Protocol for the design of an impact evaluation framework that can be used by the demonstrated nature-based solutions projects

Prepared by the EKLIPSE Expert Working Group on Nature-based Solutions to Promote Climate Resilience in Urban Areas

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Christopher Raymond[1], Carlo Calfapietra[2], Margaretha Breil[3], Nadja Kabisch[4], Mihai Razvan Nita[5,] Pam Berry[6], Marco Cardinaletti[7], Leor Lovinger[8], Corina Basnou[9], Mark de Bel[10], Vera Enzi[11,] Davide Geneletti[12], Ana Monteiro[13], Holger Robrecht[14], Niki Frantzeskaki[15]

[1] Department of Landscape Architecture, Planning and Management, Swedish University of Agricultural Sciences, SLU, Sweden
[2] Institute of Agro-Environmental & Forest Biology (IBAF) National Research Council (CNR)
[3] Fondazione Eni Enrico Mattei (FEEM) and Euro-Mediterranean Center on Climate Change (CMCC), Italy
[4] Department of Geography, Humboldt University, Berlin
[5] Centre for Environmental Research and Impact Studies, University of Bucharest
[6]Environmental Change Institute, University of Oxford, Oxford
[7]EUROCUBE srl
[8]International Federation of Landscape Architects, Europe
[9]Centre for Ecological Research and Forestry Applications (CREAF), Barcelona
[10]Deltares, Utrecht
[11]European Federation of Green Roof and Wall Associations
[12] Sus-Places Lab, University of Trento
[13]Department of Geography, University of Porto
[14] Local Governments for Sustainability, European Secretariat
[15] Dutch Research Institute for Transitions, Erasmus University Rotterdam, The Netherlands

For further information about this final protocol, please contact: secretariat@eklipse-mechanism.eu

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Glossary

Term	Definition	Key references
Adaptation	An adjustment in ecological, social or economic systems in response to observed or expected changes in climatic stimuli and their effects and impacts in order to alleviate adverse impacts of change or take advantage of new opportunities.	Adger et al. (2005)
Climate mitigation potential	The potential of reducing the GHG emissions (in particular carbon emissions) through the implementation of NBS at different spatial scales, thus contributing to the global issue of climate change.	Adapted from IPCC (2014)
Co-benefits	The various benefits that can be provided by a NBS simultaneously over a certain period.	Jiang et al. (2016)
Cost-benefit analysis	Process of quantifying costs and benefits of a NBS (over a certain period), and those of its alternatives (within the same period), in order to have a single scale of comparison for unbiased evaluation.	Adapted from Atkinson and Mourato (2015)
Environmental benefit	Any improvement of the environmental conditions including air, water and soil as a consequence of NBS implementation.	Livesley et al. (2016)
Economic cost	The cost of designing and implementing NBS over a certain period. It may include acquisition, management, transaction, damage and opportunity costs.	Naidoo et al. (2006)
Economic benefit	The economic advantages of designing and implementing a NBS over a certain period, quantifiable in terms of revenue, net cash flow and net income.	
Ecosystem services	The contributions of ecosystem structure and function in combination with other inputs to human well-being.	Burkhard et al. (2012)
Ecosystem disservices	Negative contributions of ecosystem to human well-being, including undesired and harmful impacts on the environment, that relate to the generation of ecosystem services.	Potschin et al. (2016) von Döhren et al. (2015)
Impact	The effect of a NBS in achieving a specified objective and/or dealing with an urban challenge evidenced as a change in environmental, social, economic, and ecological conditions and functions	
NBS Effectiveness	The degree to which objectives are achieved and the extent to which targeted problems are solved. In contrast to efficiency, effectiveness is determined without reference to costs. E.g., • Does the NBS lead to enhanced climate resilience in the urban area?	Adapted from Oxford Dictionary (2016)

