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# Factsheet 2

## STANDARD outcome evaluation – procedure and organisation



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*This factsheet describes the STANDARD outcome evaluation – from project selection to field survey in five steps. Further use of the data collected is described in Factsheet 4.*

## 2.1 Indicators

In the STANDARD outcome evaluation, typical goals of restoration projects are assessed on the basis of a large number of projects, using a before/after comparison. Here, as far as possible, the entire spectrum of restoration measures, types of watercourse and regions are covered. To assess the 9 goals, 10 indicator sets – comprising 22 predefined indicators – are available (Fig. 2.1; Factsheet 7). Each of these is described in an indicator set technical sheet, which specifies the methodology for standardised determination and assessment, and provides a cost estimate (Technical Sheets 1–10). In addition, predefined forms for data entry and submission are available on the FOEN website ([www.bafu.admin.ch/outcome-evaluation-resto](http://www.bafu.admin.ch/outcome-evaluation-resto); Factsheet 5). The indicator sets are selected according to the project goals and project size (see below) and fully determined in the field. By agreement with the FOEN, additional indicators for the assessment of further project-specific goals may be determined as Indicator Set 11.

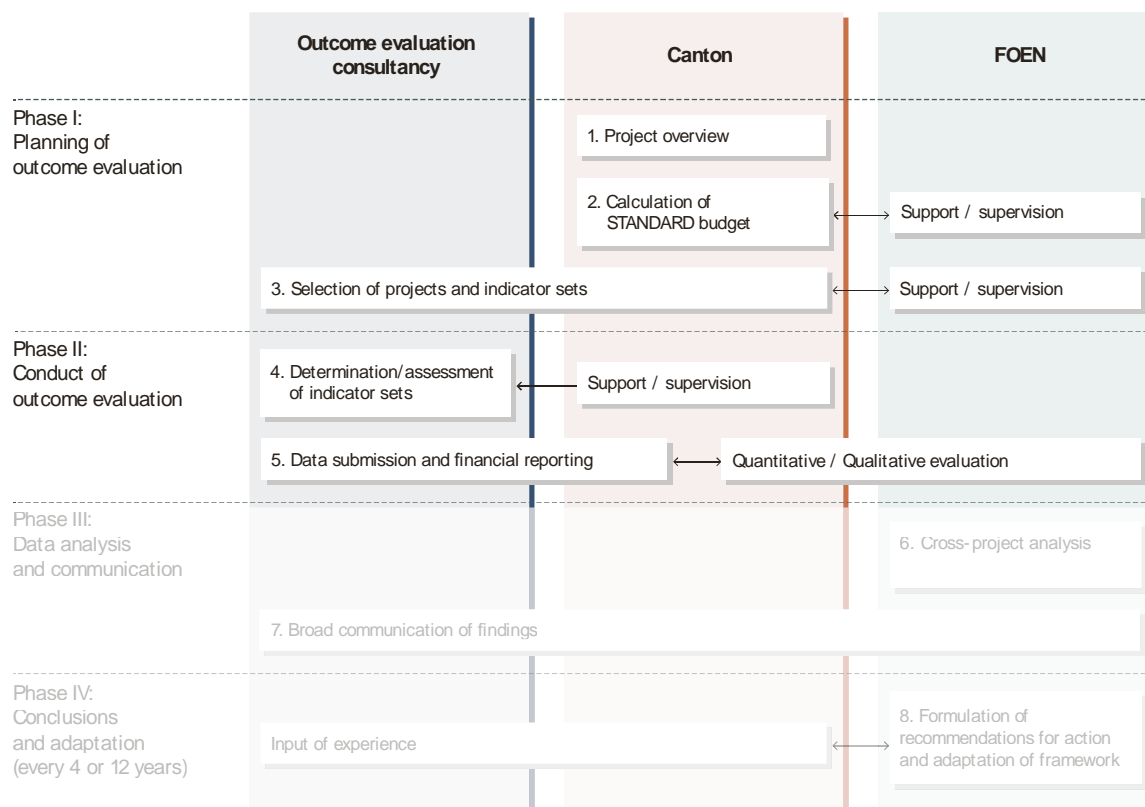
**Figure 2.1:** The typical goals of restoration projects assessed in the STANDARD outcome evaluation, with the associated indicator sets and indicators. The indicators are derived from various sources (e.g. Woolsey et al. 2005; Modular Stepwise Procedure) and in some cases have been updated for the practice documentation (Factsheet 7).

