



**CLEVER**  
**Cities**

# Measuring and valuing impact for NBS

Social Finance

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## Social Finance input into WP1 and WP4

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# 1. Overview

- **Sustainability of NBS requires a business case for impact.**
- As such, we need to identify the value creation of the investment in social and environmental terms, as well as financial terms.
- Making sure the processes are in place to do this at the outset makes this task much easier to do, with the data collected more robust, more reliable and more easily comparable between programmes.

## 2. Why we need to measure and value impact of NBS

### We need to identify sources of finance for sustainable NBS

- A sustainable NBS requires a collection of partners to be paying for its cost base - both initial start-up and ongoing costs.
- Income can be classified as either grant income or earned income. It is not necessary for a project to have a set proportion of either for a project to be sustainable, only that in aggregate the mix of income financially supports the project.

#### Grant income

1. Philanthropic/gift income
  - This usually does not need to be linked directly to measurable benefits (in monetary terms)
2. Stakeholder contribution
  - This usually comes from a public sector body e.g. local government, health service, in recognition of costs avoided or measurable benefits
3. Government grant
  - E.g. from legislation or regulation, central or local government. This could be start-up or multi-year

#### Earned income

1. Services
  - Beneficiaries pay directly for a service received as a direct consequence of the project
2. Stakeholder payment
  - Usually a public sector body paying for a service received as a direct consequence of the project on behalf of a direct beneficiary – essentially an indirect payment for services
3. Increased tax or levy income
  - As a direct consequence of providing the NBS

## 2. Why we need to measure and value impact of NBS

### A key step in building financial sustainability

- Quantifying the benefits of NBS is a key step in identifying and developing revenue streams and financing options, which are in turn integral to the sustainability of NBS.
- If we can identify who benefits from the positive impacts of NBS, we can create associated revenue streams to pay for these benefits. This helps to attract capital funding for the NBS. Two examples of this are:

#### Beneficiaries pay directly (earned income)

Beneficiaries value the benefit they receive from the NBS and are willing to pay for it

**Example:** Rainwater harvesting



Residents pay for their water provided by this system, and this income can help to cover the capital and operational expenditure associated with running it.

#### Others pay on beneficiaries' behalf (grant income)

Other groups such as government bodies pay on behalf of beneficiaries because they value these benefits to society, such as if benefits accrue to vulnerable groups or lead to further knock-on benefits

