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Clean Baltic

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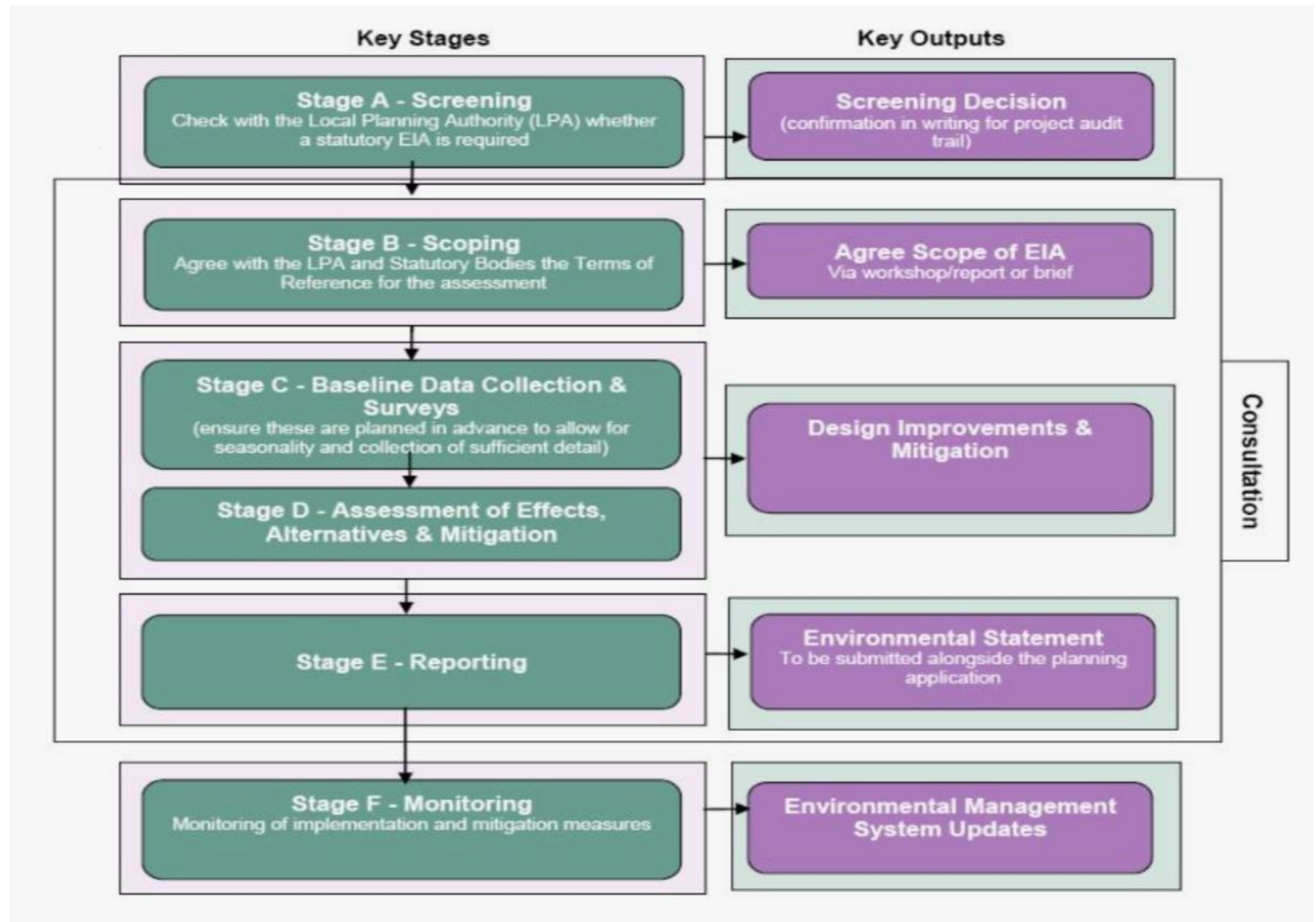


What is EIA?

Environmental Impact Assessment predicts the environmental, social, and economic effects of a planned activity before it begins — not after.

The key idea: prevention is cheaper than repair.

What is EIA?



