



MONETARY VALUATION METHODS: BENEFIT TRANSFER





The benefit transfer method estimates the economic value of an ecosystem service at a policy site – the location where a management decision needs to be informed – by drawing on value estimates from study sites where primary valuation research has already been conducted. Rather than generating new original data through surveys, ecological field work, or statistical modelling, the analyst identifies existing studies that valued the same or a comparable ecosystem service in a comparable context, and adapts their monetary estimates to the new location.

Benefit transfer is the most resource-efficient monetary valuation method available. It avoids the costs and time requirements of primary data collection entirely – no survey, no sampling, no field campaign. This makes it particularly attractive for MPA management contexts where resources are limited, timelines are short, or where a rough-order-of-magnitude economic estimate is sufficient to inform a decision without requiring the precision of a purpose-built valuation study.

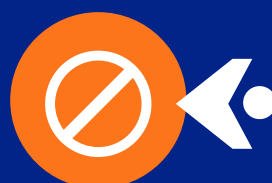
The method's efficiency, however, comes with a fundamental trade-off: the reliability of a transferred estimate depends entirely on how similar the study site is to the policy site. When ecological conditions, socio-economic characteristics, the population of beneficiaries, and the nature of the service being valued all closely match, transferred estimates can be robust and defensible. When they differ significantly – as is often the case in marine environments, where site-specific conditions vary enormously – transferred estimates may be seriously misleading. **The Vlaamse Banken case study in Blue4all directly demonstrates this tension**, and the lessons learned are woven throughout this guide.

IS BENEFIT TRANSFER RIGHT FOR YOUR CONTEXT?



USE BENEFIT TRANSFER

- + Time or resources do not allow for primary data collection
- + Comparable primary studies exist at ecologically and socio-economically similar sites
- + An order-of-magnitude estimate is sufficient for the management decision
- + The service being valued is well-studied in the existing literature



AVOID BENEFIT TRANSFER

- Sufficient time and resources exist for a purpose-built primary valuation study
- Study sites in the available literature differ substantially from the policy site
- A precise, defensible estimate is required for formal policy appraisal
- The service being valued is poorly represented in the valuation literature

For more thorough insights into when and how to use this tool, please consult the step-by-step guide below.





WHEN TO USE

1

WHEN TIME OR RESOURCES DO NOT ALLOW FOR PRIMARY DATA COLLECTION

Primary valuation methods – contingent valuation, production function analysis, best-worst scaling – all require substantial investments in survey design, data collection, and statistical analysis. Benefit transfer offers a practical route to an economic estimate when those investments are not possible. It is particularly well suited to **scoping exercises**: early-stage assessments that establish whether an ecosystem service is economically significant enough to justify further primary research, or that provide a ballpark figure for inclusion in a broader cost-benefit analysis.

2

WHEN COMPARABLE PRIMARY STUDIES EXIST

The method is most reliable when the literature contains **primary valuation studies conducted at sites that closely resemble the policy site** – in terms of ecosystem type, species composition, geographic and hydrodynamic context, and the socio-economic characteristics of the population of beneficiaries. Well-studied service types with substantial literatures – coastal protection by reef structures, recreational value of marine areas, the fisheries value of seagrass or mangrove nursery habitat – offer the most credible basis for transfer.

3

WHEN AN ORDER-OF-MAGNITUDE ESTIMATE IS SUFFICIENT

Benefit transfer results should generally be treated as indicative rather than precise. They are appropriate when a decision-maker needs to understand the **approximate scale of an economic value** – to compare it against management costs, to prioritise among services, or to argue for the relevance of economic valuation – rather than when a precise estimate is required for formal legal, financial, or regulatory purposes.

WHEN NOT TO USE



WHEN SUFFICIENT TIME AND RESOURCES EXIST FOR PRIMARY VALUATION

Benefit transfer is a shortcut justified by resource constraints. When a primary study is feasible, it will always produce a more reliable and more defensible estimate. If time and budget allow, primary valuation should be the default — benefit transfer is a practical second-best, not an equivalent alternative.

