BASE BOTTOM-UP CLIMATE ADAPTATION STRATEGIES TOWARDS A SUSTAINABLE EUROPE

Policy Brief

Issue No. 3, June 2015
www.base-adaptation.eu

BASE Evaluation Criteria for Climate Adaptation (BECCA)

Key messages

- *Monitoring and evaluating climate change adaptation initiatives is important for tracking successes and failures in order to foster learning*
- *BECCA provides a checklist of topics and issues to be considered in evaluations of concrete adaptation situations, focusing on outcomes and processes*
- *The target group of BECCA is anyone in the position of and interested in evaluating concrete adaptation measures including politicians, officials and planners, as well as representatives from civil society and business*
- *The evaluation of adaptation should start by examining relevant processes, which can support decision-makers and stakeholders in identifying the right direction in developing adaptation measures*
- *Challenges to meaningful evaluation of climate adaptation include the feasibility of conducting an evaluation, limits to awareness and expertise, and the availability of information*

1. Introduction[1]

Climate change threatens the countries, regions and economic sectors of Europe in different ways. Adaptation to climate change is carried out through very different policies and measures. Monitoring and evaluating these initiatives is important for tracking successes and failures in order to foster learning. There already exist a large number of criteria and criteria sets to evaluate climate adaptation policies and measures and their implementation, e.g. in the EU Member States, notably in Germany, the UK, and Finland, in European institutions (e.g. European Environment Agency), as well as in (international) organisations working in the field of climate adaptation (e.g. PROVIA[2], C2ES[3]). The criteria sets can be used to assess the effectiveness of an adaptation intervention, the avoided damage, the economic, environmental and social side effects etc. As climate adaptation is often about integrating climate aspects into other policy fields, criteria that assess the interlinkages between different policy objectives (e.g. co-benefits, trade-offs) are of particular importance.

---

[1] This policy brief is an output of the EU FP7 project 'Bottom-up Climate Adaptation Strategies
[2] For more, see: http://www.unep.org/provia/

[3] For more, See: http://www.c2es.org/

In this context, this policy brief presents the BASE Evaluation Criteria for Climate Adaptation (BECCA). BECCA consists of a list of evaluation criteria and some guidance notes on how and when to use them. BECCA was developed on the basis of the existing academic literature and policy documents that address the issue of adaptation evaluation and revised on the basis of feedback from real-world adaptation cases. The research leading to BECCA examined how one can meaningfully evaluate adaptation at the level of specific activities that are the focus of adaptation cases[4]. This also means considering the context specificity of adaptation and also policy coherence in the way it is experienced at 'street' and/or actor level. Criteria must be chosen based on the relationship between planned adaptation activities and the socio-economic, political, environmental and climatic context in which they will be implemented. The criteria must also be salient from the point of view of their primary user. The latter may vary from those vulnerable to a particular impact of climate change to local implementers of adaptation measures and developers of policy.

BECCA is intended for use as a checklist of topics and issues to be considered in evaluations of concrete adaptation situations. In other words, not all all criteria should be applied, but rather a reasonable selection thereof. Climate adaptation is highly context-specific and, therefore, there is no one-size-fits-all criteria set for evaluating climate actions. Hence, guidance is provided on which criteria to use in which adaptation situations. On this basis, the user is free to tailor their own set of evaluation criteria with specific weights of certain dimensions depending on the context.

The policy brief is structured into four main sections. Section 2 overviews BECCA (which is divided into outcome and process criteria), and provides definitions and examples for how the criteria can be measured. Section 3 provides guidance on how and when the criteria should be used. Section 4 provides a brief stepwise illustration of the process of using BECCA. Section 5 concludes with a reflection on BECCA and its outlook for assisting with the evaluation of future climate adaptation initiatives.

2. The BECCA criteria

In this chapter, the BASE Evaluation Criteria for Climate Adaptation (BECCA) are presented. They consist of a list of evaluation criteria and some guidance notes on how and when to use them. The BECCA are subdivided into outcome and process-criteria. For each criterion, a brief definition is provided, as are examples on how to measure the criteria (in most cases).

2.1. BECCA outcome criteria

The outcome criteria focus on the actual adaptation actions and provide way to judge the merit and worth of the adaption in relation to observed or projected climate change.

Category	Subcategory/ criteria	Explanation
Effectiveness	**General description**	The extent to which the intended outcome(s) has (have) been achieved. In terms of preventing climate change damage (e.g. reducing impacts, reducing exposure, enhancing resilience or enhancing adaptive capacity, reduction in economic losses). A further specification might be to consider effectiveness also in terms of 'cost-effectiveness'.
	Relevance	The extent to which the adaptation measures addressed climate change impact.
	Avoided damage	Portion of the targeted potential damages that could be avoided by implementing the adaptation measures. The

[4] For examples, see "Case study search tools" at Climate-ADAPT, http://climate-adapt.eea.europa.eu/sat.

		portion of avoided damage might result in expected gross benefits (Example for measurement: Avoided damages in physical and economic metrics)
	Scope of effect	Identify at which spatial level the adaptation measures had an effect.
	Level of resilience	Measure the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change. (Example for measurement: Biophysical measures of resilience: measures of water use sustainability and of recurrent urban flooding.)
	Vulnerability	Measure the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change. The effectiveness of adaptation measures thus is expressed in terms of reduced exposure or sensitivity, and increased adaptive capacity. Here it is referred to "outcome vulnerability", which describes the vulnerability which is left after the adaptation measures have been implemented. (Example for measurement: Vulnerability is determined by a range of social and economic factors (e.g. age, health, deprivation, building location and form) which affect exposure to a climate hazard, sensitivity and capacity to respond.)
	Sensitivity	Measure the nature and degree to which a system is adversely affected by significant climatic variations. The effectiveness of adaptation measures is thus expressed in terms of reduced sensitivity. (Example for measurement, here for water scarcity: changes in water demand, water productivity, and water accessibility, compared to some base period. These indicators could be further disaggregated according to different users and sectors: domestic, agriculture, industry, energy production, tourism. Examples of possible indicators for sensitivity to droughts: changes in water demand, water productivity, water accessibility and susceptibility to (production) losses due to these changes during drought events, compared to some base period.)
	Exposure	Exposure refers to the nature and degree to which a system is exposed to significant climatic variations. The effectiveness of adaptation measures can be expressed in terms of reduced exposure. (Example for measurement: for exposure to water scarcity: changes in average precipitation, average river discharge, average soil moisture, and groundwater recharge. Examples of possible indicators for exposure to drought: severity, duration, return periods and timing of drought events due to temporal decrease of precipitation, river discharge, soil moisture.)
	Adaptive capacity	Adaptive capacity is the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences. The effectiveness of adaptation measures can be expressed in terms of increased adaptive capacity. (Example for measurement: Adaptive capacity to cope with water scarcity is determined by the ability/possibility of regions or sectors to close the gap between water demand and supply. This could be achieved by enhancing the societal ability to increase water supply, decrease water demand or some combination of both.)

