

A closer look at Vulnerability Assessment

■ WHAT ARE VULNERABILITY ASSESSMENTS?

Vulnerability describes the degree to which a natural or social system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes (IPCC 2007).

The purpose of assessing the underlying factors of vulnerability is to identify measures and policies that reduce vulnerability. Vulnerability Assessments (VAs) help to identify the nature and extent to which climate change may harm a country, region, sector or community. These assessments provide a basis for devising measures that will minimize or avoid this harm – i.e. to adapt. VAs are therefore a central component of adaptation action. In short, they are important mechanisms for gathering information on “**what to adapt to** and **how to adapt**” (Füssler and Klein 2006).

■ WHAT ARE DIFFERENT APPROACHES FOR VULNERABILITY ASSESSMENT?

The type and approach of a VA can differ depending on the **purpose** of the VA, i.e. why it is undertaken, and the **subject matter**, i.e. the vulnerability of who or what is analysed / assessed. These can be socio-economic (e.g. group of people, human health, livelihoods) or biophysical (e.g. ecosystems, species, habitats, water) **exposure units** or combinations of the two (e.g. localities, sectors).

The approach can also be determined by the **scale** (global, regional, national, district, state, community, household, or individual level).

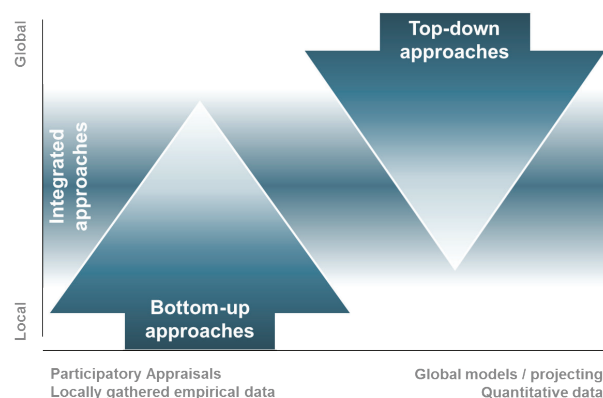
In general, it is possible to distinguish between **top-down** VA approaches and **bottom-up approaches** (see figure below).

Top-down VAs usually refer to scenario-driven assessments that apply global or regional climate projections to assess potential impacts on physical or natural exposure units, such as watersheds, infrastructure, or agricultural production systems.

For **bottom-up** VAs, the unit of analysis is typically smaller and more localised, such as households or communities. The emphasis is more on current and short-term time scales, where vulnerability to current climate variability serves as a starting point for understanding vulnerability to future climate conditions. Local knowledge is often integrated through participatory processes.

In **integrated approaches** elements of both top-down and bottom-up are combined to complement each other.

A further classification of top-down approaches is to distinguish between **indicator-based** and **model-based approaches**. The latter require more data and analysis, whereas the former relies on available proxies. Located somewhere between indicator-based and model-based approaches is the use of impact chains, where cause-effect relationships between different components of a systems are depicted. It builds on very simple models indicating the relations between components. However, this is only a simple classification as these approaches cannot be separated accurately from top-down or bottom-up approaches. Often, bottom-up approaches also use a set of indicators, but with rather qualitative data and/or coming from participatory processes.



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■ WHAT ARE PURPOSES OF UNDERTAKING A VULNERABILITY ASSESSMENT?

Vulnerability Assessments are conducted for a variety of purposes. Essentially they are important decision-making support tools.