Goal	Indicator set	Indicators
<b>Morphology</b> • Natural structure/diversity of bed • Natural structure/diversity of bank and riparian zone • Natural sediment dynamics  <b>Hydrology and hydraulics</b> • Natural hydraulic diversity • Natural lateral connectivity	1 Habitat diversity	1.1 River bed structures 1.2 River bank structures 1.3 Water depth 1.4 Flow velocity 1.5 Presence of cover 1.6 Substrate
	2 Dynamics	2.1 River bed structure dynamics 2.2 River bank structure dynamics 2.3 Change in river bed elevation
	3 Connectivity	3.1 Inundation dynamics 3.2 Shoreline
<b>Temperature</b> Natural temperature regime	4 Temperature	4.1 Temperature
<b>Macrophyte community</b> Natural diversity and abundance	5 Macrophytes	5.1 Macrophyte community
<b>Macroinvertebrate community</b> Natural diversity and abundance	6 Macroinvertebrates	6.1 Macroinvertebrate community
<b>Fish community</b> Natural diversity and abundance	7 Fish	7.1 Fish community 7.2 Age structure of fish 7.3 Ecological guilds of fish
<b>Riparian/floodplain vegetation</b> Natural diversity and abundance	8 Riparian vegetation	8.1 Plant species 8.2 Plant communities 8.3 Temporal shift of floodplain vegetation categories
<b>Riparian zone fauna</b> Natural diversity and abundance	9 Avifauna	9.1 Bird species
<b>Society/economy</b> Acceptance	10 Society	10.1 Stakeholder acceptance
Additional more specific goal (e.g. dragonflies, crustaceans, spawning pits, arthropods)	11 Specific goal	11.1 By agreement with the FOEN

## 2.2 Procedure and organisation

The STANDARD outcome evaluation involves two phases and five steps (Fig. 2.2), the timing of which is linked to the Programme Agreement negotiations. Different entities are responsible: the cantons and the contracted consultancies are responsible for the planning and execution of the project-specific outcome evaluations (Phases I and II, or Steps 1–5). The FOEN has primary responsibility for cross-project data analysis and communication, and for modifications to the overall framework (Factsheet 4). The five steps are described in detail in the following sections and in other factsheets. Background information and conceptual foundations are presented in Factsheet 7.

**Figure 2.2:** The five steps of the STANDARD outcome evaluation. The higher-level steps 6–8 are explained in Factsheet 4.



### Phase I: Planning of the STANDARD outcome evaluation

#### Step 1: Project overview

The cantons prepare an overview of the restoration projects scheduled for the forthcoming Programme Agreement (PA) period for which an outcome evaluation is planned. From 2025, the cantons will additionally include in the list restoration projects already implemented for which a “before” survey is available from a previous PA period and an “after” survey is anticipated in the forthcoming PA period.

For the project overview, a cantonal tool can be used or, for example, the table designed as an aid to calculation (project list) which was prepared for the forthcoming PA submission. If an existing project list is used, it should once again be critically reviewed, e.g. with regard to the likelihood of implementation. The project overview should include the expected construction costs, so that the projects can be assigned to the project sizes described under Step 3 (small, medium-sized, large, individual project).

### Step 2: Calculation of the STANDARD budget

The budget for the STANDARD outcome evaluation is calculated with support from the FOEN and is jointly set in the PA negotiations. This budget is used to finance both “before” surveys for PA projects from the forthcoming PA period and “after” surveys for PA and individual projects from previous periods. The financing model is described in detail in Factsheet 6.