1

WHEN STUDY AND POLICY SITES DIFFER SUBSTANTIALLY

The method's reliability depends on the similarity between the sites from which values are borrowed and the site where they are applied. When ecological conditions, socio-economic context, or the nature of the beneficiary population differ markedly between study and policy sites, the transferred estimate may be seriously misleading. The greater the **contextual distance** between sites, the less the estimate can be trusted — and at some point that distance becomes so large that the estimate adds no meaningful information.

2

WHEN A PRECISE ESTIMATE IS REQUIRED FOR FORMAL APPRAISAL

Benefit transfer is not suitable as the primary evidence base for formal environmental impact assessment, legal proceedings, or regulatory cost-benefit analysis where precision and site-specificity are required. In these contexts, primary valuation should be commissioned.

3

WHEN A PRECISE ESTIMATE IS REQUIRED FOR FORMAL APPRAISAL

If the existing valuation literature contains few or no studies of the service type in comparable contexts, benefit transfer cannot be meaningfully applied. Attempting to transfer from an incomparable study produces an estimate with such wide uncertainty that it adds no real information. In this situation, documenting the gap and making the case for primary research is more honest and more useful than forcing a transfer.

4

APPLICATION EXAMPLE

HOW WAS BENEFIT TRANSFER USED IN BLUE4ALL?



RESEARCH QUESTION

How can the ecosystem services associated with the restoration of *Ostrea edulis* (European flat oyster) reefs in the Belgian part of the North Sea (MPA Vlaamse Banken) be economically valued?

Following semi-structured interviews with seven experts in oyster reef ecology, restoration, and marine management – which identified eight potential ecosystem services and narrowed these down to three priority services for valuation (biodiversity, commercial fish production, and denitrification) – benefit transfer was applied to assign monetary values to each service.

All data and calculations were compiled in an Excel workbook to keep the process transparent, adaptable, and replicable. For each of the three services, a specific formula was used:

- Biodiversity (€): Biodiversity value (€/m²) × Surface area of oyster banks (m²)
- Commercial fish production (€/year): Commercial value (€/kg) × Increased biomass (kg/year) per species
- Denitrification (€/year): Denitrification rate (μmol N₂-N m² h⁻¹) × Nitrogen removal value (€/μmol) × Surface area (m²) × 8,760 hours

Using a projected restoration surface of 100 km², estimated values were: biodiversity €2.78 billion (one-off), denitrification €107 million per year, and commercial fish production €46,825 per year. However – and this is the most important finding from the exercise – the research site is located approximately 35 kilometres offshore at a depth of around 30 metres, conditions that differ substantially from the nearshore or intertidal environments studied in most of the available oyster reef literature. No primary studies were found that valued *Ostrea edulis* ecosystem services at comparable offshore depths. **The mismatch between study sites and policy site meant that results could only be treated as broadly indicative and hypothetical, not as reliable economic estimates.** The exercise nonetheless demonstrated the value of the process itself: documenting which comparisons were and were not possible, and why, is itself a meaningful contribution to MPA management.



STEP-BY-STEP GUIDE

How to use the benefit transfer method?

PHASE 1 – PREPARATION

STEP 1.

Define the ecosystem service to be valued and clarify the management purpose

Before searching for studies, be explicit about:

- Which specific ecosystem service needs to be valued, and what decision will the estimate inform?
- What level of precision is required – is an order-of-magnitude figure sufficient, or does the decision require a more reliable estimate?
- What is the spatial scale of the valuation – how much area of the ecosystem is being considered?

Where the range of relevant ecosystem services is not yet clear, a preliminary step using qualitative methods – such as semi-structured interviews with local experts and stakeholders – can help identify and prioritise the services most relevant to the specific MPA context before committing to the benefit transfer process. This was the approach taken in the Vlaamse Banken case, where seven expert interviews narrowed an initial longlist of eight potential services to three priority services for valuation.

STEP 2.

