GREEN INFRASTRUCTURE AND RESTORATION: GLOSSARY

The following objectives of the WG GIIR (Working Group on Green Infrastructure Implementation and Restoration) have been identified to profit from the elaboration of a glossary on relevant terms: *(a) the exchange of information between EC, MS and civil society on the implementation of tasks mentioned in the Green Infrastructure (GI) Strategy; (b) giving added value to EC actions by transferring them to the national context and vice versa; (d) the exchange of information on best practice in relation to ecosystem restoration and its contribution to GI deployment.* During its meeting of 23/06/14, the WG GIIR agreed that members will work on such a glossary of GI/restoration.

This document collects information related to definitions on GI and restoration provided within the work on Mapping and Assessment of Ecosystems and their Services MAES, Restoration, No Net Loss NNL, and of the 1st Green Infrastructure Working Group. It further explores glossaries used in study contracts and guidance documents elaborated for the Commission, as well as further sources. The annex collects the contents of the glossary documents. It should be noted, however, that definitions in this document are not an exhaustive compilation of existing definitions, nor did the working group members interpret or critique any definitions in relation to green infrastructure.

Aim of the work of the WG is to get an overview on the used terminologies and to improve coherence between them – this work is explicitly not developing new or modifying existing definitions. A focus is set on general terminology, whilst also exploring how the urban, agricultural or water management sectors are using the term. Attention is paid to vocabulary such as NNL, nature-based solutions, ecosystem-based solutions and how these terms are linked; and on different definitions of GI used in Member States.

In a later stage, translations of the glossary in all the languages could be an option for the future but the main focus of this document is placed on delivering a coherent message, because different languages could imply different meanings.

This work could also contribute to understand the demarcation line between GI and restoration, referring to questions such on "Are all restoration activities always contributing to GI and vice versa? Ex. Are green roofs part of restoration?"

EU Green Infrastructure Policy: Public consultation

The European Commission had convened a Working Group on Green Infrastructure Implementation and Restoration (2014) to develop documents supporting Green Infrastructure policy development and implementation in particular at national and regional levels.

http://ec.europa.eu/environment/nature/ecosystems/index_en.htm

A. Official documents of the European Commission

1. COM(2013)249 Green Infrastructure (GI) — Enhancing Europe's Natural Capital

Form	*Where?*	*What?*	*Link to source*
Text	Chapter 1.2 "What is GI?"	Description and definition of GI	http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013DC0249

2. SWD(2013)155 final: Green Infrastructure (GI) — Enhancing Europe's Natural Capital. Technical information on Green Infrastructure (GI)

Form	*Where?*	*What?*	*Link to source*
Glossary	Part IV: Glossary	Explanation of key terms; references	http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013SC0155

B. European Commission study contracts and EEA reports

1. Science for Environment Policy In-depth Reports: The Multifunctionality of Green Infrastructure (2012)

Form	*Where?*	*What?*	*Link to source*
Text	Introduction	Description of GI	http://ec.europa.eu/environment/nature/ecosystems/docs/Green_Infrastructure.pdf

2. European Environment Agency: Green infrastructure and territorial cohesion. The concept of green infrastructure and its integration into policies using monitoring systems (2011)

Form	*Where?*	*What?*	*Link to source*
Text, Table	2.1 Definition of green infrastructure	Example definitions of GI: characteristics, benefits, references	http://www.eea.europa.eu/publications/green-infrastructure-and-territorial-cohesion

3. IEEP and Milieu (2013). The Guide to Multi-Benefit Cohesion Policy Investments in Nature and Green Infrastructure. By Peter Hjerp, Patrick ten Brink, Keti Medarova-Bergstrom, Leonardo Mazza, and Marianne Kettunen of IEEP, together with Jennifer McGuinn, Paola

Banfi and Guillermo Hernández of Milieu. A Report for the European Commission. Brussels.

Form	*Where?*	*What?*	*Link to source*
Text, Table	Key definitions: Green Infrastructure	Description of GI	http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/guide_multi_benefit_nature.pdf

4. Naumann, Sandra, McKenna Davis, Timo Kaphengst, Mav Pieterse and Matt Rayment (2011): Design, implementation and cost elements of Green Infrastructure projects. Final report to the European Commission, DG Environment, Contract no. 070307/2010/577182/ETU/F.1, Ecologic institute and GHK Consulting.

Form	*Where?*	*What?*	*Link to source*
Text	3.1 Definition of green infrastructure	Description of GI + references	http://ec.europa.eu/environment/enveco/biodiversity/pdf/GI_DICE_FinalReport.pdf

5. Lammerant, Johan; Peters, Richard; Snethlage, Mark; Delbaere, Ben; Dickie, Ian; Whiteley, Guy. (2013) Implementation of 2020 EU Biodiversity Strategy: Priorities for the restoration of ecosystems and their services in the EU. Report to the European Commission. ARCADIS (in cooperation with ECNC and Eftec).

Form	*Where?*	*What?*	*Link to source*
Text, glossary	2.2 Definitions for 'restoration' 2.3.2 Terms and definitions	Definition of restoration, restored and degraded ecosystems. Key terms + references	http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/RPF.pdf

6. Medarova-Bergstrom, K, Kettunen, M, Rayment, M, Skinner, I and Tucker, G (2014) Common Framework for Biodiversity-Proofing of the EU Budget: General guidance. Report to the European Commission, Institute for European Environmental Policy, London.

Form	*Where?*	*What?*	*Link to source*
Text, glossary box	Box 1.2. Glossary of terms	Glossary of key terms for biodiversity proofing	http://ec.europa.eu/environment/nature/biodiversity/comm2006/proofing.htm

C. Glossaries on European websites

1. Glossary of key terms used in the European Climate Adaptation Platform

Form	*Where?*	*What?*	*Link to source*
Web glossary	Whole webpage http://climate-adapt.eea.europa.eu/glossary	Key terms on Climate change adaptation	http://climate-adapt.eea.europa.eu/

D. Glossaries elaborated by Working Groups

1. Recommendations of the (first) Working Group on GI (2012)

Form	*Where?*	*What?*	*Link to source*
Text	GI TASK 1/2/3 RECOMMENDATIONS	Description of GI functionalities	https://circabc.europa.eu/w/browse/194caec4-df33-4ffc-ae79-c9e53aa11e87

2. Glossary of MAES (2014)

Form	*Where?*	*What?*	*Link to source*
Glossary	MAES Glossary of terms	Description key terms	http://biodiversity.europa.eu/maes/glossary-of-terms

3. Glossary of NNL (2014)

Form	*Where?*	*What?*	*Link to source*
Glossary document	Whole document	Description of 7 key terms relevant for NNL	http://ec.europa.eu/environment/nature/biodiversity/nnl/pdf/NNL_Glossary.pdf

E. Glossaries on European, national or regional level

1. Opinion of the European Economic and Social Committee on the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions "Green Infrastructure (GI) — Enhancing Europe's Natural Capital COM(2013) 249 final"

Form	*Where?*	*What?*	*Link to source*
Text	3.1 A clear definition of GI	Definition of GI	http://www.eesc.europa.eu/?i=portal.en.nat-opinions.29377

2. UK: Building natural value for sustainable economic development: Green Infrastructure Valuation Toolkit (Northwest region)

Form	*Where?*	*What?*	*Link to source*
Web glossary	Whole webpage http://www.greeninfrastructurenw.co.uk/html/index.php?page=glossary	Key terms on Green Infrastructure in the regional context	http://www.greeninfrastructurenw.co.uk/html/index.php?page=index

3. France: Cartographie des réseaux écologiques de Rhône-Alpes

Form	*Where?*	*What?*	*Link to source*
Glossary	Whole document http://biodiversite.rhonealpes.fr/documents/corridors/RERA2010_Glossaire.pdf	Key terms and acronyms for ecological networks	http://biodiversite.rhonealpes.fr/spip.php?rubrique60

4. UK: National Ecosystem Assessment 2011 and NEA Follow On Report 2014

Form	*Where?*	*What?*	*Link to source*
Text and Section on keywords related to Cultural Ecosyste	Whole document http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx	Comprehensive analysis of the UK's natural environment in terms of the benefits it provides to society and	http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx Keywords: http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=cBf%2

m Services Glossary		economic prosperity. The UK National Ecosystem Assessment follow on was published in 2014. It provided further analysis of the cultural and economic value of nature and developed a range of tools and methods to assist decision-makers wishing to apply an ecosystems approach. Includes Section on keywords	bpR5zDns%3d&tabid=82

F. Non-EU publications with glossaries relevant for GI:

1. TEEB glossary

Form	*Where?*	*What?*	*Link to source*
Glossary	Whole document (9 pg)	Key terms for TEEB + references	http://termite.eea.europa.eu/uploads/document/file/1026/TEEB_Glossary.pdf

Table 1: Summary of Definitions for GI

KEY TERM	DEFINITION	SOURCE	LEVEL
Green Infra-structure (GI)	GI is a successfully tested tool for providing ecological, economic and social benefits through natural solutions. It helps us to understand the value of the benefits that nature provides to human society and to mobilise investments to sustain and enhance them. It also helps avoid relying on infrastructure that is expensive to build when nature can often provide cheaper, more durable solutions. Many of these create local job opportunities. GI is based on the principle that protecting and enhancing nature and natural processes, and the many benefits human society gets from nature, are consciously integrated into spatial planning and territorial development. Compared to single-purpose, grey infrastructure, GI has many benefits. It is not a constraint on territorial development but promotes natural solutions if they are the best option. It can sometimes offer an alternative, or be complementary, to standard grey solutions.	http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013DC0249	EU
GI	Network of natural and semi-natural areas, features and green spaces in rural and urban, terrestrial, freshwater, coastal and marine areas. It is a broad concept, and includes natural features, such as parks, forest reserves, hedgerows, restored and intact wetlands and marine areas, as well as man-made features, such as ecoducts and cycle paths. The aims of GI are to promote ecosystem health and resilience, contribute to biodiversity conservation and enhance ecosystem services.	http://ec.europa.eu/environment/nature/ecosystems/docs/Green_Infrastructure.pdf	EU
GI	A concept addressing the connectivity of ecosystems, their protection and the provision of ecosystem services, while also addressing mitigation and adaptation to climate change. It contributes to minimising natural disaster risks, by using ecosystem-based approaches for coastal protection through marshes/flood plain restoration rather than constructing dikes. GI helps ensure the sustainable provision of ecosystem goods and services while increasing the resilience of ecosystems. The concept is central to the overall objective of ecosystem restoration, which Is now part of the 2020 biodiversity target. It also promotes integrated spatial planning by identifying multifunctional zones and by incorporating habitat restoration measures and other connectivity elements into various land-use plans and policies, such as linking peri-urban and urban areas or in marine spatial planning policy. Its ultimate aim is contributing to the development of a greener and more sustainable economy by investing in ecosystem-based approaches delivering multiple benefits in addition to technical solutions, and mitigating adverse effects of transport and energy infrastructure	http://www.eea.europa.eu/publications/green-infrastructure-and-territorial-cohesion	EU