	Sustainability	The likelihood that benefits/outcomes of the adaptation measures/ adaptation process will continue for an extended period of time after the project completion, as well as the ability of stakeholders to continue the adaptation processes beyond project lifetimes. Sustainable development is expected to minimise the threats posed by the impacts of climate change and to capitalise on the potential opportunities presented by it, and bring benefits in terms of alleviating pre-existing problems (no-regret). (Example for measurement: Time span during which the adaptation practice keeps on being effective, after having been implemented.)
Efficiency	**General description**	A measure of how economically funds, expertise, time etc. are converted into results. The measure should consider if the (economic and non-economic) benefits gained from adaptation measures exceed the (economic and non-economic) costs of its implementation, against the policy objectives used in the analysis. Actions should also be weighted on the basis of the risks involved, their long-term cost effectiveness and market compliance. (Example for measurement: Economically efficient measures have economic benefits that exceed economic costs)
	Cost/benefit ratio	Economic viability of adaptation measures in terms of their costs and benefits ratio. Adaptation measures are assessed based on whether they can reach their objectives in the most efficient way in economic terms (e.g. to achieve objectives at least cost) and have a balanced cost/benefits ratio. The benefits and effectiveness of adaptation measures are compared to costs and effort. (Example for measurement: Adaptation measures are considered cost-efficient if they bring higher benefits in comparison to its costs of implementation.)
	Total cost	The costs of the adaptation measures; direct costs, further economic costs and external costs, as a base to rank their relative merit. The direct costs can be further split in investment costs, maintenance costs and also costs of administrative implementation of adaptation measures. (Example for measurement: Total economic value of the design, implementation, execution, performance monitoring and evaluation of the adaptation practice.)
	Benefits	The economic, environmental, socio-economic benefits, separating *ex-ante* and *post-ante* adaptation measures. Identification of the beneficiaries from participation (a) Opportunities are provided for all sections of the community to participate, b) Participation benefits all sections of the community).
	Uncertainty of evaluated costs and benefits	Uncertainty of evaluated costs and benefits of the adaptation measures.
Equity	**General description**	Equitable distribution of benefits as widely as possible with attention to most vulnerable groups.
	Proportion of beneficiaries	Supporting the broadest possible range and number of beneficiaries. (Example for measurement: Number of beneficiaries of the adaptation measures with respect to the total population from the given location which is or will be experiencing the problem that requires adaptation.)
	Attention to the most vulnerable groups	Attention and priority towards supporting most vulnerable groups. (Example for measurement: Attention received by the most vulnerable population group within the target

		population (e.g. children, elderly, handicapped))
Side effects	**General description**	Side effects are (usually unintended) positive and negative, outcomes of the adaptation measures for other social, environmental or economic objectives (e.g. to help reduce social inequality, to decrease energy demand, to help raising resilience of ecosystem services etc.). The negative side effects (also referred to as maladaptation) are indirect, negative outcomes set off by the adaptation measures outside of their target area. Positive side effects (ancillary effects) are additional beneficial outcomes delivered by the adaptation measures but not aimed at in the first place (e.g. new employment opportunities, innovation knock-on effects and new market potential, social capital accumulation).
	Economic side effects: *a. General description*	The economic benefits generated by the implementation of the adaptation measures.
	b. Effect on innovation and competitive advantage	The effect of the adaptation measures on innovation and competitive advantage. (Example for measurement: Did the measures give an incentive for innovation? Did or can they deliver a competitive advantage for the EU economy?)
	c. Effect on employment	The effect of the adaptation measures on employment. (Example for measurement: Does the measures have effects on employment?)
	Environmental side effects: *a. General description*	The benefits or damages of the adaptation measures for other environmental objectives. (Example for measurement: Did or will the measures decrease the risk of losing unique environmental resources?)
	b. Synergies with climate mitigation	The effect of the adaptation measures on climate change mitigation (for instance through changes in land use that reduce emissions of GHGs as a side effect) or the degree of consistency with mitigation measures (e.g. synergies between low carbon and climate resilient development). (Example for measurement: Did the measures reduce GHG emissions or enhance GHG sequestration?)
	c. Positive environmental effects (e.g. biological diversity, env. pressures)	The contribution of the adaptation measures to avoiding causing or exacerbating other environmental pressures. (Example for measurement: Did the measures have positive or negative effects on the conservation of biological diversity (other than directly intended as an adaptation effect)? Did the measures alleviate or exacerbate other environmental pressures?)
	d. Avoiding of maladaptation	Avoidance of maladaptation; avoid introducing perverse effects or limiting future adaptation.
	Social side effects: *a. General description*	The benefits or damages of the adaptation measures for other social objectives. (For example, effective climate risk management will help secure development outcomes (socioeconomic outcomes including improved wellbeing, reduced vulnerabilities, better resilience and more secure food, water and energy) in the face of increasing climate risks), including equality, i.e. the distribution of benefits and costs across different population groups and different spaces.) (Example for measurement: Did the measures enhance well-being and quality of life (e.g. in the urban environment)? Did the measures decrease the risk of losing unique cultural resources?)
	b. Distributional impacts	The impacts on different social or economic groups.
Acceptability	**General description**	The adaptation measures are culturally, socially, environmentally and politically acceptable. They are