Examples of projects requiring mandatory EIA

Industry & energy

- Oil refineries
- Large power plants (thermal, nuclear)
- Chemical plants
- Steel and metal works

Infrastructure

- Airports
- Motorways and expressways
- Large ports and marine terminals
- Dams and reservoirs

Resource extraction

- Quarries and mines (above a certain extraction volume)
- Dredging works in ports/canals (like our Vistula Spit Canal case)

Resource extraction

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Agriculture

- Large livestock complexes (pig farms, poultry farms — above a set number of animals)

Waste

- Municipal landfills
- Waste incineration plants

The detective's toolkit

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01

Judgement-based methods
(Expert judgement)

03

Spatial & quantitative methods
(GIS overlay & mapping, modelling)

02

Structured & visual methods
(Checklists, Impact matrices, impact tree)

04

Field & participatory methods





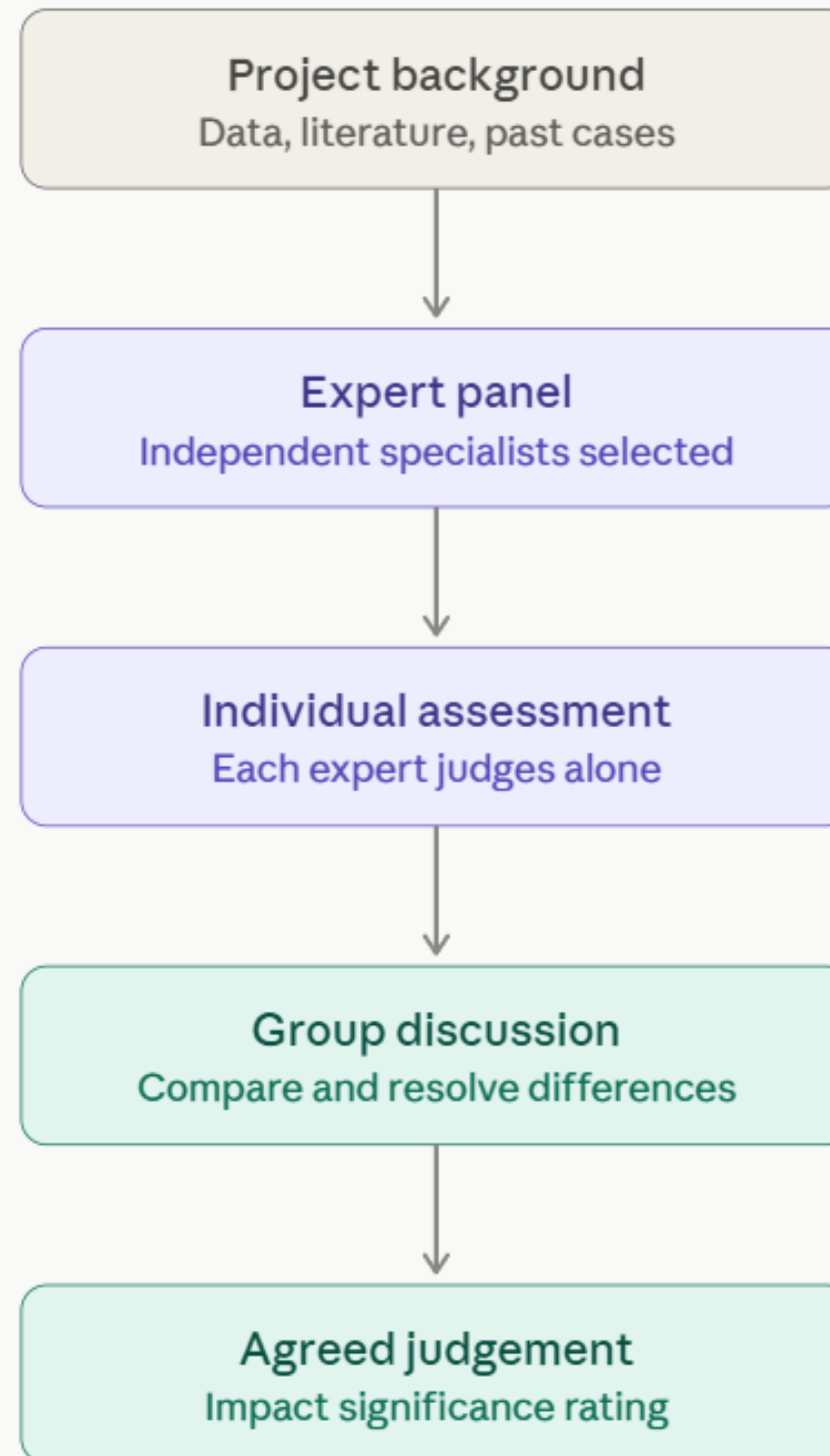
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METHOD 1

Expert judgement

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The fastest and most widely used method.

