IN-DEPTH REPORT[1]: E-CONSULTATION ON NATURE-BASED SOLUTIONS

12 November 2014

[1] The results in this report reflect the discussions of the E-Consultation on Nature-Based Solutions of 12 November 2014. It does not necessarily represent the views of the European Commission.

Table of Contents

Introduction **3**

Main findings across discussions **4**

Word clouds **5**

Topic cluster **6**

Participants profile **8**

Improved Risk Management and Resilience - Details per Question **9**

Restoring Degraded Ecosystems - Details per Question **21**

Climate change adaptation & mitigation -Details per Question **32**

Sustainable Urbanisation - Details per Question **42**

General Statistics **55**

INPUT TO E-CONSULTATION: CONCEPT NOTE **58**

INPUT TO E-CONSULTATION: IMPROVED RISK MANAGEMENT AND RESILIENCE **60**

INPUT TO E-CONSULTATION: RESTORATION OF DEGRADED ECOSYSTEMS **62**

INPUT TO E-CONSULTATION: CLIMATE CHANGE ADAPTATION AND MITIGATION **64**

INPUT TO E-CONSULTATION: SUSTAINABLE URBANISATION **66**

About Synthetron 68

Contact *68*

Introduction

The European Commission is developing an EU Research and Innovation policy on Nature-Based Solutions to tackle some of the most pressing challenges of our time. Nature-based solutions can transform societal challenges into innovation opportunities by capitalising on existing knowledge and turning natural capital into a source for green growth and sustainable development. These solutions are inspired and supported by nature, while maintaining and enhancing natural capital. They are sustainable measures that simultaneously meet environmental, social and economic objectives. The objective of the EU Research & Innovation policy on nature-based solutions is to position Europe as a world leader both in Research & Innovation on nature-based solutions and in the global market for nature-based solutions.

The European Commission, in co-operation with the European Platform for Biodiversity Research Strategy (EPBRS)[2], organised on 12 November 2014 an e-consultation as part of an ongoing multi-stakeholder dialogue that will contribute to framing a comprehensive EU Research & Innovation policy framework for Nature-based solutions. Input to the e-consultation was developed by the Horizon 2020 Expert Group on Nature-Based Solutions and Re-Naturing Cities (and can be found at the end of this document). The four discussion sessions were:

- Improved Risk Management and Resilience,
- Restoring Degraded Ecosystems;
- Climate Change Adaptation and Mitigation;
- Sustainable Urbanisation.

The results of these discussions feed into an ongoing consultation process, including the Stakeholder Workshop 'Nature-Based Solutions and Re-Naturing Cities, that will be organised on 8 December 2014. The main findings across the topical discussions of the e-consultation have been summarized, also in the form of word clouds and topic clusters. For each specific session, detailed comments to each of the questions asked during the e-consultation are also available. Finally, statistics on participant number and activity during the e-consultation are presented.

We hope that the discussions and report presented will form a fruitful basis for the further developed of the Research and Innovation policy on Nature-Based Solutions. For suggestions or more information please e-mail to: RTD ENV NATURE BASED SOLUTIONS@ec.europa.eu .

---

[2] *Jurgen Tack (Research Institute for Nature and Forest, Brussels) organized the e-confsultation on behalf of EPBRS; Mrs Orfee Vergote (Research Institute for Nature and Forest, Brussels) provided administrative support; Allan Watt (Centre for Ecology & Hydrology), Bill Sutherland (University of Cambridge), Pam Berry (University of Oxford), and Luise Noring (Copenhagen Business School) moderated the different sessions; Florin Popa (Belgian Biodiversity Platform), Pierre Huybrechts (Belgian Biodiversity Platform) and Estelle Ballian (Belgian Biodiversity Platform) made keyword analyses; and the team of Synthetron provided technical support with the e-consultation and finalizing the report.*

Main findings across discussions

Across the different topical discussions we observed **5 main recurring topics**:

1. The need to adapt a **broader systemic/ holistic thinking**,
   - Beyond ‚green engineering' ,
   - including risk management.
2. **Nature-based solutions is still at it's concept phase**, further clarification is needed in terms of:
   - Definition of what NBS is,
   - Relationship towards other (related) concepts (e.g.: Millenium Ecosystems Assesment),
     - Avoid double/ overlapping definitions,
     - Possibly integrate in other concepts.
   - Further research is required.
3. The need to think and work within a **full stakeholder spectrum**,
   - Absolute requirement to involve all stakeholder,
     - Multi-level management, especially local communities,
   - Community building/ gathering is identified as a key succesfactor
   - Challenge: long-term perspective
   - Research: risk acceptance by various stakeholders.
4. A main challenge is the need to **increase awareness** within a broader public
   - Challenge is the definition (see point 1)
     - Think/ communicate in practical examples
     - E.g.: Integrate Public health in NBS.
   - Information and education is key,
   - Need for vulgarisation,
5. **Economic dimension is** –at this point in time- **hard to identify**
   - Long-term perspective versus short-term profit,
   - Funding problems need to be addressed,
   - Is it not a danger to define NBS in terms of an economic dimension? Nature as a commodity/ service?

Much more than directly applicable approaches and strategies (per topic) were common themes identified by the participants. In all discussions it appeared difficult to drill down to, and find consensus on, practical approaches and steps forward.

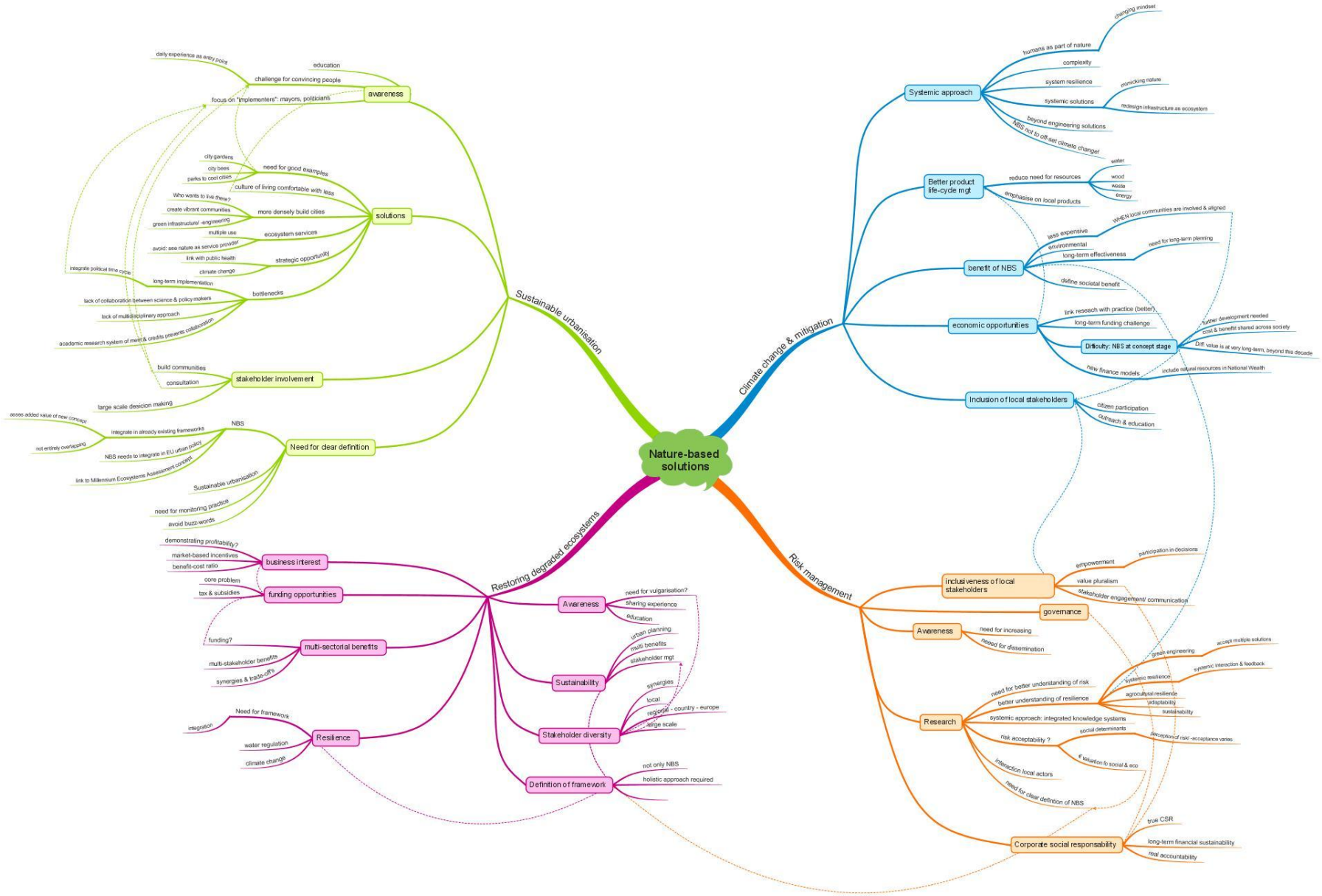
Word clouds

Improved Risk Management and Resilience

Restoration of Degraded Ecosystems

restoration
projects
land
services
degradation
natural
integrate
provide
improve
develop
studies
build
opportunities
methods
research
restoring
participation
potential
resources
examples
infrastructure
change
water
support
people
catchment
focus
scale
europe
clear
green
management
species
economic
terms
local
adaptive
benefits
ecosystem
protection
nbs
planning
education
climate
social
strategic
public
biodiversity
society
difficult
efficient
successful
urban
stakeholders
objective
multiple
flood
cities
business
needed
agree
technical
demonstrating
recognises
mitigation
stakeholder
restauring
integrated
community
environmental
respond
important
overcome
interactions
populations
transforming
marine
activity
implies
companies
survive
general
policy
quality
makers
essential
promote
spoiled
provision
concept
save
money
solution
nature
project
prove
beginning
factors
reduce
system
create
funding
intended
solutions
ecosystems
increased
techniques
sustainable
depends
systems
involve
participatory
processes
benefit
performance
quantified
management
funders
case
tools
results
ecology
common
definition
thing
shown
health
define
function
avoiding
investors
consent
areas
life
feedback
frame
objectives
terrestrial
movement
requirements
quantitative
strategy
including
working
constraints
mechanisms
missing
cost
changing
food
socio
beginning
concept
save
money
solution
nature
project
bring
rivers
spoiled
quantify
require
considered
natura
restauration
specific
providing
conservation
populations
makers
markets
difficult
problem
efficient
individual
monitoring
evaluating
expires
carbon
greening
connectivity
private
restauring
integrated
community
respond
important
overcome
interactions
populations
transforming
environmental
interest
soil
long
start
area
demonstrating
needed
business
flood
cities
mitigation
stakeholder
objective
multiple
carbon
expires
urban
monitoring
evaluating
natura
restauration
specific
conservation
providing
considered
quantify
efficient
difficult
problem
essential
promote
spoiled
provision
education
planning
public
biodiversity
society
social
climate
nbs
protection
benefits
ecosystem
general
policy
bring
quality
rivers
makers
markets
difficult
problem
efficient
individual
monitoring
evaluating
natura
restauration
specific
conservation
providing
considered
quantify

Topic cluster



The above mind map provides an overview of all ideas brought forward across the different questions.

In all 4 discussion, the participants were asked for a final recommandation to the DG Research & Innovation, 2 topics surfaced:

- The main recommandation for all participants was the absolute need to **establish a clear framework and definition** in which further research and policy guidelines can be established.

  „My advice is to clarify the term NBS, explain the added value of NBS and explain the differences with the ES concept. Avoid a new buzz word that is again unclear." (Sustainable urbanisation)

- Also was the need for a **broad systemic thinking and multi-level stakeholder perspective** re-emphasized.
  „Integrate research with management and society . Support adaptive management, adaptive research, participatory research, etc." (Restoring degraded Ecosystems)

  „My advice is to try and balance short-term wins with long term gains; it's important to keep all the stakeholders engaged in the process. It's also critical to show tangible value wherever possible." (Improving Risk Management)

Participants profile

Enrollement

A broad audience across a variety of organisations was invited to participate; they were requested to select one of the four discussions.
The table below shows the number of persons enrolled for the four discussions, excluding double, anonymous and false registrations.

Discussion	Risk Management	Restoring degraded Ecosystems	Mitigating climate change	Sustainable urbanisation	Grand Total
# participants enrolled	127	192	152	196	**667**

Actual participation

During the day the participants joined their discussion at the specific time which resulted in a lower participation rate (against the enrolled) participants. In total people from 30 countries joined the discussions, most of participants came out of six countries (in descending order): the United Kingdom, Germany, Belgium, the Netherlands, Spain and Italy.

Background	Risk Management	Restoring degraded Ecosystems	Mitigating climate change	Sustainable urbanisation	Grand Total
Industry	1	2	8	5	**16**
Local & Regional Government			3	3	**6**
National, EU and Global Government	12	12	8	6	**38**
Non Governmental Organisation	10	18	12	10	**50**
Research & Education	41	44	36	45	**166**
SME	5	6	5	14	**30**
Other	5	7	8	8	**28**
Grand Total	**74**	**89**	**80**	**91**	**334**

Research & Educational institutions had the largest representation in the sample.
Overall we observed an actual participation rate of roughly 50% which is above average in open discussions.

Improved Risk Management and Resilience - Details per Question

(1) Welcome to the synthetron discussion, please wait till the moderator opens the session.