GI	An interconnected network of natural areas and other open spaces that conserves natural ecosystem values and functions, sustains clean air and water, and provides a wide array of benefits to people and wildlife	Benedict, M. and McMahon, E. (2006). Green Infrastructure. Linking Landscapes and Communities	Academic
GI	Network of natural places and systems in, around and beyond urban areas. It includes trees, parks, gardens, allotments, cemeteries, woodlands, green corridors, rivers and wetlands	Commission for Architecture and Built Environment (2011)	National
GI	An approach to land use, underpinned by the concept of ecosystem services. Green assets such as parks, coastlines or embankments have generally been thought of in terms of their single functions- the approach that recognises their vast range of functions and their interconnectivity is called green infrastructure	Landscape Institute (2009). Green Infrastructure Position statement.	Organizational
GI	Connections between Natura 2000 sites. Valuable green urban areas and man-made bridges to natural areas, ecological corridors and zones where habitats merge	European Commission (2011)	EU
GI	Maintains and improves ecological functions in combinations with multifunctional land uses. Natural and 'man-made' structures or a territory devoid of permanent man-made structures that provide-directly or indirectly, partly or totally-through the vegetation it supports, a series of services to society.	Marco Fritz, European Commission. Environment DG	EU
GI	A strategic approach to land conservation, a 'smart' conservation that addresses the ecological and social impacts of sprawl and the accelerated consumption and fragmentation of open land.	Benedict and McMahon (2002). The Conservation Fund's Green Infrastructure	National
GI	Green infrastructure is an approach to wet weather management that uses soils and vegetation to utilise, enhance and/or mimic the natural hydrologic cycle processes of infiltration, evapotranspiration and reuse.	US Environmental Protection Agency (2008). Managing Wet Weather with Green Infrastructure. Action Strategy.	National
GI	Green infrastructure is the actions to build connectivity nature protection networks as well as the actions to incorporate multifunctional green spaces in urban environment.	EEAC (2009). Green Infrastructure and Ecological Connectivity	Organizational
GI	Green infrastructure is an approach to wet weather management that uses soils and vegetation to utilise, enhance and/or mimic the natural hydrologic cycle processes of infiltration, evapotranspiration and reuse.	US Environmental Protection Agency (2008). Managing Wet Weather with Green Infrastructure. Action Strategy.	National

GI	Green infrastructure is a concept that is principally structured by a hybrid hydrological/drainage network, complementing and linking relict green areas with built infrastructure that provides ecological functions. It is the principles of landscape ecology applied to urban environments	Ahern, J. (2007). Green infrastructure for cities: The spatial dimension.	Academic
GI	Green infrastructure is a strategically planned and delivered network of high-quality green spaces and other environmental features. It should be designed and managed as a multifunctional resource capable of delivering a wide range of environmental and quality‑of‑life benefits for local communities. Green infrastructure includes parks, open spaces, playing fields, woodlands, allotments and private gardens	Natural England. (2010)	National
GI	The network of natural and semi-natural areas, features and green spaces in rural and urban, terrestrial, freshwater, coastal and marine areas, which together enhance ecosystem health and resilience, contribute to biodiversity conservation and benefit human populations through the maintenance and enhancement of ecosystem services	http://ec.europa.eu/regional policy/sources/docgener/studies/pdf/guidemulitbenefitnature.pdf	EU
GI	Strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, green infrastructure is present in rural and urban settings	http://ec.europa.eu/regional policy/sources/docgener/studies/pdf/guidemulitbenefitnature.pdf	EU
GI	Green infrastructure is the network of natural and semi-natural areas, features and green spaces in rural and urban, terrestrial, freshwater, coastal and marine areas, which together enhance ecosystem health and resilience, contribute to biodiversity conservation and benefit human populations through the maintenance and enhancement of ecosystem services. Green infrastructure can be strengthened through strategic and co-ordinated initiatives that focus on maintaining, restoring, improving and connecting existing areas and features as well as creating new areas and features	http://ec.europa.eu/environment/enveco/biodiversity/pdf/GI_DICE_FinalReport.pdf	EU
GI	The process of actively managing the recovery of an ecosystem that has been degraded, damaged or destroyed as a means of sustaining ecosystem resilience and conserving biodiversity	CBD (2011)	Organizational
GI	A strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings.	Enhancing Europe's Natural Capital (COM/2013/0249 final)	Organizational
GI	Green Infrastructure is addressing the spatial structure of natural and semi-natural areas but also other environmental features which enable citizens to benefit from its multiple services. The underlying principle of Green Infrastructure is that the same area of land can frequently offer multiple benefits if its ecosystems are in a healthy state. Green Infrastructure investments are generally characterized by a high level of return over time, provide job opportunities, and can be a cost-effective alternative or be complementary to 'grey' infrastructure and intensive land use change. It serves the interests of both people and nature	NWRM Glossary, January 2015	Organizational

	.Clarification points: From the perspective of Natural Water Retention Measures (NWRM), green infrastructure refers to new methods of managing water, favouring as much as possible the restoration of natural ecosystems or at least of their key functionalities in terms of water management. It consists of land management or engineering measures which use vegetation, soils, and other natural materials to restore the natural water retention capacity of the landscape. Green infrastructure measures use natural and man-made materials to enhance or improve longitudinal and lateral hydrological connectivity and natural hydrologic processes, including infiltration and runoff control but also purification processes. Green infrastructure can exist at a range of spatial scales, ranging from the very local, to the scale of a neighbourhood, a city or a whole region. Local scale green infrastructure includes green roofs, permeable pavements and downspout disconnections, all of which can contribute to greater natural infiltration, reduced load on wastewater management systems, and limitations of peak runoff. At the scale of a city or neighbourhood, green infrastructure can support sustainable urban drainage systems that mimic nature by soaking up and storing water or biodiversity promotion with fish ladders. At a regional scale, green infrastructure can include the mosaic of managed semi-natural and natural areas that provides habitat, flood protection, cleaner air, and cleaner water. Thus land management strategies such as afforestation and retention of natural water retaining features in agricultural areas such as riparian buffers, ponds and wetlands can be considered as Green infrastructures designed to manage flood risks in downstream urban areas. One key feature of Green infrastructure is its multi-functionality. The underlying principle of green infrastructure is that the same area of land can offer multiple benefits if the natural or man-made ecosystem is in a socio-ecologically sustainable state. Benefits of green infrastructure include a more natural hydrological cycle and ecosystem services related to biodiversity and human amenity. Green Infrastructure investments are generally characterized by a high level of return over time, provide job opportunities, and can be a cost-effective alternative or be complementary to 'grey' infrastructure and intensive land use change. Green infrastructure serves the interests of both people and nature.		
GI	The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed	SER (2004)	National

Table 2: Summary of Key Terms relevant for GI

KEY TERM	DEFINITION	SOURCE	LEVEL
Additionality	It refers to the need for a compensation measure to provide a new contribution to conservation, additional to any existing values, i.e. the conservation outcomes it delivers would not have occurred without it.	McKenney and Kiesecker (2010)	Academic
Afforestation	Afforestation is the process of planting trees, either to replace those removed during forest harvesting or as a means of land use conversion. Afforestation is part of several natural water retention measures as it can contribute to a more natural and sustainable hydrologic cycle	NWRM Glossary, January 2015	Organizational
Agricultural practice	Agronomic practices which have the primary purpose of improvement to agriculture can, in some cases, contribute to the functioning of natural water retention measures. As such, they integrate sustainable and natural water management into current practices.	NWRM Glossary, January 2015	Organizational
Ancillary benefit	Additional or subsidiary, positive impact (in terms of social welfare). As in the case of avoided costs or damages, an ancillary benefit is an indirect one. NWRM come along with other important impacts in terms of biodiversity, amenity, etc. that are exclusive. These are not linked to the genuine objectives of River Basin Management Plans but rather may arise if the objectives of these plans are met by adding NWRM to the Programmes of Measures.	NWRM Glossary, January 2015	Organizational
Appropriate design of roads and stream crossings	Appropriately designed roads and stream crossings can minimize the likelihood or erosion and sediment production that can be associated with forestry activities including final harvest. Poorly designed or built roads and stream crossings can cause some of the most negative effects of forestry on the landscape. Well-designed roads follow the contours of the landscape. Roads which run up and down (instead of across) hills can act as channels which focus runoff and can lead to increased erosion. Properly designed stream crossings permit the free movement of fish and aquatic invertebrates and will not restrict peak flows. Ensuring that stream crossings do not restrict peak flows will help to reduce localized flooding and can ultimately be more cost effective as they will not need to be rebuilt following high flow events- Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission.	Based on Stella definition, adapted by NWRM project experts and validated by the EU Commission	Organizational /EU
Artificial groundwater recharge (AGR)	AGR stores large quantities of water in underground aquifers to increase the quantity of groundwater in times of shortage. It results in a lowering of run-off from surrounding land, and in an enhanced natural condition of aquifers and water availability. The natural cleaning process of water percolating through the soils when entering the AGR improves water quality mechanisms used to undertake the recharge should be highlighted. In this respect one can envisage: surface structures to facilitate/augment recharge (such as soakways and infiltration basins); (subsurface indirect recharge-artificial recharger is undertaken	NWRM Glossary, January 2015	Organizational

