floodline maps**, which are regarded as risk areas and areas of no development. **Scenario mapping** to map and project possible changes to floodlines resulting from climate change. The information can be used to identify a settlements exposure risk to floods and to highlight priority risk areas which need urgent mitigation action.
- Future energy scenarios can be developed from this information.
- **Vulnerability and mitigation planning** in rural and urban communities.
- Support for **MEA's**.
- Vulnerability of different sectors; agriculture, forestry, tourism, mining, land reform to climate change.
- Future crop suitability studies.
- The Department of Agriculture, Forestry & Fisheries would use climate change projections to map the fire risk at a finer scale for different vegetation types.
- The effect of climate change on forests.
- Research and Development support.
- Facilitate the compilation of the **Second National Communication**, which assesses the current national trends of adaptation to climate change across different sectors.
- Spatial distribution of species of bird and animal can be used to improve early warning systems for impacts on, and adaptive responses of, biodiversity.
- Conservation planning and the mapping of sensitive terrestrial and marine areas.
- The Department of Water and Environmental Affairs could use the atlas to co-ordinate policy development and response planning, which focuses on the effects of climate change on biodiversity. This could enhance climate change adaptation research and analytical capacity.
- This information could be used to facilitate climate change mitigation projects and general awareness on climate change issues.
- Determining **long term adaptation strategies** for the various sectors of responsibility.
- Development and implementation of measures to control marine pollution from land-based sources. For example, the creation of maps of protected areas, as well areas of industrial, agricultural, recreational and residential use and the creation of maps showing access points to the secluded areas. This could strengthen policy and legislation with regard to marine pollution.

4. WHO ARE THE STAKEHOLDERS AND HOW CAN THEY BENEFIT FROM THE ATLAS?

- It will be useful to have a centralized system where information can be shared and accessed by all departments and municipal owned entities.
- **Business** can save on costs, decrease their losses, and identify new business opportunities.
- **National government departments** (The Department of Housing, The Department of Energy, The Department of Science and Technology, The Department of Water and Environmental Affairs, and The Department of Health).
- **Provincial government** – growth and development strategies.
- **Municipalities** (for example the “bushbuck ridge” type municipalities as well as the “eThekweni” type municipalities) can use the information for integrated development planning (IDP). The Atlas must be known and reach all the ‘less resourced’ municipalities and local government in order for better monetary planning. The Atlas also needs to be user friendly in order to engage local stakeholders and other languages may need to be included for explanation purposes.
- **Engineers** (built environment).
- **Researchers** and the associated formal **institutions** (such as Universities).
- **Students** are important users of this information as they are the future decision-makers.
- **Insurance companies** – for example Benfield hazard centre.
- **Regulators**
- **Eskom** (contributor to LGN net resource centre).
- **SALGA** could be an important stakeholder but their future is uncertain.
- The line between data user and data provider is blurred as some stakeholders are both. Feedback networks between stakeholders both using and providing data need to be facilitated.
- Lessons should be taken from successful stakeholder cases, for example ARC and A-GIS with farmers and Ag Extension officers.

5. DISCUSSION POINTS

- a. The **definitions of terms**, such as vulnerability, risk and coping capacity, set the scope for the Atlas and thus the intended meaning of each needs to be made clear. For example, who is vulnerable and what is vulnerable.
- b. **Data source acknowledgement.**
- c. **Ethics and intellectual property** issues need to be addressed.

- d. In terms of **adaptation**, the challenge is how to use vulnerability data in order to express adaptive capacity.
- e. There should be another forum held just for policy makers.
- f. Branding – the name is a key part of the targeted user groups.
- g. The spatial and temporal resolution of data needs to be consistent in order to ‘compare apples with apples’. This links in the problem of compatibility of different data layers, for example using data obtained from commercial farming for a local subsistence farming study.
- h. It is important that the Atlas is as user friendly and flexible as possible and can be updated on a regular basis. There is however, the problem of ensuring the data remains as clean and understandable as possible.