		accepted by those affected and by stakeholders.
	Incorporation of local/ traditional knowledge	Identify the level of consideration of local/traditional knowledge in the design or implementation of the adaptation measures
	Endorsement of political leaders and/or implementers	Understand the level of endorsement by the political level and/or the leader of the implementing organisation(s), e.g. senior management, director/executive team of public authority
Coherence (external and internal)	**General description**	The measures are not in conflict with other adaptation efforts and coherent with existing or planned policies on local, regional and national level.
	Interactions (conflicts/synergies) with other measures	The adaptation measures are consistent with other adaptation actions in the same sector and in other sectors or even fit in a mix of adaptation measures, which can support each other and make the socio-ecological systems more resilient to uncertainties and climate impacts. (Example for measurement: To what extent does the implementation of options result in synergies or conflicts with other adaptation options?)
	Integration with policy domains, programmes or projects	Measures support the implementation of the EU Adaptation Strategy and other national or EU policies. They are aligned with other local sector policies (at least there is no conflict with other local policies). They are coherent with policy, investment and other planning cycles.
	Vertical integration	The adaptation measures support the implementation of the EU Adaptation Strategy and other national or EU policies. They are coherent with policy, investment and other planning cycles.
	Horizontal integration	The adaptation measures are aligned with other local sector policies (at least there is no conflict with other local policies). They are coherent with policy, investment and other planning cycles.
Robustness	**General description**	Adaptation measures are considered robust to uncertainties if they can maintain their effectiveness under different climatic and socio-economic development scenarios.
	Regret/ no-regret	Positive effects are even reached without climate change. No-regret measures are interventions with positive outcomes for development even in situations in which the uncertainty surrounding the future impacts does not allow for better targeting of the policy responses.

2.2. BECCA process criteria

Process criteria can be used to judge the strength and weaknesses of the process itself (is it going anywhere?) and focus on the results of a process that is expected to deliver climate change adaptation, without paying attention to how good or bad the actual adaptation measures are in relation to observed or projected climate change.

Category	Subcategory/criteria	Explanation
Adaptive capacity	**General**	Ability of a system to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities, or to cope with the consequences: Which capacities are required to facilitate adaptation in the context of the adaptation intervention?
	Capacity of actors	Which capacity do the involved actors have to adapt to the consequences of climate change? Interdependencies between different actors?

		(Example for measurement: Awareness among actors, knowledge to be used in adaptation, resources to adapt, flexibility to act)
	Capacity of institutions/ organisations	What is the capacity of institutions/organisations to adapt to the consequences of climate change? (Example for measurement: Existence and quality of monitoring/warning systems, existence of adaptation strategies, ability to implement adaptation action (e.g. financial resources, skills and knowledge, organisational commitment and ownership))
Dependencie -s	**(General) Prerequisite requirements**	Identify legislation, regulatory framework, institutional mandate and multi-level coordination, incentives, investments, benefits, actor constellations etc. that are needed as pre-requisite for adaptation planning and implementation.
	Institutional requirements	Identify institutional requirements of adaptation measures which ensure successful adaptation planning and implementation. These requirements focus mainly on the needed adjustments of current organisational procedures, arrangements and cooperation among management bodies.
	Barriers	Identify barriers (e.g. legislation, regulatory framework, institutional mandate and multi-level coordination, incentives, investments, benefits, actor constellations etc.) to adaptation planning and implementation
	Ease of implementation	Ease of implementation of adaptation measures + how difficult or easy it may be to overcome barriers to implementation. Implementation time required. (Example for measurement: Time required for the implementation of the adaptation measures and/or until results were obtained)
Deliverability and Feasibility	**General**	Primary focus on ease of implementation (in legal, technical, social, institutional, political and financial terms) and possibilities for overcoming barriers. Complementary elements include repeatability/transferability and institutional capacity and autonomy.
	Repeatability	Repeatability and transferability to other regions (Example for measurement: Possibility of transferring and applying the practice to other geographical areas or population groups)
	Stakeholder implementability	Implementability for stakeholders in terms of decision-making, technical and managerial ease, and acceptability within existing social norms (e.g. for farmers)
	Existing window of opportunity	Identify window(s) of opportunity that may support/facilitate/make easier the implementation of the adaptation measure
	Level of autonomy	Level of autonomy in decentralised decision-making and action-taking (Example for measurement: Degree of freedom and capacity of the stakeholders during the process of defining and implementing the adaptation practice (absence of limitations or restrictions of e.g. economic, political and technical origin))
Flexibility	Potential for adjustments to different climate scenarios and socio-economic developments	The adaptation measures allowed easy adjustments and incremental implementation if conditions changed or if changes are different from those expected today. In this sense, adjustable measures should be able to be adapted to different climate scenarios as well as socio-economic development trends. (Example for measurement: Does the proposed measures take sufficient consideration of the uncertainty aspect of climate change? Do the measures remain useful under less or unexpected manifestations of climate change? Can the

		measures easily be adapted if conditions are changing or different from expected?)
Participation	**General**	Inclusion of stakeholders/the target population in the design and/or implementation of adaptation measures (Example for measurement: Involvement of the target population in the different phases of the adaptation process (e.g. through participative workshops; awareness and/or capacity building; implementation of actions))
	Purpose of stakeholder participation	What is the purpose of stakeholder participation? E.g. information provision/dissemination, data collection, designing measures, aid implementation, evaluating measures, consensus building/support.
	Scope of stakeholder participation	What is the scope of stakeholder involvement? E.g. experts, government officers, local communities, all.
	Quality of the process	How and when was the process of stakeholder participation conducted? How can the quality be judged in the light of its ambitions?
Lessons learnt	**General**	What are the lessons learnt from the adaptation intervention? For different actors? How can these insights be used in future adaptation action?
	Capacity building	Does the experience from the adaptation intervention contribute to building adaptive capacity that could support the delivery of adaptation action?

3. Guidance on how to use BECCA

BECCA is meant as a general checklist to ensure that all potentially relevant aspects are considered in an evaluation of a climate adaptation intervention. The list of criteria is based on a comprehensive review of existing documents on climate adaptation evaluation covered in the academic literature and in the policy world[5]. BECCA thus has the ambition to represent an overarching set of evaluation criteria for climate adaptation action. When using it, the aim is not to cover the full catalogue in an evaluation but to choose a reasonable set of criteria that fits the specificities of the concrete adaptation situation to be evaluated and that is feasible (in terms of resources, time, availability of information etc.) to be carried out.