	• Does the NBS lead to environmental benefits? • Does the NBS lead to social benefits? • Does the NBS lead to economic benefits?	
Performance	The degree to which NBS address an identified challenge (e.g., climate resilience) and/or fulfils a specified objective in a specific place (territory), time and socio-economic context.	Adapted from Dunn (2004)
Relevance	The degree to which a NBS contributes to dealing with the primary problem (performance)	
Reliability	The ability of a method to produce consistent results.	
Reliable NBS	A NBS whose performance is guaranteed over time with a certain defined maintenance strategy.	
Resilience	The capacity of a system to absorb disturbance and reorganize while undergoing change so as to retain essentially the same function, structure, identity, and feedbacks	Walker et al. (2004)
Robustness	The capacity of an analytic procedure to remain unaffected by small, but deliberate variations in parameters.	
Robust NBS	A NBS that achieves the expected objectives and solves the targeted problem under different uncertain future situations.	
Social benefit	The range of ways in which individuals and societies can socially be positively impacted by NBS.	
Social cost	The range of ways in which individuals and societies can socially be negatively impacted by a NBS.	
Synergy in the delivery of ESS	Arises when increased provision of one ESS causes improvement in the provision of another ESS.	Potschin et al. (2016) Beumer et al. (2014)
Trade-offs	Situations in which one ecosystem service increases and another one decreases. This may be due to simultaneous response to the same driver or due to true interactions among services.	Potschin et al. (2016) Bardosa et al. (2016)

Introduction

EKLIPSE called for expertise to develop an impact evaluation framework (No.1/2016) to guide the design, development, implementation and assessment of Nature-Based Solutions (NBS) demonstration projects in urban contexts. The purpose of these projects is to enhance resilience in urban areas in the face of climate change impacts such as temperature extremes, wind, drought and flooding, using nature-based solutions (EKLIPE 2016). The call followed a request by the European Commission Director General, Research and Innovation (EC DG R&I) aiming to enhance the framework conditions for NBS at a European Union (EU) policy level and provide the evidence and knowledge base for NBS.

For the purpose of this work, the EKLIPSE Expert Working Group on NBS to Promote Climate Resilience in Urban Areas (EWG) defined NBS to societal challenges as solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions (European Commission, 2016).

The EWG met in person and remotely on 28th July, 2016 and 3rd-4th October, 2016, and had several additional meetings remotely afterwards. After receiving background knowledge to the EKLIPSE project and the scope and purpose of the project, the EWG identified a structured process for organising the work tasks. This document outlines the nature of the request, choice of methodology, details of the methodology and expected outcomes. It is important to note that the quick scoping of the literature may not be comprehensive or unbiased because of the short time to respond comprehensively to the request.

The Request as Received in July 2016

EKLIPSE called for expertise to develop an impact evaluation framework (No.1/2016) to guide demonstration projects in the design, development, implementation and assessment of NBS demonstration projects on climate resilience in urban areas. The aim is to devise an assessment framework that can be applied across the projects in the European Union so that their outputs can be compared. The framework should also be compatible with Mapping and Assessment of Ecosystems and their Services Urban Pilot framing, ecosystem-based adaptation and relevant information on climate adaptation, natural water retention, green infrastructure, greening cities and other Commission-based initiatives (EKLIPSE 2016).

Characteristics/components/capabilities

The framework needs to include a series of definitions, criteria and methodological guidance for measuring the effectiveness of NBS projects in delivering multiple benefits in the city they are implemented. The methodological guidance also needs to address trade-offs and synergies between different impacts of NBS. The framework should be applicable in any European setting and be used and improved by the demonstration projects supported by the SC5-10-2016 Platform. The framework should also be user-friendly, in the sense that it can be incorporated into, for example, city management/decision tools (EKLIPSE 2016).

The following criteria should be considered in the framework:

1) multiple or co-benefits;
2) disservices;
3) trade-offs;
4) synergies;
5) cost-effectiveness;
6) environmental impacts;
7) socio-economic impacts.

Expected outputs

1) An impact evaluation framework with a list of criteria for assessing NBS' performance in dealing with the identified challenges;
2) The identification of research and knowledge gaps according to the criteria presented in the impact evaluation framework;
3) An application guide to accompany the framework for measuring how of NBS projects fare against the identified indicators in delivering multiple (environmental, economic and societal) or co-benefits;
4) Any further recommendations to improve assessment of effectiveness of NBS projects.