Best used as a first pass — then confirmed with more structured methods.

01

METHOD 1

Expert judgement

Case: new shopping centre car park, surface runoff into a nearby stream

Expert	Likelihood	Severity	Duration	Confidence
Stormwater engineer	4 / 5	3 / 5	Permanent	High
Ecologist (stream health)	4 / 5	4 / 5	Permanent	Medium
Road safety officer	2 / 5	2 / 5	Seasonal	Low
Panel consensus (after discussion)	4 / 5	3 / 5	Permanent	Medium-High

Overall judgement: likely and permanent impact (oil, sediment, de-icing salt) — recommend a stormwater retention/treatment system, not just monitoring

Scale: 1 = negligible · 5 = severe



Expert



METHOD 1

judgement

Situation: A small marina on the Baltic coast wants to expand from 20 to 50 boat berths. Nearby is a beach where local residents swim in summer.

Panel: 3 experts (assign roles among participants): a water quality specialist, an ecologist, and a marina representative.

Individual scoring: Each expert independently gives a score from 1 to 5:

Criterion	Score
Likelihood of water pollution (fuel, antifreeze, waste)	
Severity of impact on water quality at the beach	

Group discussion Where did your scores differ — and why?

- 1. Whose opinion do you think carries the most weight on this question?
- 2. Panel's final consensus — one score per criterion.

Quick conclusion

In one sentence: should this move to a more detailed method (like a checklist or modelling), or is expert judgement enough here?



METHOD 1

Expert judgement — **pros & cons**

Pros:

- Fast and low-cost
- Flexible — works for any project type
- Good for early screening
- Draws on real-world experience

Cons:

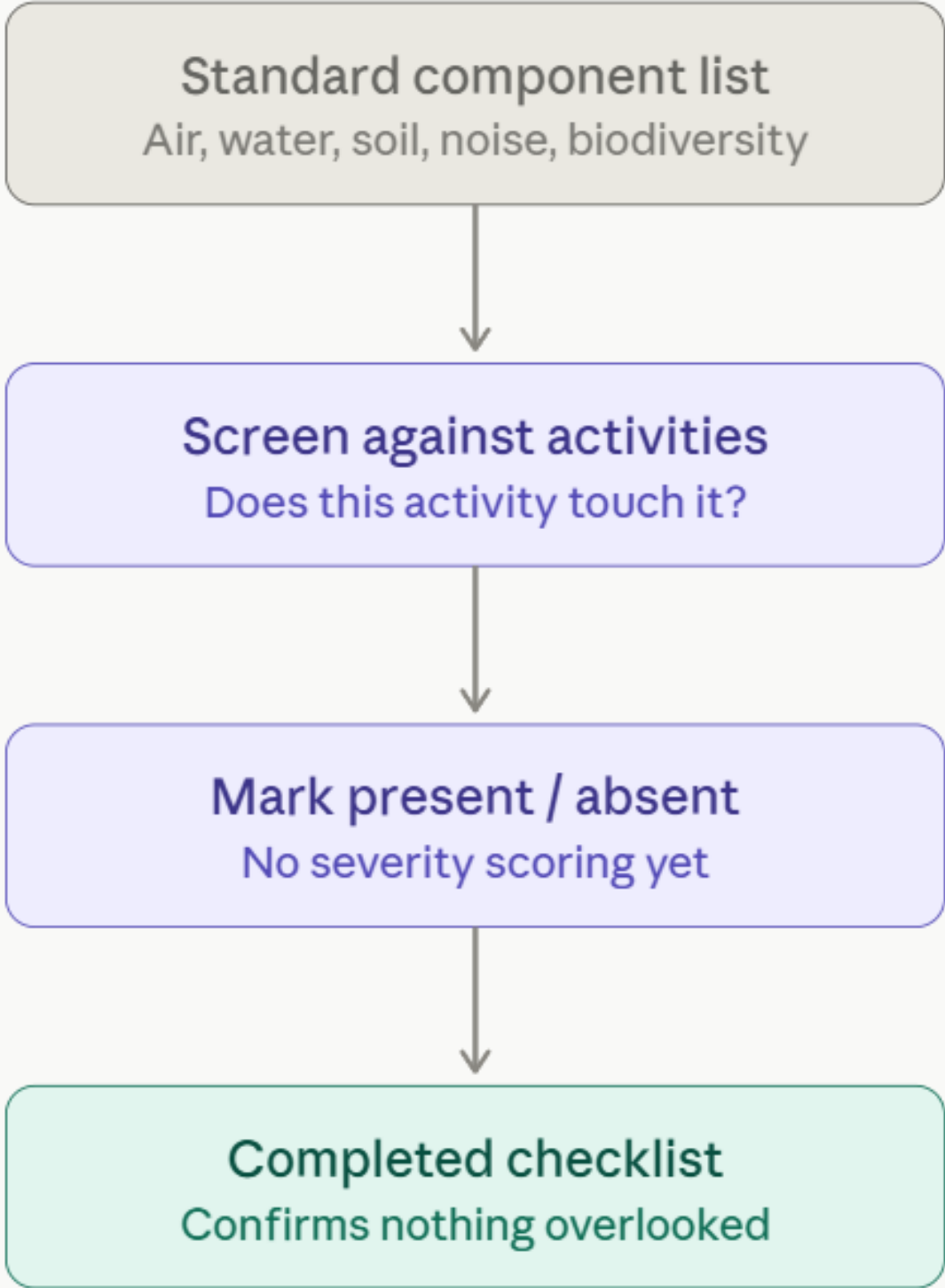
- Subjective — depends on who's on the panel
- Hard to reproduce with a different panel
- No hard numbers, only opinions
- Risk of groupthink
- Senior experts can dominate the discussion