**Example:** Green corridors

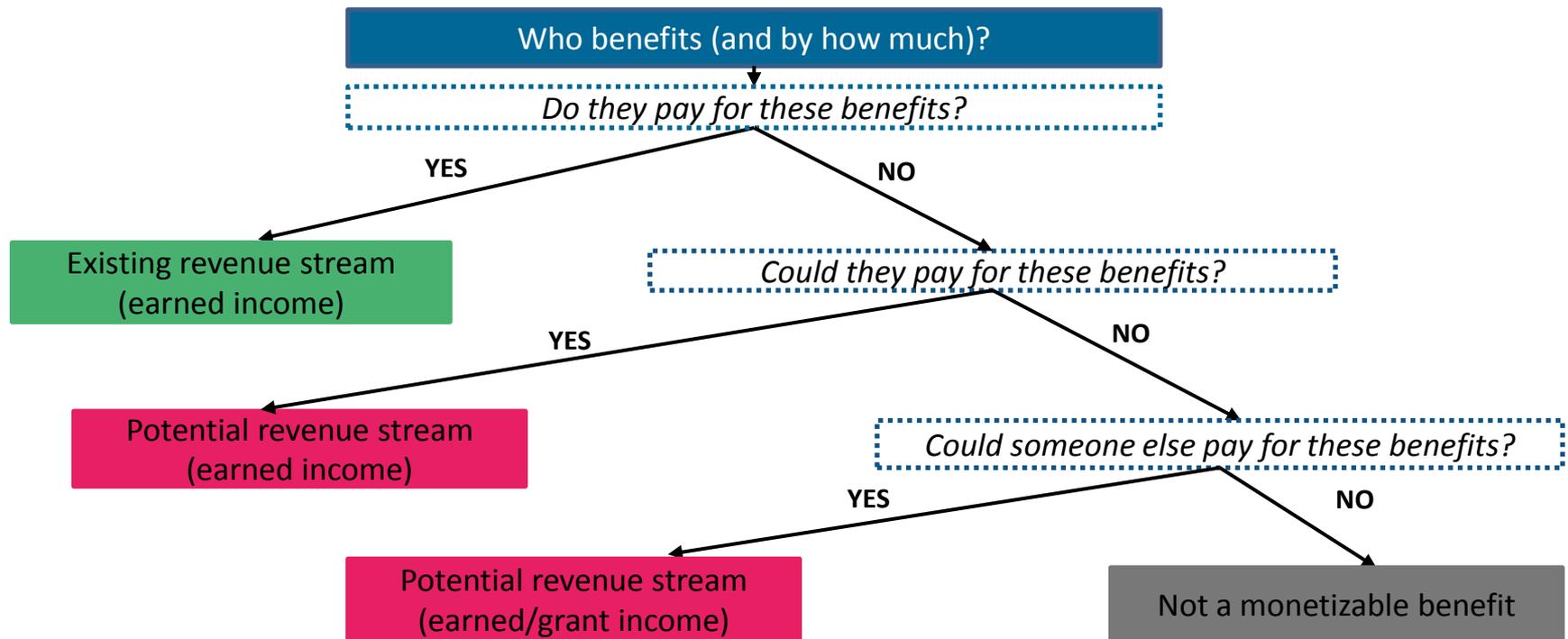


These improve the air quality and therefore health of residents in a deprived area. The health service contributes to the corridor, acknowledging the savings to them from reduced incidents of asthma and other ill health.

## 2. Why we need to measure and value impact of NBS

### An approach to identifying revenue streams

One way of developing revenue streams is as follows:



## 2. Why we need to measure and value impact of NBS

### Other things to consider

Not all benefits are measurable

- Some benefits will be hard or impossible to measure accurately, or to turn into a monetary value – especially in comparison to the status quo
- **For example, it is not easy to measure the *change* in people’s physical health after the creation of a new green corridor that increase walking, unless their health was also measured before it existed**
- This is why it is important to think about measurement early, pre-implementation, and to measure baselines to establish a counterfactual scenario if possible

Not all benefits lead to revenue streams

- There may not always be a clear link to a revenue stream, so not all benefits will be monetizable and helpful to financial stability
- **For example, if we cannot prove the improvement in people’s health from increased walking, health services may not accept savings to them and therefore may not pay**
- This is why it is important to explore as wide a range of benefits as possible at this stage, in order to find those that can evidence their additionality

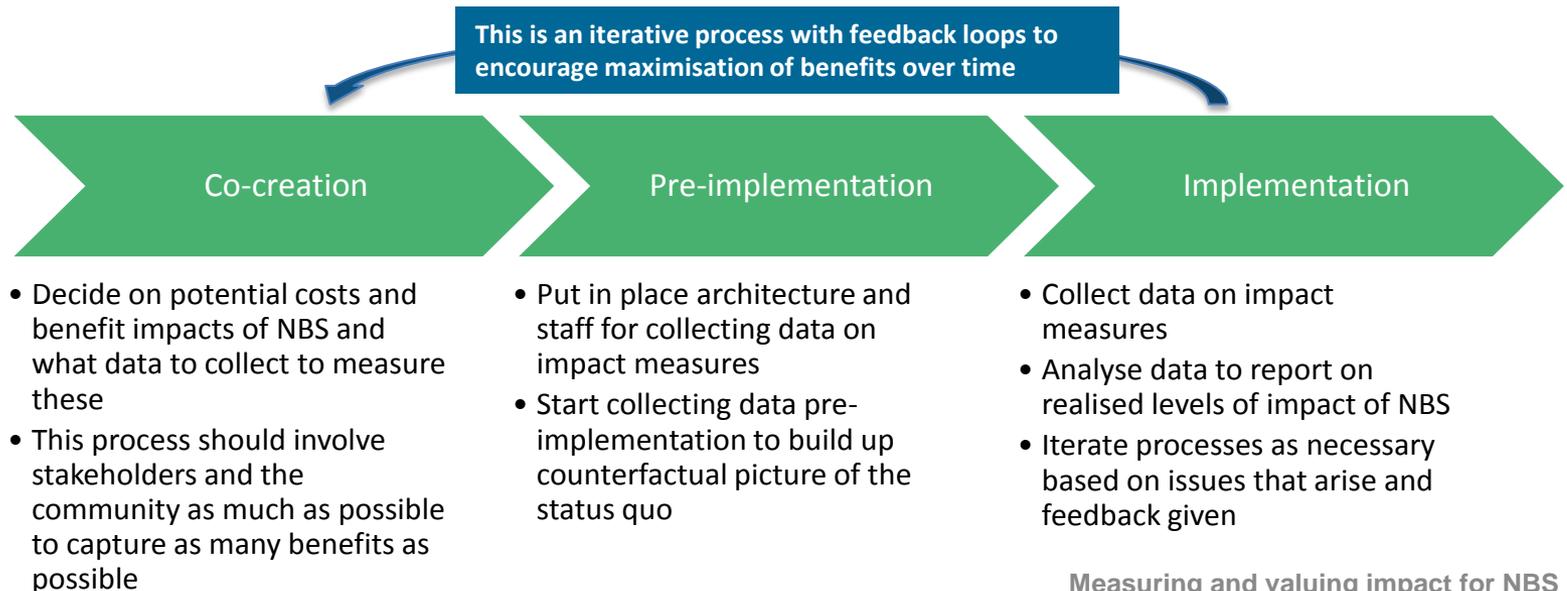
Are there any costs?