Started	Dur	Participants	Msgs	Synthetrons	Poll
09:00	2	47	13	0	

No TOP / HIGH / MEDIUM / LOW / BOTTOM Synthetrons in this Topic.

(2) Please share your first overall feeling or reaction on the short document on IMPROVED RISK MANAGEMENT AND RESILIENCE that you received

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
09:02	13	58	76	13	0	0	0	6	7	

ReachPercent	Level	Agreement	Synthetron
21 %	LOW	agree	My first reaction was: yes, nature teaches us how to improve risk management and resilience. For example: systemic diversity is the natural recipe for achieving resilience in complex adaptive systems, and we can achieve resilience in OUR systems by emulating natural system design. This is biomimicry.
21 %	LOW	agree	(1) calculating different scenarios of risk reduction for different types of ecosystems should require first risk assessment (i.e., what are the priority risks to be reduced ?). I miss this point
21 %	LOW	agree	the position paper broadly seems to make sense - nature provides many benefits including avoiding costs for economy and society that have often not been fully accounted for - so looking more seriously at how nature based solutions can help to improve risk and reilience make sense
21 %	LOW	agree	Overall, the document is fine with me but I am missing clear boundaries about what is meant by NBS. Some partners consider that any technological solution to combat climate change is part of NBS, same for some very sophisticated engineered solutions (e.g. synthetic biology). It should be clear that this is not the purpose. A good illustration of the range of NBS approaches was povided by the Biodiversa

ReachPercent	Level	Agreement	Synthetron
			workshop on NBS, Brussels, June 2014.
21 %	LOW	agree	But focus should not only be on climate. Biodiversity is more broad.
19 %	LOW	agree	The level of risk acceptability is relevant and should be developed as part of the last point for research and innovation. Social sciences sould be part of the research.
12 %	BOTTOM	agree	I think it is a good starting point overall, but it should acknowledge more clearly and explicitly the social determinants of risk assessment and risk management (social norms, local practices, traditions, cultural context). At the moment these are almost invisible in the concept paper (except for a brief reference to 'qualitative aspects needed to support the insurance capacity of ecosystems'.
12 %	BOTTOM	agree	Approach a bit narrow. Too much focus on protection or mitigation. Risks, hazards and disasters: disasters because of risk mis-management. Adaptation is as much managing risks than reducing hazards in particular catastrophic risks (volcanos, earthquakes, tsunami...). Slow developing catastrophic risks require more attention: ecosystem resilience, biodiversity… Values to consider are not only economic values/costs. Social and ecological values matter as much.
12 %	BOTTOM	bipolar	My first reaction was that the value of an ecosystem cannot be measured. Any value-assignation puts some parts of the ecosystem at risk - as "the whole is more than the sum of its parts" this is a very risky procedure.
7 %	BOTTOM	agree	Seems a good summary - would appreciate clarification of exactly what is meant by "qualitative aspects needed to sustain the insurance capacity of ecosystems" - is the word insurance intended here as 'performance' or financial insurance?
7 %	BOTTOM	agree	I think the concept of nature-based solutions can be useful but is vaguely defined. Much effort has been spent in the past years in developing theory and operationalising the framework of ecosystem services. It is important to link NBS with ES more explicitly, so that we do not start from '0' again.
7 %	BOTTOM	agree	But some measurement of ESS is possible, one can value ESS. Also one can compare services lost to services restored
7 %	BOTTOM	agree	I would like to see included the role local and regional governments can play

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(3) What are the strategic opportunities of nature based solutions to IMPROVE RISK MANAGEMENT AND RESILIENCE? As far as possible please share specific examples and remember the three dimensions – economic, environmental and social

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
09:14	17	64	163	28	0	1	2	9	16	

ReachPercent	Level	Agreement	Synthetron
75 %	HIGH	agree	Research has often showed that the empowerment and inclusion of local inhabitants in nature based risk management (floodings, clear cutting from forests and soil erosion) have the highest chance of long term success. Therefore people and how the use nature should be a key aspect if we want long term solution, rather than commercially based technologically based solutions. Which have to generate money on the long term.
59 %	MEDIUM	agree	NBS should involve multiple stakeholders
40 %	MEDIUM	agree	Planning and implementing NBS offers the opportunity to bring stakeholders together that might usually not cooperate and in this way contribute additionally to resilience (aspect of integration)
32 %	LOW	agree	NBS call for a systemic approach that aims to understand the social-ecological system and the particular linkages between social and ecological variables
22 %	LOW	agree	NBS are usually low-cost, no-regret options that bring multiple benefits
22 %	LOW	agree	The framework of ecosystem services and NB solutions brings the opportunity to reach a common understanding of the multi-values of nature.
22 %	LOW	agree	resilience: increasing / preserving biodiversity (research shows it has a strong insurance property)
19 %	LOW	agree	A key strategic opportunity, particularly in urban areas, is bringing nature into urban spaces with the benefits for wellbeing that can bring - for example sustainable drainage systems can provide valuable green space with benefits far beyond drainage for local communities. The positive effect on wellbeing from contact with nature is strong and proven.
17 %	LOW	agree	One point that is currently overlooked is that risk management is not only about quantifying risks, but also about understanding social perceptions of risks - for instance, the way different stakeholders

ReachPercent	Level	Agreement	Synthetron
			perceive risk on different temporal and spatial scales. These are key elements in any attempt to design governance models for risk mitigation.
17 %	LOW	agree	In fisheries, the us of marine protected areas are becoming more and more popular. They are like nature conservations areas. They provide an insurance system against overfishing, and usually they have positive economic, environmental and social impacts.
17 %	LOW	agree	NBS solutions and cost: they need to be valued over time as initial costs may be higher but over time, they are often less expensive than grey infrastructure
16 %	LOW	agree	A clear definition of resilience would also be a good starting point.
14 %	BOTTOM	agree	preserving biodiversity is key
14 %	BOTTOM	agree	Resilience in agriculture certainly could benefit from NBS, also in combination with more precision farming.
13 %	BOTTOM	agree	To manage the impact of risks by nature is based on a local to regional supply scale (vegetation against soil erosion, place to store excess water during flooding, local sel, where to manage the risk itself is often at regional to international scale (climate change). We must distuingguish what we aim for with nature based solutions: the impact of rsisk (resilience) or the actual risk itself.
13 %	BOTTOM	agree	I agree that the link between NB solutions and the benefits needs to be operationalized.
13 %	BOTTOM	agree	But again need to look at multiple values and not just financial costs
11 %	BOTTOM	agree	NBS in flood risk management provides opportunities for all three dimensions. The challenges for implementation though are: (I) Real Performance of NBS versus grey solutions; (ii) implementation cuts across many disciplines (ecomonic, social, planning, flood defence etc) hence requires all players to collaborate and agree - NOT easy!
11 %	BOTTOM	agree	resilience requires an understanding of how our social/economic/environmental systems can work together
10 %	BOTTOM	agree	NBS are usually a good starting point for local governments which want to address the risk they face, but have restricted budgets
10 %	BOTTOM	agree	Facing growing complexity and more dynamic systems (economic, industrial)., resilience is one of the most challenging topics, also for companies. If we aim for stable ecosystems, we should also focus on

ReachPercent	Level	Agreement	Synthetron
			them and give them the chance to learn from NBS for adaptation, resilience and selforganization.
8 %	BOTTOM	agree	Maybe not consciously but natural systems and organisms constantly evaluate risks, called feedback loops. Well adapted systems are able to signal and response adequately - what if our systems could also be locally attuned and responsive too?
8 %	BOTTOM	agree	From a performance perspective, in relation to flood risk management, I think NBS offer a partial solutions - or at least NBS have not been shown (yet) as sufficiently capable for the whole solution
8 %	BOTTOM	agree	Grey solutions do not solve the problem, but often shift it geographically (e.g. higher dykes in one region lead to increased flooding in another)
6 %	BOTTOM	agree	Coastal zones are under particular high pressure. Particularly in developing countries people are often not aware of the protection function of ecosystems, and also not on other values they provide. More awarenesss rising is necessary.
6 %	BOTTOM	agree	Feedback to moderator: a section on 'do not understand' would be useful to add in scoring system.
5 %	BOTTOM	agree	I think the main advantage or opportunity of NBS is that they are less "rigid", i.e. they can adapt more easily within a changing environment.
5 %	BOTTOM	agree	Also looking how nature solves ecological challenges like flooding in a more natural way: wetlands as protection

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(4) Thanks for this reflection on Nature-Based solutions overall. Lets focus now on practical examples that you can share that will have a practical effect within the next 5 years

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
09:30	9	64	95	12	0	0	0	4	8	

ReachPercent	Level	Agreement	Synthetron

ReachPercent	Level	Agreement	Synthetron
30 %	LOW	agree	Sustainable agricultural land use management
19 %	LOW	agree	Soft engineering approaches in coastal zone management - e.g. sand dune and wetland rehabilitation as defence against storm surge
19 %	LOW	agree	Making companies accountable of their use of nature (beyond commercila natural resource) and of the social risk that their activity may generate is important 9an a subject of reflection in the business sector itself).
17 %	LOW	agree	Encourage people in cities to create green spaces on their private properties
14 %	BOTTOM	agree	Initiatives linked to land stewarship. In Spain there is a net that has started in one region and has been enhanced with public funds to reach the whole country. This initiative brings together biologists, agronomists, economists... with farmers, so the formers provide scientific support to the farmers and the farmers hold theirs holdings in a sustainable way. They also benefict from quality products certifications and new channels of comercialisation of their products.
14 %	BOTTOM	agree	river restoration (from canalisation), slowing the passage of floods and reintroducing diverse habitats
14 %	BOTTOM	agree	governments alone cannot finance the needed nature restoration, there is much potential in getting businesses involved in nature riks management and nature restoration
11 %	BOTTOM	agree	Sustainable urban drainage systems have the scope to reduce flooding but also provide a source of grey water that can be used in innovative housing projects e.g. for showering, watering gardens etc, contributing to water conservation - but only if regulation allows the use of untreated water for certain purposes
11 %	BOTTOM	agree	Natural water retention measures, buffering areas, river renaturation can be achieved already in the medium term, especially if compensation contractual agreements can be put in place with the owners of / farmers operating the grounds put below water. Green engineering requires equilibrated consensus among stakeholders, particularly the urban and the rural
10 %	BOTTOM	agree	How well measured are these examples? What are the metrics?
8 %	BOTTOM	agree	the most convincing pratical examples for nature-based solutions are: (i) protection forests again avalanches and landslides, (ii) semi-natural floodplains and wetlands with their multitude of functions, (iii) dense vegtetation for erosion control (iv) trees/forests for CO2 uptake. So finally its mainly (semi-)natural forests (and wetlands).

ReachPercent	Level	Agreement	Synthetron
8 %	BOTTOM	agree	Insurance industry also needs to be on board

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(5) Take a minute to reflect on our discussion and the very many opportunities and examples mentioned in this discussion.

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
09:39	7	63	66	10	0	0	0	4	6	

ReachPercent	Level	Agreement	Synthetron
21 %	LOW	agree	I would add awareness for NBS as well, as it is probably not well known in many sectors
15 %	LOW	agree	top: the systemic interaction of the three.
15 %	LOW	agree	Top: all 3 dimensions: integrate local stakeholders and dont forget neighboring areas and scales larger than local scale.
15 %	LOW	agree	I think that question is somewhat loaded - the answer is highly dependent on location - the best strategic opportunities in NBS depend on local cultural perspectives, local economic conditions, local environmental quality, societal choice, nature conservation peiorities etc
11 %	BOTTOM	agree	Top: food and water security are key issues world wide, but the options for securing these are dependent on local and regional conditions (both biophysical as well as stakeholder and governance contexts).
10 %	BOTTOM	agree	this is very important - variability in climate factors (e.g. precipitation, temperature, etc) will be unstable in the future, thus NBS will need to be designed and/or build upon the inherent flexibility and adaptability of nature
10 %	BOTTOM	agree	ned for a more critical attitude towards the current dominance of economic approaches to environmental and social valuation and risk assessment

ReachPercent	Level	Agreement	Synthetron
8 %	BOTTOM	agree	linking water and climate and biodiversity, makes for a strong story where water and climate are the relative knowns, and NBS the emerging field
8 %	BOTTOM	agree	Top: NBS as possibility to ensure the well-being of their citizens
6 %	BOTTOM	agree	A question which pops up in many research areas: the spatial patterns: Is it best to optimise for one risk in one location, or should it be looked at from higher spatial scales to cover all risks at regionl/national or even global scales?

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(6) Considering these strategic opportunities what, for you, is a key research question / innovation action to be solved in the near future so that investors are able to take decisions on opportunities in nature-based NBS for RISK MANAGEMENT AND RESILIENCE?

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
09:46	12	62	150	26	0	2	1	7	16	

ReachPercent	Level	Agreement	Synthetron
85 %	HIGH	agree	Cost benefit analyses must be extended to also embrace non-economic values to ensure sustainability of decisions in the long-run.
84 %	HIGH	agree	I think it's very important to move away from a purely engineering-like, 'technocratic' model of risk management
49 %	MEDIUM	agree	I thnik that is one of the issues - our regulators are not familiar with NBS - an important area for investigation
36 %	LOW	agree	How can grey and green infrastructures be combined to achieve resilience?
34 %	LOW	agree	The same standards will not be applicable - a new approach must be found
20 %	LOW	agree	Awareness raising through existing good business examples.

