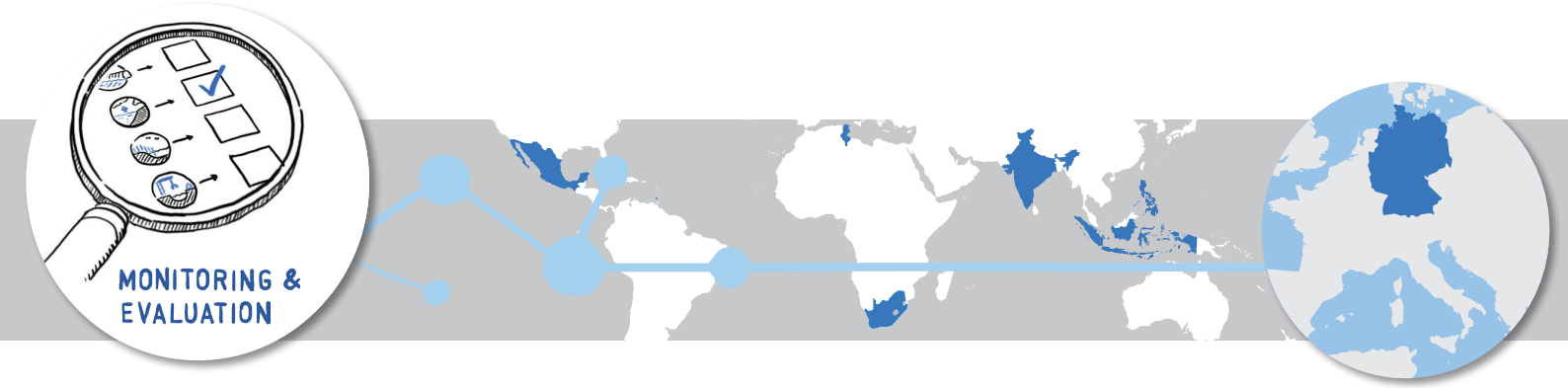

Method Brief

Climate change impact and response monitoring in German Federal states

The Approach

Several German States are developing a Monitoring and Evaluation (M&E) system to assess impacts from climate change and/or track the results of adaptation measures.

Scope and entry points

Several German states have already established an adaptation strategy linked to the German National Adaptation Strategy, or are in the process of doing so. This Method Brief focuses on two states: North Rhine-Westphalia (the country's most populous state), and Schleswig-Holstein in northern Germany.

How it works

The **State of North Rhine-Westphalia** already has an operational climate change and climate impact monitoring system in place. It consists of 15 indicators as shown in Table 1. A factsheet detailing the definition, source of data and development of each indicator is available online (see Figure).

North Rhine-Westphalia's M&E system focuses on environmental and climatic parameters and does not include socio-economic parameters. Data is either measured by state authorities, or is provided by other bodies such as the German Meteorological Service.

The **State of Schleswig-Holstein** in Northern Germany has started the process of developing a climate change adaptation M&E system with a systematic inventory of all relevant existing monitoring systems. The main goal is to assess the usability of these M&E systems for adaptation M&E and to explore the extent to which the existing monitoring could be adjusted or additionally linked with climate data to allow specific adaptation-oriented conclusions. As of early 2013, studies are in progress to suggest suitable indicators taking into account considerations such as resource intensity, timelines, spatial resolution, etc. It is expected to take at least two years before the system is operational.

Topic area	Climate impact indicator
Climate and atmospheric parameters	1: Temperature 2: Number of cold days 3: Number of warm days 4: Precipitation 5. Extreme precipitation 6: Snow
Water	7: Water temperature
Biodiversity	8: Length of vegetation period 9: Climate sensitive bird species
Soil	10: Soil temperature 11: Rain erosivity
Agriculture	12: Start of apple blossom 13: Sowing and emergence of maize and winter wheat
Forestry	14: Risk of forest fires 15: Phenology of the Beech

Table 1: Climate change impact indicators monitored by the State of North Rhine-Westphalia.

Specifics of application

Stakeholders and institutional set-up

The agencies leading the development of the M&E system are usually the respective State Ministries for Environment in cooperation with their State Environmental Agencies (a separate, more technical body). Usually, the development is designed as a cooperative process including several sector agencies and departments, which are responsible for the different sector fields relevant to adaptation and climate impacts. An inter-state adaptation working group has been established at the federal level to exchange concepts and discuss the latest progress of work among the states.