Refinements to the Scope of the Request

In recognition of time and resource constraints, EWG co-chairs engaged in a negotiation process with EKLIPSE and EC DG R&I to refine the scope of the request. The following points were agreed to by all parties:

- A rapid evidence assessment approach would be adopted;
- An impact evaluation framework would be developed despite varying references to different types of frameworks used in the request;
- The framework would focus on environmental, economic and social impacts, despite varying references in the request to both effects and impacts;
- The peer-reviewed literature scoping would focus on articles written in English and accessible from ISI Web of Science. In contrast the 'grey' literature scoping would focus on planning and policy documents available from the websites of regional and national municipalities and agencies, as well as consultancies and Google Scholar. Documents written in English and various European languages (accessible to the EWG) would be considered;
- Given cost constraints, only literature freely available and accessible via university or organisational licences would be considered;
- Biodiversity benefits and costs would be considered within the indicators of environmental benefits and costs, and the wider challenge of green space management.
- Not all indicators requested by DG R&I would be considered for each challenge as part of the literature scoping;
- EC DG R&I sought clarity on the scale at which each indicator could be applied. Each indicator would therefore be considered at regional, metropolitan, urban, street and home scales;

- Additional attention would be devoted to the water management challenge given that it is a key component of current NBS calls for funding;
- EC DG R&I requested further emphasis on climate resilience. An additional section would therefore be added to the report on climate change and climate resilience, to be the umbrella concept that frames the NBS challenges;
- One report would be delivered as part of this request, entailing the impact evaluation framework and the application guide;
- The cost effectiveness of the indicators presented in the impact evaluation framework would not be considered;
- The final report objectives would be condensed to:
    - To develop an impact evaluation framework with a list of criteria for assessing NBS' performance in dealing with challenges related to climate resilience in urban areas;
    - To prepare an application guide for measuring how NBS projects fare against the identified indicators in delivering multiple (environmental, economic and societal) or co-benefits;
    - To make recommendations to improve assessment of the effectiveness of NBS projects, including the identification of knowledge gaps according to the criteria presented in the impact evaluation framework. These recommendations are included in the application guide.

Methodological Approach

The EWG methodological approach involved a quick scoping review of the literature (Collins et al. 2015) and expert consultation. To ensure the scoping remained targeted on key climate resilience in urban areas challenges, the EWG selected eight challenges from the expert report on NBS supported by Director General Research and Innovation (DG R&I) (European Commission 2015) and recent reviews of nature-based solutions frameworks (Kabisch et al., 2016). These challenges are:

1) Water management;
2) Coastal resilience;
3) Green space management (including enhancing/conserving urban biodiversity)
4) Air/ambient quality*;
5) Urban regeneration;
6) Social justice and social cohesion**;
7) Participatory planning and governance**;
8) Public health and well-being**;
9) Potential for new economic opportunities and green jobs in the EU and in global markets**.

*to reduce urban heat island effect and/or to improve air/ambient quality
** also cross-cut challenges 1-5

Quick scoping review of the literature

The procedure for the quick scoping review of the literature was adapted from a rapid evidence assessment methodology used in the conservation sciences (Collins et al., 2015; Dicks et al. 2014; Pullin et al. 2016). The scoping consisted of three stages (Figure 1). Stage one involved a structured search of the scientific and grey literature, stage 2 involved asking EWG members to add to the body

of literature by suggesting up to 10 important papers per challenge area based on their area(s) of expertise and stage 3 involved a narrative synthesis of the selected scientific and 'grey' literature.