	through wells reaching the saturated zone. The regulatory approach to be adopted for each of the above three mechanisms could differ considerably, due to the fact that the level of natural protection to groundwater is vastly different for each of the mechanisms.		
Assessment	The analysis and review of information derived from research for the purpose of helping someone in a position of responsibility to evaluate possible actions or think about a problem. Assessment means assembling, summarising, organising, interpreting, and possibly reconciling pieces of existing knowledge and communicating them so that they are relevant and helpful to an intelligent but inexpert decision-maker	Parson (1995)	Academic
Assets	Economic resources	TEEB (2010)	Organizational
Avoided Cost	Equivalent to an indirect benefit; financial outlays, negative impacts or welfare losses on anyone which are eluded by choosing one specific course of action among different alternatives. Some natural water retention measures (NWRM) may protect rivers and freshwater sources thus reducing other protection costs, increasing rivers' natural assimilation capacity and making other quality measures redundant. For example, mulching and other NRWM may reduce erosion and enlarge the lifespan of reservoirs while reducing their maintenance costs, etc. These benefits are context-based (and potentially site-specific) and therefore often difficult to identify and quantify. Valuation alternatives range from the estimation of production losses to the cost of defensive and replacement measures (i.e. averting behaviour).	NWRM Glossary, January 2015	Organizational
Bank	The sloping side of any hollow in the ground, especially when bordering a river.	CED	Organizational
Baseline/ Reference point	A fixed point in time to which progress towards the 15% restoration target can be measured	IUCN (2012)	Organizational
Basic measure	Basic measures are the minimum requirements to be compiled with and shall consist of a: (a) those measures required to implement Community legislation for the protection of water, including measures required under the legislation specified in Article 10 and in part A of Annex VI; (b) measures deemed appropriate for the purposes of Article 9; (c) measures deemed appropriate for the purposes of Article 9; (c) measures to promote an efficient and sustainable water use in order to avoid compromising the achievement of the objectives specified in Article 4; (d) measures to meet the requirements of Article 7, including measures to safeguard water quality in order to reduce the level of purification treatment required for the production of drinking water; (e) controls over the abstraction of fresh surface water and groundwater, and impoundment of fresh surface water, including a register or registers of water abstractions and a requirement of prior authorisation for abstractions and a requirement of prior authorisation for abstraction and impoundment. These controls shall be periodically reviewed and, where necessary, updated. Member States can exempt from these controls, abstractions or impoundments which have no significant impact on water status; (f) controls, including a requirement for prior authorisation of artificial recharge or augmentation of groundwater bodies. The water used may be		

	derived from any surface water or groundwater, provided that the use of the source does not compromise the achievement of the environmental objectives established for the source or the recharged or augmented body of groundwater. These controls shall be periodically reviewed and, where necessary, updated; (g) for point source discharges liable to cause pollution, a requirement for prior regulation, such as a prohibition on the entry of pollutants into water, or for prior authorisation, or registration based on general binding rules, laying down emission controls for the pollutants concerned, including controls in accordance with Articles 10 and 16. These controls shall be periodically reviewed and, where necessary, updated; (h) for diffuse sources liable to cause pollution, measures to prevent or control the input of pollutants. Controls may take the form of a requirement for prior regulation, such as a prohibition on the entry of pollutants into water, prior authorisation or registration based on general binding rules where such a requirement is not otherwise provided for under Community legislation. These controls shall be periodically reviewed and, where necessary, updated.		
Basins and ponds	Basins and ponds store surface run-off. Detention basins are free from water in dry weather flow conditions but ponds (e.g., retention ponds, flood storage reservoirs, shallow impoundments) contain water in dry weather, and are designed to hold more when it rains.- Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Benefits	Positive change in wellbeing from the fulfilment of needs and wants	TEEB (2010)	Organizational
Bio/conservation/ habitat/mitigation banking	The general purpose of such banking is offsetting residual adverse impacts. It is therefore mainly an instrument to implement compensation requirements		EU
Biodiversity	The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems	CBD (1992)	Organizational
Biodiversity	The variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part. It includes diversity within species, between species and between ecosystems. Connecting biodiversity to ecosystem functioning involves locating ecosystems in a multivariate space defined by dimensions that describe different ways of relating organisms to one another Examples of these dimensions include taxonomic (or species) diversity, phylogenetic (evolutionary) diversity, functional diversity (variation in the degree of expression of multiple functional traits), interaction diversity (characteristics of the food web network of linkages defined by biotic interactions) and landscape diversity (the number, relative abundance and distribution of different habitat types within a landscape).	http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013SC0155	EU
Biodiversity	Measurable conservation outcomes resulting from actions designed to compensate for significant	Business and	Organizational

offsets	residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure, ecosystem function and people's use and cultural values associated with biodiversity	Biodiversity Offsets Programme (2015)	
Biodiversity proofing	A structured process of ensuring the effective application of tools to avoid or at least minimize harmful impacts of EU spending and to maximise the biodiversity benefits. It is applicable to all spending streams under the EU budget, across the whole budgetary cycle and at all levels of governance, and contributes to a significant improvement in the state of biodiversity according to the 2010 baseline and agreed biodiversity targets	http://ec.europa.eu/environment/nature/biodiversity/comm2006/proofing.htm	EU
Biophysical parameter	A biophysical parameter is a measurable characteristic that can help in defining a particular system. It can cover individual substances, groups of substances or be defined by its measurement method like turbidity or the measurement of oxygen consumption like BOD5 or COD. It is generally expressed by a value and its unit.	NWRM Glossary, January 2015	Organizational
Biophysical structure	The architecture of an ecosystem as a result of the interaction between the abiotic, physical environment and the biotic communities, in particular vegetation		
Biophysical valuation	A method that derives values from measurements of the physical costs (e.g., surface requirements, labour, biophysical processes, material inputs)		
Buffer strips and shelter	Buffer strips are areas of natural vegetation cover (grass, bushes or trees) at the margin of fields, arable land, transport infrastructures and water courses. They can have several different configurations of vegetation found on them varying from simply grass to combinations of grass, trees, and shrubs. Due to their permanent vegetation, buffer strips offer good conditions for effective water infiltration and slowing surface flow; they therefore promote the natural retention of water. They can also significantly reduce the amount of suspended solids, nitrates and phosphates originating from agricultural run-off. Buffer strips can be sited in riparian zones, or away from water bodies as field margins, headlands or within fields (e.g. beetle banks). Hedges across long, steep slopes may reduce soil erosion as they intercept and slow surface run-off water before it builds into damaging flow, particularly where there is a margin or buffer strip alongside.- Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Channels and Rills	'Hard-edged' conveyance channels to move water between components in a SuDS 'train'. Typically narrower than swales, but may also include vegetated aspects. - Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Coarse woody	Coarse woody debris is a key stream habitat feature used by fish and other organisms. Coarse woody	Based on Stella	Organizational

debris	debris can also help to lower flow velocity in streams.- Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	definitions, adapted by NWRM project experts and validated by the European Commission	/EU
Compensation measures	Aim to result in no overall impact on the coherence of the Natura network; which is broadly analogous to biodiversity offsets	Habitats Directive	Organizational
Compensation/Off set	Measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate prevention and mitigation measures have been implemented. The goal of biodiversity offsets is to achieve no net loss, or preferably a net gain, of biodiversity on the ground with respect to species composition, habitat structure and ecosystem services, including livelihood aspects		EU
Conservation status (of a natural habitat)	The sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species	EEC (1992)	EU
Conservation status (of a species)	The sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations	EEC (1992)	EU
Continuous Cover Forestry	Continuous cover forestry (CCF) is a broad term encompassing a wide variety of forest management practices. One key feature of is that biomass removal is based either on small clearcuts or selective harvesting. Smaller clearcuts may create less hydrological disturbance but some of the filtration benefits associated with forest soils may be lost as a result of the greater driving and road maintenance needed for continuous harvesting.- Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Control Traffic Farming	Controlled traffic farming is a system which confines all machinery loads to the least possible area of permanent traffic lanes. Current farming systems allow machines to run at random over the land, compacting around 75% of the area within one season and at least the whole area by the second season. Soils don't recover quickly, taking as much as a few years. A proper CTF system on the other hand can reduce tracking to just 15% and this is always in the same place. CTF is a tool; it does not include a prescription for tillage although most growers adopting CTF use little or none because soil structure does not need to be repaired. The permanent traffic lanes are normally parallel to each other and this is the most efficient way of achieving CTF, but the definition does not preclude tracking at an angle. The permanent traffic lanes may be cropped or non-cropped depending on a wide range of variables and local constraints. - Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU

Cost-Benefit Analysis	A framework of analysis based on economic rationality (within a number of constraints one will always try to make that decision that increases her individual welfare) and founded on welfare economics. CBA compares costs and benefits of different alternatives and provides rational criteria for decision-making. CBA is a critical input for some decisions but does not replace decisions themselves (i.e. its result is not a binding one). CBA quantifies in monetary terms and compares the pros and cons of any initiative, including items for which the market does not provide a satisfactory measure of economic value. CBA yields profitability indicators, financial, economic or social, on the basis of information throughout the lifespan of the project. It is to be used when the objectives of different NWRM or Programmes of Measures are not the same, that is to say, when what is at stake is not just a set of alternative measures themselves but also different collective aims.	NWRM Glossary, January 2015	Organizational
Cost-effectiveness Analysis	Analytical tool or appraisal technique that assesses the costs of alternative ways of producing the same output or alike. It ranks alternative measures on the basis of their costs and effectiveness, where the most cost-effective measure gets the highest ranking. Since CEA is suggested for comparative analyses, costs to be collected should include those that are not site-specific.	NWRM Glossary, January 2015	
Crop rotation	Crop rotation is the practice of growing a series of dissimilar/different types of crops in the same area in sequential seasons. It gives various benefits to the soil. A traditional element of crop rotation is the replenishment of nitrogen through the use of green manure in sequence with cereals and other crops. Crop rotation also mitigates the build-up of pathogens and pests that often occurs when one species is continuously cropped, and can also improve soil structure and fertility by alternating deep-rooted and shallow-rooted plants. Can be used in combination with other measures where these are compatible with crop choice. - Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Damage	Acute and obvious changes in an ecosystem	SER (2004)	National
Degradation	Subtle or gradual changes that reduce ecological integrity and health	SER (2004)	National
Degraded	The simplification or disruption of ecosystems, and the loss of biodiversity, caused by disturbances that are too frequent or severe to allow natural ecosystem recovery in a relevant or 'reasonable' period of time. Degradation resulting from various factors, including climate perturbations and extreme events, as well as human activities, generally reduces flows of ecosystem goods and services	IUCN (2012)	Organizational
Descriptor	A descriptor characterizes ecosystem condition. A descriptor consists of one or more indicators and distinguishes ecosystem condition levels by means of threshold values between levels	IUCN (2012)	Organizational
Destroyed	When degradation or damage removes all macroscopic life, and commonly ruins the physical environment as well	SER (2004)	National
Detention/Infiltration Basins	Vegetated depressions designed to store runoff on the surface and allow it to gradually infiltrate into soil. Infiltration basins are dry, except in periods of heavy rainfall, and may serve to other functions (e.g.	Based on Stella definitions, adapted by	Organizational /EU