- We also have to think about whether there are any costs to people that may need compensating
- **For example, does the creation of the green corridor, and the subsequent shift in people’s travel patterns, lead to a decline in footfall for existing retail businesses?**
- Are there any potential unintended negative consequences that we need to look out for?

### 3. When we need to measure and value impact of NBS

#### We need to start thinking about measuring from the very start

- We need to put in place the infrastructure for measuring impact *before* the implementation of NBS
- This should be done as part of the co-creation process, so that we can be sure that we are capturing all possible benefits to all possible beneficiaries
- This will also allow us to collect some data pre-NBS, helping to create a picture of the counterfactual. This makes attribution of benefits to the NBS more robust
- It also helps to build a culture of measurement to embed this practice as an important part of implementing NBS.



## 4. How we should measure and value impact of NBS

### Some examples of potential benefits in key areas (1)

The EKLIPSE Expert Working Group on NBS to Promote Climate Resilience in Urban Areas (EWG) has selected **10 challenges** from the expert report on NBS supported by DG research and Innovation and a recent review of NBS frameworks. These are:

- 1 Climate mitigation and adaptation
- 2 Water management
- 3 Coastal resilience
- 4 Green space management (inc. urban biodiversity)
- 5 Air/ambient quality
- 6 Urban regeneration
- 7 Participatory planning and governance
- 8 Social justice and social cohesion
- 9 Public health and well-being
- 10 Potential for new economic opportunities and green jobs

## 4. How we should measure and value impact of NBS

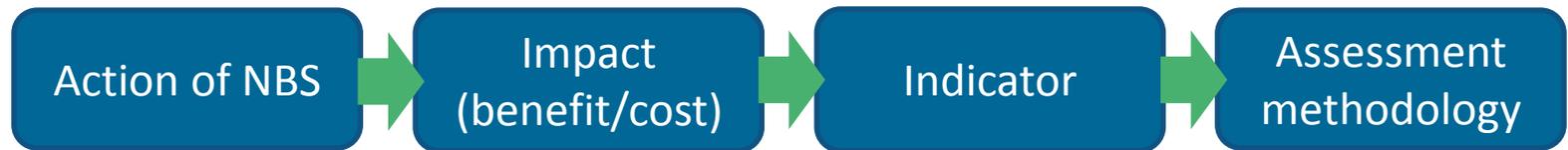
### Some examples of potential benefits in key areas (2)

A full description of potential benefits that NBS could bring to each of these 10 challenges can be found in EKLIPSE EWG's [impact evaluation framework report](#). This includes metrics for indicators, monetary, non-monetary and environmental assessments as well as integrated approaches to measuring these. **This is a good starting point when beginning to think about potential benefits to be measured for your specific NBS.**

Challenge	Example potential benefits
Climate mitigation and adaptation	Carbon sequestration, temperature reduction, energy savings
Water management	Flood peak reduction, improved water quality, improve health
Coastal resilience	Increased resilience of cities, restoration of coastal ecosystems, sustainable development of coastal regions
Green space management	Increased quality and quantity of green and blue existing, restored and new NBS, increased connectivity and functionality
Air/ambient quality	Reduction of air pollutants, co-benefits inc. shading, stormwater runoff mitigation and noise shielding
Urban regeneration	Greater ecological connectivity, more energy efficient buildings
Participatory planning and governance	Improved coordination of NBS strategies, increased accessibility to green open space
Social justice and social cohesion	Increase in communities' sense of ownership of local space
Public health and well-being	Provision of health benefits, decrease of detrimental effects
New economic opportunities and green jobs	Increased willingness to invest, jobs created

## 4. How we should measure and value impact of NBS

Following EKLIPSE’s approach, we propose the following method for implementing measurement systems for benefits