METHOD 2

Checklists

A structured list of environmental components to review — air, water, soil, noise, biodiversity, and more.



Component	Score (0-3)
Nutrient load (N & P)	● 3
Water quality (O ₂ , turbidity)	● 2
Marine biodiversity	● 2
Coastal hydrology	● 1
Noise & shipping	● 1
Total	9 / 15

0 = no impact · 1 = minor · 2 = moderate · 3 = major, needs detailed assessment

02

METHOD 2

Checklists

Example: Finland's standard EIA checklist for wind farm projects includes over 40 items, from bat migration routes to shadow flicker on nearby homes.

Case: construction of a stormwater treatment facility (settling tank + polishing stage)

Component	Score (0-3)
Surface water quality	● 2
Soil quality	● 1
Groundwater	● 1
Hydrological regime	● 2
Noise	● 1
Air quality	● 1
Biodiversity (aquatic life)	● 2
Traffic / access	● 1
Landscape	● 1
Odour	● 1
Local residents (construction)	● 1
Cultural heritage	0
Total	14 / 36

Checklists can also be used to compare alternatives. Score each project option against the same components, then compare totals — this helps identify which alternative causes the least overall impact.



METHOD 2

Checklists

Pros:

- Simple and fast to create and use
- Makes sure nothing important gets overlooked
- Easy to standardise across many projects
- Works well for comparing alternatives (score each, compare totals)

Cons:

- Doesn't show how severe an impact is, just that it exists
- Doesn't show connections between impacts
- Can miss cumulative effects — where several activities hit the same receptor
- A low total score can hide one severe impact behind several minor ones

02

METHOD 2

Impact matrices

A table: project activities (rows) × environmental components (columns). Each cell scores the impact where they meet.

Reveals **cumulative impact** — where several activities hit the same receptor at once, something a simple checklist can miss.

Phase ↓ / Component →	Nutrient load	Water quality	Marine biodiversity
Construction	● Low	● Medium	● Low
Operation	● High	● High	● Medium
Decommissioning	● Low	● Medium	● Low

Operation is the critical phase — continuous discharge outweighs one-off construction impacts

02

METHOD 2

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METHOD 2

Impact matrices

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Pros:

- Reveals cumulative impact — several activities affecting the same receptor at once
- More structured than a checklist — shows scale/importance, not just presence
- Good visual overview of the whole project on one page
- Based on a real, tested method

Cons:

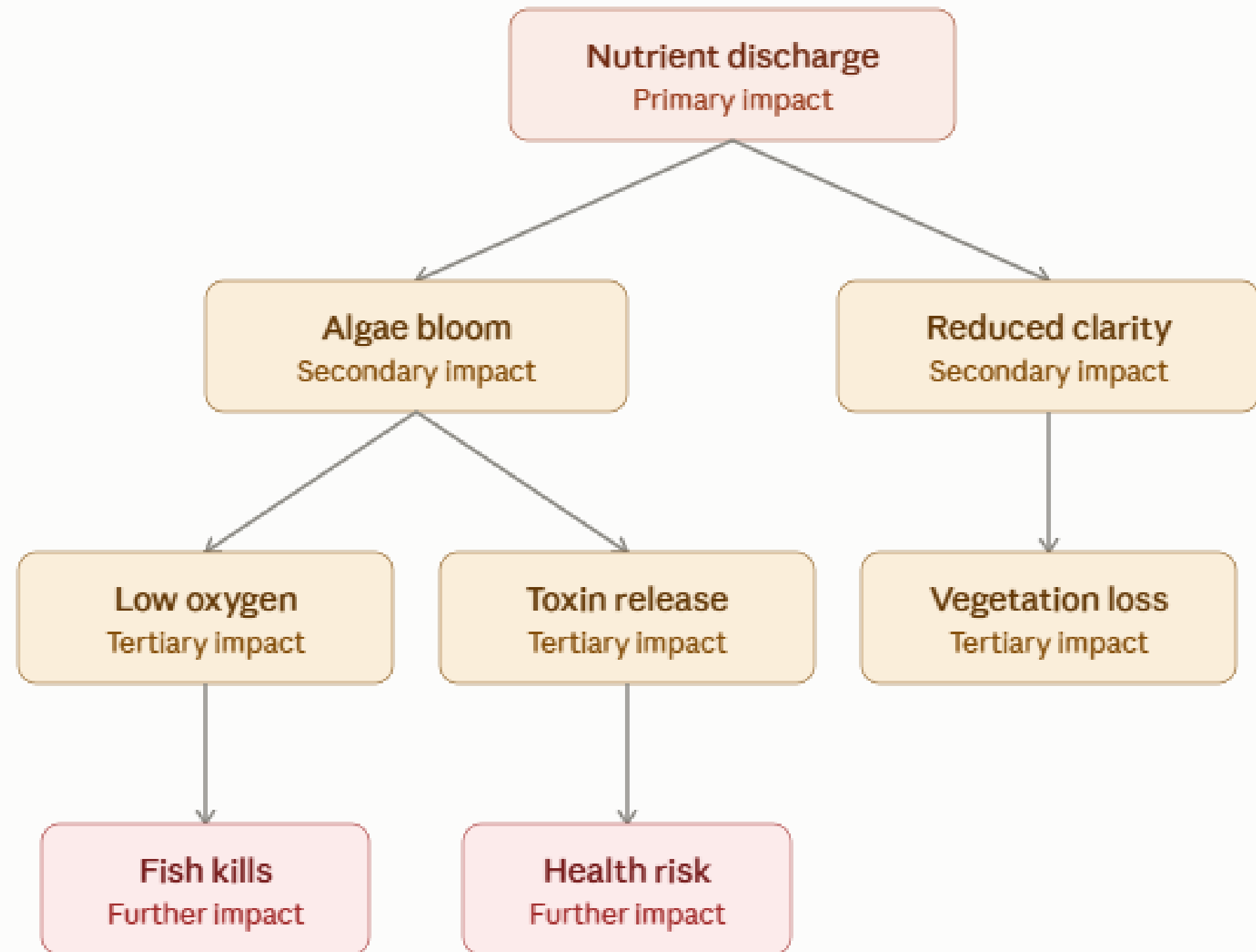
- Scoring magnitude and importance is still partly subjective
- Weak at showing secondary/indirect effects
- Can get very large and hard to read
- Doesn't clearly separate short-term vs long-term impacts



METHOD 2

Impact tree

Traces cause-and-effect chains beyond the first impact — showing secondary, tertiary, and further consequences. One primary impact can branch into several separate chains. Reveals effects a checklist or matrix would miss, since those only capture the direct, first-level impact.



One impact chain diagram shows several branches — a matrix only captures the first box



METHOD 2

Impact tree

Pros:

- Shows secondary and tertiary effects, not just the direct impact
- Reveals branches a matrix or checklist would miss
- Easy to follow, even for non-experts

Cons:

- Can get large and complex for big projects
- Still relies on expert judgement for each link
- Doesn't show magnitude — just that a link exists



METHOD 2

Impact tree

Situation: Farmers apply fertilizer to their fields, and shortly after, heavy rain falls over the area. AUGUST 2026

Your task: Starting from one primary impact — **fertilizer washed off fields by heavy rain** — draw a chain of at least 3 steps, showing what it leads to.