Document the policy site characteristics

Before searching for studies, document the key characteristics of the policy site thoroughly. These will serve as the benchmark against which study site comparability is assessed. Relevant characteristics include:

- **Ecological:** ecosystem type, dominant species, habitat extent, water depth, exposure and hydrodynamic regime, water quality, connectivity to adjacent habitats
- **Geographic:** distance to shore, latitude, biogeographic region, tidal regime
- **Socio-economic:** population of beneficiaries, income levels, existing uses of the marine area, cultural context
- **Management:** current and proposed conservation status, restoration targets, spatial extent of the intervention

The Vlaamse Banken case

The policy site's key characteristics were: offshore location (~35 km from shore), water depth (~30 m), subtidal habitat, *Ostrea edulis* as the target species, Belgian North Sea biogeographic context, and a projected restoration area of 100 km². The offshore depth was the single most important characteristic – and the one that most consistently failed to match available study sites, which were overwhelmingly nearshore, intertidal, or shallow subtidal environments.

PHASE 2 – LITERATURE SEARCH

STEP 3.

Search for primary valuation studies

Conduct a systematic literature search for primary valuation studies that have estimated the monetary value of the same ecosystem service in a comparable context.

The search should cover:

- Academic databases (Web of Science, Scopus, Google Scholar) using search terms combining the ecosystem service, species or habitat type, and valuation method
- Grey literature and reports from environmental agencies, conservation organisations, and international bodies (TEEB, IPBES, The Economics of Ecosystems and Biodiversity)
- Existing valuation databases such as EVRI (Environmental Valuation Reference Inventory) or the SEEA database, which aggregate primary valuation studies and allow filtering by ecosystem type and service
- Recent systematic reviews and meta-analyses of the service in question – these are particularly useful because they synthesise multiple primary studies and often provide adjusted or harmonised value ranges



Practical tip:

Start by searching for meta-analyses and systematic reviews of the service type before looking for individual primary studies. A well-conducted meta-analysis will have already assembled, screened, and assessed the comparability of the relevant literature, saving substantial search time and providing a more reliable basis for transfer than any single primary study.

PHASE 2 – LITERATURE SEARCH

STEP 4.

Screen and shortlist comparable studies

Not all studies found in the literature search will be suitable for transfer. Screen each study against the policy site characteristics documented in **Step 2**, using the following transferability dimensions:

Dimension	Questions to ask	Red flags
Ecosystem type and species	Does the study assess the same habitat type and, where relevant, the same species?	Study covers a different habitat type or a different oyster species with different ecological functions
Geographic and hydrodynamic context	Is the study site in a comparable biogeographic region, with similar depth, exposure, salinity, and tidal regime?	Study site is nearshore or intertidal; policy site is offshore or deep subtidal
Scale and condition	Is the ecosystem in the study in a comparable condition and at a comparable extent to the policy site?	Study is based on pristine or fully recovered habitat; policy site is restoration scenario
Population and income	Do the beneficiaries in the study have comparable income levels and cultural relationship to the sea?	Study is from a different income-level context or a different cultural relationship to marine resources
Valuation method	Is the valuation method used in the study appropriate for the service and unlikely to introduce systematic bias relative to other methods?	Study uses a method known to produce outlier values for this service type
Study quality	Is the study peer-reviewed, methodologically transparent, and free from obvious design flaws?	Study lacks methodological detail, is unpublished, or has known design problems

Key lessons from Vlaamse Banken

Defining 'key case characteristics' before beginning the literature search – and applying them rigorously during screening – is essential to obtaining meaningful results. In the Vlaamse Banken case, the offshore depth and distance from shore were identified as the most critical characteristics for denitrification transferability. Applying these criteria strictly left very few usable studies and one service (denitrification) without any truly comparable primary study. **Documenting this absence transparently is itself a valuable and honest output: it signals where primary research is needed most.**

PHASE 3 – TRANSFER

STEP 5.