	recreation). They provide flow control through attenuation of runoff at the end of SuDS 'chains'. Basins may also act as "bioretention areas" of shallow landscaped depressions, typically under-drained, relying on engineered soils, vegetation and filtration to reduce runoff and remove pollution. - Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	NWRM project experts and validated by the European Commission	
Downsput disconnection	Downspout disconnection involves the rerouting of rooftop drainage pipes from the storm sewer system to rain barrels, cisterns, or permeable areas instead of the storm sewer. This reduces the loading of rainwater on the storm sewer system, and can have great benefits in cities with combined sewer systems. Downspout disconnection stores stormwater and/or allows stormwater to infiltrate into the soil, thus contributing to the natural water retention capacity of the landscape.	NWRM Glossary, January 2015	Organizational
Drivers of change	Any natural or human-induced factor that directly or indirectly causes a change in an ecosystem. A direct driver of change unequivocally influences ecosystem processes and can therefore be identified and measured to differing degrees of accuracy; an indirect driver of change operates by altering the level or rate of change of one or more direct drivers	MA (2005)	Academic
Early sowing	Early sowing refers to sowing up to six weeks before the normal sowing season. This allows for an earlier and quicker development of crops and of a root network that leads to soil protection. The period in which the soil lies bare is shorter and, therefore, erosion and run-off are less significant and water infiltration is improved. Early sowing can also help to mitigate the extreme ETP rates typical of Mediterranean summers. However, early sown plants are frost sensitive; therefore farmers run the risk of losing the crops because of the low temperatures. In northern countries, temperature in spring (March) can be adequate but the risk of frost is still serious until May. Therefore, early sowing requires specific tools (plastic tunnel covers, onsite green house, etc.) and cannot be applied by any farmers for any crops. - Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Ecological value	Non-monetary assessment of ecosystem integrity, health, or resilience, all of which are important indicators to determine critical thresholds and minimum requirements for ecosystem service provision	TEEB (2010)	EU
Economic cost	Sacrifice associated to the use of available resources to one means instead of another (so that any economic cost is indeed an opportunity cost) or of following one course of action instead of the best available alternative. As applied to NWRM, it refers to those negative impacts in terms of welfare, either direct or indirect, that may be linked to the implementation of any measure. The difference between explicit and implicit costs depends on whether there is an unequivocal monetary payment (or at least one which is straightforward to infer) or not. The term "direct (economic) cost" does actually refer to those costs that fall directly on the promoter of the NWRM. Hence, as opposed to direct costs, indirect costs are those incurred by others (those who are not under the direct scope of the NWRM implementation).	NWRM Glossary, January 2015	Organizational

Economic valuation	Non-monetary assessment of ecosystem integrity, health, or resilience, all of which are important indicators to determine critical thresholds and minimum requirements for ecosystem service provision	TEEB (2010)	EU
Ecosystem	Dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit. For practical purposes it is important to define the spatial dimensions of the ecosystem in question. Ecosystems are often grouped in units that have similar specific biotic and abiotic features	http://biodiversity.europa.eu/ecosystem-assessments/european-level	EU
Ecosystem assessment	A social process through which the findings of science concerning the causes of ecosystem change, their consequences for human well-being, and management and policy options are brought to bear on the needs of decision-makers	UK Nea (2011)	National
Ecosystem condition	The capacity of an ecosystem to yield services, relative to its potential capacity (MA, 2005). For the purpose of MAES, ecosystem condition is, however, usually used as a synonym for 'ecosystem status'	MA (2005)	Academic
Ecosystem degradation	A persistent reduction in the capacity to provide ecosystem services	MA (2005)	Academic
Ecosystem function	Subset of the interactions between biophysical structures, biodiversity and ecosystem processes that underpin the capacity of an ecosystem to provide ecosystem services	TEEB (2010)	EU
Ecosystem patch	In the 4-level model is an ecosystem area that can be distinguished from other ecosystem patches based on its vegetation composition. Patches can be delineated by their specific boundaries	IUCN (2012)	Organizational
Ecosystem process	Any change or reaction, which occurs within ecosystems, physical, chemical or biological. Ecosystem processes include decomposition, production, nutrient cycling, and fluxes of nutrients and energy	MA (2005)	Academic
Ecosystem services	The direct and indirect contributions of ecosystems to human wellbeing. They can be categorised in four main types: provisioning services (e.g. food, water, fuel); regulating services (e.g. flood and disease control); supporting/habitat services (e.g. nutrient cycling); and cultural services (e.g. recreation)		
Ecosystem state	The physical, chemical and biological condition of an ecosystem at a particular point in time		
Ecosystem status	A classification of ecosystem state among several well-defined categories. It is usually measured against time and compared to an agreed target in EU environmental directives (e.g. HD, WFD, MSFD), e.g. “conservation status”		
Elimination of riverbank protection	The suppression of lateral constraints consists in removing some bank protection in order to enhance lateral connection of the river, diversifying flows (depth, substrate, speed), diversify habitats but also capping floods in the mainstream. - Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Energy inputs	Subsidies added to ecosystems such as fertilizers, fossil fuel, or labour that are required to turn ecosystem functions into ecosystem services and benefits		

Environmental cost	Negative impacts connected with the actual or potential degradation of natural assets or environmental quality due to economic activities.	NWRM Glossary, January 2015	Organizational
Equivalence	To refer to or to assess the relationship between the losses at impacted site and the gains at the compensation site		EU
Equivalent Annual Cost	The cost per year of implementing a NWRM over its entire lifespan. EAC is used when comparing NWRMs of unequal lifespans. It is estimated through listing all capital expenditures and when they are incurred; calculating the net present value of expenditures, once discounted; and converting this net present value into an annuity	NWRM Glossary, January 2015	Organizational
Erosion	The general process or the group of processes whereby the materials of Earth's crust are loosened , dissolved, or worn away and simultaneously moved from one place to another, by natural processes, which include weathering, solution, corrosion, and transportation, but usually exclude mass wasting. For the case of NWRM, erosion refers mainly to soil erosion due to surface run-off. The eroded material is generally called sediment. (Source: adapted from Wikipedia and GEMET)	Wikipedia and GEMET	Organizational
Externality	(either positive or negative). Third-party effect or welfare impact, which is both unilateral (i.e. one cannot decide neither whether to suffer it or not nor how much impact to bear), and non-compensated. In other words, an externality stemming from the implementation of a NWRM is a cost (if negative) or a benefit (if positive), which is not directly reflected in the direct costs or benefits of the NWRM but are one of its outcomes. It is a welfare variation expressed in monetary units.	NWRM Glossary, January 2015	Organizational
Filter Strips	Gently sloping vegetated strips of land that provide opportunities for slow conveyance and infiltration. Designed to accept runoff as overland flow from upstream and to slow the progress of this runoff. - Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Financial cost	The (monetary) value of resources deployed for the implementation of any NWRM, which includes upfront capital expenditures, either from new investments or the replacement of assets in past investments; depreciation allowances (annualised cost or replacing the accounting value of existing assets in the future); operating expenditures (those incurred to keep the NWRM running in an efficient manner); maintenance expenditures (for preserving existing or new assets in good functioning order throughout their useful life); and decommissioning costs (those incurred at the end of the lifecycle of the NWRM).	NWRM Glossary, January 2015	Organizational
Floodplain	A floodplain is an area of land adjacent to a stream or river that stretches from the banks of its channel to the base of the enclosing valley walls which provides space for the retention of flood and rainwater. It experiences flooding during periods of high discharge. It includes the floodway, which consists of the stream channel and adjacent areas that actively carry flood flows downstream, and the flood fringe,	Based on Stella definition and Wikipedia, adapted by NWRM project experts	Organizational

	which are areas inundated by the flood, but which do not experience a strong current. Floodplain soils are generally very fertile and they have often been dried-out to be used as agricultural land. Floodplains have also been separated from the river by dikes, berms or other structures designed to control the flow of the river. Nowadays, the objective is to restore them, their retention capacity and ecosystem functions by reconnecting them to the river. Example of action that can be done on floodplains: hedges to break flood streams, e.g. hedges perpendicular to the river flow that are planted in the restored floodplain to slow down floods. In other words, a floodplain is an area near a river or a stream which floods when the water level reaches flood stage		
Forest Harvesting	Forest harvesting can cause severe disruptions to the hydrological cycle. Clearcut areas are often subject to localized flooding due to reductions in evapotranspiration caused by removal of trees. Roads and other infrastructure needed to support forest harvesting can also be significant sources of sediment to surface waters. However, negative effects can be minimized when forest harvesting is performed in a water-sensitive manner and measures are taken to maintain the natural hydrological functioning of the landscape.	NWRM Glossary, January 2015	Organizational
Forests as large-scale water pumps	Much of the evapotranspiration from forests falls elsewhere as rain, Ellison et al. (2012), amongst other, have shown that this large scale water pump can be a significant component of the annual precipitation in many continental areas. That is to say, many continental areas would receive a lot less rain if it were not for the moisture returned to the atmosphere by actively growing forests.	Ellison et al. (2012)	Academic
Functional traits	A feature of an organism that has demonstrable links to the organism's function		
Gabion	A gabion (from Italian gabbione meaning "big cage"; from Italian gabbia and Latin cavea meaning "cage") is a cage, cylinder, or box filled with rocks, concrete, or sometimes sand and soil for use in civil engineering, road building, and military applications.	NWRM Glossary, January 2015	Organizational
Green cover	Green cover (including cover crops or catch crops) refers to European Commission crops planted in late summer or autumn, usually on arable land, to protect the soil, which would otherwise lie bare during the winter, against wind and water erosion. Green cover crops also improve the structure of the soil, diversify the cropping system, and mitigate the loss of soluble nutrients	Based on Stella definitions, adapted by NWRM project experts	Organizational
Green roof	Systems to cover the roof of a building or structure with vegetation cover and/or landscaping. Green roofs are designed to intercept and retain precipitation, reducing the volume of runoff and attenuating peak flows.	NWRM Glossary, January 2015	Organizational
Grey infrastructure	From the perspective of Natural Water Retention Measures (NWRM), grey infrastructure usually refers to the traditional methods of managing water, using man-made, constructed assets, most often water tight and designed to avoid any type of ecosystem to grow on it. Modern grey infrastructure such as permeable pavements and some roof water retention systems mimic the natural water retention capacity of the landscape and help to restore more natural patterns of run-off and infiltration. It includes	NWRM Glossary, January 2015	Organizational

