Glossary

**Altruistic value:** Altruism is the desire to secure an enhancement of the wellbeing of others. Altruistic economic value is the willingness to pay on the part of individual A to ensure that individual B secures some gain in wellbeing. Altruistic value is an example of *non-use value.*

**Anchoring bias:** Anchoring bias is where respondents are influenced by the starting values, or succeeding bids, used in elicitation of WTP, for example, in a bidding game or dichotomous choice elicitation format.

**Axiom of transitivity:** An axiom of rational choice which states that if A is preferred to B and B is preferred to C, then A should be preferred to C.

**Benefit (or bid) function:** A regression equation that describes the relationship between WTP and relevant factors such as characteristics of the population, the change in the non-market good or service and so on.

**Benefits transfer:** An approach which makes use of previous valuations of similar goods at a study site and, with any necessary adjustments, applies them to produce estimates for the same or similar good in a different context, known as the policy site. What is transferred may be a mean WTP, with or without some adjustment for changed conditions (for example, different income levels), or a benefit function (or *bid function*).

**Bequest value:** Bequest values measure people’s WTP to ensure their heirs and future generations will be able to use the resource in the future. Bequest values are an example of *non-use values.*

**Bid function:** A function which relates the compensating variation measure of a change in welfare (or maximum WTP for a change in a non-market good) to changes in parameters of interest, for example, income, socio-economic and demographic factors, prices of other goods and characteristics of non-market goods.

**Bid function model:** A model of WTP based on direct estimation of the bid function, rather than the underlying utility function.

**Bidding game:** An elicitation format for WTP where respondents are faced
with several rounds of discrete choice questions, with the final question being an open-ended WTP question.

**Bootstrapping:** A technique to create confidence intervals for mean and median WTP using any type of data (i.e. continuous, binary or interval) or results from any estimation method (i.e. non-parametric or parametric). With a data set containing \( N \) observations, the analyst creates multiple simulated data sets by sampling \( N \) times with replacement from the original set of observations. The model is re-estimated for each simulated data set to obtain a new set of parameter estimates from which estimates of mean and median WTP can be derived. These estimates can be arranged in order and 95 per cent confidence intervals defined as the values falling on the 2½th and 97½th percentiles.

**Choice experiment:** A form of choice modelling in which respondents are presented with a series of alternatives and asked to choose their most preferred.

**Choice modelling (CM):** This encompasses a range of SP techniques, including choice experiments, contingent ranking, contingent rating and paired comparisons. CM approaches describe an asset in terms of its attributes, or characteristics, and the levels that these take, and may be used to determine which attributes are significant determinants of value; their implied ranking; the value of changing them; and the total economic value of a resource or good.

**Choice set:** A set of alternatives presented to respondents, usually in a choice experiment context, where they are asked to choose their most preferred.

**Closed-ended format:** An elicitation format where respondents have to select their answer from a number of pre-specified alternatives. See dichotomous choice format, referendum format.

**Coercive payment vehicles:** These are payment mechanisms involving a degree of compulsion, for example taxes, rates, fees, charges or prices. May be contrasted with non-coercive instruments such as donations.

**Comparative risk assessment:** Method of doing risk assessment for two or more risks at the same time to determine where a given level of resources would be most sensibly allocated. A form of cost effectiveness analysis.
Compensating variation: The compensating variation of a price fall (rise) is the sum of money that, when taken away from (given to) the consumer, leaves him or her just as well off with the price change as if it had not occurred. Thus, initial utility is held constant.

Compliance cost assessment: An assessment of the costs of a policy (as opposed to a project) incurred by the sector which may be directly or indirectly affected.

Constant sum scale: These scales ask respondents to allocate a constant number of units (say points or money) among a set of objects according to some criterion.

Construct validity: This examines whether the relationships between measures produced by a CV study and other measures are in accordance with expectations. Examples include predictors from economic theory, and empirical regularities in the form of associations with other variables which seem intuitively correct and which hold across a large number of studies.

Constructed preferences: A view that survey responses will be ‘constructed’ largely as a function of how the questions are asked rather than as a function of stable underlying preferences. Constructed preferences are not therefore ‘true’ preferences.

Consumer surplus: The difference (or the net gain) between the price actually paid when purchasing a good or service and the price the consumer would have been willing to pay for the same good or service.

Content validity: This assesses whether the SP study asked the right questions in a clear, understandable, sensible and appropriate manner with which to obtain a valid estimate of the construct (say maximum WTP for a specific good) under investigation.

Contingent ranking: A form of choice modelling in which respondents are required to rank a set of alternative options. Each alternative is characterised by a number of attributes, which are offered at different levels across options. Respondents are then asked to rank the options according to their preferences.

Contingent rating: A form of choice modelling exercise in which respondents are presented with a number of scenarios and are asked to rate them individually on a semantic or numeric scale.
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**Continuous rating scale:** In a continuous rating scale respondents are asked to rate an object by placing a mark at the appropriate position on a line that runs from one extreme of the criterion of interest to the other.

**Convergent validity:** A process of construct validity in which the measures obtained from a given SP study are compared with results from other SP studies to see if they produce similar answers, or answers that vary in a predicted manner.