Select the transfer type

There are three main approaches to benefit transfer, differing in what is transferred and how much site-specific adjustment is made:

Unit value transfer

What is transferred:

A single monetary value (e.g. €/hectare/year) is taken from one or more study sites and applied directly to the policy site, with minimal adjustment.

When to use it:

Study and policy sites are highly similar; a rough-order-of-magnitude estimate is sufficient; limited time or resources available for adjustment.

Adjusted unit value transfer

What is transferred:

The transferred value is adjusted to account for differences in income levels, prices, or other observable characteristics between study and policy site.

When to use it:

Study and policy sites differ in income levels or currency; PPP or income elasticity adjustments can be applied; more precision is needed than unadjusted transfer provides.

Value function transfer (meta-analysis)

What is transferred:

A statistical function relating WTP to site characteristics is estimated from multiple primary studies and applied to the policy site's characteristics.

When to use it:

Multiple primary studies exist; policy site characteristics are well documented; greater precision is required and sufficient data exist to estimate the function reliably.

Adjusting for income and purchasing power

When transferring values across countries or time periods, monetary estimates must be adjusted to make them comparable. Two standard adjustments are:

- **Purchasing power parity (PPP):** convert values from study site currency to policy site currency using PPP exchange rates rather than market exchange rates, to account for differences in the cost of living.
- **Income elasticity of WTP:** adjust for differences in per-capita income between study and policy site populations using an income elasticity factor (typically assumed to be 0.5–1.0 for environmental goods). The formula is: $WTP_{policy} = WTP_{study} \times (Income_{policy} / Income_{study})^{elasticity}$.

Using Excel for benefit transfer calculations:

A well-structured Excel workbook is one of the most practical tools for organising a benefit transfer exercise. A recommended structure is: one sheet per ecosystem service, listing candidate studies with their key characteristics and value estimates; a comparison sheet documenting how each study compares to the policy site on the transferability dimensions; a calculation sheet applying adjustments (PPP, income elasticity, scaling) with clearly labelled formulas; and a sensitivity analysis sheet showing how the final estimate changes when key assumptions are varied. This structure – used in the Vlaamse Banken case – makes the process transparent, auditable, and easy to update as new studies become available.

PHASE 3 – TRANSFER

STEP 6.

Extract and standardise values from selected studies

For each shortlisted study, extract the following information systematically:

- The reported monetary value and its unit (€/ha/year, \$/tonne of nitrogen removed, etc.)
- The year of the study (for price index adjustment)
- The currency and country of origin (for PPP adjustment)
- The valuation method used (WTP, replacement cost, production function, etc.)
- The ecological conditions under which the value was estimated
- Any caveats or limitations noted by the original authors

Convert all values to a common unit, currency, and price year before proceeding to the transfer calculation. Use national consumer price indices (CPI) for inflation adjustment and OECD PPP conversion factors for cross-country comparison. Where multiple values are extracted from the same study (e.g. different scenarios or subgroups), be explicit about which value is used and why.

STEP 7.

Compute the transferred value

Apply the transfer formula appropriate to the service being valued and the data available. The general form for a scaled unit value transfer is:

Transferred value = Adjusted unit value × Scale of service at the policy site

Where the scale of service is expressed in the same units as the denominator of the unit value (e.g. hectares, tonnes of nutrient removed, linear metres of coastline protected). The key scaling variables will differ by service:

- **Biodiversity or habitat value:** area of the ecosystem (m^2 or ha)
- **Denitrification or nutrient removal:** denitrification rate × area × time period (e.g. annual hours)
- **Fish production:** estimated biomass increase per species × commercial market price per kg
- **Coastal protection:** length of coastline protected × unit protection value

Vlaamse Banken formulas:

The three formulas applied were: (1) Biodiversity: value (€/m²) × surface area (m²); (2) Commercial fish production: commercial value (€/kg) × increased biomass (kg/year) per species, summed across species; (3) Denitrification: average denitrification rate ($\mu\text{mol N}_2\text{-N m}^2 \text{ h}^{-1}$) × nitrogen removal value (€/μmol) × surface area (m²) × 8,760 hours/year. Using a projected restoration surface of 100 km², this produced estimates of €2.78 billion for biodiversity (one-off), €107 million/year for denitrification, and €46,825/year for commercial fish production.