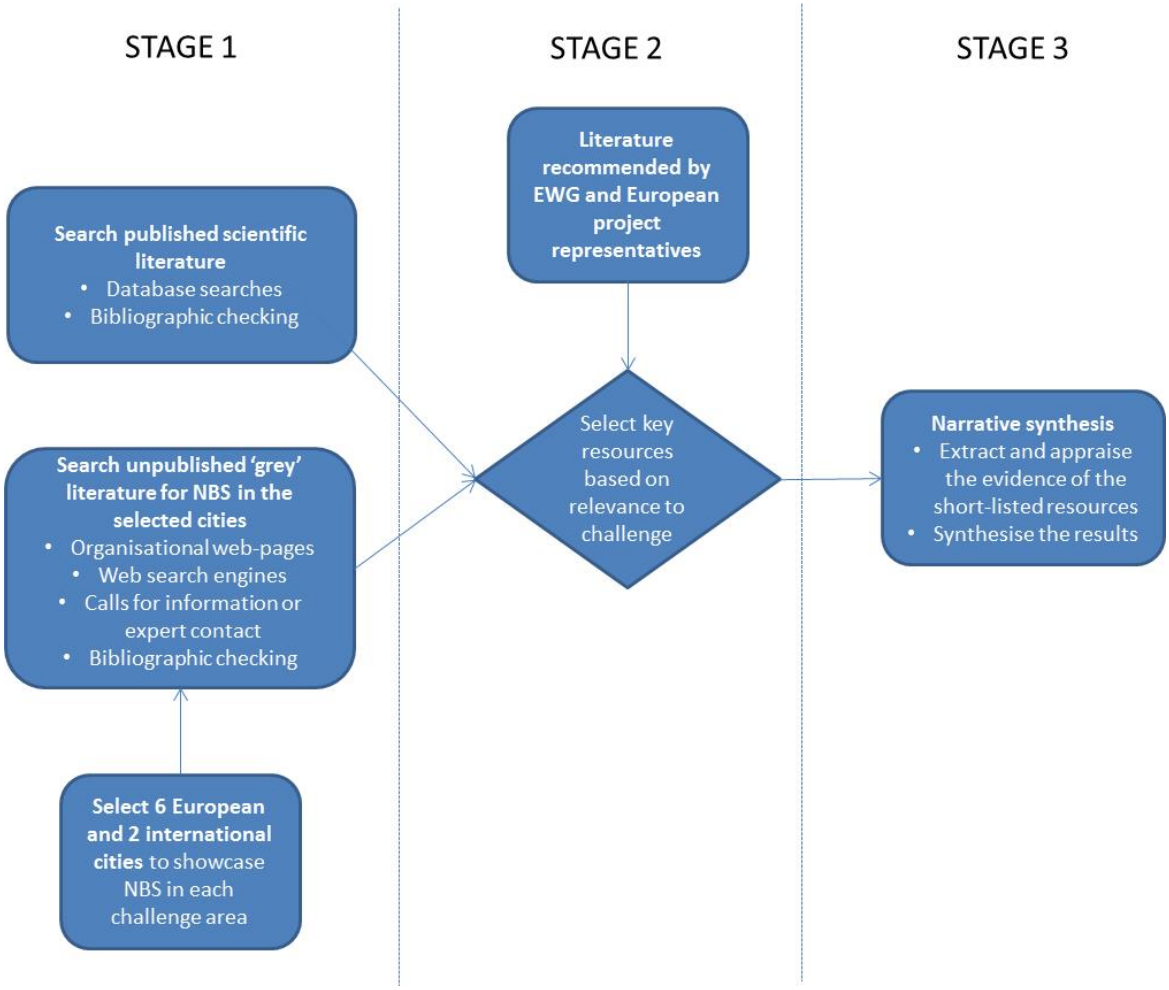

Figure 1 The three stages of the quick scoping review of the literature.
Adapted from the IPBES (2014) pollination assessment guidelines.

Stage 1

Stage 1 was divided into two core tasks of searching the published literature and the unpublished 'grey literature'.

Search the published literature

To search and refine published literature, EWG members:

1) Conducted a key word title search in ISI Web of Science using the term "framework" AND "challenge area" (e.g., water management) (or synonyms thereof) AND one of terms noted in the columns in the search strategy (Table 1);
2) Undertook multiple separate searches using the glossary as a guide. All search results were recorded in an Excel file;
3) Read the title, abstract (or Executive Summary, if it is a report) for relevance of paper to the challenge area and the key words used in the search. If the paper is deemed irrelevant, omit from the list;
4) For each relevant paper, documented in an Excel file the presence, absence or unknown status of each attribute noted in Table 1 with respect to each challenge (using √, X or ?

respectively). Population of the database is to be based on reading of titles and abstracts only. Some qualitative comments were also made as indicated in Table 1;

5) Archived informative figures that could guide the design of the impact evaluation framework.