Question: Which impact did you identify, and how far did your chain go — did you reach a tertiary impact, or further?



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03

METHOD 3

GIS overlay

GIS overlay & mapping

Spatial layers (project site, protected areas, water bodies, residential zones) are overlaid on one map to show exactly where the project conflicts with sensitive areas. Turns "impact somewhere" into "impact exactly here."

Example: when Poland planned a new pipeline route across Pomerania, GIS overlay of wetland boundaries, Natura 2000 sites, and villages shifted the corridor by 4 km to avoid a protected peat bog.



METHOD 3

Modelling

Mathematical models predict how pollutants disperse in air or water, how noise travels, or how a water body responds to nutrient loads. Gives exact numbers — concentrations, decibels — not just "yes/no".

Tool	Stands for	Open-source
AERMOD	AMS/EPA Regulatory Model	Yes
ADMS	Atmospheric Dispersion Modelling System	No
SWAT	Soil and Water Assessment Tool	Yes
HEC-HMS	Hydrologic Engineering Center — Hydrologic Modeling System	Yes
OpenFOAM	Open-source Field Operation And Manipulation	Yes
QGIS	Quantum GIS	Yes

5 of 6 tools are free / open-source — only ADMS is fully commercial

! Models are only as good as their input data



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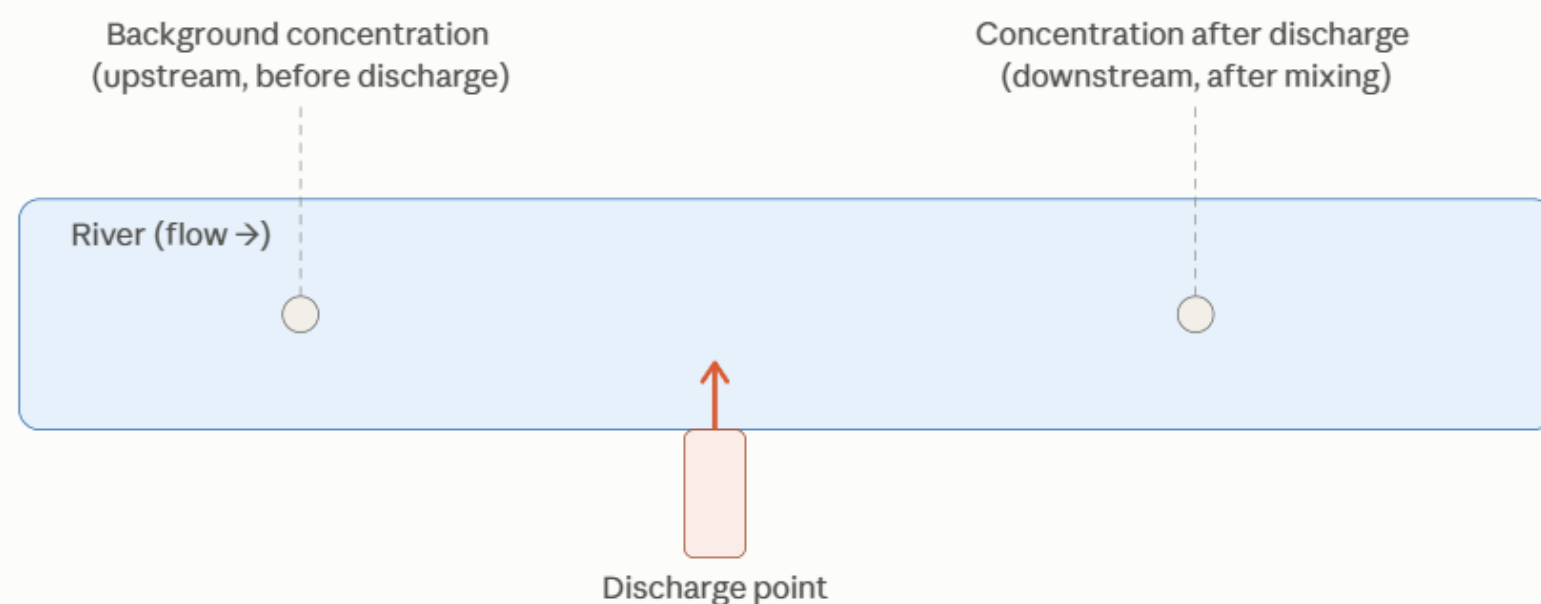
METHOD 3

**Task: What do you need to know
before you discharge into a river?**

03

METHOD 3

Task: What do you need to know before you discharge into a river?