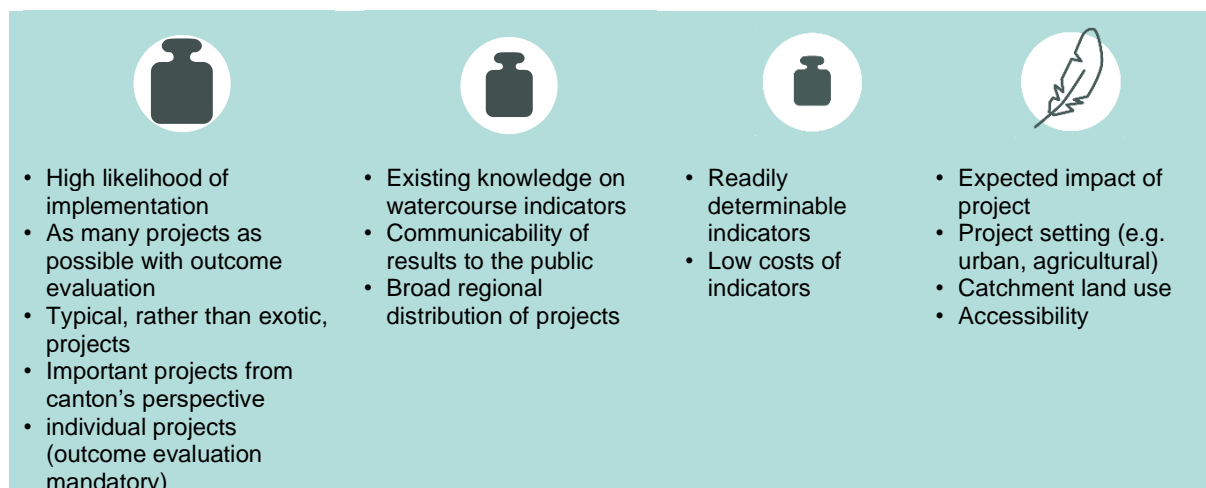
### Step 3: Selection of projects and indicator sets

The canton decides how the budget for STANDARD outcome evaluation is to be employed, i.e. for which projects an outcome evaluation is to be conducted and on what scale. It takes into consideration the project selection criteria shown in Figure 2.3. Particularly suitable for STANDARD outcome evaluation are projects with a high likelihood of implementation or of major cantonal importance. Also especially suitable are projects for which knowledge concerning certain indicator sets (e.g. fish population) is already available. In contrast, project selection should not be influenced by the expected impact of the project or by ready accessibility for fieldwork. For individual projects, an outcome evaluation is mandatory.