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of the Federal Republic of Germany

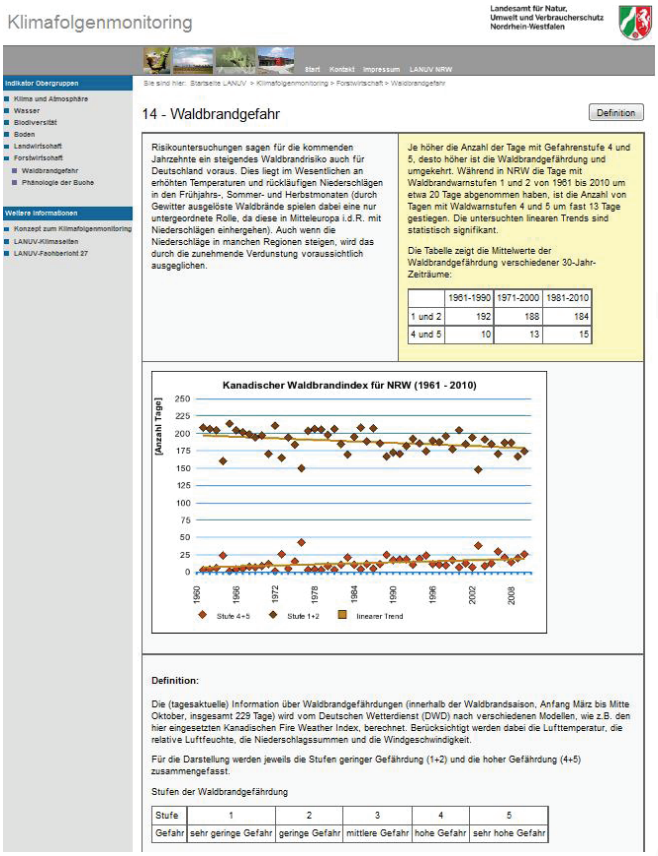

Figure 1: Online profile of the climate change impact indicator 'danger of forest fire'.

Input

The development of M&E systems requires expertise and inputs from various sector stakeholders as well as overall efforts for conceptualisation and coordination. The State of Schleswig-Holstein commissioned external consultancy support to tackle the latter requirement. In Schleswig-Holstein, the development process is estimated to take at least two years.

Output

In Schleswig-Holstein, the M&E system will be described by specifying who does what, when and with what resources. Specific outputs will include indicator lists and a factsheet for each indicator detailing relevance, technical specifications, data sources, institutions responsible for data collection and interpretation, sources of funding etc. The regular M&E documentation will include periodic reports as well as online platforms similar to the one shown in the figure above.

Capacity required and ease of use

Specific challenges include limited resources available in the state administrations, and potential resistance from some sector representatives. Screening of existing sectorial M&E programmes in regard to their relevance to climate change impacts and responses presents an opportunity (e.g. in connection with the EU Water Framework Directive; EU Habitats Directive etc.). The indicator development requires very specific technical expertise in all involved sectors.

Conclusions for future application

Outcome and added value

An operational M&E system at state level provides a useful supplement to a national-level M&E system, as it is more closely aligned to state-level policy and decision-making and can therefore benefit adaptation. An additional added value is that existing data sources with relevance to climate change are put together in one place or platform, which enables a more systematic view of how climatic changes affect the state.

Cost-benefit ratio

The required resource input can be reduced by making use of existing M&E systems. This makes additional costs reasonable in comparison with the benefits outlined above (see 'Outcome and added value').

Potential for replication

If adaptation decisions are made at state level, it is worthwhile to explore the value of state-level climate impacts and response monitoring as practiced, for example, by the state of North Rhine-Westphalia and being developed by Schleswig-Holstein. Resources required for operating the M&E system can be reduced by screening existing data sources for relevance to adaptation M&E. In both states, the indicator development follows the OECD concept DPSIR (Drivers, Pressures, State, Impacts, Reponses), which can be replicated in a range of different contexts.

References

The climate change impact indicators used by the state of North Rhine-Westphalia can be accessed under:
http://www.lanuv.nrw.de/kfm-indikatoren/index.php

Roadmap explaining the development of the adaptation strategy for the State of Schleswig-Holstein (in German only):
http://www.schleswig-holstein.de/MELUR/DE/Service/Broschueren/Umwelt/pdf/Fahrplan_Klimawandel__blob=publicationFile.pdf

Adaptation Strategy of the State of North Rhine-Westphalia (in German only):
http://www.umwelt.nrw.de/klima/klimawandel/anpassungspolitik/anpassungsstrategie/index.php

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