ReachPercent	Level	Agreement	Synthetron
18 %	LOW	agree	I agree- investments are heavily biased by purely economic profits
18 %	LOW	agree	Biological effects of proposed measures should also be better investigated before programs are undertaken. Sustainability measures should be biologically based.
15 %	LOW	agree	[1] Performance of NBS versus grey
15 %	LOW	agree	integrate risk management variables into accounting systems beyond current monetary accounts (insurance) to broaden the scope of corporate responsibility to the ecosystem natural capital (Environmental Liability...).
13 %	BOTTOM	agree	The full reference for the mention that companies which properly address ethical, environmental & sustainability issues deliver considerably better long-term financial returns on equity & returns of assets than those failing to address such matters (Juniper 2013) is Juniper, T. (2013), What has nature ever done for us?, http://cannovan.com/books/what-has-nature-ever-done-for-us/
11 %	BOTTOM	agree	How to compare different hazard intensities and different socio-economic conditions which each other to identify the ranges for which eco-drr works in the long run and when hybrid or grey solutions become necessary
11 %	BOTTOM	agree	How many small, diverse and independently designed solutions can be more resilient than one-for-all types of actions.
11 %	BOTTOM	agree	natural - social systems research, focused on understanding, monitoring and managing interactions and feedbacks
11 %	BOTTOM	agree	Policymakers are also not familiar with NBS and therefore incentives fail to arise.
10 %	BOTTOM	agree	Sharing best practises and lessons learned, so others can build from there
10 %	BOTTOM	agree	How can we calculate the value of NBS to the insurance industry to reduce flood risks and once valued how should we target investment?
10 %	BOTTOM	agree	How are the concepts of resilience and sustainable development interlinked? Which contribution can NBS make?
10 %	BOTTOM	agree	decision support tools capable to compare the effectiveness of grey, green, soft measures or hybrid measures

ReachPercent	Level	Agreement	Synthetron
10 %	BOTTOM	agree	A good technical decision only can be transformed in a good social decision if the public participation is assured on the process
8 %	BOTTOM	agree	The evidence to show how NBS performs and how that compares to grey solutions
8 %	BOTTOM	agree	identify means of implementing NBS, other than through legislation
8 %	BOTTOM	agree	Case studies need to include more data on economic and social benefits of specific cases
8 %	BOTTOM	agree	standards: No, same standards would be "more of the same".
7 %	BOTTOM	agree	how to integrate systemic uncertainty into risk assessment (especially when dealing with participatory approaches to assessment)
7 %	BOTTOM	agree	"standards": NBS should not be more complicated/burocratic than grey infratsructure

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(7) Finally, please share your most important take-away message for the research agenda on nature based solutions. Share your advice to DG Research and Innovation on the field of nature based solutions research. Start your sentence with: ”My advice is: …”

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
09:57	13	59	101	21	0	0	2	12	7	

ReachPercent	Level	Agreement	Synthetron
55 %	MEDIUM	agree	When talking about resilience, the concept of sustainability should be included as overall goal.
41 %	MEDIUM	agree	My advice is to try and balance short-term wins with long term gains; it's important to keep all the stakeholders engaged in the process. It's also critical to show tangible value wherever possible.
38 %	LOW	agree	my advice is to consider importance of education simultaneously to innovation - key to long-term change and impact

ReachPercent	Level	Agreement	Synthetron
33 %	LOW	agree	my advice is to research and build better models of socio-environment systems, and use these a quantitative evidence based foundation for risk management and resilience
31 %	LOW	agree	My advice is to explore how cities as places were most people live can use NBS for increasing their resilience.
24 %	LOW	agree	My advice is to make a great effort on dissemination, and on developing metrics and approaches to standardisation
22 %	LOW	agree	My advice is a wider perspective is required to look at nature based solutions. Wherever possible potential biological effects should be properly factored in to allow optimised solutions to be obtained.
22 %	LOW	agree	My advice is to develop safeguards to avoid misuse of the concept by business. The situation is very confused at the moment and the term is being used for all kinds of very different applications that I am very concerned that if clear definitions are not provided soon, we may have very bad surprises. Also, more consistency across concepts would be useful between risk prevention for climate, flood, biodiversity since people on the ground are lost.
22 %	LOW	agree	My advice - the second one - work strongly on real Corporate Social Responsability: nowadays is some kind of greenwashing
21 %	LOW	agree	My advice is, base NBS research in the same principles that make NBS work: synergies, connectivity. In other words, it's not individual solutions, but part of a solution to a bigger problem
19 %	LOW	agree	My additional advice is that companies should be made aware that it makes good business sense to act in a sustainable fashion and to be kind to the planet.
17 %	LOW	agree	My advice is to raise awareness among policymakers and regulators about the advantages of NBS, and the importance of allowing latitude for innovative practices in that space.
16 %	LOW	agree	Grey solutions are generally "issue based". Policy makers and regulators need to become aware of the integrated multiple benefits (ecosystem services) to be had from NBS and to consider them across departments
16 %	LOW	agree	My advice is to ensure the research also looks at the barriers to implementation.
14 %	BOTTOM	agree	My advice is to quantify the benefits of NBS in a societal and enviromental sense so that comparisons can more easily be made with grey infrastructure solutions.

ReachPercent	Level	Agreement	Synthetron
10 %	BOTTOM	agree	My advice is to consider sets of environments important for mitigation of a series of hazard factors,starting with carbon sequestration (forests, oceans,...) and so on
10 %	BOTTOM	agree	My advice is: work with a broad, inclusive understanding of risk management that integrates not only usual quantitative risk assessment, but also socio-cultural factors (e.g. risk perceptions depending on temporal and spatial scales, local practices etc.).
9 %	BOTTOM	agree	It is important to have a wide range of stakeholders to provider a fuller understanding of risks and opportunities.
9 %	BOTTOM	agree	My advice for moving toward better resilience is to try to follow a methodology that looks first at risk assessment, then reduction of those risks, early warning systems (as applicable), the potential for financial solutions (typically insurance), and when all else is not enough, post-disaster response.
9 %	BOTTOM	agree	Yes but taking in account that the main goal should be to improve our environment
7 %	BOTTOM	agree	Green city/buildings), urban gardening,

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

Restoring Degraded Ecosystems - Details per Question

(1) Welcome to the synthetron discussion, please wait till the moderator opens the session.

Started	Dur	Participants	Msgs	Synthetrons	Poll
11:02	2	57	8	0	

No TOP / HIGH / MEDIUM / LOW / BOTTOM Synthetrons in this Topic.

(2) Please share your first overall feeling or reaction to the short document on RESTORATION OF DEGRADED ECOSYSTEMS that you received as pre-reading. What do you like about it?

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
11:03	9	75	92	20	0	1	0	3	16	

ReachPercent	Level	Agreement	Synthetron
80 %	HIGH	agree	I Like it recognises that the first thing to do before restauring is AVOIDING degradation
34 %	LOW	agree	I like the focus on a range of multiple benefits - climate, flood protection, recreation, education, public health. I think that emphasising multiple benefits can build greater support for restoration of ecosystems.
26 %	LOW	agree	where degradation has already happened, we see a loss of "services" to many people that seek benefit from the ecosystem
16 %	LOW	agree	It is a good basis for start working on, but a major part is missing. It is primarely focus on terrestrial ecosystems. Marine ecosystems seem not to be considered.
12 %	BOTTOM	agree	I agree with the concepts promoted in this document and have been advocating them in the UK for some time.
12 %	BOTTOM	agree	Indeed it should be a shift in mindset across all sectors -- that is, we have to do X but how do we do this

ReachPercent	Level	Agreement	Synthetron
			from an ecological sensitive perspective.
9 %	BOTTOM	agree	In general, connection to flood protection and climate change mitigation.
9 %	BOTTOM	agree	I overall like the document and strategic opportunities provided - , to sustain and conserve the delivery of essential services, such as water purification, carbon storage, food provisioning and provisioning of livable places is missing the important fact that this is sustained and delivered by species, biodiversity is providing, supporting and regulating these services and currently we are loosing biodiversity 100x the background rate.
8 %	BOTTOM	agree	It tries to involve business to restauration but I have the concern who pays for it: public adminsistration?
8 %	BOTTOM	agree	I think the discussion about green infrastructure and the restoration of degraded ecosystems is important.
8 %	BOTTOM	agree	I belive that this initiative is fantastic but there must be some clarification. For example, it's a bit unclear to me what it is understood as ecosystem restoration, also there are other terms that looks unfamiliar to me, like re-naturing
8 %	BOTTOM	agree	Challenges & trends & strategic opportunities are well stated, but the solutions proposed do not systematically imply the use of NBS
7 %	BOTTOM	agree	I like the emphasis on looking for funding opportunities for restoration
7 %	BOTTOM	agree	It also does not really cover the very real opportunities, and indeed the need if outcomes are to be effective, of fully involving ALL stakeholders in the various processes
7 %	BOTTOM	agree	In understand the focus is identifyng challenges and strategies to improve EU restoration activities, with the contribution of research
7 %	BOTTOM	bipolar	From my observations there is too much emphasis on forests (real ones) as well as on fake forests (plantations in EU policy-making.
7 %	BOTTOM	agree	It seems tome that the general idea is to find NEW solutions, that can be considered as nature-based.
5 %	BOTTOM	agree	I think the use of demonstration projects, as listed in the document, will be very useful for testing research and educating the public. In Ireland EU LIFE projects such as MulkearLIFE have had this function

ReachPercent	Level	Agreement	Synthetron
5 %	BOTTOM	agree	It seems to lack specific direction - for whose benefit is this intended - i.e. for Nature or industry?
5 %	BOTTOM	agree	I like the idea of the building with nature concept, where e.g. protection from the sea is combined with creating more opportunities for nature and recreation instead of building higher and more dikes. In this way new habitats are created for species that now suffer and even became locally extinct

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(3) What specific interventions do you know of that are likely to be most effective in contributing to Nature Based Solutions?

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
11:12	20	80	286	36	0	0	4	8	24	

ReachPercent	Level	Agreement	Synthetron
66 %	MEDIUM	agree	Integrate restoration projects into land planning
61 %	MEDIUM	agree	We need real stakeholder participation from the very beginning of the processes
61 %	MEDIUM	agree	both are needed : protection & restoration
59 %	MEDIUM	agree	Restoration projects require a clear definition of the objective. Restoration per se is not an objective: a new different system might solve the problem in a better way. Nature-based solutions respond to multiple requirements. They provide solutions to individual and common needs, save natural resources, improve the quality of daily life. But restoration implies the choice of transforming something that has been spoiled. This has to be clearly shown.
29 %	LOW	agree	if we talk about techniques ... the restoration of soil functions, the use of native species in order to begin a restoration frame seems to me essential in the case you need to do something to the degraded area
29 %	LOW	agree	But biodiversity wont always be the driving force behind implementing a NBS. From the concept doc, reasons for NBS are to "simultaneously meet environmental, social, and economic objectives"

ReachPercent	Level	Agreement	Synthetron
22 %	LOW	agree	Catchment based studies looking at payments for ecossytem services, studies where restoration reduces the costs of provision of clean drinking water, catchment scale studies that use natural methods to control water movement and flooding. Restoration of peatland to reduce GHG emissions and improve water quality- slightly more difficult to introduce markets, can again involve water companies, also carbon markets and investors.
20 %	LOW	agree	NBS should not be "end of pipe" solutions, they should be integrated in each activity
20 %	LOW	agree	Collating examples of successful restoration projects and evaluating their benefits to society
18 %	LOW	agree	I agree with the document that there needs to be more research into funding mechanisms and institutions. We need to provide the motivation for people and organisations to be able to act.
18 %	LOW	agree	there is a clear need for this and to translate technical and scientific data into messages that become relevant to non-technical decision-makers in business and policy
16 %	LOW	agree	difficult to give feedback - it all depends where it is done and how , also price depends on the technique, scale, local factors and social factors
11 %	BOTTOM	agree	Interventions that work with, and not against nature
11 %	BOTTOM	agree	in my view the synergies between different functions need to be recognized but also the trade-offs
10 %	BOTTOM	agree	In agroecosystems, I think that agri-schemes go some way to engaging farmers with the meaning of ecosystem services and what it means to their business interests - e.g. restoring hedgerows to benefit pollinator communities
10 %	BOTTOM	agree	In farmland restoration there is also the potential for cliamte change mitigation by adopting farming practices (such as no-itillage that increase the amount of soild organic matter (and thus carcbon)
10 %	BOTTOM	agree	This has been done in the Netherlands for a decade or two now and is very successful, in this way we have increased the natural area
9 %	BOTTOM	agree	Advancing market based incentives for conservation based on the sustainable use of biodiversity with high economic value - providing a clear business case for long-term conservation not only of the particular species but also of its natural ecosystem
9 %	BOTTOM	agree	Turning waste material to new resource