Search the unpublished 'grey' literature for NBS in case example cities

To highlight the application of NBS, the EWG scoped the unpublished 'grey' literature with reference to 6 cities in Europe and 2 cities internationally, EWG members:

1) Selected the 8 cities based on:
    a. Diversity of city locations across Europe such as: coastal, inland/mountain, metropolitan and large metropolitan areas (population over 500,000 as classified by OECD);
    b. Geographical spread of city locations (across Europe);
    c. Planning tools (used for city development) and projects which had implemented NBS to address the considered challenges;
2) Searched organizational websites, used web search engines, checked bibliographies of key reports and contacted experts to identify grey literature relevant to the NBS in each city in order to collate information on the attributes listed in Table 1;
3) Identified which recent projects had worked in the case study cities and approached experts (case study leaders) to retain grey literature faster;
4) If additional input from the cities was needed, contacted URBACT Secretariat to ask for contact persons from these cities from on-going URBACT III city network projects.

Populate data and information from literature in an Excel file

Peer-reviewed and unpublished grey literature identified in Stage 1 was added to an Excel file in accordance with the attributes presented in Table 1. Row 1, Table 1 provides specific instructions on how to complete the table in Excel.

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Challenge	Search string	Description of challenge area	Location and area of focus	Spatial outreach	Climate mitigation potential	Env. cost	Env benefits	Env. impacts	Econ. costs	Econ. benefits	Econ impacts	Cost-benefit analysis	Social costs	Social benefits	Social impacts	Multiple benefits, co-benefits & synergies	ES services & disservices	trade-offs	Methods used to assess the indicators/criteria	View on the relevance, reliability and robustness of the methods	Reference
Water management		*Responding to the risk of low availability of freshwater in cities, prepare for exceptional precipitation events/flooding, improving water quality*	Note town, city or region. Urban or non-urban	Note the spatial outreach of positive and/or negative effects of the NBS	√, X or ?	√, X or ?	√, X or ?		√, X or ?	√, X or ?		√, X or ?	√, X or ?	√, X or ?			√, X or ?	√, X or ?	1-2 sentences	Excellent/ Good/Poor	
Coastal resilience		*Responding to risks from rising sea levels increasing erosion, mitigate risk of material damages/losses from extreme events*																			
Green space management		*Consolidating/increasing green space/urban biodiversity, green walls/roofs and other innovative forms of green infrastructure. Also covers increasing quantity and quality of green roofs/parks/gardens/public green spaces/amount of trees in general (?).*																			
Air/ambient quality*		*Mitigating urban heat island effect, capture air pollutants, reduce BVOCs and pollen emission*																			

Sustainable urban regeneration		*Designing, planning and building urban centres to promote sustainable urban regeneration*																		
Social justice and social cohesion**		*Providing access to green areas containing a diversity of environmental qualities or user experiences to citizens from both low and high socio-economic groups, from different age groups and from different cultural backgrounds in a way that promotes social cohesion.*												)						
Participatory planning and governance		*Whether the NBS are designed, delivered and monitored through inclusive community engagement processes and supported by effective, legitimate, transparent and accountable governance arrangements*																		
Public health and well-being**		*Encouraging use of green space to support physical, psychological and emotional health outcomes, and to support the prevention and curation of diseases*																		
Potential for new economic opportunities and green jobs in the EU and in global markets **		*Boosting jobs, growth and investment, including the creation of green jobs; applying the European solutions to worldwide markets*																		

Stage 2

Expert and open consultation

Both expert and open consultation were conducted to obtain further grey and peer-reviewed literature relevant to the request. The following organisations and projects were consulted.

EWG Members, representing:

1) Euro-Mediterranean Centre on Climate Change;
2) Local Governments for Sustainability, European Secretariat;
3) IUCN Brussels Office;
4) EUROCUBE;
5) International Federation of Landscape Architects Europe;
6) Deltares, Utrecht;
7) European Federation of Green Roof and Wall Associations.

Major European Projects:

1) Leaders of H2020 projects with interests or expertise in NBS, including co-ordinators of OPERAs, OpenNESS, TURAS, GreenSurge, TURAS, URBES and HERCULES;
2) SC5-10-2016 stakeholders;
3) Co-ordinators of the JPI Climate and JPI Biodiversity projects that deal with green / blue infrastructure in cities (e.g., Urban Europe).