In this section, some general guidance is provided on the use of BECCA and some guidance on how to adapt BECCA to a specific adaptation context.

3.1. General guidance

BECCA represents a practical devise to be used in climate adaptation evaluation. The target group of BECCA users is anyone who is in the position of and interested in evaluating concrete adaptation measures (or bundles of measures). This could be researchers as well as actors from the policy world, such as politicians, officials and planners from various administrative levels, but also representatives from civil society and business organisations. BECCA aims at supporting these actors in evaluating climate adaptation interventions and, on that basis, taking informed decisions on further actions.

For each evaluation, the user should make a choice of those BECCA criteria that are meaningful and appropriate in regard to the concrete adaptation action to be assessed. The selection of criteria depends on the purpose of the evaluation, the specific adaptation context but also on the practical circumstances in which the evaluation is carried out. Below, some guidance is provided on how to tailor the evaluation criteria accordingly.

The selection of (potentially) relevant evaluation criteria is the first step when using BECCA in an evaluation. Furthermore, feasibility of the evaluation and the selected

[5] For a comprehensive list of the documents reviewed, see Section 6.1.

criteria should be considered. Feasibility considerations might include various dimensions, among others the available resources in terms of time, person power and budget. Availability of information for each criterion is another significant aspect to consider. It might occur that relevant criteria are difficult to be apply in practice because the required data is missing. In these cases, the user might think of alternative ways of conducting the evaluation, e.g. by using qualitative information in case quantitative data are lacking.

Overall, this is an exercise in operationalising the chosen criteria while taking into account the various restrictions for carrying out the evaluation. It should result in an 'implementation plan' of the evaluation.

3.2. Tailoring BECCA to adaptation contexts

In this section, guidance is provided on how to select relevant criteria for the evaluation of concrete adaptation situations. Due to the plethora of possible adaptation cases and contexts, this can however be only an indicative list of potential relations that have to be adapted to the specific situation. Nevertheless, the analytical lens on different dimensions of the adaptation context will likely be helpful in characterising a concrete adaptation setting.

The analysis of user needs in climate adaptation evaluation conducted by BASE revealed that it is neither possible to give specific guidance for the evaluation of adaptation measures in relation to specific sectors nor to climate change impact addressed with the measure. However, the following dimensions can be identified which appear to be relevant in the set of cases that BASE covers:

Outcome-oriented vs. process-driven adaptation evaluation

Adaptation evaluation is, analytically speaking, either directed at assessing a specific outcome, or it is more concerned with evaluating the adaptation process. In practice, both alternatives will often come together in one adaptation case. One can further distinguish between analytical interest which is directed primarily at generating new information and a process-related interest that puts the evaluation results in the context of the adaptation process. The latter perspective is one that has a broader understanding of what the evaluation is about in that it is put in an application context.

For evaluating adaptation measures it is important to be clear about the purpose of the evaluation. It can be outcome-oriented, process-oriented, or both. The research leading to BECCA assumed that in most empirical cases, both goals are important and, hence, it is suggested to select evaluation criteria that cover both the outcome and the process. There is however one important caveat. The process character of climate adaptation may, for structural reasons, impede meaningful adaptation evaluation. When everything is in a flux evaluation of what has been or will be achieved in terms of outcome becomes a moving target.

Retrospective vs. prospective evaluation

Related to the previous aspect, one can also distinguish between retrospective and prospective evaluations. These types of evaluations are often done for (partially) different reasons which affects, among others, the criteria that are meaningful to use and how they are operationalised. One can argue that prospective evaluations are particularly important in a climate adaptation context due to its projective nature. The difficulty lies within the fact that availability of information is more limited with regard to the future, and does not entail precise and certain information, which could make prospective (*ex ante*) evaluations more difficult. This holds true especially regarding the 'effectiveness' and 'efficiency' criteria. The same pattern also occurs with regard to process criteria. It might be particularly challenging to evaluate criteria such as 'deliverability and feasibility' and 'flexibility' which are both referring to future developments.

For prospective evaluations, feasibility of evaluation may however be an issue of timing when they are carried out. This has an impact on the criteria that are regarded meaningful (in terms of providing useful information at a given stage) and implementable in the evaluation (in terms of data availability and resources). At the

same time, evaluations could be addressed in more strategic ways. Opportunities could be created to make things feasible and to find information by thinking about data collection strategies and/or engagement with the case. So even though things may not seem feasible now, or information may be missing, prospective cases have more opportunities to change this – which is something that may no longer be possible with retrospective evaluations.

Evaluation of single vs. integrated measures

Adaptation interventions may comprise a single measure or a bunch of measures. There obviously exist greater challenges in applying the BECCA criteria – in fact any set of evaluation criteria – for integrated analyses than for single measures. An integrated analysis brings in multiple dimensions that have to be accounted for, and causalities are more difficult to establish in cases where multiple measures are involved.

At the same time, criteria such as 'coherence', although important for single measure evaluations as well, should be particularly in focus in evaluations of integrated adaptation interventions. Coherence should be taken into account in a twofold way: regarding relations of the adaptation measures among each other as well as regarding the relations with other (existing) policies and measures.

Evaluation of bottom-up vs. top-down adaptation approach

Adaptation interventions may follow a rather top-down or bottom-up approach. According to this, the criteria suitable in adaptation evaluation may differ. For example, 'acceptability' of adaptation action is an issue to be considered in the evaluation of any adaptation situation although this is more difficult in practical terms for top-down cases. Further, the subcriterion 'incorporation of local/traditional knowledge' may in many cases not fit well with a top-down adaptation approach.

Also, there are criteria, such as 'adaptive capacity', that are related to the two types of adaptation situations differently: Whereas the top-down adaptation approaches have a view 'from above' and hence might refer more to institutional capacities, bottom-up adaptation approaches are focused on the concrete circumstances, including the actors involved. Hence, the perspectives on capacity for climate adaptation in the two groups are different.