	channels, pipes, sewers and sewage treatment works, ditches, dikes, dams... Grey infrastructure is so-called because it is often constructed of concrete. Unlike green infrastructure, grey infrastructure typically does not deliver multiple benefits. Grey infrastructure such as sewers and sewage treatment works are needed in urban areas but their effectiveness can be enhanced by green engineering measures which help to restore the natural water retention capacity of the landscape.		
Habitat	The physical location or type of environment in which an organism of biological population lives or occurs. Terrestrial or aquatic areas distinguished by geographic, abiotic and biotic features, whether entirely natural or semi-natural		
Headwater areas	Targeted planting of forests in headwater areas (e.g. with a slope) can help to stabilize hillslopes, thereby reducing erosion and potentially leading to greater water retention in montane areas. Afforestation may have beneficial effects on the hydrograph by reducing peak flows and helping to maintain base flows. The potential for water retention must be balanced against the increased ET and pollutant trapping that may be associated with forests. - Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Human well-being	A context- and situation dependent state, comprising basic material for a good life, freedom and choice, health and bodily well-being, good social relations, security, peace of mind, and spiritual experience	MA (2005)	Academic
Hydraulic annexes	To ease the overall functioning of the river, some hydrographical network elements could be reconnected, including the so-called hydraulic annexes. This will allow for improvement of lateral connectivity, diversifying flows and habitats, but also cleaning the secondary arms that play a key role for retention in high water periods.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Indicator	For each descriptor an indicator and indicator unit (e.g. ha, %) needs to be defined. These indicators allow measuring the state of the descriptors. The choice of the indicators should be pragmatic and based on available information, applicable legislation, etc. As an example the indicator for the descriptor 'connectivity' is the level of fragmentation.	IUCN (2012)	Organizational
Indicator	Observed value representative of a phenomenon to study. In general, indicators quantify information by aggregating different and multiple data. The resulting information is therefore synthesised		
Infiltration	The penetration of water into the soil from the surface.	NWRM Glossary, January 2015	Organizational
Infiltration Capacity	The maximum rate at which water can infiltrate into the soil from the surface.	NWRM Glossary, January 2015	Organizational
Infiltration Trenches	Shallow excavation filled with gravel or other material to create temporary storage to enhance the natural capacity of the ground to infiltrate. Infiltration trenches would typically be used to intercept surface runoff drainage (e.g. drainage from roof or other impervious areas) or to convey water towards a	Based on Stella definitions, adapted by NWRM project experts	Organizational /EU

	detention pond.	and validated by the European Commission	
Interception	Rainfall that is stored on a vegetation canopy and later evaporated back to the atmosphere.		
Intercropping	Intercropping is the practice of growing two or more crops in proximity. The most common goal of intercropping is to produce a greater yield on a given piece of land by making use of resources that would otherwise not be utilized by a single crop. Examples of intercropping strategies are planting a deep-rooted crop with a shallow-rooted crop, or planting a tall crop with a shorter crop that requires partial shade. Numerous types of intercropping, all of which vary the temporal and spatial mixture to some degree, have been identified: mixed intercropping, row cropping, relay cropping, etc.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Lake	An enclosed body of water, usually but not necessarily fresh water, from which the sea is excluded.	WHIT	Organizational
Lakes (measure)	Lakes are by definition water retention facilities; they store water (for flood control) and provide water for many purposes such as water supply, irrigation, fisheries, tourism, etc. In addition, they serve as sinks for carbon storage and provide important habitats for numerous species of plants and animals, including waders. In the past, lakes have sometimes been drained to free the land for agriculture purposes, or have simply not been maintained and have silted up. Restoring lakes is re-introducing them where they have been in former times or revitalising them.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Land use conversion	It is widely believed that forest soils can function as pollution filters. Afforestation is practiced in rural areas around many large cities as a means of improving the quality of the drinking water supply aquifer by filtering out pollutants. Afforestation may also reduce peak flows and help to maintain base flows. Such afforestation should reduce sediment loadings and may have other benefits including improved biodiversity and recreational value.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Leaching	The process by which nutrients and other chemicals are washed out of the soil by percolating water. Nitrate fertilisers, for example, are washed out of the soil because of their high solubility. They eventually find their way into watercourses or groundwater causing pollution.	NWRM Glossary, January 2015	Organizational
Level	The model divides the continuum of ecosystem condition from poor to excellent into four distinct levels. For each level there are sets of ecosystem descriptors and associated threshold values that are regarded as typical for that level	IUCN (2012)	Organizational
Levelling of dams/longitudinal barriers	Levelling longitudinal barriers allows re-establishing fluvial dynamics and ecological continuity. The aim is to restore the slope and longitudinal profile of the river, to restore natural water flows, to allow for the solid transport (sediment) to take place, to diversify flows (depth, substrate, speed), diversify habitats and related flora and fauna.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Lifespan	Length of time for which the NWRM may fully operate.	NWRM Glossary, January 2015	Organizational

Macropores	Large pores in the soil that may form important pathways for infiltration and redistribution of water bypassing the soil matrix as a preferential flow. May result from soil cracking and ped formation, root channels and animal burrows. May be important in transport of contaminants.	NWRM Glossary, January 2015	Organizational
Maintenance	From the perspective of natural water retention measures (NWRM), maintenance is the set of actions or processes that are performed to keep an already existing natural process functioning in the best possible manner. Maintenance can include both physical activities, the planning process and communication.	NWRM Glossary, January 2015	Organizational
Managed Aquifer Recharge (MAR)	MAR is the purposeful recharge of water to aquifers for subsequent recovery and environmental benefit. Within the context of urban environment, MAR covers the injection and infiltration of captured stormwater – as such, it is linked to SuDS measures such as rainwater harvesting and infiltration techniques, but worth differentiating as a case where the primary purpose is to increase recharge to aquifers in addition to attenuating surface runoff mechanisms used to undertake the recharge should be highlighted. In this respect one can envisage:(i) surface structures to facilitate/augment recharge (such as soak ways and infiltration basins);(ii) subsurface indirect recharge - artificial recharge is undertaken through wells drilled within the unsaturated zone;(iii) subsurface direct recharge - artificial recharge is undertaken through wells reaching the saturated zone. The regulatory approach to be adopted for each of the above three mechanisms could differ considerably, due to the fact that the level of natural protection to groundwater is vastly different for each of the mechanisms.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Meadows and pastures	Meadows are areas or fields whose main vegetation is grass, or other non-woody plants, used for mowing and haying. Pastures are grassed or wooded areas, moorland or heathland, generally used for grazing. Due to their rooted soils and their permanent cover, meadows and pastures provide good conditions for the uptake and storage of water during temporary floods. They also protect water quality by trapping sediments and assimilating nutrients.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Metrics	A set of unitary measurements of biodiversity lost, gained or exchanged. This varies from very basic measures such as area analysis, to sophisticated quantitative indices of multiple biodiversity components which may be variously weighted. These metrics are used in order to compare losses at the damaged site and gains at the compensation site and provide decision support to establish equivalence		EU
Mitigation hierarchy	The principle that appropriate actions to address potential biodiversity impacts are taken in the following order of priority: (1) avoidance of impacts; (2) reduction of negative impacts; (3) rehabilitation/restoration measures; and (4) compensation measures for significant adverse residual impacts		
Mitigation hierarchy	Biodiversity offset/compensation schemes usually follow a three step mitigation hierarchy of: avoid or prevent negative impacts in the environment in general and biodiversity in particular; minimise and rehabilitate on-site effects of development if impacts cannot be avoided; and offset/compensation measures that are undertaken as a last resort (on or off-site) for the residual adverse impacts		EU

Mitigation measures	Measures which aim to reduce impacts to the point where they have no adverse effects. Examples of mitigation measures include avoidance of sensitive sites or disruptive work at sensitive times (e.g. breeding seasons) and the use of best available technologies to reduce pollutants		
Modified Ecosystem	In the context of the 4-level model modified ecosystems are those ecosystems which are heavily influenced by human activities, i.e. intensive agriculture and silviculture, built urban areas, roads, airports, quarries, brownfield areas, heavily modified water bodies	IUCN (2012)	Organizational
Multiplier effect	Factor of proportionality that shows how much spending in a NWRM may induce direct or indirect changes in macroeconomic variables, such as income, employment, investment, etc. It is another way of referring to wider economic impacts of NWRM.	NWRM Glossary, January 2015	Organizational
Natural bank stabilisation	In the past, various activities were undertaken to straighten rivers, such as the stabilisation of river banks with concrete or other types of retention walls. Such actions limited rivers' natural movements, leading to degradation of the river, increased water flow, increased erosion and decreased biodiversity. Natural bank stabilisation reverses such activities, allowing rivers to move more freely. Where bank stabilisation is nevertheless necessary, such as in residential areas, natural materials such as roots or gravel can be used. Natural materials are preferable as they allow water to infiltrate into the bank. They also provide better living conditions for aquatic fauna.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Natural Water Retention Measure	Natural Water Retention Measures (NWRM) are multi-functional measures that aim to protect and manage water resources and address water-related challenges by restoring or maintaining ecosystems as well as natural features and characteristics of water bodies using natural means and processes. Their main focus is to enhance, as well as preserve, the water retention capacity of aquifers, soil, and ecosystems with a view to improving their status. NWRM have the potential to provide multiple benefits, including the reduction of risk of floods and droughts, water quality improvement, groundwater recharge and habitat improvement. The application of NWRM supports green infrastructure, improves or preserves the quantitative status of surface water and groundwater bodies and can positively affect the chemical and ecological status of water bodies by restoring or enhancing natural functioning of ecosystems and the services they provide. The preserved or restored ecosystems can contribute both to climate change adaptation and mitigation.	NWRM Glossary, January 2015	Organizational
Nature-based solutions (NBS)	Nature-based solutions to societal challenges such as climate change, unsustainable urbanisation, environmental degradation and human health and well-being are inspired or supported by nature and simultaneously provide environmental, social and economic benefits. They are designed to bring more nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions. Multi-functionality is a key feature of nature-based solutions that makes them different from "grey"	Last version based on the work of the Horizon 2020 Expert Group on Nature-Based Solutions and Renaturing Cities	Organizational