PHASE 4 – VALIDITY & UNCERTAINTY

STEP 8.

Assess transferability and document sources of uncertainty

Before reporting results, assess and document the sources of uncertainty in the transferred estimate. This is arguably the most important step in the entire process – and the one most often skipped.

Transferability assessment

For each service valued, rate the transferability as high, medium, or low based on the transferability dimensions assessed in Step 4. Where transferability is low, the estimate should be treated as broadly indicative only, and this must be stated prominently in any report or presentation of results.

Sensitivity analysis

Test how sensitive the transferred estimate is to the key assumptions made. At minimum, vary: (1) the unit value used (e.g. using the lowest and highest values from the range of comparable studies); (2) the income elasticity assumption; and (3) the scale estimate. Present results as a range rather than a point estimate wherever possible.

Inter-method comparison

Where multiple valuation methods could in principle be applied to the same service, note whether the benefit transfer estimate is consistent with what those methods would likely produce. Large divergences may indicate that the transferred value is an outlier or that the scaling assumptions need revision.

Key lessons from Vlaamse Banken

The biodiversity estimate (€2.78 billion) is an order of magnitude larger than the denitrification estimate (€107 million/year) despite covering the same area – reflecting the very high per-unit biodiversity values found in the available literature, which were based on pristine nearshore reefs rather than restored offshore reefs. The commercial fish production estimate (€46,825/year) is orders of magnitude smaller, reflecting the very modest biomass assumptions used. The wide range of results across three services at the same site is itself informative: it reveals how sensitive benefit transfer is to the unit values available in the literature, and why sensitivity analysis across the full range of available values is essential before drawing any conclusions.



PHASE 5 – INTERPRETATION & REPORTING

STEP 9.

Interpret and report results honestly

State what the estimate is – and what it is not

Benefit transfer estimates should always be presented with explicit statements about their transferability quality and the assumptions underlying them. A high-quality benefit transfer is one where transferability is documented, assumptions are explicit, and sensitivity analysis has been conducted. An estimate with low transferability is not worthless – it still provides a basis for discussion and a signal of magnitude – but it must be clearly labelled as hypothetical or indicative, not as a reliable economic value.

Communicate the process, not just the number

The process of conducting a benefit transfer – documenting which comparisons were possible and which were not, identifying gaps in the literature, and building a structured framework for scaling values – is itself a valuable output that goes beyond the monetary estimate. In the Vlaamse Banken case, the finding that no comparable primary study existed for offshore *Ostrea edulis* denitrification was as informative as the estimate itself: it signals where future primary research is most needed.

Complement with qualitative evidence

Because benefit transfer estimates are often uncertain and context-specific, they are most credible and most useful when presented alongside qualitative evidence on the importance of the service to local stakeholders. Expert interviews, focus groups, or stakeholder workshops that confirm the relevance and perceived importance of the valued service lend legitimacy to the economic estimate and help audiences interpret it appropriately.

STEP 10.

Translate results into management action

- Use the benefit transfer estimate as a lower-bound contribution to a cost-benefit argument for habitat conservation or restoration – particularly where restoration costs are known and can be directly compared
- Present the range of estimates (from sensitivity analysis) rather than a single figure, to convey the inherent uncertainty
- Use the literature gap identified during the search to make the case for primary valuation research where the service is important and no comparable studies exist
- Share the structured Excel workbook with MPA managers and partners so the calculation is transparent, replicable, and updatable as new studies become available

SUMMARY

Advantages and limitations



ADVANTAGES

Resource-efficient

Does not require primary data collection – the main investment is literature search and transferability assessment. Can produce an economic estimate in days or weeks rather than months.

Useful for scoping and prioritisation

Even an uncertain estimate can help establish whether a service is economically significant, which services to prioritise for primary valuation, and where the literature gaps are most important.