The method used to engage EWG members in the project differed slightly to that of representatives of European projects. Below are the scripts:

EWG member script

Dear EWG Members,

Based on your expertise, identify a maximum of 10 papers (peer-reviewed or grey literature) per challenge area. Use the following method as a guide:

- Challenge area. Ensure you relate each paper to one of the challenge areas listed in Table 1 of protocol.
  - it is possible that some papers don't relate to a particular challenge, but rather present an integrated approach to addressing multiple challenges. If this is the case, note "integrated approach" and place it in the "general frameworks" directory in Dropbox. Use this framing as a last resort. Most papers (particularly the peer-reviewed literature) generally have an emphasis on one of the challenges listed.
  - you don't need to cover every challenge area. Only respond to those which you have the most expertise in.
- Location of study (focus on urban areas and aim for varied distribution across Europe and globe)
- Diversity of indicators discussed in the paper, which may include:
  - Environmental benefits;
  - Environmental impacts;
  - Economic costs;
  - Economic benefits;
  - Economic impacts;

- Social costs;
- Social benefits;
- Social impacts;
- Multiple benefits, co-benefits and synergies of the NBS;
- Services and disservices;
- Trade-offs;
- Your rapid appraisal/assessment of the relevance, reliability and robustness of the methods for assessing each indicator. The following criteria can be used as a guide for assessment:
  - The methodology used is clearly and transparently presented;
  - The degree to which the methodology reduces and addresses sampling bias (recognising that qualitative and quantitative approaches have different procedures for identifying bias);
  - The methods employed are appropriate for the research question(s) and result in the conclusions reached by the study;
  - The assumptions made are outlined and are consistent with the research question(s);
  - The methods used for measurements and for the analysis of the collected data are reliable and suitable to address the research question(s);
  - Measurements and analysis results have been validated and verified;
  - Limitations and replicability of the methodology have been discussed.

❖ Avoid over-citing of your own papers (i.e., papers you have led-authored, co-authored or deliverables your organisation has commissioned or received funding to write).

❖ Provide full-text in Dropbox under relevant challenge. Name each full-text file as follows: lastnameoffirstauthor_date_summ_title_initials. The folder can be found at: …

❖ Add all references to the "NBS EWG Stage 2" Mendeley shared folder.

European projects script

Dear XXXX,

I am the co-chair of an EKLIPSE Expert Working Group (EWG) responsible for developing an impact evaluation framework to guide the design, development, implementation and assessment of Nature-Based Solutions (NBS) demonstration projects in urban contexts (No.1/2016) http://www.eklipse-mechanism.eu/ongoing_processes . This request has come directly from DG R&I (European Commission). As part of this project we are undertaking a quick scoping of the peer-reviewed and 'grey' literatures with respect to the following climate resilience challenges:

Challenge areas

1) Water management;
2) Coastal resilience;
3) Green space management (including biodiversity conservation);
4) Air/ambient quality;
5) Sustainable urban regeneration;
6) Participatory planning and governance;
7) Social justice, including social cohesion;
8) Public health and well-being;
9) Potential for new economic opportunities and green jobs in the EU and in global markets.

We are evaluating the impact of NBS for addressing each of these challenges with respect to the following criteria:

Criteria

1) Climate mitigation (emission reduction & carbon sequestration);
2) Environmental costs;
3) Environmental benefits;
4) Environmental impacts;
5) Economic costs;
6) Economic benefits;
7) Economic impacts;
8) Cost-benefit analysis;
9) Social costs;
10) Social benefits;
11) Social impacts;
12) Multiple benefits, co-benefits & synergies;
13) ES services & disservices;
14) trade-offs.

As your role as co-ordinators of XXXX project, I was wondering whether you could suggest peer-reviewed or grey literature prepared by members of XXXX that could be relevant to the challenges and criteria that the EWG is addressing (noted above). It is possible that some papers don't relate to a particular challenge, but rather present an integrated approach to addressing multiple challenges, as in the case of integrated land management. We also therefore welcome your suggestions for integrated frameworks.

I appreciate that there could be many hundreds of articles, strategies or reports to consider. To make things easier, could you send full-texts or links to what you deem are the **10 most relevant pieces of peer-reviewed or grey literature produced by XXXX per challenge area (noted above) and relevant to urban areas**. You are welcome to send the files to us in a dropbox link given file sizes.