	infrastructure, such as artificial river banks, dikes, etc. Nature-based solutions, such as green and unsealed surfaces in cities, green roofs, and salt marshes and dunes for coastal protection, use the properties and functions of ecosystems to provide water regulation, flood risk protection, climate change adaptation, etc. for human communities.		
Nitrate	Nitrate, NO-3, is the main nitrogen containing anion occurring in the soil. It is very soluble and moves freely in water through the soil profile. Nitrate in water is a pollutant above certain concentrations and can be a danger to human health. The main source of nitrate in water is agriculture although sewage discharges can also be an important factor.	NWRM Glossary, January 2015	Organizational
Nitrate leaching	The 1980 EC Drinking Water Directive set a maximum of 50 mg/l of nitrate in drinking water (equivalent to 11.3 mg/l nitrate-nitrogen). An increasing number of water sources currently exceed this limit. Agriculture is the main source of nitrate in drinking water where nitrate, having a high solubility, washes out of the soil and gradually, often over many years, reaches underground water sources. Losses of nitrate by leaching depend on soil type and rainfall. The lightest arable soils only retain about 80 mm of water per metre depth; so nitrate in these, and the shallow soils which are so extensive in the UK are much more easily leached than nitrate in deep clay or silt soils which may retain more than 200 mm of water per metre. The amount of rain which is in excess of evaporation and crop transpiration and which therefore causes leaching, varies from about 150 mm per annum in the East to more than 300 mm per annum in some western and northern arable regions. In some grassland regions more than 1000 mm per annum is not unusual.	NWRM Glossary, January 2015	Organizational
No tillage	Tillage is a mechanical modification of the soil. Intensive tillage can disturb the soil structure, thus increasing erosion, decreasing water retention capacity, reducing soil organic matter through the compaction and transformation of pores. No-till farming (also called zero tillage or direct drilling) is a way of growing crops or pasture from year to year without disturbing the soil through tillage. No-till is an agricultural technique which increases the amount of water that infiltrates into the soil and increases organic matter retention and cycling of nutrients in the soil. In many agricultural regions it can eliminate soil erosion. The most powerful benefit of no-tillage is improvement in soil biological fertility, making soils more resilient	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Opportunity cost	Value of those alternatives foregone when implementing a NWRM.	NWRM Glossary, January 2015	Organizational
Overland flow areas	Ditch blocking in managed peatland forests can be used to slow water and trap sediment after forest harvesting. The ditches can be made of wood logs or gabions, for example.	Elaborated by NWRM project experts and validated by the EU Commission	Organizational /EU
Peak flow control	Engineered ponds in peatlands that have been ditched to enhance forest production have the potential	Elaborated by NWRM	Organizational

structures	to retain water in the landscape and trap sediment without adversely affecting tree growth. Such measures have the potential to limit hydrograph peaks and potentially reduce flooding associated with snowmelt.	project experts and validated by the EU Commission	/EU
Permeable paving and other permeable surfaces	Pervious surfaces (either porous or permeable) like permeable paving designed to allow rainwater to infiltrate through the surface and into underlying layers (soils and aquifers), or broader use of permeable areas to promote greater infiltration.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Phosphorous	Phosphates from agriculture are an important contributor to phosphorus loading on water bodies. Phosphorous is considered to be a limiting factor in process of eutrophication that can generally be regarded as the enrichment of surface waters by nutrients which causes overgrowth of algae and weeds. The result is deoxygenation of waters that can kill fish and other aquatic life. Algae growth can also be a hazard to human health.	NWRM Glossary, January 2015	Organizational
Preferential flow	Local concentrations of flow in the soil that may be due to the effects of macropores, local variations in hydraulic properties or fingering of a wetting front moving into the soil profile. May lead to rapid and deep infiltration of water bypassing much of the soil matrix (see also macropores).	NWRM Glossary, January 2015	Organizational
Pressures	Habitat loss, overexploitation of natural resources, the introduction and spread of invasive species, pollution and climate change are the five key pressures on biodiversity		
Rain Gardens	Small-scale depressions used for storage and infiltration, typically at a property-level and close to buildings (e.g. to infiltrate roof drainage at a property level).	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Rainwater Harvesting	Collecting and storing rainwater for subsequent use- for example, using water butts or lager storage tanks.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Ratio/multipliers	The area occupied by an offset divided by the area affected by a project's impact		EU
Reconnection	From the perspective of natural water retention measures (NWRM), reconnection is the process of improving hydrological connection in the landscape, both through linking water bodies and through improving the connectivity between rivers and their adjacent floodplains. Reconnection can make use of historical and currently water channels to restore previously existing hydrological connectivity and functioning.	NWRM Glossary, January 2015	Organizational

Reduced stocking density	Reduced stocking density will limit soil compaction, thereby facilitating more rapid infiltration during precipitation events and potentially reducing peak flows and sediment runoff.	Elaborated by NWRM project experts and validated by the EU Commission	Organizational /EU
Reduced/Conservation tillage	Conservation tillage leaves at least 30% of crop residue on the soil surface, or at least 1,100 kg/ha of small grain residue on the surface during the critical soil erosion period. This slows water movement, which reduces the amount of soil erosion.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Re-mandering	In the past, rivers have been straightened by cutting off meanders (historically, many rivers in northern and western Europe have been straightened and channelized to facilitate log floating and/or speed up the drainage of water and control/limit the river bed movements). Re-meandering is bringing a river back closer to its naturally meandering state by creating a new meandering course and by reconnecting cut-off meanders. Re-meandering slows down the flow of a river. The new form of the river channel creates new flow conditions and very often also has an impact on sedimentation. The newly created or reconnected meanders also provide habitats for a wide range of aquatic and land species of plants and animals	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Renaturation	A process of returning natural ecosystems or habitats to their original structure and species composition. Renaturation requires a detailed knowledge of the original species, ecosystem functions and interacting processes involved.	GEMET, adapted from DUNSTE	Organizational
Reservoir catchment	Afforestation of reservoir catchments can have multiple benefits. It can reduce sediment inputs from the catchment, lengthening the life of the reservoir, and may also have beneficial effects on water quality in some cases when peatlands are afforested. Afforestation can reduce peak flows and help to maintain base flows.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Residual impact	The remaining adverse impact on biodiversity after appropriate avoidance, minimisation and rehabilitation measures have been taken according to the mitigation hierarchy		
Resource cost	The cost linked the economic or relative scarcity of water once it is used.	NWRM Glossary, January 2015	Organizational
Restorable area	The total Member State territory minus the territory which qualifies as level 1	IUCN (2012)	Organizational
Restoration	The return of an ecosystem to its original community structure, natural complement of species, and natural functions	European Commission Biodiversity Strategy Impact Assessment	EU
Restoration	Restoration is a management action or set of actions with the aim of restoring natural hydrologic	NWRM Glossary,	Organizational

	functioning in the landscape. Restoration of natural functioning can contribute to an environmental balance in water management.	January 2015	
Retention Ponds	Ponds or pools with additional storage capacity to attenuate surface runoff during rainfall events. Retention time of runoff can provide the capacity to remove pollutants through sedimentation and opportunity for biological uptake of nutrients.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Revitalisation of flowing waters	In the past, rivers flows have been modified through channelization, embankments or modification of river beds. Those modifications were aiming at flood prevention or supporting changes of agricultural practices for example. This has led to uniformed flows in the rivers and often having effect on the water time transfers. Current practices for revitalisation of flowing waters are trying to create the conditions for diversifying the water flows, inducing more diversity in habitats for fauna but also increasing the water time transfers in order to prevent flash floods in the downstream areas for example.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Riparian buffers	Planting and maintaining tree cover in near-stream areas can have multiple benefits including erosion and nutrient leaching control. They will also slow the stream velocity during high flow flood events and may have beneficial effects on stream temperature. Maintaining treed forest buffers during clearcutting can help minimizing the adverse effects of forestry on water quality and may have additional biodiversity benefits.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Riparian zone	1) Terrestrial areas where the vegetation complex and microclimate are products of the combined pressure and influence of perennial and/or intermittent water and soils that exhibit some wetness characteristics. 2) Zone situated on the bank of a water course such as a river or stream	DUNSTE/GILP96	Organizational
Riverbed	The channel containing or formerly containing the water of a river.	BJGEO	Organizational
Riverbed (alluvial mattress)	The reconstitution of the alluvial mattress consists in levelling-up the river bed and/or reactivating the bank erosion in order to stop the incision of the river bed. It can allow better connection with side arms, level-up the water level at low flow periods, diversifying flows (depth, substrate, speed), diversify habitats and increase retention times.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Sediment capture ponds	Sediment capture ponds are widely used to "slow down" water being drained from boreal forests. The main function of the sediment capture ponds is to remove prevent pollution of receiving waters downstream of a forest by removing suspended sediment and associated pollutants.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Soakaways	Excavations, typically filled with gravel, designed to store water and allow it to infiltrate into underlying	NWRM Glossary,	Organizational