To calculate the maximum allowable concentration of a pollutant in a discharge, you need to know:

River characteristics:

- Depth
- Flow velocity
- Water volume / flow rate (Q)
- Background concentration of the pollutant
- Permissible concentration

Discharge characteristics:

- Volume of wastewater being released



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METHOD 4

Field studies & consultations

Real data on current conditions, plus local knowledge from residents — grounding the assessment in reality, not just assumptions.

Field studies & baseline monitoring — collecting real data on current environmental conditions, before the project starts

Public consultations — using local residents' knowledge as a genuine data source, not just a formality

Example: before expanding a fish farm in a Swedish fjord, baseline water sampling combined with interviews with local fishers revealed a spawning ground the official maps didn't show.



Choosing the right method

- Need a fast, early screening? → Expert judgement
- Worried about missing something? → Checklist
- Several activities, one receptor? → Impact matrix
- Choosing between locations? → GIS overlay
- Need exact numbers, not just “yes/no”? → Modelling
- Need to know what’s really there? → Field data & consultation

After identifying an impact, we need to assess it — and the method depends on which environmental component is affected.

- **Water** → chemical analysis, load calculations, dilution modelling
- **Air** → dispersion modelling, emission calculations
- **Soil** → nutrient balance, contamination sampling
- **Noise** → sound level modelling, distance decay calculations
- **Biodiversity** → population counts, habitat mapping, field surveys

There is no single formula — the right assessment method matches the component being affected.

Monitoring the outcome

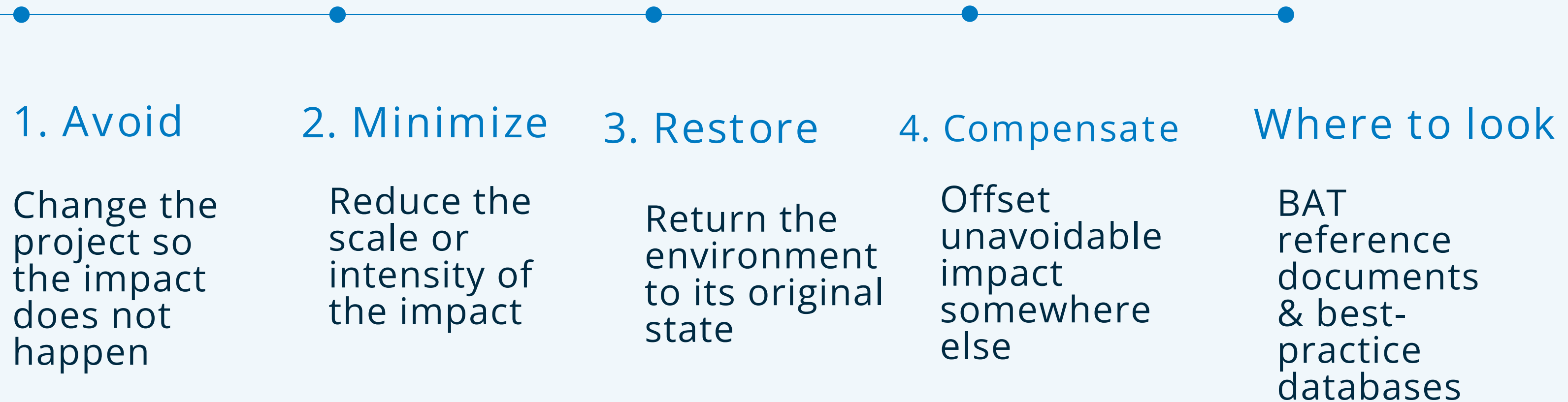
Indicator	How measured	Frequency	Type
Total N & P in effluent (mg/L)	Auto-sampler + lab analysis	Weekly	● Compliance
Dissolved oxygen in receiving water	Fixed sensor buoy	Continuous	● Baseline
Chlorophyll-a (algal bloom indicator)	Water sampling + satellite data	Monthly (summer)	● Baseline
Effluent flow rate	Flow meter	Continuous	● Compliance
Benthic invertebrate community	Field survey	Annual	● Baseline

Compliance = checked against the permit limit · Baseline = long-term ecological trend