Makes existing research actionable

Connects MPA managers to the broader scientific literature on ecosystem service values, translating academic research into practical inputs for management decisions.

Transparent and replicable

When documented in a structured spreadsheet, the process is fully auditable, easy to update as new studies emerge, and can be adapted to different management questions at the same site.



LIMITATIONS

Reliability depends entirely on comparability

A benefit transfer is only as good as the similarity between study and policy sites. In marine environments, this similarity is often limited – particularly for offshore, deep-water, or ecologically unusual sites.

May seriously over- or underestimate value

When study sites differ substantially from the policy site, transferred estimates can be off by an order of magnitude or more. Large estimates in particular should be treated with extreme caution.

Cannot capture highly site-specific values

Cultural heritage, sense of place, and locally embedded values cannot be transferred from studies conducted elsewhere.

Literature gaps are common in marine contexts

Many marine ecosystem services – particularly in offshore, deepwater, or northern European settings – are poorly represented in the primary valuation literature, limiting the method's applicability.

SUMMARY

Common pitfalls and how to avoid them

Pitfall	How to avoid it
Skipping the transferability assessment	Always document the key characteristics of the policy site before searching for studies, and assess each candidate study explicitly against those characteristics before using it.
Using a single study without sensitivity analysis	Always use multiple studies where available and present results as a range. If only one study is available, test sensitivity to its key assumptions.
Presenting estimates as precise without qualification	Always state the transferability quality of the estimate prominently. Use language like 'indicative', 'hypothetical', or 'lower bound' as appropriate.
Failing to adjust for currency and income differences	Always convert values to a common currency year and apply PPP adjustment when transferring across countries. Apply income elasticity adjustment when income levels differ substantially.
Ignoring the literature gap	If no comparable study exists, document this explicitly and use it to argue for primary research – do not force a transfer from an incomparable study.
Presenting a benefit transfer as equivalent to primary valuation	Benefit transfer is a shortcut, not a substitute. Make clear to decision-makers that primary valuation would provide more reliable estimates if the decision requires precision.

Assumptions

- The ecosystem service being valued at the policy site is functionally equivalent to the service valued in the study site – both in type and in the mechanism by which it generates benefits
- The population of beneficiaries at the policy site has comparable preferences to those at the study site, or adjustments for income and cultural differences are sufficient to account for preference heterogeneity
- The primary studies used are methodologically sound and free from serious design flaws
- The scaling factors applied (area, volume, rate) accurately represent the service provision at the policy site
- Results are presented as indicative rather than precise estimates, with transferability quality and sensitivity analysis documented



IMPLEMENTATION CHECKLIST



- ☐ Define the ecosystem service to be valued and clarify the management purpose and required precision
- ☐ Consider whether a preliminary qualitative step (e.g. expert interviews) is needed to identify and prioritise services
- ☐ Document policy site characteristics across ecological, geographic, and socio-economic dimensions
- ☐ Conduct a systematic literature search covering academic databases, grey literature, and valuation databases
- ☐ Screen candidate studies against policy site characteristics; document the comparison transparently
- ☐ Select the transfer type (unit value, adjusted unit value, or value function) based on available studies
- ☐ Extract and standardise values to a common currency, price year, and unit
- ☐ Apply income and PPP adjustments where appropriate
- ☐ Compute the transferred value using a clearly documented scaling formula
- ☐ Organise all steps in a structured Excel workbook for transparency and replicability
- ☐ Conduct sensitivity analysis across the range of available unit values and key assumptions
- ☐ Rate transferability quality; state limitations prominently in all reporting
- ☐ Present results as a range, not a point estimate; distinguish indicative from reliable estimates
- ☐ Present results as a range, not a point estimate; distinguish indicative from reliable estimates
- ☐ Document literature gaps; use them to make the case for primary research where needed
- ☐ Complement economic estimates with qualitative evidence where available



For more information on the Blue4All project, please visit our website or follow us on LinkedIn.



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