**Cost–benefit analysis:** A procedure for valuing gains (benefits) and losses (costs) in monetary terms, based on individuals’ willingness to pay to secure the benefit or avoid the cost and the resource costs involved.

**Cost-effectiveness analysis:** Evaluation of an option in terms of its cost per unit of ‘output’, where ‘output’ reflects the goals chosen (for example, lives saved).

**Coverage error:** The extent to which the sample frame provides a biased or unreliable coverage of the target population.

**Criterion validity:** The comparison of WTP estimates from a contingent valuation study with actual market or simulated market experiments. Since market prices are not available for public goods, criterion validity can generally only be tested against market prices for private goods. In this manual, criterion validity is subsumed under convergent validity.

**Dichotomous choice:** An elicitation format in which respondents are faced with only two response alternatives, such as yes/no, agree/disagree, or vote for/vote against. Sometimes a ‘don’t know’ option is also included to avoid forcing respondents into artificially choosing one of the answers.

**Direct use value:** Where individuals make actual use of a resource for either commercial purposes or recreation.

**Discounting:** Discounting is the process of expressing future values in present value terms which allows for the comparison of cost and benefit flows regardless of when they occur. The present value of a future flow of benefit or cost will be lower than the future value because of discounting. There is no a priori correct way to discount future gains and losses, although exponential discounting is most widely used. SP techniques may be used to derive discount rates.
**Distance decay effect:** How WTP varies as the respondent’s distance from the object in question increases.

**Economic value:** The monetary measure of the wellbeing associated with the change in the provision of some good. It is not to be confused with monetary value unless the latter is explicitly designed to measure the change in well-being, nor with financial value which may reflect market value or an accounting convention. As Freeman (1993) notes, the terms ‘economic value’ and ‘welfare change’ can be used interchangeably.

**Elicitation format:** The method whereby respondents are asked questions to determine how much they would value the good if confronted with the opportunity to obtain it. Possible formats include open-ended, dichotomous choice, payment card, payment ladder.

**Embedding:** Embedding concerns changes to two or more arguments within a multivariate utility function. For example, when we move from considering a project to preserve A to another which will conserve A plus B, we can state that the former project is perfectly embedded within the latter. See also scope insensitivity.

**Environmental impact assessment:** Systematic listing and quantification, where possible, of the impacts on the environment from a policy, project or process. Impacts may or may not be aggregated in some way.

**Environmental risk assessment:** A procedure for determining levels of risk and severity of events.

**Equivalent variation:** The equivalent variation of a price fall (rise) is the sum of money that, when given to (taken from) the consumer leaves him or her just as well off without the price change as if it had occurred. Thus, it preserves the post-change utility level.

**Existence value:** The value that people put on the existence of a resource, even when they have no intention of ever using the resource. Existence values are part of non-use values.

**Expectation-based validity:** A type of content validity in which SP measures are related to other constructs in a manner which is consistent with prior expectations (theoretical, intuition and empirically driven expectations).
Exponential discounting: Discounting of future costs and benefits involves applying a weight, call it $\alpha_t$, to a cost or benefit in time $t$ such that $\alpha_t$ is less than unity and declines with time. Exponential discounting selects a particular path for the value of $\alpha_t$ as defined by:

$$\alpha_t = 1/(1 + r)^t,$$

where $r$ is the discount rate. Contrasts with hyperbolic discounting.

External validity: Assessing the validity of SP results by reference to some yardstick outside the study, for example, the results of a different study.

Face validity: This assesses whether the CV study asked the right questions in a clear, understandable, sensible and appropriate manner with which to obtain a valid estimate of the construct (say maximum WTP for a specific good) under investigation.

Face value assumption: The assumption that (i) respondents always answer truthfully and (ii) they also answer the specific question asked.

Filter questions: Questions included at the beginning of a questionnaire in order to screen potential respondents to ensure that they meet the necessary requirements to answer the question.

Focus groups: A focus group is a discussion group by a moderator among a small group of respondents in an unstructured manner.

Free rider: An individual who benefits from the provision of a good (usually a public good) by more than he or she pays for it.

Health-health assessment: Procedure for evaluating policies in terms of health risks they reduce and health risks they increase because the costs of policy reduce incomes, some of which would have been spent on risk reduction.

Hyperbolic discounting: A form of ‘slow discounting’ such that the future is discounted at a rate less than that implied by exponential discounting.

Hypothetical bias: The possibility that SP estimates may be biased upwards due to the hypothetical nature of the payment commitment.
Economic valuation with stated preference techniques

Incentive compatibility: The questionnaire design objective of constructing a valuation mechanism in which truth-telling and utility maximisation coincide.

Indirect use value: This arises where individuals benefit from ecosystem functions supported by a resource rather than actually using it (for example, watershed protection or carbon sequestration by forests).

Indirect utility function: A function that describes household utility (or wellbeing) usually in terms of how much utility it can derive from income, given the prices of goods and, say, the level of provision of a non-market good.

Internal validity: Assessing the validity of the results of a SP survey in terms of consistency with other features of the survey, for example, WTP should vary positively with income.