ReachPercent	Level	Agreement	Synthetron
9 %	BOTTOM	agree	Yes, I have been calling for pro-nature urban planning in my city, whereby urban planning doesn't just try to reduce impacts on nature and compensate for them but also look fo ways of enhancing nature
9 %	BOTTOM	agree	we need to build all the strategy with the local stakeholders and maintain ongoing training sessions with them (both side learning process)
9 %	BOTTOM	agree	Use synergies between WFD, flood directive, NATURA 2000, biodiversity protection
8 %	BOTTOM	agree	The use of plants to fight against soil erosion in mountains and in the borders of rivers.
8 %	BOTTOM	agree	We need an whole ecosystem approach - we need a framework to enhance the understanding of the complex interactions between biodiversity, ecosystem structure and functioning and ecosystem service provision within and across marine, freshwater and terrestrial systems and distribute this in a way the wider society can relate to-e.g. citizen science
8 %	BOTTOM	agree	Green roofs, Green wals, Green promenades in cities are also a way of renaturing cities and bring NBS
8 %	BOTTOM	agree	Adapt infrastructures to allow the movement of the fauna
8 %	BOTTOM	agree	Greening of cities: there is considerable scope for innovative design, with the purpose of fostering ecosytem functions in cities - food production, pollinator services, reduction of urban pest through the diversificaiton of urban fauna...
6 %	BOTTOM	agree	For flood protection, it is then less expensive to use plants and to conserve wet meadows instead of the construction of mineral ditchs
6 %	BOTTOM	agree	What about sustainability? Eco-designed infrastructures must be sustainable, first of all.
6 %	BOTTOM	agree	Funding is the problem, because the benefits of green infrastructure are longterm, shortterm the cost can be high
6 %	BOTTOM	agree	Generate priority maps linked to the provision of ecosystem services, including biodiversity, as a references for optimum fund allocation
5 %	BOTTOM	agree	In water bodies cleaning of the soils from excessive phosphate and reversing acidification
5 %	BOTTOM	agree	These issues are certainly ones in which there is a need for more research!
5 %	BOTTOM	agree	Integrating NBS and green infrastructure concept into spatial planning and in early stages of planning in other sectors

ReachPercent	Level	Agreement	Synthetron
5 %	BOTTOM	agree	Techniques as well as the objectives must be nature based, eg: bio-assistance, bioremediation leading to the generation of a living soil (not a dead one)
5 %	BOTTOM	agree	I agree that restoration may have a flexible definition and it is important to be clear about what is intended by 'restoration', returning to a pritine system is highly unlikely but restoring some elemnts of function and components is possible

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(4) If you have to rank the strategic opportunities from an economic opportunity perspective, then what is top of your list? What is likely to be the most cost effective opportunity? Start your sentence with: "top:…"

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
11:31	10	80	151	25	0	0	0	4	21	

ReachPercent	Level	Agreement	Synthetron
30 %	LOW	agree	Top strategy is growing the interest of the busieness community about the opportunities of maintaining and restoring ecosystems in order to foster a sustainable aproach to this issue. Public intervention only is not enough
27 %	LOW	agree	Top: flood protection savings through restoration of wetlands, floodplains, "giving more space to the rivers"
15 %	LOW	agree	restoration for adaptation to climate change
15 %	LOW	agree	restoration for climate change mitigation
14 %	BOTTOM	agree	Top: demonstrating the value of investments by evaluating the socio-economic benefits of successful examples of restoration.
14 %	BOTTOM	agree	Education most likely to be most cost-effective in the long-term (via avoided costs...)

ReachPercent	Level	Agreement	Synthetron
11 %	BOTTOM	agree	Top: Increasing interest across society... (education is key)
10 %	BOTTOM	agree	top: greening of grey infrastructure
9 %	BOTTOM	disagree	Probably there is not much new land consumed in Europe
9 %	BOTTOM	agree	top: new urban planning with the objective of minimizing the use of non-urban land
9 %	BOTTOM	agree	As important as the HOW MUCH is the WHO: who benefits and who bears the costs.
8 %	BOTTOM	agree	Planning restoration periurban areas around large cities
8 %	BOTTOM	agree	Top choice for me would be catchment restoration to improve water regulation.
8 %	BOTTOM	agree	Top is to keep our ecosystems function properly, now and in the future
8 %	BOTTOM	agree	Top: NBS may provide solutions that save public expenditure (e g, increasing puyblic health, thus decreasing medical cost), while providing new bussines opportunities. These are indirect economic benefits that should be quantified.
8 %	BOTTOM	agree	But we are facing a food security crisis with climate change and also increased and wealthier populations in other parts of the world. If governments are not prepared to make people to pay the true cost of food then farmers have to be subsidised to produce it
6 %	BOTTOM	agree	top: restoration for climate change mitigation
6 %	BOTTOM	agree	Top: Agro-ecology / biodiversity contributing to ecosystem restoration and resilience
6 %	BOTTOM	agree	Top too would be to re-examine the tax and subsidy regime that influences land use and land management practices.
6 %	BOTTOM	agree	fully agree
6 %	BOTTOM	agree	I would expand this to watersheds, thus including also peatlands
5 %	BOTTOM	agree	top are integrated solution with a muliple benefit
5 %	BOTTOM	agree	We have to address the underlying drivers of environmental degradation, in order to reduce the pressure on resources. There are many future generations that will need to survive on whatever we leave behind.
5 %	BOTTOM	agree	Education should reach the working world. Creating a bussiness ethic of fostering NBS, which then

ReachPercent	Level	Agreement	Synthetron
			provide social recognition and customer-image benefits.
4 %	BOTTOM	agree	top: new urban planning with quantitative tools that have the capacity to objectify the choices

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(5) Which is for you a key research & innovation question that, if be solved in the near future, would make most difference for those wishing to fund or adopt nature based solutions for the RESTORATION OF DEGRADED ECOSYSTEMS?

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
11:41	12	78	198	15	0	0	0	5	10	

ReachPercent	Level	Agreement	Synthetron
25 %	LOW	agree	Develop tools to integrate restoration projects in land and marine plan ning
18 %	LOW	agree	Make clear what the benefits are of restoration to the general public and thus funders
17 %	LOW	agree	development of cost-efficient monitoring systems for the performance of restoration projects
16 %	LOW	agree	Assess the potential of ecosystem services benefits in quantitative terms
16 %	LOW	agree	To value (in monetary terms or other terms) the benefits of a specific restauration
14 %	BOTTOM	agree	This requires strategic planning of restoration projects, to maximize the potential for comparisons and mutual learning
12 %	BOTTOM	agree	to be more conscious, we may comunicate at a larger scale. I mean if we stay just together we'll all agree but we need to concern more people such as funders, politics ...
10 %	BOTTOM	agree	Increase our ability to predict the outcomes of restoration , including passive restoration, under global change
9 %	BOTTOM	agree	Monitoring and evaluation existing projects.

ReachPercent	Level	Agreement	Synthetron
8 %	BOTTOM	agree	Evaluate and quantify what is already done (sometimes on a voluntary basis) by the local actors in order to not always reinvent the wheel.
8 %	BOTTOM	agree	what are the most cost-efficient monitoring systems for restoration performance
8 %	BOTTOM	agree	It will be possible in the future to have research projects jointly financed by national and regional authorities togethere with the EC? Ecosystems do not know borders
6 %	BOTTOM	agree	The search key is to create a manual with procedures and costs that can provide designers with an easy technical comparison between traditional solutions and cutting-edge solutions
6 %	BOTTOM	agree	Agree and this should take a broad approach regarding costs, not only private but also public, not only directly tangible benefits in economic terms, but also cultural values and appreciation
5 %	BOTTOM	agree	For me nature conservation has a meaning only if we include social aspects

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(6) Finally, share your most important take-away message for the research agenda on nature based solutions. Share your advice to DG research and innovationon NBSs for the short term agenda. Start your sentence with: ”My advice is....

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
11:53	16	78	204	22	0	0	0	7	15	

ReachPercent	Level	Agreement	Synthetron
22 %	LOW	agree	Integrate research with management and society . Support adaptive management, adaptive research, participatory research, etc.
18 %	LOW	agree	My advice is to bring together all practiced and proofed restoration methods in Europe, to compare them and learn from each other
18 %	LOW	agree	My advice is to build up from small scale initiatives (rather than trying to focus on a couple of huge

ReachPercent	Level	Agreement	Synthetron
			ones), to promote breakthrough innovation and showcast successful examples.
18 %	LOW	agree	My advice is that connectivity is essential for the species populations to survive under changing climate conditions and thus more attention should be payed to linking natural areas throughout Europe. Natura 2000 is not sufficient
17 %	LOW	agree	overcome : prove (by quantified feed back) that NBS are as much or more efficient than conventionnal solutions
16 %	LOW	agree	My advice is to sharpen the business case (why should I do it?) for NBS, for different stakeholder groups.
16 %	LOW	agree	My advice is: please define clearly what "nature-based" solution can be. Define some general ideas. It is not well presented in the document you have sent.
14 %	BOTTOM	agree	My advice is to set a money value on degradation by companies and have them pay into an insurance for restoration before they start on a potentially damaging activity
12 %	BOTTOM	agree	My advice is that DG research should conduct a survey all strategic plans (if they exist) of cities to verify and promote the inclusion of green infrastructure and protection of natual and agriculutral land where needed it
12 %	BOTTOM	agree	My advice is to put some efforts on resuming and better disseminate the results of the already performed research (When a project expires, the dissemination expires, too and it si difficult to find results); on the other hand, efforts should be targeted to demonstrators paving the way to the private players
12 %	BOTTOM	agree	My advice is also to strengthen education in ecology in schools and secondary educational forms
10 %	BOTTOM	agree	Overcome constraints by demonstrating the socio-economic value of investing in nature-based solutions.
9 %	BOTTOM	agree	My advise is to develop biophysical, social and economic methodologies to quantify the interactions and trade-offs among ecosystem services, taking into account the different stakeholders that actually use or demand ES.
9 %	BOTTOM	agree	my advice is to support local projects innovated by the local community because they have a potential to be most successful

ReachPercent	Level	Agreement	Synthetron
8 %	BOTTOM	agree	My advice is to engage all stakeholders in restoration and prove to them that it is not wasted money, it will have long term economic return and will be acceptable from the local society without to create problems to their land
8 %	BOTTOM	agree	My advice is to support by EU fundings project which involved NBS !
6 %	BOTTOM	agree	Collaborate more efficiently with other DGs particularly environment and energy
5 %	BOTTOM	agree	my advice is, that indicator sets/systems for strategic env.planning programmes/projects have to be researched on
5 %	BOTTOM	agree	My advice is to go back to the drawing board and first develop clear and unambiguous definitions of what we mean by 'Nature-based' and 'restoration'
5 %	BOTTOM	agree	Educate policy-makers
5 %	BOTTOM	agree	To overcome constraints awareness on NBS in other DGs (industry, agriculture) and among policy makers need to increased through communcation activities
4 %	BOTTOM	agree	My advice is to develop approaches and tools for integrating restoration actions in land planning, considering the landscape scale and the interactions and tradeoffs between ecosystem services, with the participation of stakeholders all along the process

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

Climate change adaptation & mitigation -Details per Question

(1) Welcome to the synthetron discussion, please wait till the moderator opens the session.

Started	Dur	Participants	Msgs	Synthetrons	Poll
13:01	2	53	11	0	

No TOP / HIGH / MEDIUM / LOW / BOTTOM Synthetrons in this Topic.

(2) Please share your first overall feeling or reaction to the short document on Climate Change Adaptation & Mitigation (CCAM) that you received as pre-reading

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
13:02	10	67	62	9	0	0	0	3	6	

ReachPercent	Level	Agreement	Synthetron
27 %	LOW	agree	General, but clear and inspiring document. Needs details and specification.
18 %	LOW	agree	Good summary, could be made more useful with some concrete examples
17 %	LOW	agree	my first impression was that there is a very strong focus on consequences for cities, but CC will have a strong influence on ecosystems (also outside cities) and their services, also outside the cities
14 %	BOTTOM	agree	I agree that it's the ability to address several problems simultaneously that is one of the most important strengths
9 %	BOTTOM	bipolar	Knowledge about CCAM is not the issue at the moment, mainstreaming in different policy sectors is far more relevant.
9 %	BOTTOM	agree	I was hoping for some definition of what Nature-Based Solutions actually means. The H2020 materials on the web give more than one definition. The IUCN has nature based solutions as a priority work area, and uses another definition. Landscape managers have another. So what are we talking about?

ReachPercent	Level	Agreement	Synthetron
9 %	BOTTOM	agree	The document seems to focus mostly on cities. With LULUCF accounting for ca. 1/3rd of emissions, and with the impact of extreme weather on agriculture expected to grow, this is much too narrow.
9 %	BOTTOM	agree	very brief summary, the various aspects of ccam could be elaborated more in the context of nbs
8 %	BOTTOM	agree	I'm missing evolutionary adaptation. This is very important in frame of CC. More knowledge is needed to define species at extinction risk and species with high evolutionary potential.