In addition, the nature of the adaptation situation – top-down or bottom-up – has an impact on the suitability of evaluation (sub)criteria, such as 'proportion of beneficiaries', 'support for fair allocation of risks', 'incorporation of local knowledge' and 'ease of implementation'. These are possibly of greater importance for bottom-up cases than for top-down cases.

The criterion 'participation' may be less important in a top-down approach to adaptation. An argument may be that stakeholders (from lower levels) are less involved. However, national stakeholders or scientific experts may be very important to involve. In a bottom-up approach to climate adaptation stakeholder participation and the associated subcriteria are highly important. The same applies for 'capacity building' as a subcriterion to 'lessons learnt'.

Evaluation of conflictual vs. consensual adaptation settings

One further characteristic of adaptation action is whether it takes place in a conflictual or consensual setting. Evaluation criteria such as 'acceptability', 'coherence' and 'robustness' can be seen as equally important in consensual and conflictual adaptation contexts. In conflictual settings, however, problems regarding the feasibility of applying these criteria in adaptation evaluation are somewhat more likely, and may lead to reformulation along particular interests. The reason for this might be that the conflict is likely to spill over into implementation and possibilities to apply these criteria to obtain information. This should however not thwart attempts to nevertheless apply them.

The same might hold true for the various process criteria. It may, for example, be difficult to use 'participation' as an evaluation criterion in conflictual adaptation cases due to the fact that challenges related to participation may be symptomatic of

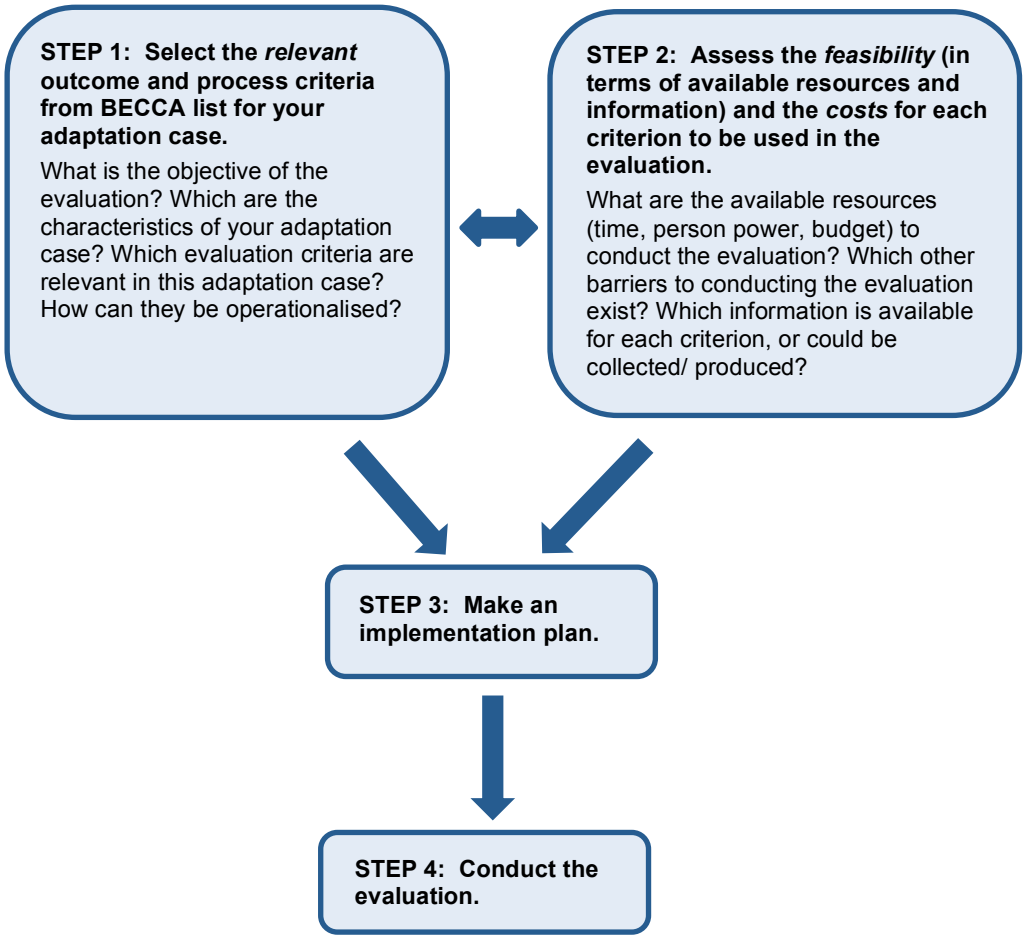
conflictual situations. On the other hand, participation could also be seen as part of the solution to resolve conflicts and, in this sense, it is therefore recommended to apply 'participation' as an evaluation criterion since this could contribute to exposing and hence resolving conflicts.

Furthermore, the criterion 'dependencies' seems to be directly related to the characteristic of an adaptation situation as conflictual or consensual. In conflictual settings, the evaluation criterion 'dependencies' plays an important role as it is directed at identifying (part of) the causes of conflict that impede adaptation action. This also applies to the related subcriteria 'barriers' and 'ease of implementation' which are particularly important in conflictual settings when evaluating the adaptation process. Here one may argue that evaluation can reveal where the major conflicts and barriers exist and where the implementation and/or decision making was smoother.

4. The BECCA process

Based on the considerations above, the following process for a BECCA evaluation is suggested.

Figure 1: Stepwise approach to applying BECCA



5. Outlook

The BASE Evaluation Criteria for Climate Adaptation (BECCA) represents a comprehensive set of criteria from which the user should select those criteria that are relevant and salient in a concrete adaptation situation. As climate adaptation is highly context-specific, a standard evaluation would not be able to capture this specificity. The idea with using BECCA therefore is that the users should tailor their own set of evaluation criteria on the bases of understanding the implications of the use of different criteria in different adaptation settings.

The list of evaluation criteria for climate adaptation was compiled, and based on feedback from the BASE case studies aimed to give guidance on how to select the relevant criteria for specific adaptation cases. In addition to general guidelines on how to use BECCA, the case studies' feedback was related to properties of the case studies in order to gain context-specific recommendations. This turned out to be less fruitful than hoped for. One reason might be the limited number of case studies – in total 20 – that provided feedback to be analysed. Another reason is a structural one: The context-specific nature of adaptation situations defies simple and quick generalisation. Hence, in order to produce more robust guidance on how to use individual criteria, a much broader empirical basis is necessary. For this reason, one can (more or less) only retrench to recommending that users should tailor their own sets of evaluation criteria from BECCA.