**What is the NBS doing?**

**Example:**  
*The Queen Caroline Estate programme, implemented by Groundwork, retrofitted Sustainable Urban Drainage Systems (SuDs) to social housing in an integrated way, connecting surface water drainage to the combined sewer system.*

**What is a potential benefit of this action?**

*Some of the key aims were to manage flood risk, improve water quality and act as natural cooling. Other aims were reducing exposure of vulnerable communities to climate change effects, increased health and wellbeing and increased community engagement.*

**What indicators can be collected to support this?**

*Monitoring of SuDs effectivity using water stations, flow sensors, pressure sensors and thermal imaging to measure water attenuation and temperature. Biodiversity surveys. Jobs created, stakeholders engaged, meetings attended.*

**How can we evaluate these indicators to measure this?**

*Environmental benefits were assessed using established scientific methods on e.g. water attenuation during storm events. A SROI of was undertaken, estimating a £4.39 of benefits generated for every £1 invested.*

## 4. How we should measure and value impact of NBS

### Valuation techniques (1)

There are a range of methods available to measure and quantify, sometimes in monetary terms, impact.

There is extensive literature covering the details of these and when each one would be most appropriate, which we will not repeat here. What follows is a high-level summary of the most widely-used methods

If applying monetary values, the first step is to choose a **valuation technique** to do so. It's important to have **consistency or at least comparability of methods** between cities.

Some key methods are:

Stated  
preference

- Relies on answers to carefully worded survey questions rating preferences that are scaled following an appropriate model of preference to yield a measure of value
- Typically, the questions will ask how much people would be willing to pay to maintain something or how much they would need to be compensated for the loss of it

## 4. How we should measure and value impact of NBS

### Valuation techniques (2)

Revealed  
preference/  
hedonic pricing

- A method of analysing choices made by individuals to infer monetary value. It combines market data and attributes on the benefit being valued.
- For example, environmental quality being reflected in house prices would use house price data and environmental metrics such as biodiversity or air quality

Subjective well-  
being

- Similar to revealed preference, it determines the value of a benefit via the estimation of actual but implicit trade offs
- It has been used to measure the value of a variety of environmental impacts including air pollution and flooding

Existing  
estimates

- It is always worth checking existing databases (e.g. Naturvation H2020 project value and benefit assessment methods database) to look for existing estimates and methodologies that can be adapted for your NBS.

## 4. How we should measure and value impact of NBS

### Evaluation techniques (1)

Once values (monetary or not) have been applied to benefits, these then need to be evaluated against the costs of the NBS.

- The two most common ways to do this are using social return on investment or a social cost benefit analysis. These are particularly useful for attracting public sector stakeholder contributions, or contributions from socially-minded investors.
- **Attracting conventional private investment is usually done with a more traditional financial model of expected revenue streams and costs.**

#### Social Return on Investment (SROI)

- A framework for measuring and accounting for non-financial value.
- It measures social, environmental and economic outcomes and uses monetary values to represent them, enabling a ratio of benefits to costs to be calculated
- $SROI \text{ ratio} = \text{present value of impact} / \text{value of inputs}$

#### Social Cost Benefit Analysis (SCBA)

- Similar to SROI, it includes societal effects (indirect) benefits as well as direct financial benefits
- Calculates the direct, indirect and external effects of a programme

## 4. How we should measure and value impact of NBS

### Evaluation techniques (2)

#### The seven principles of SROI:

1. Involve stakeholders – to inform what gets measured, how it's measured and how it's interpreted
2. Understand what changes – how is incremental change created by the NBS?
3. Value the things that matter – use financial proxies where they are meaningful
4. Only include what is material – provide a true and fair picture of costs and benefits
5. Do not over-claim – only claim the value that the NBS is creating
6. Be transparent – demonstrate the basis for the analysis, report it to and discuss it with stakeholders
7. Verify the result – provide for independent assurance



## Further resources

- EKLIPSE H2020 project: [http://www.eclipse-mechanism.eu/eclipse\\_outputs](http://www.eclipse-mechanism.eu/eclipse_outputs)
- Naturvation H2020 project: <https://naturvation.eu/assessment>
- Guide to SROI:  
<http://www.socialvalueuk.org/app/uploads/2016/03/The%20Guide%20to%20Social%20Return%20on%20Investment%202015.pdf>
- Valuation techniques for SCBA: <https://www.gov.uk/government/publications/valuation-techniques-for-social-cost-benefit-analysis>
- Unit cost database (UK-centric) <http://www.neweconomymanchester.com/our-work/research-evaluation-cost-benefit-analysis/cost-benefit-analysis/unit-cost-database>



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