Itemised rating scale: In an itemised scale, respondents are presented with a scale that has numbers or a brief description associated with each category and are asked to select one of the categories according to some criterion. The categories are ordered in terms of the scale position.

Life-cycle analysis: Process used to evaluate environmental burdens associated with a product, process or activity by examining emissions at every stage of the life-cycle (for example, production, distribution, use and disposal).

Likert scale: A type of itemised rating scale where respondents are asked to indicate a degree of agreement or disagreement with statements about the object.

Meta-analysis: A statistical procedure whereby a number of different studies are treated as inputs to a wider study that seeks to explain the variability of outcomes in the individual studies. Meta-studies involve not just outcomes of the original studies (for example, mean WTP) but also the sample size, date and location of the study, the author and so on.

Multi-criteria analysis: Analysis of decisions in a context where there are multiple goals (objectives) that cannot usually be reduced to a single monetary measure. MCA seeks to identify those combinations of outcomes that are dominated by other combinations, and to show the trade-offs between the final set of potentially ‘efficient’ combinations.
Non-use value: The value placed on a resource by people who are not current users of that resource and who do not intend to use the resource themselves. See altruistic, bequest and existence values. It is also referred to as passive use value.

Open-ended format: A straightforward elicitation format which asks respondents to state their maximum WTP (or minimum WTA).

Option value: The value that people place on having the option to use a resource in the future even if they are not current users.

Paired comparison: In a paired comparison scale respondents are presented with two objects simultaneously and asked to select one according to some criterion. They may also be asked to indicate the strength of their preference in a numeric or semantic scale.

Payment card: An elicitation format which presents respondents with a visual aid containing a large number of monetary amounts to facilitate the valuation task.

Payment ladder: A form of payment card whereby a ladder of monetary values is presented.

Protest bid: A response to a valuation question which does not give the respondent’s genuine WTP (or WTA), but either a zero value or an unrealistically high (or low) value.

QALY: ‘Quality Adjusted Life Year’, a remaining life year weighted by the expected quality of life in the year in question.

Rank order scale: In a rank order scale, respondents are presented with several objects simultaneously and asked to order or rank them according to some criterion.

Reference-dependent utility: An individual’s utility is defined in relation to that individual’s reference point, normally the status quo.

Referendum model: A model of questionnaire design using an elicitation format of the form ‘Would you be willing to pay X?’
Economic valuation with stated preference techniques

Reliability: This refers to the degree of replicability of a WTP/WTA measurement over time and over different SP applications.

Risk-risk assessment (RRA): Compares the risks reduced by a policy or project and asks what the risks would be if the policy was not implemented.

Sample frame population: A list of the target population from which the sample will ultimately be drawn, for example, all dwelling units in a city, all visitors to a site, all households with a telephone.

Scope: This concerns a change in just one argument of a multivariate utility function. For example, a change in the scope of a good occurs when the quantity of that good increases or decreases.

Scope insensitivity: see scope test.

Scope test: Tests in the processing of a SP study, or in focus groups and pre-tests, to see if respondents’ values vary positively with an increasing quantity of the public good in question. If they do not, there is said to be ‘scope insensitivity’. One form of scope insensitivity is embedding.

Semantic differential scale: A type of itemised rating scale with seven points, the end points associated with bipolar labels (for example, very good, very bad).

Sequencing: A method of valuing a variety of goods within the same study, presenting the respondent with a series or sequence of goods in which the policy package is built up incrementally, with valuations being sought at each stage.

Stability (of values): The extent to which values remain constant over time.

Stakeholder analysis: The process of identifying groups who may be affected by a change in question, determining and monitoring their gains and losses.

Standing: A term used to describe those individuals who are affected by the change under consideration, and whose values will be considered.

Stapel scale: A type of itemised rating scale which uses a single key word and requires respondents to rate the object of interest on a scale generally from –5 to +5, without a neutral point.
Starting point bias: When the final valuation estimate shows dependence on the starting point used.

Theoretical validity: The consistency between WTP estimates derived from stated preference studies and underlying theoretical expectations (for example, fewer people will agree to higher price bids).

Total economic value: Total economic value of an environmental resource is made up of i) use values and ii) non-use values. Use values are composed of a) direct use value, b) indirect use values and c) option values, whilst non-use values are made up of a) altruistic values, b) existence values and c) bequest values.

Use value: The value placed on a resource by users of that resource. See direct use value, indirect use value and option values.

Utility: This is synonymous with wellbeing.

Utility difference model: An indirect utility model constructed to estimate the difference in utility that results from provision of the non-market good. This model relies on specification of the underlying utility functions and is then used to derive specific forms of bid functions.

Validity: Refers to the degree to which an SP study measured the intended quantity.

Verbal protocol: An approach where respondents are encouraged to think out loud and verbalise anything they might be thinking, even if trivial and seemingly unimportant, while completing a task such as answering a questionnaire.

Willingness to accept compensation: The monetary measure of the value of forgoing an environmental (or other) gain or allowing a loss.

Willingness to pay: The monetary measure of the value of obtaining environmental (or other) gain or avoiding a loss.