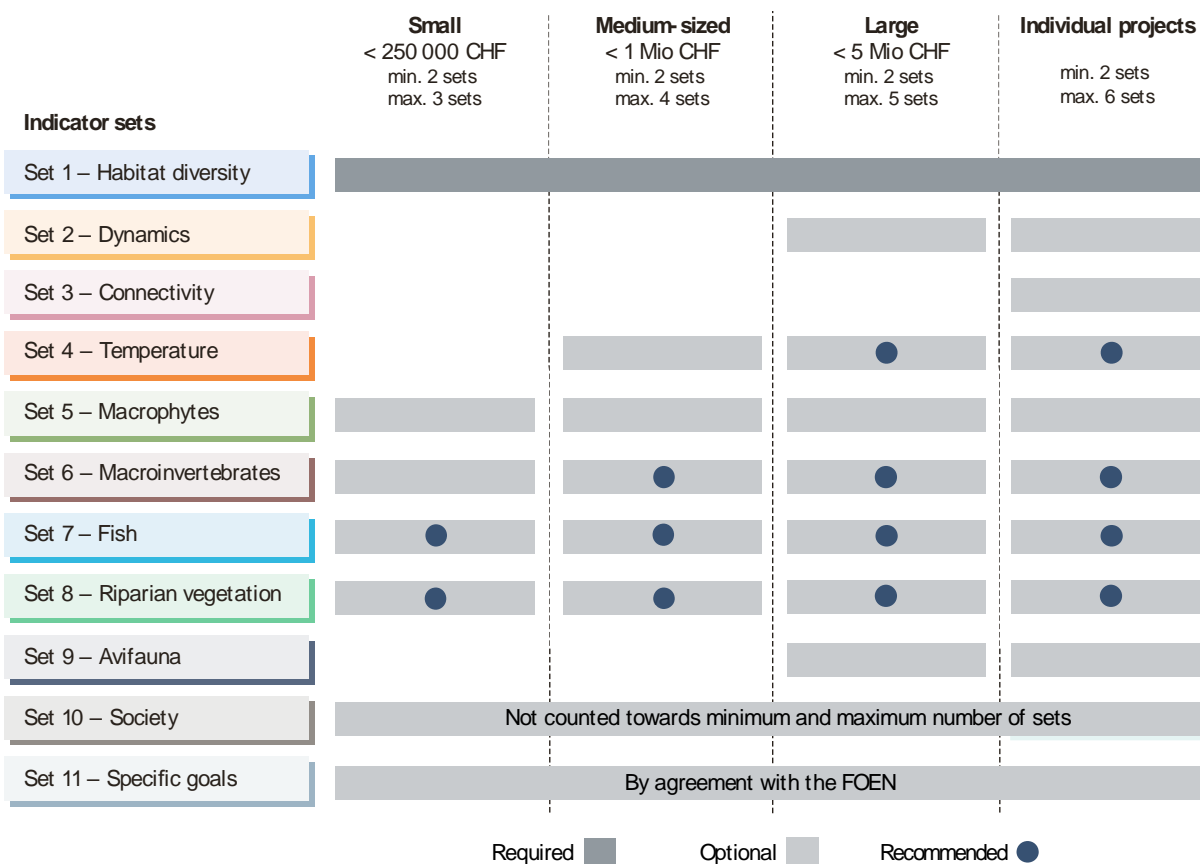
In addition, in collaboration with the consultancies contracted for the outcome evaluation, the canton defines the extent of the outcome evaluation for each project. This is based on the project size, i.e. the costs of the project (Fig. 2.4). Four categories of project size are distinguished: small (< CHF 250,000), medium-sized (CHF 250,000-1 m), large (CHF 1–5 m) and individual projects (see Handbook on Programme Agreements). Depending on the project size, different numbers of indicator sets may be selected (Fig. 2.4). Set 1 (Habitat diversity) is required, i.e. it is to be determined in every outcome evaluation. There are also optional indicator sets, the number of which increases with project size. In addition, certain indicator sets are recommended by the FOEN. In each case, indicator sets are to be selected in accordance with the project goals; it is not appropriate to select an indicator set which has no relevance for the project concerned. It should also be borne in mind that a number of indicator sets can only be determined in wadeable watercourses. If specific goals pursued in a project are not captured by any of the existing indicator sets, then, by agreement with the FOEN, additional indicators may be included under Set 11 (e.g. for dragonflies, amphibians, etc.).

The minimum extent is the same for all project sizes, comprising the required Indicator Set 1 (Habitat diversity) and one of the optional biological Indicator Sets 5–9 (Indicator Set 11 – Specific goal – is not counted towards the minimum extent). The maximum extent increases with project size (e.g. at most three indicator sets for small projects or six for individual projects). Indicator Set 10 (Society) can be additionally determined independently of the maximum number of indicator sets; the same applies for Indicator Set 11 (Specific goal), by agreement with the FOEN. In Table 2.1, rough cost estimates are given for one survey per indicator set.

**Figure 2.3:** Selection criteria for projects for which the STANDARD outcome evaluation is to be conducted, ordered by weight.



**Figure 2.4:** Required, optional and recommended indicator sets according to project size (small, medium-sized, large, individual project). The maximum extent of the outcome evaluation depends on the project size. The minimum extent comprises Indicator Set 1 and one of the biological Indicator Sets 5–9.