Please name each file in the following way: lastnameoffirstauthor_date_abbreviatedtitle_XXXX

Many thanks for your help with this request. Would it be possible for you or one of your project colleagues to complete this task by **Friday the 16th September 2016**. We apologise for the short timeframe for completion.

Please contact me if you have any questions about this request for literature.

Populate data and information from literature in an Excel file

The EWG intended to repeat the data population method in Stage 1 to scope the literature recommended by EWG members and representatives of European projects. However, given time and resource constraints, the population method was revised to adding the following information into a separate Stage 2 worksheet in Excel:

1) Identify the challenge area which the literature is most relevant to;
2) In that challenge row, add:
    a. Citation;
    b. Abstract or key objectives, methods and findings;
    c. Recommended by (name individual EWG member of European project);
3) Note the relevance of the literature to challenge area. This was a subjective assessment of relevance based on the reading of title and abstract;
4) Add literature to the Mendeley library and full-text documents to Dropbox.

Prioritise the literature populated into tables in Stages 1 and 2

While the EWG had initially set up a procedure for ranking papers based on their relevance, this procedure was not used because of difficulties associated with assigning importance ratings to individual papers. Rather, EWG members were instructed to read all papers populated into the Excel sheets in stages 1 and 2. This task was feasible given that less than 30 papers were identified per challenge area.

Stage 3

Extract and appraise the evidence of the short-listed papers

The EWG developed a sophisticated method for extracting and appraising the evidence (Appendix 1). However, due to time and resource constraints, a modified extraction method was adopted. This revised method involved EWG members:

1) Preparing an outline of the final report to address the key needs of the request. At this time, further changes to the request were made by negotiation with EKLIPSE and DG R&I (see refinements to scope section);
2) Completing the template included in the outline of the final report (see example in next section) based on the literature provided in the Excel file;
3) Further refining the text inserted into the template at a EWG meeting in Brussels on October 3-4, 2016.

Template for undertaking the narrative synthesis

Short introduction to the challenge (why is it important to consider, what is its relevance to climate resilience in urban areas?)

Short description of the NBS across potential actions and expected impacts (3-4 actions and associated impacts – well referenced)

Potential Actions	*Expected impacts*
•	•
•	•
•	•
•	•

Examples of indicators used to assess the expected impacts (note relevant indicators from the literature and the scale at which they can be applied as recommended in key papers)

	Scale at which indicators can be applied			
	Region	Metro	Urban	Street	Home
•					
•					
•					

Possible methods for assessing the indicators (note 4-5 methods which can be used to assess the indicators

-
-
-
-
-

Potential success and limiting factors (including synergies and trade-offs)

-
-

Case Example

Briefly describe an example of a NBS to address the challenge – what is it, what are the expected impacts, how are they measured (if they are) and what are the outcomes?

Review of the draft report

Currently (i.e., on the 17th October 2016), the EWG is in the process of compiling the final report. Feedback on the framework presented in a draft report will be sought from a range of stakeholders using the following engagement process:

1) Focus Group with European projects with interest and expertise in NBS (early November, 2016) – a 2 hour Focus Group will be conducted via GoToMeeting to obtain feedback on the draft report, including gaps in reporting and suggested strategies for addressing them;
2) External expert review of the report (mid-November to early December, 2016) – approximately five external reviewers will be invited by EKLIPSE to review the draft report on its content and structure. Reviewers will represent different backgrounds (academia, policy and practice). The EKLIPSE EWG will formally respond to the comments made by each of these five reviewers;
3) Public consultation on the draft report – the draft report will be placed on the EKLIPSE website allowing members of the public to comment on it between mid-November and early December, 2016.

Final Reporting

Final reporting will involve:

1) Completing the framework document and application guide (1 report) in accordance with the headings provided in a draft report outline, and agreed to by EKLIPSE and EC DG R&I on October 4, 2016;
2) Preparing a short PowerPoint which presents an overview of the impact evaluation framework and application guide.

Expected outputs and format of reporting

There will be two outcomes of this work:

1) A peer-reviewed report synthesising the key findings relevant to the three expected outcomes. This will be delivered in the first week of January 2017;
2) A PowerPoint presentation to members of EC DG R&I, EKLIPSE and key stakeholders in December 2016.