- Why monitor — check if the real effect matches the EIA prediction
- What we measure — indicators tied to the predicted impacts (concentrations, noise, species)
- Compliance monitoring — are we within the legal limits — yes or no
- Baseline monitoring — long-term tracking of overall environmental state

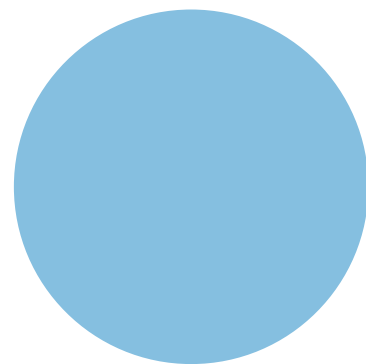
Mitigation hierarchy

Reducing impact is not "permit or forbid" — it is finding the right way to lessen it.





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Where to look

BAT (Best Available Techniques) — the most effective and practically applicable production technologies that minimize environmental impact, at a cost that is economically and technically viable.

EIPPCB / BREF — EU reference documents on best available techniques, by industry sector
<https://bureau-industrial-transformation.jrc.ec.europa.eu/archived-reference-documents>

HELCOM — Baltic-specific best-practice guidelines and recommendations for agriculture and nutrient reduction
helcom.fi/action-areas/agriculture



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European Commission > EU-BRITE > BAT reference documents

BAT reference documents

BAT reference documents (BREFs) represent the outcome of the ‘Sevilla process’. The majority of BREFs cover specific agro-industrial activities; such BREFs are referred to as 'sectoral BREFs'. However, there are also a number of 'horizontal BREFs' dealing with cross-cutting issues such as energy efficiency, industrial cooling systems or emissions from storage with relevance for industrial manufacturing in general. A specific BREF was developed for the monitoring of emissions to air and water from installations under the Industrial Emissions Directive, which is referred to as the 'ROM'. The table below presents in alphabetical order a list of all BREFs drawn up to date.

Show more

Name	Code	Adopted/Published Document	Formal draft	Kick-off meeting
Production of Chlor-alkali	CAK	BREF BATC (12.2013)		
Ceramic Manufacturing Industry	CER	BREF (08.2007)	BREF FD (04. 2026)	MR (02.2026)
Production of Cement, Lime and Magnesium Oxide	CLM	BREF BATC (04.2013)		

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Agriculture

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Latest News

(05/08/2026) Poland takes over
HELCOM Chairship from Lithuania

(23/06/2026) Preparations
underway for the 2026 HELCOM
Ministerial Meeting in Warsaw

(17/06/2026) Markus Helavuori
designated as the next Executive
Secretary of HELCOM

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Agriculture

The highest proportion of riverine anthropogenic diffuse nutrient load in the Baltic Sea region is observed in catchment areas with intensive agriculture and a large number of scattered dwellings. In the atmospheric emissions and deposition of nitrogen, the proportion of ammonia emissions from agriculture, e.g. manure management and livestock housing, has increased.

Agriculture is a major source of nutrient inputs to the Baltic Sea, contributing to over 70-90% of nitrogen and 60-80% of phosphorus diffuse loads and almost half of total waterborne inputs to the sea. **Eutrophication** is one of the main threats to the biodiversity of the Baltic Sea, caused by excessive inputs of nutrients to the marine environment. Diffuse loading makes reducing nutrient loads from agriculture more complicated than cutting loads from easier manageable point sources. There is also a considerable time lag between the implementation of measures and visible effects in water bodies.

Agriculture is one of the core areas of HELCOM operations. The major reductions of nutrient inputs from farming, as well as the introduction of measures to curtail phosphorus and nitrogen losses, are both stipulated in the **Baltic Sea Action Plan** (2007, revised in 2021) and the **Baltic Sea Regional Nutrient Strategy** (2021).



PUBLICATION (27/11/2025) Reducing nutrient inputs to the Baltic Sea

RECOMMENDATION (09/04/2025) 42-43-7 Best Available Technology (BAT) and Best Environmental Practice (BEP) to reduce nutrient inputs and greenhouse gas emissions from manure

RECOMMENDATION (22/05/2024) 42-43-5 Mitigating ammonia emissions from agriculture

RECOMMENDATION (25/10/2021) 42-43-2 Amendments to Part II Annex III “Criteria and measures concerning the prevention of pollution from land-based sources” of the 1992 Helsinki Convention

YOUR TURN

Eco-detective challenge
Different clues, one method — over to you

LET'S SOLVE A CASE