	soils or aquifers. Soakaways would typically receive point-source inflow (e.g. from roof drainage).	January 2015	
Soakaways	Excavations, typically filled with gravel, designed to store water and allow it to infiltrate into underlying soils or aquifers. Soakaways would typically receive point-source inflow (e.g. from roof drainage).	NWRM Glossary, January 2015	Organizational
Socio-economic system	Our society (which includes institutions that manage ecosystems, users that use their services and stakeholders that influence ecosystems)		
Soil Conservation	The management of land to minimise soil erosion to maintain soil and water resources, and provide sustainable benefits in the long term.	NWRM Glossary, January 2015	Organizational
Soil Conservation	The management of land to minimise soil erosion to maintain soil and water resources, and provide sustainable benefits in the long term.	NWRM Glossary, January 2015	Organizational
Strip cropping	Certain layers of plants will absorb minerals and water from the soil more effectively than others. When water reaches the weaker soil that lacks the minerals needed to make it stronger, it normally washes it away. When strips of soil are strong enough to slow down water from moving through them, the weaker soil can't wash away like it normally would. Because of this, farmland stays fertile much longer.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Subsoiling	On heavy or poorly structured soils it is occasionally necessary to loosen the soil to a greater depth than that reached by normal cultivations, in order to improve drainage and root penetration. Subsoiling machines (subsoilers) for this purpose can operate at depths from 300-600 mm and at spacing as close as 1 metre. Subsoiling may be used to counteract effects of soil smearing and compaction resulting from handling of soils in wet conditions.	NWRM Glossary, January 2015	Organizational
Sunk cost	Those expenditures that, once committed, cannot be (easily) recovered. These costs arise because some activities require specialized assets that cannot be readily diverted to other uses.	NWRM Glossary, January 2015	Organizational
Supplementary measure	"Supplementary" measures are those measures designed and implemented in addition to the basic measures, with the aim of achieving the objectives established pursuant to Article 4. Part list of such measures. Member States may also adopt further supplementary measures in order to provide for additional protection or improvement of the waters covered by this Directive, including in implementation of the relevant international agreements referred to in Article 1.B of Annex VI contains a non-exclusive list of such measures. Member States may also adopt further supplementary measures in order to provide for additional protection or improvement of the waters covered by this Directive, including in implementation of the relevant international agreements referred to in Article 1	NWRM Glossary, January 2015	Organizational
Surface Runoff	Surface runoff can be described as water flowing over soil, vegetation or other ground cover instead of infiltrating to the underlying soil. Surface runoff may be caused by imperviousness of the underlying material, or because the underlying material is already being saturated, i.e. at capacity. The quantity of water during storm events (and/or runoff from adjacent impervious surfaces) may exceed the infiltration capacity of the soil and receiving waters resulting in increased flood risk. The speed at which liquid soaks	NWRM Glossary, January 2015	Organizational

	into the soil is important in working out the risk of run-off. Run-off can contribute to on-site and off-site problems via leaching and erosion. This includes: - losses of pesticides, fertilisers or soil, - pollution of receiving water if the run-off water is contaminated with pesticides, fertilisers or sediment, - other biophysical impacts on the aquatic environment like excessive sedimentation and clogging, or high concentrations of suspended solid which in turn cause cloudiness of the water affecting the quantity of sunlight that infiltrates the water.		
Suspended Sediment	The solid particles, suspended within the water column, which the water is carrying. Includes soil particles and organic material derived from living thing. Can be measured by filtering the water and accurately weighing the dried residue to give a figure in milligrams per litre.	NWRM Glossary, January 2015	Organizational
Sustainable Drainage Systems	Approaches to manage surface water that take account of water quantity (flooding), water quality (pollution) and amenity issues are collectively referred to as Sustainable Drainage Systems (SuDS).SuDS mimic nature and typically manage rainfall close to where it falls. SuDS can be designed to slow water down (attenuate) before it enters streams, rivers and other watercourses, they provide areas to store water in natural contours and can be used to allow water to soak (infiltrate) into the ground or evaporated from surface water and lost or transpired from vegetation (known as evapotranspiration).	Susdrain	Organizational
Sustainable Urban Drainage Systems	Sustainable Urban Drainage Systems (or SUDS) are a sequence of water management practices, green infrastructures and measures designed to drain surface water in a manner that mimics the natural hydrologic cycle and will provide a more sustainable approach to rainwater management than what has been the conventional grey infrastructure practice of routing run-off through a pipe to a receiving watercourse.	NWRM Glossary, January 2015	Organizational
Swales	Shallow, broad and vegetated channels designed to store and/or convey runoff.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Targeted planting for “catching” precipitation	There is some evidence that planting trees on some Mediterranean hillslopes can assist in cloud formation and precipitation. The forests assist in "trapping" rising air and condensing atmospheric water vapour. This work has been pursued by Milan, amongst others.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Temporary tributaries flow	Temporary streams are of particular importance when it comes to water storage and time retention especially in flash flood prone areas. Some measures can be directly implemented in order to ensure their proper functioning.	Based on Stella definitions, adapted by NWRM project experts	Organizational /EU

		and validated by the European Commission	
Threshold value	The transition values of applied indicators for moving between levels	IUCN (2012)	Organizational
Traditional terracing	Traditional terraces consist of nearly level platforms built along contour lines of slopes, mostly sustained by stone walls, used for farming on hilly terrain. When properly built and well maintained, terraces can reduce erosion and surface run-off by slowing rainwater to a non-erosive velocity. So-called traditional terracing involves less disturbance of the terrain than modern terracing, as it does not involve significant levelling or cutting using heavy machinery.	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Transaction cost	Efforts (either monetary outlays or consumption of any other resources, such as time) of administering, monitoring, and enforcing a NWRM. Policy-making involves political costs that are absent in private exchanges.	NWRM Glossary, January 2015	Organizational
Transformation	The conversion of an ecosystem to a different kind of ecosystem or land use type	SER (2004)	National
Transformed ecosystem	In the context of the 4-level model transformed ecosystems are those ecosystems which – in the framework of restoration – are transformed from one ecosystem type to another ecosystem type	IUCN (2012)	Organizational
Trees in urban areas	Urban planning that incorporates trees can have multiple benefits. Trees in urban areas have multiple benefits including increased infiltration and other benefits including shade and amenity value.	Elaborated by NWRM project experts, validated by the European Commission	Organizational /EU
Turbidity	A measure of how much suspended sediment is in the water. It is generally monitored in a stream or lake. The higher the turbidity the 'dirtier' the water and the less light will penetrate into the water.	NWRM Glossary, January 2015	Organizational
Urban forests parks	Urban forest parks or protected areas provide multiple benefits including increased water infiltration, pollutant filtration, reductions in peak flow and maintenance of base flows. Urban forests also have many other aesthetic, biodiversity and quality of life benefits.- Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Urban Planning	Within the framework or natural water retention measures (NWRM), urban planning refers to the application of the "Grey to Green" principle within cities. The specific focus of urban planning for NWRM is to achieve sustainable water management by mimicking natural functions and processes in the urban environment.	NWRM Glossary, January 2015	Organizational
Value	The contribution of an action or object to user-specified goals, objectives, or conditions	MA (2005)	Academic
Water Retention	*Water retention covers a wide set of mechanisms (see synthesis document n°1) the effect of which are to increase the capture of water* by aquifers, soil, and aquatic and water dependent ecosystems. More precisely it refers to capabilities of catchments (including wetlands, rivers and floodplains but also other	NWRM Glossary, January 2015	Organizational

	land areas) to hold or retain as much water as possible during periods of abundant or even excessive precipitation, so that water is available for use during dry periods and runoff peaks are minimized.		
Water sensitive driving	"Water sensitive driving" requires an awareness of the wet areas (mires, peatlands, etc.) in the landscape and an ability to avoid them while conducting forestry operations. Water sensitive driving is focussed primarily on minimizing water quality impacts of forestry including nutrient leakage and an increased potential for methylmercury formation.	NWRM Glossary, January 2015	Organizational
Wetland (measure)	Wetlands restoration and creation can involve: technical, spatially large-scale measures (including the installation of ditches for rewetting or the cutback of dykes to enable flooding); technical small-scale measures such as clearing trees; as well as changes in land-use and agricultural measures, such as adapting cultivation practices in wetland areas. Wetland restoration can improve the hydrological regime of degraded wetlands and generally enhance habitat quality. (Creating artificial or constructed wetlands in urban areas can also contribute to flood attenuation, water quality improvement and habitat and landscape enhancement).- Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Based on Stella definitions, adapted by NWRM project experts and validated by the European Commission	Organizational /EU
Wetlands	Wetlands provide both stormwater attenuation and treatment, comprising shallow ponds and marshy areas covered in aquatic vegetation. Wetlands detain flows for an extended period to allow sediments to settle and to remove contaminants. They also provide runoff attenuation and can provide significant ecological benefits.	NWRM Glossary, January 2015	Organizational

ANNEX

A. Official documents of the European Commission

1. COM(2013)249 Green Infrastructure (GI) — Enhancing Europe's Natural Capital

Form	*Where?*	*What?*	*Link to source*
Text	Chapter 1.2 "What is GI?"	Description and definition of GI	http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013DC0249

Chapter 1.2 - What is GI?

GI is a successfully tested tool for providing ecological, economic and social benefits through natural solutions. It helps us to understand the value of the benefits that nature provides to human society and to mobilise investments to sustain and enhance them. It also helps avoid relying on infrastructure that is expensive to build when nature can often provide cheaper, more durable solutions. Many of these create local job opportunities. Green Infrastructure is based on the principle that protecting and enhancing nature and natural processes, and the many benefits human society gets from nature, are consciously integrated into spatial planning and territorial development. Compared to single-purpose, grey infrastructure, GI has many benefits. It is not a constraint on territorial development but promotes natural solutions if they are the best option. It can sometimes offer an alternative, or be complementary, to standard grey solutions.

Many definitions of GI have been developed. It is therefore difficult to cover all aspects in one short paragraph. The following working definition will however be used for the purposes of this Communication.

GI: a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings.

2. SWD(2013)155 final: Green Infrastructure (GI) — Enhancing Europe's Natural Capital. Technical information on Green Infrastructure (GI)

Form	*Where?*	*What?*	*Link to source*
Glossary	Part IV: Glossary	Explanation of key terms; references	http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013SC0155

PART IV: GLOSSARY

Biodiversity is the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part. It includes diversity within species, between species and between ecosystems. Connecting biodiversity to ecosystem functioning involves locating ecosystems in a multivariate space defined by dimensions that describe different ways of relating organisms to one another Examples of these dimensions include taxonomic (or species) diversity, phylogenetic (evolutionary) diversity, functional diversity (variation in the degree of expression of multiple functional traits), interaction diversity (characteristics of the (food web) network of linkages defined by biotic interactions) and landscape diversity (the number, relative abundance and distribution of different habitat types within a landscape).

Connectivity comprises two components, structural and functional connectivity. It expresses how landscapes are configured, allowing species to move. Structural connectivity, equal to habitat continuity, is measured by analysing landscape structure, independent of any attributes of organisms. This definition is often used in the context of meta-population ecology. Functional connectivity is the response of the organism to the landscape elements other than its habitats (i.e. the non-habitat matrix). This definition is often used in the context of landscape ecology. A high degree of connectivity is generally linked to low fragmentation.