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(3) As some of you mentioned in the first question, concrete examples are important. Please share good examples you have come across of existing effective NBS for integrated CCAM. Remember all three dimensions – economic, environmental and social

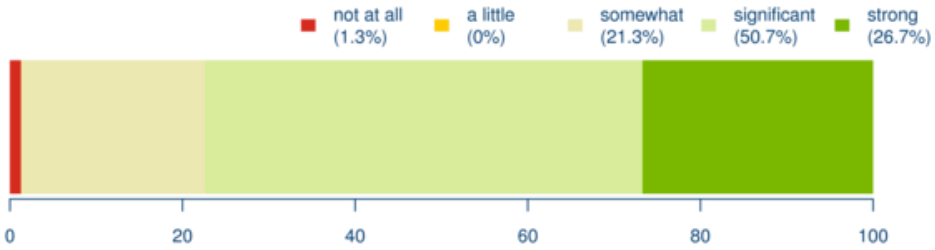
Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
13:11	12	75	145	9	0	0	0	3	6	

ReachPercent	Level	Agreement	Synthetron
24 %	LOW	agree	It is important to look for systemic solutions because if we don't understand the system-wide impacts (including cross-sectoral impacts) we don't find robust solutions and continue to find single solutions that solve one problem while causing another
23 %	LOW	agree	Noordwaard polder in The Netherlands: willow forest to protect the dike from waves. Cheaper than dike enforcements, inhabitants happy with natural view, and the forest is supporting NATURA2000 species for adjcent areas.
19 %	LOW	agree	Agrobiodiversity is crucial. Putting all our resources on a few dozen highly bred crop plants is the contrary of resilience. There are over 20,000 food plants used by humans somewhere in the world; analysing and domesticating the vats majority that is merely harvested from the wild must be a priortity.
12 %	BOTTOM	agree	Sustainable woodlands that are managed for biodiversity, recreation, etc, but also provide structural

ReachPercent	Level	Agreement	Synthetron
			timber. Using native species to enhance mitigation (flooding, etc) whilist sequestering carbon away in building materials.
8 %	BOTTOM	agree	increasing the green spaces in the cities
7 %	BOTTOM	agree	Green cities go beyond greening the city. they also involve energy transition, "zero waste" production, sophisticated water evacuation systems and sustainable mobility (among others).
5 %	BOTTOM	agree	Not in Europe, but manrgove restoration and conservation is (e.g. in Sulawesi, Indonesia) is an example where mitigation and adaptation come together
5 %	BOTTOM	agree	strategies to reduce deforestation and forest degradation associated with a forest products economy chain - contributes to reduce emissions at same time protect soil loss and degradation, protect water cycle, create a local economy from forest products (wood and non wood products).
4 %	BOTTOM	agree	I dont see many concrete examples, more visions/ideas..

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(4) To what extent do you think that the application of NBS in Europe can make a cost effective contribution to CCAM?



Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
13:23	19	75	200	17	0	1	0	4	12	X

ReachPercent	Level	Agreement	Synthetron
86 %	HIGH	agree	NBS should be embedded in local level spatial planning and decision making. Also funding schemes would be very welcome. Local authorities and citizens should be included in NBS options.
26 %	LOW	agree	new strategic opportunities must include changing perspective on waste to being a resource, tapping into solar resources of energy and cascading enery usage, and circular use of natural resources. please note: simple reduction will not solve anything, restructuing might
16 %	LOW	agree	Long-term effectiveness is dependent upon decision makers thinking beyond their next election cycles - they need to understand and accept that NBS can take many years to implement and complete, especially when dealing with ecological timescales (e.g. the benefits of afforestation can take decades to materialise)
15 %	LOW	agree	Mimicking natural ecosystems will be crucial. This means nutrient, water, gas and energy cycles must be understood and closed wherever possible. Example: trees add organic carbon to the soil through leaf and twig litter, making that soil better able to utilize fetilizer and more able to buffer excess rainfall.
15 %	LOW	agree	Long term, I would suggest that NBS will hold up much better than non-NBS. I would like to see some research that explores this further.
14 %	BOTTOM	agree	If you don't plan for long term, you become a reactive society and CCAM is not possible
11 %	BOTTOM	agree	Agreed ! We need to be as ambitious as that. Pollution reduction buys time; no pollution at all is the objective. That's how ecosystem are functionning
11 %	BOTTOM	agree	Long term, NBS needs to be considered at concept stage
9 %	BOTTOM	agree	new strategic opportunites must include waste reduction energy conservation and reduced use of natural resources
9 %	BOTTOM	agree	NBS should combine different aspects and therewith external and internal costs as well as non-monetarized benefits for the public
8 %	BOTTOM	agree	NBS (bio-inspired solutions) should be used to not only offset current GHD emissions but past

ReachPercent	Level	Agreement	Synthetron
			emissions: not just end of pipe solutions
8 %	BOTTOM	agree	nature-based solutions will be effective if there are participative
7 %	BOTTOM	agree	Solutions that meet the requirements of multiple sectors at once - e.g. health, environment, infrastructure, agriculture, tourism - can present opportunities for co-financing and co-management, potentially with significant cost reducti ons across all sectors
7 %	BOTTOM	agree	In other words - many groups are involved in land use planning and development, and many are affected by it. We need to help build an understanding of how CCAM will affect them, and how NBS can support their needs.
7 %	BOTTOM	agree	A cost effective contribution could be to redisgn human made infrastructure in general, as natural ecosystems, thus using both nature inspired and nature supported solutions. Thus human made infrastructure along with restored natural ecosystems, would provide cost effective essential "services"
7 %	BOTTOM	agree	Long term, governance questions become crucial. Decision-makers in democracies plan for one or at most two election cycles, but the challenges we face - CC, acidying oceans, biodiversity loss and all the rest - need decadal, or even centry-long, planning. How do build that into polical life without diminishing democracy?
7 %	BOTTOM	agree	Sown biodiverse pastures are an innovation of the Biodiversity Engineering that has climate and soil benefits that are added value to final products which, once adequately valued by consumers and policy-makers, increase farmers income

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(5) If you had to rank the strategic opportunities in NBS for CCAM from an ECONOMIC OPPORTUNITY point of view, which would come top of your list? Start your sentence with: "top:…"

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
13:41	8	71	124	10	0	0	0	3	7	

ReachPercent	Level	Agreement	Synthetron
20 %	LOW	agree	I'm fed up on this allegance we give to the economic criteria. I say it again, if these criteria block some ecological and societal progress, these criteria are non-sense. The good question is which are the most needed innovations from the social and environmental point of view. And then Economy should adapt. And that should be the role of Politics and the European Commission.
17 %	LOW	agree	top : limit imported natural resources we can find locally
17 %	LOW	agree	Top: reduce demand for products from tropical forests
9 %	BOTTOM	agree	Top would be Floodplain revitalization and urban green spaces with their multiple benefits
9 %	BOTTOM	agree	Top priority is about land management. Stop building new houses everywhere and then plan for transport and other needs: think about a sound space management from a global perspective to develop "logical" and sustainable organizations
7 %	BOTTOM	agree	Identify why specific stocks of natural capital are degraded and how they can be restored leading to climate adaptation and mitigation and incorporate natural capital into national wealth accounts so that it is treated as a measure of wealth in the same way we use GDP
6 %	BOTTOM	agree	top: if we can contribute to job creation and engagement of businesses through innovative NBS then there would be a much greater strategic impact
6 %	BOTTOM	agree	Where is the economic opportunity unless governments (or others) put a real value on CCAM, biodiversity, etc?
6 %	BOTTOM	agree	Top: reduce remote transport and support local business
4 %	BOTTOM	agree	Top opportunities are those where the environmental and social benefits are at least as strong as the econo

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(6) For you, what is a key research and innovation question which if solved would make the most difference for those wishing to fund or adopt NBS for CCAM?

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
13:49	16	70	220	21	0	0	0	2	19	

ReachPercent	Level	Agreement	Synthetron
22 %	LOW	agree	Cost: the impression that NBS is "costly" is a reflection of the high degree of ignorance among decision-makers as to what effective NBSs actually are. In agriculture and forestry and city planning, the ROI of NBS usually exceeds that of any non-NBS solution by a quite astonihsing degree.
17 %	LOW	agree	cost: this assumtion is not true in many cases, think of expensive maintanance on machineries for water purification or dikes. So there needs to be more clearance on these subjects to stakeholders.
12 %	BOTTOM	agree	NBS are NOT always costly to implement - the whole rationale for NBS, dating from the 1990s, is that they are more cost effective and provide longer-term benefits. Capital costs are often very low, particularly when local communities are involved.
12 %	BOTTOM	agree	cost: strategies involving a high number of synergies across sectors will avoid maladaptation and promote cost effectiveness
10 %	BOTTOM	agree	How to address the technical barriers that prevent landowners from adopting restorative land use practices aimed at climate adaptation and mitigation ?
10 %	BOTTOM	agree	I'd like to question this very general statement as sometimes NBS are even less costly.
10 %	BOTTOM	agree	across: how do you quantify the benefits of NBS
9 %	BOTTOM	agree	Lack of current knowledge/evidence on the actual effectiveness of specific NBS in different situations, as often effectiveness will be context-specific, is a likely constraint. Such data needs to be collected in a consistent and quantitative (where possible) manner to enable comparison across sites and measures.
9 %	BOTTOM	agree	The links between ecosystem functions, services and levels of biodiversity is an area needing further knowledge. And the relation of these aspects with a changing climate would be an important step for providing appropriate NBS to each situation and ecosystem.
9 %	BOTTOM	agree	research on soft measures (behaviour, organisation, management, lifestyles, mega trends, cross sector

ReachPercent	Level	Agreement	Synthetron
			knowledge (i.e. input in european research strategies by major UN forecasts in other sectors; lifestyles and developping countries/explosive growth in population etc.); creating a common map on developments and how they turn out for different regions in Europe and world wide
9 %	BOTTOM	agree	Cost: put a cost on climate change adaptation, mitigation is low cost in comparison
9 %	BOTTOM	agree	Exactly. it is a very broad statement to make across all NBS, some are very inexpensive and effective
7 %	BOTTOM	agree	not only quantify the benefits, but also costs (economic and social0; and compare these with grey infra
6 %	BOTTOM	agree	top: in cities NBS solve multiple problems, but are often only paid from one source. Which new finance constructions are possible to deal with this?
6 %	BOTTOM	agree	Yes, biologists, technologists, and SSH. At the same time open more interfaces to practitioners in public domains as well as in business and voluntary organisations. No news, but still hard to do.
6 %	BOTTOM	agree	Please speciefy the abbreviations
6 %	BOTTOM	agree	Do we need to agree on everything ? Resilience of systems is also based on diversity & redundancy. And we represent such a small sample of opinions...
6 %	BOTTOM	agree	DRR = disaster risk reduction
6 %	BOTTOM	agree	Cost: Changing mindset is the biggest problem regarding NBS and perceived risks of this type of solutions, cost is the easiest argument for avoiding NBS
6 %	BOTTOM	agree	Across: Research on systems' resilience for CCAM, focusing particularly on its institutional, cultural and spatial components
4 %	BOTTOM	agree	How to integrate nature-based solutions in climate policy?

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(7) Finally, share your most important take-away message for the research agenda on nature based solutions. Share your advice to DG Research & Innovation on the field of nature based solutions research. Start your sentence with: ”My advice is: …”

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
14:05	10	65	91	12	0	0	0	5	7	

ReachPercent	Level	Agreement	Synthetron
28 %	LOW	agree	My advise ist that across sectors and the differnt parts of society costs and benefits should be shared. Very often with EBA costs are considerd in terms of money, benefits are not. Therefore with EBA more emphasis should be given on benefits beyond the direct impact of the measure (e.g. health benefits, recreational value, biodiversity conservation)
20 %	LOW	agree	My advice is: DG REsearch & Innovation innitiatives should support several pilot projects in distinct circumstances to have diversified outcomes and solutions - diversity is a key point of resilience
19 %	LOW	agree	My advice is to across different sectors and disciplines what are the best approaches to evaluating the costs and benefits of NBS for CCAM and what are the best indicators for businesses and policy-makers that would encourage investment in research and development and adoption
19 %	LOW	agree	My advice is to collate existing evidence on the effectiveness of NBS in comparison to other forms of CCAM, identify the gaps and fund more research to strategically fill them. Be open that NBS may need to be considered as a complimentary solution with other soft and hard solutions to adaptation and mitigation.
17 %	LOW	agree	my advice is: sustainability is a characteristic of complex ADAPTABLE systems. if we design for smarter adaptability in all our systems, we'll be better equipped to create sustainability. And from living systems we can learn how to build adaptability in a smart way.
14 %	BOTTOM	agree	My advice is : do not build European strategy within a mindset where human society is distinct from nature. NBS can be relevant only if we consider humans as part of nature. If we do not, we will carry on addressing our challenges with incoherent and pretty inefficient measures.
11 %	BOTTOM	agree	My advice is: as already stated it in my previous message: research on systems' resilience focusing on cultural, institutional and spatial (scales) aspects of it, both in developed and developing cities and their surroundings
9 %	BOTTOM	agree	Yes, I think that the role of biodiversity in underpinning the success of NBS is a key issue.
9 %	BOTTOM	agree	There need to be better links between research and practice

ReachPercent	Level	Agreement	Synthetron
8 %	BOTTOM	agree	Yes, yes yes !!!
6 %	BOTTOM	agree	My advice is that NBS research must address the complexity of NBSs - solutions must take into account long-term and multi-scale interactions to reduce the risks associated with, and maximise the opportunities for, business-led approaches.
5 %	BOTTOM	agree	My advice is to start applying now the NBS that are known to work and have a good cost/effective ratio and support R&D&I for improving existing solutions and to find new NBS

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

Sustainable Urbanisation - Details per Question

(1) Welcome to the synthetron discussion, please wait till the moderator opens the session.

Started	Dur	Participants	Msgs	Synthetrons	Poll
15:01	1	59	12	0	

No TOP / HIGH / MEDIUM / LOW / BOTTOM Synthetrons in this Topic.