Purposes	Which approaches, methods, conditions would support this intention?
Identifying people, places and sectors that may be most affected by climate change so that relevant assistance for adaptation can be channelled accordingly.	<ul style="list-style-type: none"> • For identifying places on a larger scale top-down approaches are commonly used • For identifying vulnerable groups of people or places and sectors at a smaller scale integrated and bottom-up approaches are commonly used
Designing adaptation policies and projects: Understanding the vulnerabilities and capacities of a system is a prerequisite for formulating adequate strategies and interventions that minimize its exposure and sensitivity and/or increase its adaptive capacity. Usually, VA is a step within adaptation planning processes.	<ul style="list-style-type: none"> • Climate Proofing: A lot of material on already climate proofed policies and projects is available here • A training on Climate Change Adaptation and thus on Climate Proofing is available here • A module on Mainstreaming Adaptation is available here
Monitoring adaptation success: Evaluating whether or not a specified adaptation policy is reducing vulnerability requires a clear identification and description of this vulnerability.	<ul style="list-style-type: none"> • The GIZ Guidance "Making Adaptation Count" is available here • A module on M&E of Adaptation is available here
Launching community based action for adaptation: Local communities often know already quite a lot about their vulnerability. A participatory VA can be used as entry point for community based action.	<ul style="list-style-type: none"> • The Toolkit for Community Based Adaptation by CARE is available here • The Community-based Risk Screening Tool – Adaptation and Livelihoods (CRiSTAL) is available here • Information on the project Climate Change Adaptation in Rural Areas of India (CCARAI) can be found here • The Community Based Adaptation Exchange portal provides much information on this topic
Usually, VAs form important baselines for mandatory reporting and planning systems such as National Communications submitted to the UNFCCC, as well as National Adaptation Programmes of Action (NAPAs).	<ul style="list-style-type: none"> • UNFCCC Resource Guide for preparing the National Communications of Non-Annex 1 Parties, Module 2 Vulnerability and Adaptation to Climate Change • UNFCCC Step-by-step Guide for implementing National Adaptation Programmes of Action

■ WHAT ARE CHALLENGES AND HOW TO OVERCOME THEM?

Despite evolving experiences in applying VAs, there are still many challenges associated with them:

- The decision on which approach or method would best fit concrete conditions.
In a series of [Method Briefs](#) you find a range of methodological descriptions of applied VAs in order to guide you through the diversity of different approaches.
- Data availability and capacity: In many cases, high quality, reliable information simply does not exist or is difficult to access. In other cases, the information may be accessible, but it is not in a format that can be easily understood or analysed.
See the following list with possible sources of information that can serve as a starting point when you are looking for information on vulnerabilities already undertaken in your region.

Possible sources of climate information and assessments

- National Communications to the United Nations Framework Convention on Climate Change (UNFCCC)
- Intergovernmental Panel on Climate Change (IPCC) Reports
- National Adaptation Program of Action (NAPA) documents
- National Action Program to Combat Drought and Desertification (NAP) documents
- Professional and academic journals
- Meteorological data on current climate trends from national or international sources
- Seasonal forecasts
- Maps showing topography, agro-ecological regions, infrastructure, etc.
- National census and poverty data
- Existing city planning documents
- All hazard and disaster plans
- Existing risk assessments
- University climate centers or geography departments

See also the module on Climate Information & Services [here](#).

- In addition, advanced and more sophisticated types of VAs might require expertise and concrete expert input. Check out the people and institutions that have carried out many VAs and are experienced in suiting approaches to the needs of various political and economic situations in the [Method Briefs](#).
- In general, there is a challenge to get VA reports and maps adequately reflected in politics and decision-making. In chapters 6 to 12 of the [OECD policy guidance](#) you find useful tips on how to identify key actors and determine entry points for integrating adaptation and thus the results of a VA into policy making at different levels; from national, sector and project level to local level. See also some [case studies on how information should be “packaged” so that governments and citizens can use it effectively](#) by WRI.

■ WHAT ARE EXAMPLES FOR AND LESSONS FROM APPLICATION?

Navigator for existing knowledge

Taking into consideration the great variety of Vulnerability Assessments approaches the inventory of application experiences might support the selection of an appropriate method in a concrete case. Please follow this [link](#) for various Method Briefs on mainstreaming adaptation.

Example of application

Assessing vulnerabilities at different levels in Tunisia

The conspicuous increase of the frequency of climate extremes has prompted the Tunisian government to examine the impacts of climate change in more detail. A study commissioned in 2006 provided first reliable climate forecasts and identifies most vulnerable sectors, including agriculture, water and tourism. More detailed Vulnerability Assessments in the agricultural sector show their results in detailed vulnerability maps. One Vulnerability Assessment on olive production shows that land suitable for olive production is disappearing at an alarming rate and that the sector needs adaptation measures urgently.