**Table 2.1:** Rough cost estimate for one survey (e.g. one “before” or one “after” survey) per indicator set. More detailed information on timing is given in the technical sheets. General expenses (e.g. for travel to field surveys) are not included. Calculations are based on hourly rates between CHF 80 and CHF 160.

Indicator set	Effort from technical sheets (person-hours)		Cost range (CHF)	Notes
	Specialists	Assistants		
1. Habitat diversity	16–30	18–44	4,000–9,200	
2. Dynamics	12	18–20	6,200–9,500	Incl. geodetic cross section survey
3. Connectivity	32	32	7,700–8,300	
4. Temperature	14	8–32	2,900–5,400	Excl. acquisition of loggers
5. Macrophytes	3	0–3	500–800	
6. Macroinvertebrates	20-40	1,5	2,700-5,700	Incl. quality control species identification
7. Fish	20–64	12–88	4,200–19,000	
8. Riparian vegetation	8–28	-	1,300–4,500	Minimum: Indicator 8.1 only; Maximum: 8.1 + 8.2
9. Avifauna	13–18	-	2,100–2,900	
10. Society	11–14	-	1,800–2,200	

## Phase II: Conduct of the STANDARD outcome evaluation

### Step 4: Determination and assessment of indicator sets

In the STANDARD outcome evaluation, surveys are conducted before and after restoration (“before” and “after” surveys). An exception to this are culverted reaches, which cannot be sampled prior to restoration (Factsheet 8). The number of surveys depends on the project size (Fig. 2.5). In small projects, surveys are conducted once before (0–2 years before the start of construction work) and once after restoration (4–6 years after completion of construction work). In medium-sized and large projects, surveys are conducted once before (0–2 years before the start of construction work) and twice after restoration (4–6 years and 10–14 years after completion of construction work). An exception to this is Indicator Set 10 (Society), for which the first “after” survey is conducted after just one year. The period for the conduct of field surveys can be adapted if necessary – for example, if the absence of an average flood event means that it was not possible for morphological changes to occur. Indicator Set 1, required for all projects, provides the basis for the other indicator sets. It is therefore to be determined first. In addition, all indicator sets have specific seasonal timeframes within which they have to be determined (Factsheet 8).

Certain surveys are conducted across the entire restored reach, e.g. parts of Indicator Set 1 (mapping of river bed structures and bank structures). Other surveys, especially the time-consuming biological indicator sets, are conducted on a subsection of the restored reach (Factsheet 8). In order to ensure the comparability of surveys, the location of the restored reach and the subsection should not change, i.e. it remains the same for the “before” and “after” surveys. The STANDARD outcome evaluation does not routinely involve sampling of (channelised) control or (near-natural) reference reaches (Factsheet 7); this is, however, possible in consultation with the FOEN.

**Figure 2.5:** Periods specified for “before” and “after” surveys.



### Step 5: Data submission and financial reporting

When the work has been completed, all data from the STANDARD outcome evaluation (measurements and assessments) is transmitted to the centralised data repository. This may be done directly by the consultancies contracted for the outcome evaluation or by the canton. Predefined data entry forms are available. Following quality control by the canton, the data is submitted to the FOEN ([wiko\\_revit@bafu.admin.ch](mailto:wiko_revit@bafu.admin.ch)). Financial reporting takes place at the end of each PA period. Further information on this topic is to be found in Factsheets 5 and 6.

#### List of modifications

Relevant changes are marked in **green**.

Date (mm/yy)	Version	Change	Responsibility
4/2020	1.02	Correction of spelling errors, minor terminological modifications	Eawag
4/2020	1.02	Minor graphical modifications (Fig. 2.5)	Eawag
4/2020	1.02	Modification cost estimate indicator set 8	Eawag
7/2021	1.03	Modification cost estimate indicator set 6 (incl. quality control species identification)	Eawag

3/2024	1.04	Modification cost estimate indicator set 6 (incl. quality control species identification)	Eawag
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