(2) Please share your first overall feeling or reaction to the short document on SUSTAINABLE URBANISATION that you received as pre-reading

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
15:02	9	71	91	18	0	0	0	3	15	

ReachPercent	Level	Agreement	Synthetron
24 %	LOW	agree	Sustainable urban development is a must. Europe is getting more and more urbanised and cities are facing huge challenges (environmental, economical, social etc). Cities are the places were everything is coming togteher and were we can achieve huge savings (C02 etc). I missed a bit the more systematic apporach and the need for intergated apporaches (like circular economy).
16 %	LOW	agree	Hello, first of all, I would stress the trans-disciplinary issue of the problem. This means creating policies to gather different research fields: biologists, social researchers, architects and engineers.
16 %	LOW	agree	The short outline of the paper is clear, but it needs to be indeed elaborated in terms of the concrete challenges to be addressed
14 %	BOTTOM	agree	Good approach except for the division of areas into 'economic, environment, and social'-issues.NBS and sustainable urbanisation in general requires a better sense of cross-sectoral approaches.
13 %	BOTTOM	agree	add concrete examples of nature based solutions and their outcomes

ReachPercent	Level	Agreement	Synthetron
11 %	BOTTOM	agree	the application of an integral approach to urban development should be the goal, but is still not used in practice.
10 %	BOTTOM	agree	The content is very broad - nature based solutions encompasses an enormous variety of potential actions. I would like more specificity
10 %	BOTTOM	agree	I was intrigued. I think it is a very important subject because of he fact that urban population is constantly increasing
10 %	BOTTOM	agree	Yes I think this is the right direction - we ought to tie the thinking into the overarching ecosystems services concept articulated in the Millennium Ecosystems Assessment and subsequently - the services are divided into supporting, provisioning, regulating and cultural.
9 %	BOTTOM	agree	The document has not deepen enough the issue
9 %	BOTTOM	agree	Document contains standard analysis. Ignores systems level, concentrates on optimization of specific systems (e.g. water), ignores interactions. Treats ecology as separate from urban env.
9 %	BOTTOM	bipolar	I seem to have an allergic reaction to eurospeak and I found it a bit weighted down by that. I'd love to pull it back to practical realities if at all possible. Something that I can visualise and become a part of.
9 %	BOTTOM	agree	Environmental dimension is not only about natural science and climate, but also about the daily social and functional environment. How to experience the city, feel contain and sure etc.
7 %	BOTTOM	agree	I think, the short outline of topics is okay
6 %	BOTTOM	agree	Good synthesis of sustainable urbanization challenges, but lacks a clearer explanation on how nature-based solutions can contribute to these challenges
6 %	BOTTOM	bipolar	Add: urban systems are ecologies
6 %	BOTTOM	agree	the first overall feeling is that we have to be aware of the high relevance of teh assessment of technological changes by social groups. Raising awareness and link action of citizens to the changes is thus crucial.
6 %	BOTTOM	agree	I agree. Working examples of how ecosystems and their services can be mobilized to support 'quality of life' would be really helpful.

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(3) What evidence can you share of main NBS that have been widely applied so far in cities?

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
15:10	16	83	283	32	0	0	0	9	23	

ReachPercent	Level	Agreement	Synthetron
24 %	LOW	agree	I like the idea to "explain" the NBS using some examples, in the beginning...starting with positive examples already implemented
20 %	LOW	agree	Vertical gardens
20 %	LOW	agree	Surely the best of nature based solutions is that they are inherently local - so local solutions to local situations should be a watchword
17 %	LOW	agree	Parks to cool and clean the air and collect rain water, rivers for water and deter floods...
16 %	LOW	agree	green areas/walls/roofs
16 %	LOW	agree	Not widely but some cases of: green walls, green roofs, green infrastructure and connecting parks, drainage systems etc.
15 %	LOW	agree	One element that I think should be stressed is that sustainable cities are profitable. Investing into a more sustainable cities can give direct profit to many actors in the city. From the exploitation of ecosystem services to the mitigation of extreme climate events. In our daily profession we still find a lot of resistance in proposing nature based solutions because they are not seen as opportunities by the parties involved.
15 %	LOW	agree	Ecosystem services
15 %	LOW	agree	hard to talk about widely applied when it's often locally-adapted solutions, e.g. water square in Rotterdam
13 %	BOTTOM	agree	urban gardening
12 %	BOTTOM	agree	proud: the new plan for waste water in copenhagen.. it is solved with extensive green area's

ReachPercent	Level	Agreement	Synthetron
11 %	BOTTOM	agree	Recreation opportunities provided by urban parks and other green areas are widely applied in cities
11 %	BOTTOM	agree	sustainable urban drainage increases the green space in a city (which has concomitant mental& emotional well-being benefits previously mentioned), as well as benefits to reduce rainwater in sewers, and climate resilience
11 %	BOTTOM	agree	Opening up private squares in Edinburgh as public greenspace - well used spaces that perform civic roles, and places for relaxation
9 %	BOTTOM	agree	urban green areas contribute to economic activities and people wellbeing
9 %	BOTTOM	agree	small community gardens, in-block gardens and first community composters
7 %	BOTTOM	agree	Nature-friendly green spaces that provide multiple functions (e.g. recreation, buffer against climate change effects in urban environment, relaxation, clean air, ...)
7 %	BOTTOM	agree	green roofs?
7 %	BOTTOM	agree	Climate Quarter in Denmark - climate change resilience provided by NBS
6 %	BOTTOM	agree	roof gardens - but we know little about their biodiversity or health value
6 %	BOTTOM	agree	urban nature supporting population mental health and wellbeing
6 %	BOTTOM	agree	"City bees" - network promoting bee keeping in urban areas - awareness raising and educational.
5 %	BOTTOM	agree	Local participation in gardening projects, growing vegetables together.
5 %	BOTTOM	agree	True, but aparently these can be pretty demanding in terms of input in order to keep them flourishing.
5 %	BOTTOM	agree	Sorry but having to score every statement is highly frustrating and getting in the way of a fruitful and potentially interesting discussion developing so I am opting out of discussion
5 %	BOTTOM	agree	building healthy community and infrastructure
5 %	BOTTOM	agree	Yes, green roofs, which capture rain and can serve other ecological functions can also be visually appealing for those urban residents and workers who can look out onto them .
5 %	BOTTOM	agree	optimisation of urban spaces for reducing enviromental impcats; urban compaction versus urbanization
5 %	BOTTOM	agree	Unfortunately NBS are not yet standard solution to be assessed first to solve the respective problem. Only if the assessment shows that hybrid or grey solutions better tackle the problem, then those should

ReachPercent	Level	Agreement	Synthetron
			be implemented. if such a priority would be put in practice, the wide application of NBS in cities would only be a matter of time
5 %	BOTTOM	agree	In Madrid, burying a motorway to create a puiblic park.
5 %	BOTTOM	agree	Publicly ranking the sustainability level of new developments to generate competition
4 %	BOTTOM	agree	Poor urban planning could aggravate the impacts of climate change in an urban environment. The increase of urban temperatures could be dealt with the creation of green areas and the promotion of the existing ones.

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(4) What are the strategic opportunities in the next 5-10 years for nature based solutions that will ensure more SUSTAINABLE URBANISATION? Please be as specific as you can.

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
15:26	15	83	272	32	0	0	1	4	27	

ReachPercent	Level	Agreement	Synthetron
56 %	MEDIUM	agree	Linking Public Health agendas with Nature Agendas
23 %	LOW	agree	Why we are always thinking in new development? There many things to do to improve the sustainability in the areas we already have
17 %	LOW	agree	more knowledge about the ecosystem services in general and what benefits they can have for an ordinary citizen
16 %	LOW	agree	linking economic regeneration strategies with nature based solutions
15 %	LOW	agree	NBS must be integrated in (potential) EU urban strategy
13 %	BOTTOM	agree	Transdisciplinary projects, everyone learns.

ReachPercent	Level	Agreement	Synthetron
13 %	BOTTOM	agree	development of the decision support tools that support local government and private parties to contribute to the nature-based city development
13 %	BOTTOM	agree	well said! this term has not been validated largely but came out only from IUCN looby
13 %	BOTTOM	agree	HiFacilitators! it seems there is a lot to clarify about the meaning of NBS :-)
12 %	BOTTOM	agree	There is a need of decision-making schemes that take into account integrated social-env-economic issues
11 %	BOTTOM	agree	The natural principle is surely that in nature, there is no other ecological system that is so wasteful as our public sewer system!
10 %	BOTTOM	agree	Before on embarking for good on the NBS path and make this new word the new buzzword from the commission, it would be highly needed to prove the added value of using such a word, compared to previous vocabulary. It would avoid confusion among society as a whole and would maybe permit avoiding procrastination over the already-proven-as-needed-actions to counteract biodiversity loss
9 %	BOTTOM	agree	Building more densely, with greater energy efficiency while providing citizens with better access to green space is at once a fundamental challenge and if addressed a strategic opportunity.
7 %	BOTTOM	agree	involvement of the community into planing of NBS
7 %	BOTTOM	agree	linking urban green with rural green through connected green infrastructure
7 %	BOTTOM	agree	The two main strategic opportunities are climate change (e.g. reducing the heat island effect) and public health (air quality, cost reduction of mental health, invitation to move on bikes or on foot, ...)
7 %	BOTTOM	bipolar	Reduce the population density in city centres - enhancing rural areas population. in this way the NBS can be more effective.
7 %	BOTTOM	agree	Make the Urban Agenda NBS at the core.
7 %	BOTTOM	agree	Not only the core, we need an integrated approach
7 %	BOTTOM	agree	Urban access rather than mobility.
6 %	BOTTOM	agree	Develop, test and implement urban governance models with the local stakehodlers in desiging green solutions in new urban development plans.

ReachPercent	Level	Agreement	Synthetron
6 %	BOTTOM	agree	Nature Based Solutions, the main topic here ;)
5 %	BOTTOM	agree	Climate change
5 %	BOTTOM	agree	Collaborate working from the bottom-up, s tarting with communities.
5 %	BOTTOM	agree	through NBS resiliency of cities as a hotspot of economic growth can be assured in a cost effective way
5 %	BOTTOM	agree	To move beyond the state of the art in terms of strategic implementation of eco-innovations it is high time to focus on balancing technology push with technology pull factors, where urban areas are no longer a backdrop for plug-and-play but an active and user-driven demand side.
5 %	BOTTOM	bipolar	who really wants to live in a dense/compact city...?
5 %	BOTTOM	agree	Education is key in cities: people live disconnected to Nature, Nature based solutions are also a way to put Nature back into our urban lives
5 %	BOTTOM	agree	Agree retrofitting is vital. Especially in cities with limited space - e.g London
5 %	BOTTOM	agree	As well as access to green space - emphasis on high quality green routes to work and home to allow comfortable and sustainable movement as density of cities are increased
4 %	BOTTOM	agree	We need a more holistic integrated approach between land use planning, transport and green/water spaces
4 %	BOTTOM	disagree	smart cities are just about IT and IT only is valid for a couple of years then out of date

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(5) If you had to rank the strategic problems from an economic opportunity point of view, which would come top of your list? Start your sentence with: “top:…”

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
15:40	8	81	118	7	0	0	0	1	6	

ReachPercent	Level	Agreement	Synthetron
15 %	LOW	agree	please clarify 'strategic problems from an economic opportunity point of view'
10 %	BOTTOM	agree	The impact of NBS on air quality in cities is difficult to assess. According to some studies air quality improvements due to greening are very low for some air pollutants. Better focus on reduction of emissions in cities (e.g. traffic management).+
9 %	BOTTOM	agree	what do you mean about strategic problems?
8 %	BOTTOM	agree	top strategic problem is capitalism and the (global) marked based society
8 %	BOTTOM	agree	Over-dependence on fossil fuels for transport, energy, water purification, building etc
8 %	BOTTOM	agree	You would save billions on human health care - curative and palliative
8 %	BOTTOM	agree	Top: To have an overall, holistic and strong urban planning, deciding how to protect landscape in the long run.

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(6) For you, what is a key research and innovation question which if solved would make the most difference for those wishing to fund or adopt sustainable urbanisation?

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
15:48	12	75	222	28	0	0	0	4	24	

ReachPercent	Level	Agreement	Synthetron
36 %	LOW	agree	Quantify the socio-economic and environmental benefits of NBS

ReachPercent	Level	Agreement	Synthetron
28 %	LOW	agree	bottleneck: long-term decision-making in the light of human well-being in cities and not primarily in the light of short-term economic gains
16 %	LOW	agree	Please work in coordination with other EC services (urban strategy, resource efficiency of buildings, EPBD, ...)
15 %	LOW	agree	Model the ability of individual cities to sustain a growing population under certain scenarios, and include development pathways with or without nature-based solutions
14 %	BOTTOM	agree	Urbanisation have to be inspired by nature to provide "forest like" solutions : Biomimicry, permaculture, agroecology, urban food production, ...
14 %	BOTTOM	agree	Bottleneck: Cities still often 'passive' laboratories - rather than local actors (decision-makers, practitioners ...) as equal counterparts in research
12 %	BOTTOM	agree	sorry lack of button up approch wanted to say
12 %	BOTTOM	agree	bottleneck: no consensus on models of "desirable" urban development
9 %	BOTTOM	agree	how can cities make money (or save money that are now spent) by adopting sustainable urbanization solutions? what kind of solutions are there that can create profit? this is what is more important for those making the decisions
9 %	BOTTOM	agree	Overall are approaches that centre on transdisciplinary solution-oriented research and innovation, integrated cross-sectorial research, participatory science and innovation, public engagement, added value by co-creation to be supported.
9 %	BOTTOM	agree	Provide more evidence on how 'green' solutions compare with 'grey' solutions
9 %	BOTTOM	agree	bottleneck: no co-operation with those creating new knowledge and sustainable systems with those making the decisions
8 %	BOTTOM	agree	Which are the most sustainable solutions?
8 %	BOTTOM	agree	Prove the cost-effectiveness of some NBS in relation to traditional "grey" solutions
8 %	BOTTOM	agree	how to convince people to think long term instead of short term
8 %	BOTTOM	agree	how to increase people awarness about the importance of nature?