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Appendix 1 – Preferred stage 3 method for the narrative synthesis, but unfeasible due to time and resource constraints

1. For the most important papers, read the full paper to establish where and how NBS have been applied, and identify measurement and assessment tools. The information will need to be recorded in a consistent manner in another excel spreadsheet, in order to facilitate cross-comparison and to identify frameworks which are strong on particular components.
2. Excel file is to include the attributes listed in Table 2.

Table 1 Attributes to guide the narrative synthesis (stage 3)

Area	Instructions
Paper ID	Start with challenge area number e.g. 1.1 until 8.10. 10 per challenge area
Paper reference	Reference of paper Authors, Year of publication, title, journal indications, etc.
Type of NBS applied	Outline the types of NBS considered relevant to the challenge (e.g. green walls, green roofs, planting trees, restoring water sources, urban green areas, also includes various hybrids between conventional engineering solutions and the interactions between interventions)
Objectives of the NBS	What are the objectives of the NBS?
Outcomes of the NBS	What were the noted outcomes of the NBS (stated performance)? (note the stated benefits or costs)
Case study name	Just in case a specific project is addressed in the paper
Country	Specify spatial scale. In which country has the NBS been implemented and assessed?
City	Specify geographical range. - In which city has the NBS been implemented and assessed? - Was it a city-wide project OR a pilot project in specific neighborhood/area etc? Does it consider all Europe, biogeographical areas, some countries or sites?
Affected population number	Is there any indication whom the NBS should benefit local or global, neighborhood or total city if available
Time frame	Implementation period
Implementation phase	Is the NBS assessed still in operation or already finalized
Concrete challenges / impact initially addressed	Specify challenge. E.g.: - Heat included the climate impacts on cities regarding Urban heat island, extreme temperatures, heat waves - Flood included Extreme precipitation, storm events, superficial flooding, sea level rise - Drought included droughts and water scarcity - Other included Biodiversity, Air quality
Benefits / Co-benefits identified	Specify benefits or co-benefits of NBS, ie. additional benefits provided beside concrete challenges such as adaptation to climate change impacts such as flood, heat, etc.
NBS implementation budget	Include the pre-calculated or final costs if applicable of NBS design, implementation and maintenance, if available.

Area	Instructions
Indicators used to assess performance of NBS	Provide a brief overview of the indicators used to assess/measure performance (i.e., outcomes) of the NBS. Note the: - Most frequently used indicators - Least frequently used indicators
Methods applied for NBS performance assessment	Concretisation of assessment method. Which method has been applied to assess effectiveness of NBS project? Which measurements have been used and by whom researchers, planners?
Assessment of method	Are the methods employed appropriate for the research questions and result in the conclusions reached by the study? - The methodology used is clearly and transparently presented; - The degree to which the methodology addresses sampling bias recognising that qualitative and quantitative approaches have different procedures for identifying bias; - The methods employed are appropriate for the research questions and result in the conclusions reached by the study; - The assumptions made are outlined and are consistent with the research questions; - The methods used for measurements and for the analysis of the collected data are reliable and suitable to address the research questions; Measurements and analysis results have been validated and verified; Limitations and replicability of the methodology have been discussed
Assessment of interactions	Did the study include recommendations about how to include analyses of interactions, both positive and negative feedbacks of the benefits or costs of NBS? If so, specify.
Highlighted implications for policy, practice, society	Are there any implications for policy, practice or society mentioned in the course of the paper? If yes, please highlight.
Recommendations for applying these methods	Are there any concrete recommendations given in the paper which can be used to compare the effectiveness of NBS across implementation projects.
Any identified knowledge gaps	Are there any knowledge gaps discussed and highlighted in the paper which have been identified in the course of the paper?
Comments	Please, add any aspects, which have not been covered by other categories e.g. any advantages, disadvantages.

3. Synthesise the results:
    a. Synthesise the key findings from Table 2 across all papers per challenge area;
    b. Present the findings to the expert working group during their in-person meeting in Brussels on October 3-4;
    c. Discuss findings and identify important findings and areas of focus;
    d. Identify figures from the archive which could be used to best represent important findings and adapt them where appropriate.