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Guideline for integrating ecosystem-based adaptation into municipal planning and governance

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What is ecosystem-based adaptation?

Ecosystem-based adaptation refers to the **use of biodiversity and ecosystem services** as part of an overall adaptation strategy to help municipalities and their inhabitants adapt to the adverse effects of climate change. As illustrated in Figure 2, ecosystem-based adaptation is linked to both natural and societal processes and can be seen as **consisting of the following components**: ecosystem-based adaptation measures (1), which make use of ecological structures, such as trees, wetlands or green roofs (2), more specifically, their functions and capacity (3), which in turn provide benefits or services for climate change adaptation (4). The recognition and valuation of these benefits or services (5) finally influences public and private decision-taking and support for investing in specific measures (1).

Ecosystem-based adaptation measures, and the institutional and inter-institutional practices that sustain them, are the focus of this guideline. They entail the **sustainable conservation, restoration, creation and management** of the ecological structures that provide adaptation benefits and are carried out at all three governance levels: local, institutional and inter-institutional (Figures 1 and 2). Ecosystem-based adaptation measures can be implemented **both with and without the explicit goal of climate change Tc(in5**

I OPERATIVE measures: local level

1 Measures on the ground (city – neighborhoods – properties)

Key question: Which ecosystem-based adaptation measures are already implemented on the ground by the municipality or are in planning?

Orientation values

Step 1	Step 2	Step 3
The use of ecological structures for adaptation generally receives low attention within the city's on-the-ground operations.	Some ecosystem-based adaptation measures are sporadically implemented on the ground. However, there is still no systematic or comprehensive implementation of ecosystem-based adaptation measures.	The function and/or use of ecological structures for adaptation is taken into account within all on-the-ground operations. Ecosystem-based adaptation measures are systematically implemented on the ground with consideration of all relevant aspects (e.g. comprehensive consideration of existing and future climate risks; see section 9).

7 Personnel and financial assets

Key question: Are there human and financial resources in place that can support the integration

I-III ANALYSIS table: existing measures

The following table assists in analyzing existing measures in regard to their strengths and weaknesses. First, existing measures are identified on the basis of the previous sections I-III and classified according to eight categories (see below). Existing measures listed are then further detailed with information regarding their legal basis (e.g., city council decision) and the actors responsible for planning and implementing them (e.g. specific staff, units or departments). Subsequently, the measures listed can be evaluated according to different aspects (see section 9: classification and evaluation of measures).

I OPERATIVE measures: local level			
1 Measures on the ground (city – neighborhoods – properties)			
List of existing ecosystem-based measures that support climate change adaptation (including implementation timeframe)	Legal basis	Responsibility	Evaluation *(Individual and total evaluation of category 1)*
…			
…			
II STRATEGIC measures: institutional / administrative level			
2 General planning strategies and visions			
List of relevant planning strategies and visions (including issue date)	Legal basis	Responsibility	Evaluation *(Individual and total evaluation of category 2)*
…			

…

3 Climate change adaptation strategy (ecosystem-based approaches as part of an explicit municipal climate change adaptation strategy)			
List of existing ecosystem-based adaptation strategies (including issue date)	Legal basis	Responsibility	Evaluation *(Individual and total evaluation of category 3)*
…			

7 Personnel and financial assets			
List of all relevant human and financial resources/assets (including revision date if applicable)	Legal basis	Responsibility	Evaluation *(Individual and total evaluation of category 7)*

9 Classification and evaluation of measures

The identification of weaknesses and strengths of existing ecosystem-based approaches begins with classifying them according to the three levels (local, institutional and inter-institutional) and the eight categories described in sections I-III. The previous analysis table hereby helps to visualize what concrete initiatives exist in each category. Lack of, or low level of activity in some of the categories may indicate an unbalanced focus of the current initiatives. This initial analysis is important in order to define future areas of action.

Subsequently, the three-tier orientation values for systematic integration of ecosystem-based adaptation within municipal governance and planning (see sections 1-8) serve to support evaluation of the identified level of engagement. Step 3 always requires *comprehensive* consideration of ecosystem-based adaptation. This comprehensive view relates to the following aspects:

A. **Hazard:** all potential climate hazards are considered.
B. **Risk reduction:** all risk aspects are covered.
C. **Scale:** all relevant levels on both spatial and institutional scales are included (city – neighborhood – and property level as well as unit or department level).
D. **Relation to core work:** separate (explicit) and integrated (implicit or explicit) implementation of ecosystem-based measures complement each other. The emphasis

ecosystem

- Cold. Code: C
- Storms. Code: S
- Other climate impact types. Code: O

o Non

I-III ANALYSIS table: potential measures

The same analysis table (see preceding chapter) can be used for the identification and examination of planned or potential measures that are necessary to foster the integration of ecosystem-based adaptation within municipal governance and planning.