ReachPercent	Level	Agreement	Synthetron
8 %	BOTTOM	agree	bottleneck: lack of top-down approach in policy developmentand lack of multidisciplinary approach in finding appropriate solutions
7 %	BOTTOM	agree	How can new development be made carbon, energy and water use neutral both in it construction and by its inhabitants over its anticipated lifespan
7 %	BOTTOM	agree	In which case is a mixture between NBS and "grey" solutions best? In which case is NBS not recommended
7 %	BOTTOM	agree	securing efficient water supply (pure drinking water) by use of innovative waste water and rain water management systems considering climate aspects in urban settings
7 %	BOTTOM	agree	bottleneck spatial planning with clear rules and community engagement
5 %	BOTTOM	agree	NBS do not (yet) have a "business case" and as solution vary need to educate architects, decision makers
5 %	BOTTOM	agree	Given the preoccupation of most decision-makers with economic growth and jobs, the key R&I question is 'what will it do for growth and jobs?'
5 %	BOTTOM	agree	Delelop and promote innovative planning methodologies on integrating NBS into urban planning
5 %	BOTTOM	agree	bottleneck: have people practically engaged i.e. touching with hands / dirty their hand with NBS experiences
5 %	BOTTOM	agree	Bottleneck: for transdisciplinary and integrated open innovation approaches to deliver more on its anticipated potential, one of the pertinent bottlenecks appears to be in the academic research system of merits and incentives to take on the role as co-creators (rather than remaining mere 'knowledge providers').
5 %	BOTTOM	agree	could we add political time cycles to this one as well ,i.e. these are shorter than needed in terms of taking the longer term view of human wellbeing
4 %	BOTTOM	agree	Early engagement of stakeholders is key

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

(7) Finally, share your most important take-away message for the research agenda on nature based solutions. Share your advice to DG Research & Innovation on the field of nature based solutions research. Start your sentence with: ”My advice is:

Started	Dur	Participants	Msgs	Synthetrons	Top	High	Medium	Low	Bottom	Poll
16:00	13	73	178	27	0	0	0	7	20	

ReachPercent	Level	Agreement	Synthetron
33 %	LOW	agree	My advice is: Make the need for and the benefits of NBS known especially to implementers, that is mayors and other politicians. Those working in the field of sustainable urbanization, academics, biologist, specialist in general are already convinced. It is those who could implement solutions that need awareness raising.
25 %	LOW	agree	my advice is to clarify the term NBS, explain the added value of NBS and explain the differences with the ES concept. Avoid a new buzz word that is again unclear.
24 %	LOW	agree	My advice is: Also explore how to best engage the community. Many succcessful NBS are ser-funded initiatives that pay for themselves or voluntary sector aided
22 %	LOW	agree	My advice is: let's not just see nature as a provider of services to people. The language of ES, NBS, reduces nature to something that just make use of somehow. Nature can provide, but we must think of ourselves as protectors of nature, not just users
18 %	LOW	agree	advise: dramatically increase educational projects, for children and adults, in order to increase the awarness about the importance of natural capital conservation
15 %	LOW	agree	My advice is to frame NBS within already developed conceptual frameworks: ecosystem services and green infrastructure in urban areas
15 %	LOW	agree	my advise: make decision support tool to couple and classify the possible interventions and estimate their impact on economic, environmental and social dimension (beneficiary local government and private stakeholders)
12 %	BOTTOM	agree	My advice is: show the tangible benefits of NBS over traditional approaches and demonstrate that they provide monetary savings when all of their ecosystem/social services functions are costed, then their uptake would seem obvious

ReachPercent	Level	Agreement	Synthetron
11 %	BOTTOM	agree	My advice: show case the not working ones as well
10 %	BOTTOM	agree	my advice is: engage in a really comprehensive assessment on impacts of NBS, in spatial, economic and social aspects.
10 %	BOTTOM	agree	My advice is: asses the expected impact of NBS in terms of economic, social and environmental sustainability
10 %	BOTTOM	agree	my advice is: emphasise the contribution NBS can make to quality of life of European citizens
10 %	BOTTOM	agree	My advice is to ensure a good blend between scientific research and practical application, including monitoring of effectiveness.
10 %	BOTTOM	agree	My advice: not to forget the urban food potential and the great potential for socio-economic impact that it has
10 %	BOTTOM	agree	My advice is: relate the impact to people's well being, to the next generation
10 %	BOTTOM	agree	Thank you
8 %	BOTTOM	agree	My advice as already said is: Before on embarking for good on the NBS path and make this new word the new buzzword from the commission, it would be highly needed to prove the added values of using such a word, compared to previous vocabulary. It would avoid confusion and frustration among society as a whole and would maybe permit avoiding procrastination over the already-proven-as-needed actions to counteract biodiversity loss and the increase of human-well being
8 %	BOTTOM	agree	My advise is define the interaction between NBS and the city clearly
8 %	BOTTOM	agree	I would agree with "aligning" NBS with ecoysystem services and green infrastructure, but I do not see these as entirely overlapping concepts.
8 %	BOTTOM	agree	I think frequently new buzz-words are required to attract people's/policy-maker's attention even if the content is pretty much the same (yet I agree that they need to be well defined)
7 %	BOTTOM	agree	There are many sustainable solutions already and more can be crated. What is missing is will and initiatives to bring these solutions to the surface, create awareness and apply them in real conditions to see and evaluate the results.
7 %	BOTTOM	agree	Advice: not only focus on product & performance (as are most biomimicry examples of today), but also

ReachPercent	Level	Agreement	Synthetron
			on systems and processes> there is much to gain
6 %	BOTTOM	agree	My advice is: to review the concept of NBS clarifying it and expanding it including NAture-Inspired solutions (ex: biomimicry). Possibly engagein an e-consultation about the concept of NBS as so far it has not been validated by major stakeholders and experts in the field of sustainability.
6 %	BOTTOM	agree	My advice is to create a culture of "living comfortably with less" in order to be able to move to a low-carbon economy
6 %	BOTTOM	agree	my advice is: involve local and regional authorities in determining what is it they need to move ahead
6 %	BOTTOM	agree	advise: education project about NBS should be preformed outside the school - give a public space (e.g. parks) new function
6 %	BOTTOM	agree	My advice is: fund research projects that identify contexts in which nature-based solutions are appropriate, and just as importantly contrast these contexts with situations where 'articifical/technical-solutions' work best. This raises the question of whether there really are many solutions which do not have a foundation in nature (they would have to avoid being governed by physical laws...)

Explanation: TOP >= 90% (of Reach) > HIGH >= 70% > MEDIUM >= 40% > LOW >= 15% > BOTTOM >= 0%

General Statistics

Overview

	risk	restoring	climate	urban	Synthetron-Benchmark
Number of active Participants [1]	74	89	80	91	
Total Count of Messages	619	902	814	1.133	
Messages per Person	8.4	10.13	10.18	12.45	16
Total Count of Synthetrons	110	118	78	144	
Synthetronization	18%	13%	10%	13%	17%
Total Count of Elaborations	133	270	199	316	
Elaboration Level	21%	30%	25%	28%	21%
Total Count of Bipotrons	86	140	110	180	
Bipotronization	14%	16%	14%	16%	19%

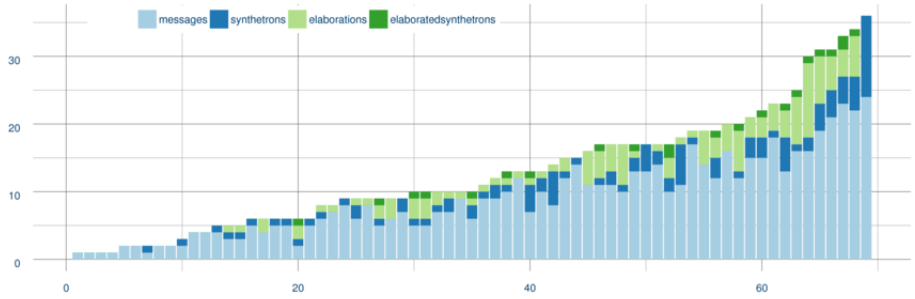
[1] scored and/or sent messages

Synthetronization: indicates the number/ percentage of statement that received a sufficient level of support to be propagated beyond the immediate networked participants

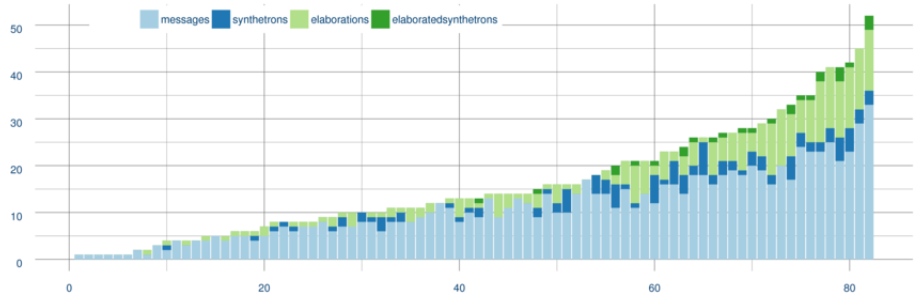
Although the average level of synthetronization appeared to be slightly below the benchmark, we observe a significant higher level of elaboration, meaning that participants really engaged in direct conversation with each other.

Activity Level

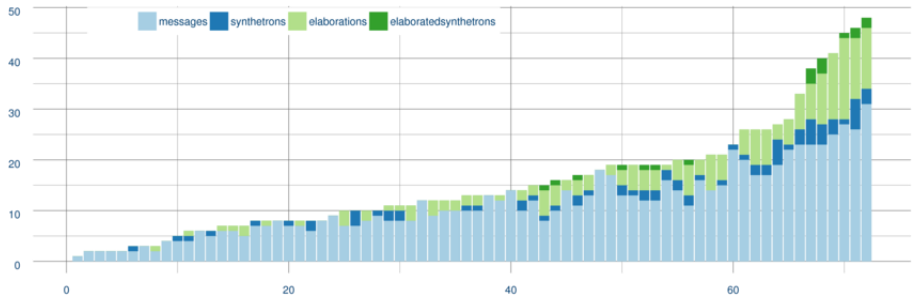
Risk



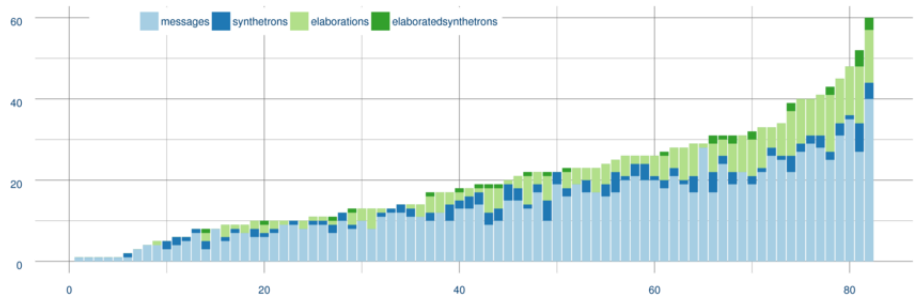
Restore



Climate



Urban



The activtiy pattern of all 4 discussions were in line with normal expectations.

Explanations

Discussion & Messages

Synthetrons	Synthetrons are messages which have been selected, based on the cumulated level of scores they were attributed by participants. The higher the score, the more weight the participants give to them. The classes are defined in the following order (Synthetron Level): ▪ top: > 90% reach ▪ high: > 70 % ▪ medium: > 40% ▪ low :> 15% and ▪ bottom: < 15%.
Reach Percentage	The percentage of participants that have scored the message before it fell below the scoring threshold
Bipotrons	Bipotrons are messages which participants scored in opposing ways: agree and disagree.

INPUT TO E-CONSULTATION: CONCEPT NOTE[3]

Within the overall aim of contributing to greening the economy and making development sustainable, the objective of the EU Research & Innovation policy on Nature-Based Solutions is to position Europe as a world leader both in Research & Innovation on nature-based solutions and in the global market for nature-based solutions.

Nature-based solutions to societal challenges involve the application of knowledge about the features and processes of nature in work, towards options for future actions that are resilient, resource efficient, and attuned to local conditions and needs. They build on two premises: (i) some societal challenges stem from human activities that have failed to recognize ecological limitations; (ii) sustainable alternatives to those activities can be found by looking to nature for design and process knowledge. Thus, nature-based solutions are inspired and supported by nature, and they maintain and enhance natural and social capital. They are positive, innovative responses to societal challenges, and they have the potential to simultaneously meet environmental, social, and economic objectives.

The EU Research & Innovation policy promoting nature-based solutions will encourage actions that:

- Capitalise on existing knowledge, and supplement where necessary, to provide a sound evidence-base for tackling some of the most pressing global challenges with solutions inspired or supported by nature;
- Integrate social, economic and environmental considerations in such a way as to result in responsible innovations;
- Deliver role-models for change that can be measured, verified, replicated, adapted and scaled-up in Europe and world-wide;
- Open up new opportunities for capacity-building in all areas of ecological expertise and related subject areas;
- Foster trans-disciplinary and multi-stakeholder involvement from design to implementation to enhance awareness, mutual learning, and optimal uptake of solutions, including societal buy-in;
- Innovate with governance, finance and business models, as well as stimulate both social innovation and market opportunities;
- Leverage both public and private sources of funding for scaling up the deployment of nature-based solutions.