There are issues that pose challenges to meaningful evaluation of climate adaptation. Feasibility of conducting an evaluation and availability of information seem to be recurring bottlenecks. The analysis of the case studies' feedback revealed that, even though the relevance of most criteria was unequivocal, difficulties became apparent in efforts to put things into practice. Feasibility to carry out an evaluation might be severely hampered by a lack of resources (time, person power, and budget). Further, the assessment and/or the measurement of many criteria (especially in quantitative terms) are very challenging at the current level of awareness and technical expertise. For many issues, data and information are not available (or only obtainable at a high cost). Therefore, there is a need for better knowledge infrastructure, an ability to collect site-specific data, but also impact assessment studies at more regional (or macro-regional) level that achieve economies of scale that are impossible to be pursued at local level.

On a positive note one may point out that there are also numerous BECCA criteria that can be applied reasonably at modest or low costs, especially in a self-reflective mode. This is particularly true for many of the process criteria, which can support decision-makers and stakeholders in identifying the right direction in developing adaptation measures, even if usefulness of the specific adaptation actions cannot be determined immediately. It is therefore suggested that the evaluation of adaptation should generally start by examining relevant processes. Such evaluations build awareness and contribute to learning across sectors and cases, revealing differences and similarities. The process evaluations are also likely to identify which processes are so massive and costly that it is justified to pay particular attention to detailed in depth evaluations of outcomes. It is no accident that the most developed evaluation was found in cases which involve significant planning and investments. By alternating between process and outcome evaluations, cost effective evaluations that support learning are achievable.

6. References

Weiland, S., Tröltzsch, J., Capriolo, A., Den Uyl, R., Jensen, A., Giordano, F., Hildén, M., Karali, E., Mäkinen, K., Nielsen, H., Penha-Lopes, G., and Russel, D. 2014. 'BASE Evaluation Criteria for Climate Adaptation (BECCA)'. Available online at: http://base-adaptation.eu/base-evaluation-criteria-climate-adaptation-becca [Accessed 20 April 2015].

6.1. List of approaches, frameworks and criteria sets for evaluating climate adaptation – analysed for BASE WP 2.3

Code	Frameworks for evaluation of adaptation
1	Adaptation Fund (AF), Framework and guideline for project/programme evaluations, https://www.adaptation-fund.org/sites/default/files/Evaluation_framework.pdf http://adaptation-fund.org/sites/default/files/Guidelines%20for%20Proj_Prog%20Final%20Evaluations%20final%20compressed.pdf
2	Adaptation Sub-committee (2011), Adapting to climate change in the UK, measuring progress, ASC Progress Report 2011, http://www.theccc.org.uk/publication/adapting-to-climate-change-in-the-uk-measuring-progress-2nd-progress-report-2011/ And: Adaptation Subcommittee of the UK Climate Change Committee (2010), How well prepared is the UK for climate change.
3	Altvater, S., et al. (2012), Adaptation measures in the EU: Policies, costs, and economic assessment. "Climate proofing" of key EU policies, http://ftp.zew.de/pub/zew-docs/gutachten/ClimateProofing2012.pdf
4	Beck, S., et al. (2009), Synergien und Konflikte von Anpassungsstrategien und -maßnahmen. UFOPLAN FKZ 3709 41 12, http://www.bmu.de/fileadmin/bmu-import/files/pdfs/allgemein/application/pdf/3709_41_126_bf.pdf
5	Debels, P., et al. (2009), IUPA: A tool for the evaluation of the general usefulness of practices for adaptation to climate change and variability. Natural hazards 50: 211-223.
6	De Bruin, K., et al. (2009), Adapting to climate change in The Netherlands: an inventory of climate adaptation options and ranking of alternatives. Climatic Change 95 (1-2), pp. 23-45, http://link.springer.com/content/pdf/10.1007%2Fs10584-009-9576-4.pdf
7	DEFRA (2010), Measuring adaptation to climate change – a proposed approach, http://archive.defra.gov.uk/environment/climate/documents/100219-measuring-adapt.pdf
8	European Environment Agency (2005), Environmental Policy Integration in Europe: State of play and an evaluation framework. Technical report No. 2/2005.
9	Giordano, F., et al. (2013), Planning for adaptation to climate change. Guidelines for municipalities. ACT (Adapting to Climate Change in Time), http://www.actlife.eu/ EN/index.xhtml
10	Harley, M., et al. (2008), Climate change vulnerability and adaptation indicators. ETC/ACC Technical Paper 2008/9, http://www.seachangecop.org/sites/default/files/documents/2008%2012%20ETC%20-%20Climate%20change%20vulnerability%20and %20adaptation%20indicators.pdf