Lessons learnt from Example

- Vulnerability Assessments on a larger scale are very useful for first insights when planning VAs on smaller scale.
- Vulnerability Assessments on smaller scale or focussing on special sectors, geographical areas or communities, help to identify concrete adaptation measures for reducing the vulnerability.

■ REFERENCES

[Report] IPCC 2007, “[Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change](#)”, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 976pp.

[Journal paper] H.-M.,Füssel and R.J.T., Klein 2006, „Climate change vulnerability assessments: an evolution of conceptual thinking”, Climatic Change 75 (3), pp.301–329.

[Journal paper] S. Dessai and M. Hulme 2004, “Does climate adaptation policy need probabilities?” Climate Policy 4, pp. 107–128.

■ WHERE IS MORE INFORMATION AVAILABLE?

Guides, manuals and reports from adaptation experiences

[Report] GIZ 2012: Comparative analysis of climate change vulnerability assessments: Lessons from Tunisia and Indonesia, A. Hammil, L. Bizikova, J. Karami and M. McCandless, Eschborn, Germany. Available on [www.AdaptationCommunity.net](#)

[Study] GIZ 2012: Impact Chains for Some Key Crops: Rice, Maize, Millet and Sorghum and Coffee. Eggen, B. and Waldmüller L. Eschborn, Germany. Available on [www.AdaptationCommunity.net](#)

[Guide] UNFCCC 2010: Adaptation Assessment, Planning and Practice: An Overview from the Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change. [http://unfccc.int/...](#)

[Guide] UNDP 2010: Mapping Climate Change Vulnerability and Impact Scenarios – A Guidebook for Sub-National Planners. [http://europeandcis.undp.org/...](#)

[Guide] Kienberger 2008: Toolbox & Manual – Mapping the vulnerability of communities – Example from Búzi, Mozambique. [http://projects.stefankienberger.at/...](#)

[Guide] CIFOR 2008: Methods and Tools for Assessing the Vulnerability of Forests and People to Climate Change – An introduction. Locatelli et al. Working paper No. 43. [http://www.cifor.org/publications/pdf_files/WPapers/WP43Locatelli.pdf](#)

[Guide] UNFCCC 2008: Compendium on methods and tools to evaluate impacts of, and vulnerability and adaptation to, climate change.

http://unfccc.int/files/adaptation/nairobi_workprogramme/compendium_on_methods_tools/application/pdf/20080307_compendium_m_t_complete.pdf

[Guide] UNFCCC 2008: Resource Guide for preparing the National Communications of Non-Annex I Parties, Module 2 Vulnerability and Adaptation to Climate Change.

http://unfccc.int/resource/docs/publications/08_resource_guide2.pdf

[Guide] UNFCCC 2009: Step-by-step Guide for implementing National Adaptation Programmes of Action http://unfccc.int/resource/docs/publications/ldc_napa2009.pdf

Available Training Courses

[Training] GIZ 2011: Training module 03 Assessing vulnerability as part of a comprehensive climate change adaptation training

<http://www.oecd.org/dac/environment-development/integratingclimatechangeadaptationintodevelopmentplanning-practice-orientedtrainingbasedontheoecdpolicyguidance.htm>

[Training] UNFCCC 2005: Training on methods and tools for vulnerability and adaptation (V&A) assessment http://unfccc.int/resource/cd_roms/na1/v_and_a/index.htm

Available Tools and work sheets

GIZ 2013: Climate impact chains coffee.

GIZ 2013: Climate impact chains rice.

GIZ 2013: Climate impact chains maize.

GIZ 2013: Climate impact chains millet.

GIZ 2012: Climate impact chain for water.

All available on www.AdaptationCommunity.net

Community-based Risk Screening Tool – Adaptation and Livelihoods (CRiSTAL)

<http://www.iisd.org/cristaltool>

[A tool for analysing vulnerability, including the Climate Vulnerability and Capacity Analysis \(CVCA\) CARE Handbook](#)

[Toolkit for Community Based Adaptation by CARE](#)

[Community based Adaptation Exchange](#)

[Climate Risk Impacts on Sectors and Programmes \(CRISP\)](#)

➔ Discuss about Vulnerability Assessment here: [AdaptationCommunity.net](http://www.AdaptationCommunity.net)



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