This Research and Innovation policy promotes systemic and sustainable nature-based solutions for re-naturing cities, mitigating and adapting to climate change, restoring degraded ecosystems, and improved risk management.

Engagement by, and collaboration between, knowledge holders and providers, policy-makers, implementers and market players, users and society at large - from local, regional, national, EU up to global levels - is vital to realize the objectives of greening the economy and making development sustainable and

[3] The input has been prepared by the Horizon 2020 Expert Group on Nature Based Solutions and Re-Naturing Cities. It does not necessarily represent the views of the European Commission.

inclusive. Therefore, we invite all types of stakeholders from all levels to participate, including authorities, private businesses, and branch organisations, land owners, media and press, research institutes, educational institutions, civil society (non-governmental organizations), the financial and insurance sector, as well as committed individuals.

INPUT TO E-CONSULTATION: IMPROVED RISK MANAGEMENT AND RESILIENCE[4]

1. Challenge, Trend

The European Union is exposed to a range of natural and technological hazard types: drought, earthquakes, epidemics, extreme temperatures, floods, industrial accidents, wet mass movements (landslides and avalanches), storms, transport accidents, volcanos and wildfires. Between 2002 and 2013, numerous events generated more than 80 000 fatalities and several hundreds of billions euros of damages. Whilst fatalities are, for the most of part, due to extreme temperature, 40% of the amount of damages and 50% of the total population affected are due to floods. Without strong adaptation policies, the damages could reach unbearable amounts by the end of 21st century, due to the evolution of human activities concentrated in exposed areas and to the effects of climate change (floods, heatwave, drought…). Most nature-based solutions (NBS) aim to reduce the frequency or intensity of different types of hazards, such as floods, drought, heatwaves, forest fires and tsunamis and their impacts.

2. Strategic opportunity areas

The implementation of NBS offers major opportunities. When NBS aims to prevent risk, it often combines multiple functions and benefits: reduction of pollution, carbon storage, preservation of biodiversity, recreational activities, economic opportunities. Moreover NBS may offer synergies in reducing multiple risks (drought and floods, for instance) and meet the objectives of different current regulations in Europe. Also they will contribute to climate change adaptation and mitigation. The implementation of NBS suffers from a range of difficulties, not only because they question more traditional solutions, such as grey infrastructure. Of special interest would be to develop a methodology and empirical studies of the insurance value of ecosystems which represents the value of the sustained capacity of ecosystems to reduce risks to human society caused by natural disasters. However, there is a lack of an evidence base, and further important obstacles to progress include: establishing this in an effective governance and business model and obtaining funding for the initiatives.

3. Examples

Today, NBS aiming to prevent risks are implemented in different areas: e.g. flooding along rivers (natural water retention measures, dike relocation, river renaturation, buffering areas, restoration of wetlands, floodplain, re-meandering…), sea level rise in coastal regions (de-poldering, set back of estuarine defences, maintaining dunes and beaches…), heat island effects in cities (multifunctional green public spaces, sustainable urban drainage systems…), droughts in rural areas (sustainable agricultural practices) and landslides in mountainous zones (reforestation).

4 The input has been prepared by the Horizon 2020 Expert Group on Nature Based Solutions and Re-Naturing Cities. It does not necessarily represent the views of the European Commission.

Research & Innovation

- Develop models for (1) calculating different scenarios of risk reduction for different types of ecosystems (2) analyzing the effects of restoring degraded lands on risk reduction taking into account the ecosystem capacity, (3)analyze the qualitative aspects needed to sustain the insurance capacity of ecosystems;
- Translate risk reduction capacity into value through, e.g. calculating benefit/investment ratios where benefits represent the reduced risk and potential lower premiums of property insurance policies;
- Develop decision support tools to compare NBS with grey solutions and to select, design and implement NBS within land use planning, integrating several scales;
- Develop recommendations for governance and decision making process including the issues of distributional effects, acceptability, institutional and funding barriers, public participation.

INPUT TO E-CONSULTATION: RESTORATION OF DEGRADED ECOSYSTEMS[5]

Challenge, Trend

Significant areas of ecosystems are being lost and/or degraded – particularly in terms of fragmentation, conversion, and pollution - at a rapid rate due largely to anthropogenic actions. While dominant drivers vary by ecosystem type, key European pressures include: agricultural intensification, climate change, grey infrastructure expansion, increasing polluted brownfield sites, hydromorphological modifications to water bodies and unsustainable forestry practices. The resultant degradation threatens ecosystems' health and ability to function and therewith their delivery of essential services, such as water purification, carbon storage, soil erosion protection, nutrient cycling, flood damage control, forest carbon storage, and the provisioning of liveable places and recreational opportunities. Consequently, degraded ecosystems also jeopardize human well-being, economic stability and physical security.

Strategic opportunity areas

- Need to tackle Europe's resource scarcity by: avoiding the unsustainable use of available (and scarce) natural resources, preventing further degradation of ecosystems, and investing in additional restoration/re-naturing activities. These approaches can save the natural and economic resources in the long-term which underpin our economy, and thereby benefit future generations.
- Growing interest within the business community to maintain, but also to restore, the functionality of degraded ecosystems and their services, in particular where intact and resilient ecosystems build the basis for business revenue
- Increasing interest across society to implement solutions (see examples below) that generate economic benefits and increase the attractiveness of landscapes, cities and livelihoods more generally, while responding to impending threats such as climate change and the need for more green infrastructure.

Examples

- Flood protection: Transformation/restoration of riverbanks and floodplains, which often also include the establishment of recreation areas; produce a high lifetime cost-benefit ratio
- Coastal protection: Relocation of dykes and allowing for natural sedimentation processes; significant cost savings as compared to grey solutions, and increased attractiveness of landscapes

5 The input has been prepared by the Horizon 2020 Expert Group on Nature Based Solutions and Re-Naturing Cities. It does not necessarily represent the views of the European Commission.

- Climate change mitigation and recreational areas: Afforestation and rewetting peatlands; financed through CO_2 certificates and public private partnerships (including foundations, schools, public authorities) and involving a wide range of stakeholders, such as individuals, tourists schools, business etc.

Research & Innovation

- **Assess the effectiveness of possible restoration interventions.**
  There is a considerable literature but this needs to be collated and summarised.
- **Develop business and investment models to create opportunities for public-private partnerships and (voluntary) market-based incentives for business and individuals**
  Actions include (1) Exploring which ecosystems can be restored at a low cost or generate positive cost-benefit ratios in the long-term (environmentally, socially and economically), (2) Identifying mechanisms to encourage and/or support actors (companies and financial institutions – banks, pension funds) to invest in and restore/re-nature degraded ecosystems and (3) Create supporting and adequate legislative and institutional structures to enable investments in ecosystem restoration.
- **Set up demonstration projects to reconnect people with nature and facilitate social learning**
  Design and initiate restoration projects at a local level which target/re-connect urban and peri-urban populations and children and young people with nature and facilitate project ownership, build a sense of community and support shifts in mindsets and behaviours.
- **Develop business models to involve health insurance companies in restoration activities**
  Develop concepts for cooperation and business models to prevent diseases and support human health e.g. by increasing opportunities for physical activity and facilitating behavioural change. Target the generation of funds and investments to invest in the restoration of degraded areas, which can serve as recreational and sport areas and increase mental health.

INPUT TO E-CONSULTATION: CLIMATE CHANGE ADAPTATION AND MITIGATION[6]

Challenge, Trend

Climate change adaptation and mitigation (CCAM) is an over-arching and cross-cutting priority as it impacts all aspects of the environment and society and is one of the principal drivers of biodiversity loss. Climate change impacts are likely to increase and adaptation and mitigation are complementary strategies for addressing them. Nature-based approaches to CCAM present possible solutions, but less is known about the extent to which CCAM can address not only climate change, but also other environmental, social and economic challenges. In this context, a theoretical and empirical exploration of the concept of insurance value of ecosystems is needed.

Strategic opportunity areas

A number of innovative nature-based opportunities for CCAM exist, both for further development of specific methods of CCAM, but also the realisation of the cross-sectoral synergies, such as:

- developing low cost, low maintenance and low carbon solutions to climate change challenges, particularly in urban areas
- enhancing the cost effectiveness of responses to societal challenges through investing in NBS which can address multiple challenges e.g. CCAM and risk management in cities
- improving natural capital and the conservation of nature, although conservation and the objectives of nature-based solutions may not be entirely compatible
- investing in new techniques, e.g. carbon biomineralisation; artificial photosynthesis and carbon photo-sequestration

Examples of existing nature-based solutions

1. Flood risk management– floodplain recreation can be the/part of the solution to flood risk (especially important for urban areas) through increasing water storage and slowing river response times. It can have multiple other benefits including: long-term improvement in water quality, increase in wetland habitats and species and carbon sequestration. There is a mitigation trade-off with increased in CH_4 and N_2O emissions.

6 The input has been prepared by the Horizon 2020 Expert Group on Nature Based Solutions and Re-Naturing Cities. It does not necessarily represent the views of the European Commission.

2. Heat stress in urban environments – the presence of vegetation can decrease temperatures and heat stress events. Trees are particularly effective, but green roofs and wall, gardens and parks all contribute, not only to addressing this issue but also they can improve human health, biodiversity, reduce flood risk and store carbon.
3. Carbon storage - through carbon biomineralisation plants store some carbon as inorganic minerals. Certain crop types e.g. sugar cane and varieties can biomineralise carbon at a greater rate than natural vegetation and thus agriculture could contribute further to climate mitigation.

Research & Innovation

- Develop models for analyzing the qualitative aspects and investments needed to sustain the insurance capacity of ecosystems, e.g. functional diversity of the system;
- Strengthen knowledge of (i) economic, social and health benefits of nature-based CCAM; (ii) trade-offs, both between nature-based CCAM and across other priorities;
- Demonstrate how nature-based CCAM can be integrated into key economic sectors and the associated human benefits, e.g. through translating risk reduction capacity into value through calculating benefit/investment ratios where benefits represent the reduced risk and potential lower premiums of property insurance policies.

INPUT TO E-CONSULTATION: SUSTAINABLE URBANISATION[7]

Main challenges and trends

As a consequence of on-going industrial activities, population growth, climate change and increased urbanisation, the quality of our urban environments is at risk[8]. We need to rethink our cities, if we are to deliver significant social and environmental benefits. Cities need to be developed and regenerated, so that they provide healthy and liveable environments.

Strategic opportunity areas

Global studies demonstrate the effectiveness of nature-based solutions in urban areas in performing essential ecosystem services. It plays two major roles - first in contributing to the **quality of life** by determining the attractiveness of cities, and as such **influence economic value.** Secondly, they can provide **climate change resilience**, as urban green and water systems perform a range of functions, e.g. 'buffering' from extreme weather conditions, water storage and purification, urban cooling, improving air and soil quality and further biodiversity.

Sustainable urbanisation presents multiple dimensions for investigation, and can be categorized under three main challenges / trends. These challenges are interconnected:

1) the **economic development in urban areas** is highly dependent on the wealth and quality of natural resources e.g. 1.a) to fuel energy grids, 1.b) to meet the demand for water used for sanitation and drinking, 1.c) to manufacture a complex range of products in a fast-consumer society, etc.;

2) the **environmental dimension in urban planning** is most often linked to regeneration of derelict areas, to the improvement of recreation facilities and to the general well-being of citizens, e.g. 2.a) sustainable green and blue infrastructures, 2.b) clean air, 2.c) urban biodiversity, 2.d) urban and harbour farming activities, i.e. cultivation of seaweed, oysters and fish, 2.e) need for more renewable resources, 2.f) urban waste disposal etc.;

3) the **social dimension in sustainable urbanisation** focuses on people's well-being and is linked to a city's liveability e.g. 3.a) sustainable green-and-blue infrastructure vs. dominant steel-and-concrete architecture, 3.b) affluent vs. less affluent areas dependent on industrial/commercial clusters 3.c) attractive

[7] The input has been prepared by the Horizon 2020 Expert Group on Nature Based Solutions and Re-Naturing Cities. It does not necessarily represent the views of the European Commission.
[8] 53% of the global population lives in cities. By 2030, 70% of the global population is estimated to be urban dwellers. The World Bank, 2013

vs. unattractive, e.g. work-family life balance, options for recreational activities etc., 3.d) safe vs. unsafe areas, e.g. high criminality rate, scarcity of jobs, qualitatively lower educational systems and other social problems associated with the city.

Research and innovation

What are the challenges and the socio-economic and environmental benefits of nature-based solutions for improving liveability of cities?

What are the sustainable business models that enable economic growth through sustainable urbanisation whilst providing health and social and economic progress for citizens and businesses?

What are the opportunities presented by creating new and optimising the usage of currently available nature-based solutions associated with buildings and infrastructure in cities?

About Synthetron

Contact

Belgium/HQ:
Joanne Celens, joanne.celens@synthetron.com, Tel. +32 475 55 29 33
Jan Camelbeek, jan.camelbeek@synthetron.com, Tel. +32 479 205 200

Head Office:
Paleizenstraat 44 1030 Brussels - Belgium
Registered: BE0464.953.464 Meerlaan 38,

1910 Kampenhout, Belgium

For better change management we engage relevant stakeholders in anonymous online moderated conversations, so we can collaboratively identify their wisdom, feedback and solutions.