11	Harley, M., and van Minnen, J. (2009), Development of Adaptation Indicators. ETC/ACC Technical Paper 2009/6, http://acm.eionet.europa.eu/reports/ETCACC_TP_2009_6_ETCACC_TP_2009_6_Adapt_Ind
12	Hjerp, P., et al. (2012), Methodologies for Climate Proofing Investments and Measures under Cohesion and Regional Policy and the Common Agricultural Policy, http://ec.europa.eu/clima/policies/adaptation/what/docs/climate_proofing_en.pdf
13	Huitema, D., et al. (2012), Handling adaptation governance choices in Sweden, Germany, the UK and the Netherlands. Work Package 6, Deliverable 6A. Knowledge for Climate, Theme 7 "The governance of Adaptation", http://dspace.library.uu.nl/handle/ 1874/281472
14	IEG (nd.), Adapting to Climate Change: Assessing the World Bank Group Experience Phase III, http://ieg.worldbankgroup.org/Data/reports/cc3_full_eval_0.pdf
14a	IIED (2012), Tracking Adaptation and Measuring Development (TAMD) framework, http://pubs.iied.org/pdfs/17143IIED.pdf
15	Lamhauge, N., et al. (2012), Monitoring and Evaluation for Adaptation: Lessons from Development Cooperation Agencies, OECD Environment Working Paper No. 38, OECD, http://dx.doi.org/10.1787/5kg20mj6c2bw-en
16	Lühr, O., et al. (2011), Evaluierung möglicher Anpassungsmaßnahmen in den Sektoren Energie, Industrie, Mittelstand und Tourismus vor dem Hintergrund der Erarbeitung eines „Aktionsplans Anpassung“ der Bundesregierung. Funded by the German Ministry for Economics and Technology, http://www.prognos.com/fileadmin/pdf/publikationsdatenbank/110131_Prognos_Endbericht_-_BMWi_Anpassung_Klimawandel_final.pdf
17	Ministry of Agriculture and Forestry (2009), Evaluation of the Implementation of Finland’s National Strategy for Adaptation to Climate Change. Helsinki, Ministry of Agriculture and Forestry, http://www.mmm.fi/attachments/mmm/julkaisut/julkaisu sarja /2009/5IEsngZYQ/Adaptation_Strategy_evaluation.pdf
18	Nickel, D., and Blobel, D. (2010), Möglichkeiten der Priorisierung von Maßnahmen-vorschlägen für den Aktionsplan Anpassung an den Klimawandel. Welche Informationen können aus der Maßnahmenumfrage gewonnen werden? Erstellt im Rahmen des UBA-Projektes „Auswertung von Anpassungsprojekten“, FKZ 3709 41 120
19	OECD (2001), Improving policy Coherence and Integration for Sustainable Development, http://www.oecd.org/greengrowth/tools-evaluation/2763153.pdf
20	Preston, B., et al. (2010), Climate adaptation planning in practice: an evaluation of adaptation plans from three developed nations. Mitigation and Adaptation Strategies for Global Change 16(4), pp. 407-438.
21	Prutsch, A., et al. (2010), Guiding principles for adaptation to climate change in Europe. ETC/ACC Technical Paper 2010/6, http://acm.eionet.europa.eu/docs/ETCACC_TP_2010_6_guiding_principles_cc_adaptation.pdf
22	Ranger, N., et al. (2010), Adaptation in the UK: a decision making process. Policy brief by the Grantham Institute and the Centre for Climate Change Economics and Politics, http://www.cccep.ac.uk/ Publications/Policy/docs/PB-adaptationUK-ranger.pdf
23	Sanahuja, H.E. (2011), Tracking progress for effective action: A framework for monitoring and evaluating adaptation to climate change. GEF Climate-Eval Community of Practice, http://www.climate-

	eval.org/sites/default/files/studies/Climate-Eval%20 Framework%20for%20Monitoring%20and%20Evaluation%20of%20Adaptation% 20to% 20Climate%20Change.pdf
24	Smith, J.B., et al. (1996), A process for evaluating anticipatory adaptation measures for climate change. Water, Air and Soil Pollution 92, 229-238.
25	Snover, A.K., et al. (2007), Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments. In association with and published by ICLEI – Local Governments for Sustainability, Oakland, CA, http://www.cses.washington.edu/db/pdf/ snoveretalgb 574.pdf
26	Spearman, H., and McGray, M. (2011), Making adaptation count: concepts and options for monitoring and evaluation of climate change adaptation, http://pdf.wri.org/making_ adaptation_count.pdf
27	Tröltzsch, J., et al. (2011), Kosten und Nutzen von Anpassungsmaßnahmen an den Klimawandel – Analyse von 28 Anpassungsmaßnahmen in Deutschland, http://www.umweltbundesamt.de/uba-info-medien/4298.html
28	Ueda. T. (2012), Evaluation approach: special evaluation study on ADB's support for natural disasters, April 2012, Ueda, http://www.adb.org/sites/default/files/EAP-Natural-Disasters.pdf
29	UKCIP, AdaptME toolkit, http://www.ukcip.org.uk/adaptme-toolkit/
30	Umweltbundesamt (UBA) (2010), Establishment of an indicator concept for the German Strategy on Adaptation to Climate Change, http://www.uba.de/uba
31	UNFCCC (2010), Synthesis report on efforts undertaken to monitor and evaluate the implementation of adaptation projects, policies and programmes and the costs and effectiveness of completed projects, policies and programmes, and views on lessons learned, good practices, gaps and needs. FCCC/SBSTA/2010/5. United Nations Framework Convention on Climate Change, Bonn, Germany. http://unfccc.int/ resource/docs/2010/sbsta/eng/05.pdf
32	Van de Sandt, K., et al. (2013), Framework for guiding monitoring and evaluation of climate adaptation policies and projects.
33	Villanueva, P.S. (2011), Learning to ADAPT: monitoring and evaluation approaches in climate change adaptation and disaster risk reduction – challenges, gaps, and ways forward (SCR Discussion Paper 9). Gland, Switzerland: IUCN, http://community. eldis.org/.59d49a16/Learning-to-ADAPT.pdf
	Adaptation indicators
34	AEA (2012), Review of international experience in adaptation indicators. AEA/R/ED 57591 Issue Number 3, http://hmccc.s3.amazonaws.com/ASC/2012%20report/AEA%20 Global%20adaptation %20indicators%20review%20-%20final.pdf
35	Flörke, M., et al. (2011), Climate Adaptation – modeling water scenarios and sectoral impacts (ClimWatAdapt), Final report, http://edepot.wur.nl/192357
	Regional, local and sectoral approaches
36	Ayers, J., et al. (2012), Participatory Monitoring, Evaluation, Reflection and Learning for Community-based Adaptation: A Manual for Local Practitioners. CARE International and International Institute for Environment and Development, http://www.careclimatechange.org/files/adaptation/CARE_PMERL_ Manual_2012.pdf
37	Baker, I., et al. (2012), Local government response to the impacts of climate change: An evaluation of local climate adaptation plans. Landscape and Urban

	Planning 107, 127-136.
38	CARE, Framework of Milestones and Indicators for Community-Based Adaptation (CBA) http://www.careclimatechange.org/tk/integration/en/quick_links/tools/monitoring_evaluation.html
39	Dolan, A.H., et al. (2001), Adaptation to Climate Change in Agriculture: Evaluation of Options. Occasional Paper No. 26, University of Guelph, Department of Geography.
39a	La Trobe, S., and Davis, I. (2005), Mainstreaming disaster risk reduction a tool for development organizations.
40	Mizina, S.V., et al. (1999), An evaluation of adaptation options for climate change impacts on agriculture in Kazakhstan. Mitigation and Adaptation Strategies for Global Change 4(25), 25-41.
41	Schauser, I., et al. (2010), Urban Regions: Vulnerabilities, Vulnerability Assessments by Indicators and Adaptation Options for Climate Change Impacts. ETC/ACC Technical Paper 2010/12, http://acm.eionet.europa.eu/reports/docs/ETCACC_TP_2010_12_Urban_CC_Vuln_Adapt.pdf
42	UNFCCC/LDC Expert Group (2011), Best practices and lessons learned LDC Expert Group in addressing adaptation in the least developed countries through the national adaptation programme of action process, volume 1. http://unfccc.int/resource/docs/publications/ldc_publication_bbll_2011.pdf
42a	World Bank (2010), Mainstreaming Adaptation to Climate Change in Agriculture and Natural Resources Management Projects. Guidance note 8.
	Adaptive capacity
	National level:
43	Adger, N. et al. (2005), Successful adaptation to climate change across scales
44	Dixit, A., et al. (2012), Ready or not? National Adaptive Capacity Framework. World Resources Institute, http://www.wri.org/publication/ready-or-not
45	Gupta, A., et al. (2010), The Adaptive Capacity Wheel: a method to assess the inherent characteristics of institutions to enable the adaptive capacity of society. Environmental Science & Policy, 13 (6): 459-471. http://www.earthsystemgover nance.org/publication/ gupta-joyeeta-adaptive-capacity-wheel
46	Næss, L.O., et al. (2005), Institutional adaptation to climate change: Flood responses at the municipal level in Norway, Global Environmental Change 15, pp. 125-138.
47	Roenhorst, W.H.S., et al. (2012), Aanpassing aan klimaatverandering: strategie en beleid. Algemene Rekenkamer. http://www.rekenkamer.nl/Publicaties/Onderzoeksrapporten/Introducties/2012/11/Aanpassing_aan_klimaatverandering_strategie_en_beleid
47a	Schipper L., et al. (2010), Evaluation report of methods and tools for the Lower Mekong Basin, http://www.mrcmekong.org/ assets/Publications/technical/Tech-No34-Review-of-climate-change.pdf
48	Tàbara, D.J. (2010), The climate learning ladder. A pragmatic procedure to support climate adaptation. Environmental Policy and Governance 20 (1), pp. 1-11.

48a	WRI (2009) Bellagio Framework for Adaptation - Assessment and Prioritization, http://pdf.wri.org/working_papers/bellagio_framework_for_adaptation.pdf
	Local level:
48b	Alexander Ballard Ltd. (2008), Adaptive Capacity Benchmarking: A Handbook and Toolkit, http://www.climatesoutheast.org.uk/images/uploads/PACThandbook.pdf
49	Gubbels, P., and Koss, C. (2000), From the roots up: strengthening organizational capacity through guided self-assessment, http://www.hiproweb.org/fileadmin/cdroms/Biblio_Renforcement/documents/Chapter-3/Chapter%203_2/Chap3_2Doc12.pdf
50	Ivey, J., et al. (2004), Community capacity for adaptation to climate-induced water shortage: Linking institutional complexity, Environmental management 33(1), pp. 36-47.
51	Jones, L., et al. (2010), Towards a characterisation of adaptive capacity: a framework for analysing adaptive capacity at the local level. ODI Background Notes. http://www.odi.org.uk/publications/5177-adaptive-capacity-framework-local-level-climate
51a	Keller, M. (2010), Participatory Tool on Climate and Disaster Risks. Integrating Climate Change and Disaster Risk Reduction into Community-level Development Projects, http://www.adaptationlearning.net/sites/default/files/CliDR%20Eng_Vers5_0.pdf
52	Levine, S. (2011), Rethinking support for adaptive capacity to climate change: the role of development interventions, http://www.odi.org.uk/publications/6213-accra-adaptive-capacity-development-interventions
52a	Regmi, B.R., et al. (2010), Participatory Tools and Techniques for Assessing Climate Change Impacts and Exploring Adaptation Options; Tool 10: Coping and Adaptation Strategies Assessment, http://www.forestrynepal.org/images/publications/Final%20CC-Tools.pdf
	Evaluation of participation and engagement
53	Burns, D., and Taylor, M. (2001), Auditing community participation: An assessment handbook. Josef Rowntree Foundation. http://www.jrf.org.uk/publications/auditing-community-participation
53a	Community-base Risk Screening Tool (CRISTAL), http://www.iisd.org/pdf/2012/cristalusermanualv52012.pdf
54	Gardner, J., et al. (2009), A framework for stakeholder engagement on climate adaptation. CSIRO Climate Adaptation Flagship working paper series; 3. http://csiro.au/~/media/CSIROau/Flagships/Climate%20Adaptation/CAF_WorkingPaper03_pdf%20Standard.pdf http://www.csiro.au/files/files/pph1.pdf
55	Interact (2001), Evaluating participatory, deliberative and co-operative ways of working. http://www.sharedpractice.org.uk/Downloads/Interact_Working_Paper.pdf
	Policy coherence
57	Mickwitz, P., et al. (2009), Climate Policy Integration, Coherence and Governance. PEER Report No. 2 (Vol. 2). Helsinki. http://www.peer.eu/fileadmin/user_upload/publications/PEER_Report2.pdf

Authors:

This policy brief is adapted from the BASE project report 'BASE Evaluation Criteria for Climate Adaptation (BECCA)'. Lead authors: Sabine Weiland, Jenny Tröltzsch. Contributing authors: Alessio Capriolo, Roos Den Uyl, Anne Jensen, Francesca Giordano, Mikael Hildén, Eleni Karali, Kirsi Mäkinen, Helle Nielsen, Gil Penha-Lopes, Duncan Russel. This policy brief was edited by Andrew Reid.

Acknowledge-ments

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under Grant Agreement No. 308337 (Project BASE). The views expressed here are the sole responsibility of BASE and can in no way be taken to reflect the views of the European Union.