An ecosystem is a dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit. For practical purposes it is important to define the spatial dimensions of the ecosystem in question. Ecosystems are often grouped in units that have similar specific biotic and abiotic features.

Ecosystem-based approaches are strategies and measures that use nature's multiple services (= nature-based solutions) e.g. for climate change adaptation and mitigation. They are part of Green Infrastructure, because they use biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to or mitigate the adverse effects of climate change — by conserving carbon stocks and reducing emissions caused by ecosystem degradation and loss, or by enhancing carbon stocks, thus increasing resilience and reducing vulnerability. Green Infrastructure adds spatially planned, multi-purpose elements to these approaches.

Ecological networks are a representation of the biotic interactions in an ecosystem, in which species are connected by pairwise interactions. These interactions can be trophic or symbiotic. They include areas covered by a wide range of conservation measures, from a single ecoduct to intercontinental interconnected networks of protected and non-protected areas. They usually aim to maintain the functioning of ecosystems to facilitate the conservation of species and habitats and promote the sustainable use of natural resources to reduce the impacts of human activities on biodiversity and/or increase the biodiversity value of managed landscapes. They would have to be coherent and resilient to be functional parts of green infrastructure, which encompasses ecological networks but goes further due to the multi-purpose function additional to biodiversity conservation that ecological

networks are designed for, and to the inclusion of urban elements that are not part of ecological networks. Each Green Infrastructure element should play a role in the network but that does not mean they are all physically connected to each other.

Ecosystem services are the benefits that people obtain from ecosystems, or their direct and indirect contributions to human well-being. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational and cultural benefits. Since people do not directly use supporting services such as of nutrient cycling, they do not obtain benefits from them and they may not strictly be part of ecosystem services.

A habitat is the place or type of site where an organism or population naturally occurs.

Natura 2000 is the centrepiece of EU nature and biodiversity policy. It is an EU-wide network of nature protection areas established under the 1992 Habitats Directive, incorporating areas designated under the 1979 Birds Directive. The aim of the network is to ensure the long-term survival of Europe's most valuable and threatened species and habitats. It is not a system of strict nature reserves where all human activities are excluded. Whereas the network will certainly include nature reserves, most of the land is likely to continue to be privately owned and the emphasis will be on ensuring that future management is ecologically and economically sustainable. The network also fulfils a Community obligation under the UN Convention on Biological Diversity.

Natural capital is the extension of the economic notion of capital (manufactured means of production) to environmental goods and services. Natural capital is the stock of natural ecosystems that yields a flow of valuable ecosystem goods or services into the future.

Resilience describes the ability of an ecosystem to return to its original state after being disturbed.

References:

- Millennium Ecosystem Assessment (2005) http://www.unep.org/maweb/en/index.aspx
- MAES Working Group glossary http://biodiversity.europa.eu/ecosystem-assessments/european-level
- CBD Technical series No 23 http://www.cbd.int/ts/
- Glossary of the EEA Technical Report No 4/2009 on SEBI http://www.eea.europa.eu/highlights/publications/progress-towards-the-european-2010-biodiversity-target/.
- Ad hoc group on Biodiversity and Climate Change http://ec.europa.eu/environment/nature/climatechange/index_en.htm
- Wikipedia http://en.wikipedia.org/

B. European Commission study contracts and EEA reports

1. Science for Environment Policy In-depth Reports: The Multifunctionality of Green Infrastructure (2012)

Form	*Where?*	*What?*	*Link to source*
Text	Introduction	Description of GI	http://ec.europa.eu/environment/nature/ecosystems/docs/Green_Infrastructure.pdf

Introduction

Green Infrastructure (GI) is the network of natural and semi-natural areas, features and green spaces in rural and urban, terrestrial, freshwater, coastal and marine areas (Naumann et al., 2011a). It is a broad concept, and includes natural features, such as parks, forest reserves, hedgerows, restored and intact wetlands and marine areas, as well as man-made features, such as ecoducts and cycle paths. The aims of GI are to promote ecosystem health and resilience, contribute to biodiversity conservation and enhance ecosystem services (Naumann et al., 2011a). Ecosystem services are services provided by nature, such as water regulation, that benefit the environment and humans.

The EU Working Group on GI strategy has proposed that GI also promotes integrated spatial planning by identifying multi-functional zones and incorporating habitat restoration measures into land-use plans and policies (GI Working Group Task 1 Recommendations, 2011). Ultimately, GI can benefit human populations and contribute to a more sustainable economy based on healthy ecosystems delivering multiple benefits and functions.

One of the key attractions of GI is its multi-functionality, i.e. its ability to perform several functions and provide several benefits on the same spatial area. These functions can be environmental, such as conserving biodiversity or adapting to climate change, social, such as providing water drainage or green space, and economic, such as supplying jobs and raising property prices.

2. European Environment Agency: Green infrastructure and territorial cohesion. The concept of green infrastructure and its integration into policies using monitoring systems (2011)

Form	*Where?*	*What?*	*Link to source*
Text, Table	2.1 Definition of green infrastructure	Example definitions of GI: characteristics, benefits, references	http://www.eea.europa.eu/publications/green-infrastructure-and-territorial-cohesion

2.1 Definition of green infrastructure

Green infrastructure as a term does not have a single widely recognised definition. It has been adopted by the various design-, conservation- and planning-related disciplines and has been used to apply to slightly different concepts. However, it is possible to identify underlying features, common to all the disciplines that use the term. These include connectivity, multi-functionality and smart conservation. The term is used for a network of green features that are interconnected and therefore bring added benefits and are more resilient. Another common feature is the aim to either

protect or develop such networks.

There are differences, however, in the scale and the background (referred to as a basis or matrix in landscape ecology) through which these networks connect valuable natural areas. Different disciplines also focus on different sets of benefits provided by green infrastructure.
Based on scale and range of benefits, it is possible to group the definitions under two concepts:

- green infrastructure at urban scale;
- green infrastructure at landscape scale (regional, national and transnational).

These two uses of the term are obviously related — in both cases the focus is on the development and protection of networks of green, natural features. Green infrastructure is not only about connecting ecosystems per se, but also about strengthening them and their services — which can be done by (re-)connecting measures, but also by improving the landscape's permeability (which implicates different ecosystems). The baseline land use is however different: in the first case, it involves a built-up urban area; in the second case, it can be a built-up area as well as intensively farmed land or simply a different type of ecosystem to the one we are trying to connect.

The tools and approaches used to manage green infrastructure tend to vary at these different scales, as do the key sets of benefits green infrastructure delivers. There is also a difference between the physical structures counting as a part of the green infrastructure. For example, a field inside the city might count towards urban green infrastructure (it provides water infiltration and can also be used for recreation, for example), but agricultural land may not be commonly counted towards green infrastructure in the broader landscape, when the focus is on potential migration corridors for particular species. The two scales of green infrastructure are compared further in Table 2.1.

Table 2.2 presents some examples of definitions of green infrastructure from existing literature, to highlight the different meanings of the term as used by various disciplines and institutions in Europe and the United States. In addition to scale, the definitions in the literature tend to refer to different types of concepts, with some referring to green infrastructure as an 'approach' or an idea, and others as the physical 'structures' or spaces. Furthermore, if defined as 'structure', the definition refers to either an 'open space, devoid of man's element' or manmade and natural 'elements' such as green bridges and hedges.

The key, however, is to understand green infrastructure as more than a sum of its parts — functional interconnectivity brings added benefits to the green assets, which previously may have been recognised solely for their single function, such as parks, coastlines or embankments. As the Landscape Institute (2009) suggests, 'a series of inadequately connected natural elements deliver far fewer public benefits than they have the potential for' — the approach that seeks to maximise those benefits that result from synergy between elements is the core of green infrastructure.

Following on from the importance of interconnectivity, green infrastructure can be further understood in two other ways:

- a broader definition uses the term to include both green spaces and the fact that they are interlinked;
- a narrow definition uses it only to refer to the linkages and the concept of interconnectivity.

The classification of green infrastructure benefits depends on which definition is used. In the broadest sense, green infrastructure carries all the benefits provided by green spaces and structures of which it is an integral part. In the narrow sense, the benefits of green infrastructure are only the additional ones derived from interlinking: possibility of species migration, resilience to change including climate change, higher recreational value, etc. Benefits from green infrastructure are further described in Section 2.2.5.

Box 2.1 What is green infrastructure?

Infrastructure is a concept addressing the connectivity of ecosystems, their protection and the provision of ecosystem services, while also addressing mitigation and adaptation to climate change. It contributes to minimising natural disaster risks, by using ecosystem‑based approaches for coastal protection through marshes/flood plain restoration rather than constructing dikes. Green infrastructure helps ensure the sustainable provision of ecosystem goods and services while increasing the resilience of ecosystems. The concept is central to the overall objective of ecosystem restoration, which is now part of the 2020 biodiversity target. It also promotes integrated spatial planning by identifying multifunctional zones and by incorporating habitat restoration measures and other connectivity elements into various land‑use plans and policies, such as linking peri-urban and urban areas or in marine spatial planning policy. Its ultimate aim is contributing to the development of a greener and more sustainable economy by investing in ecosystem‑based approaches delivering multiple benefits in addition to technical solutions, and mitigating adverse effects of transport and energy infrastructure.

[Source: EC, 2010a]

Table 2.2 Example definitions of green infrastructure

Definitions An interconnected network of natural areas and other open spaces that conserves natural ecosystem values and functions, sustains clean air and water, and provides a wide array of benefits to people and wildlife. *Characterisation* Disciplines: Land conservation Key benefits: Conservation Scale: Landscape *Reference* Benedict, M. and McMahon. E., 2006, Green infrastructure. Linking Landscapes and Communities.
Definitions Green infrastructure is the network of natural places and systems in, around and beyond urban areas. It includes trees, parks, gardens, allotments, cemeteries, woodlands, green corridors, rivers and wetlands. *Characterisation* Disciplines: Urban design Key benefits: Recreation Scale: Urban (and beyond) *Reference* Commission for Architecture and Built Environment (CABE, 2011b).
Definitions Green infrastructure is an approach to land use, underpinned by the concept of ecosystem services. Green assets such as parks, coastlines or embankments have generally been thought of in terms of their single functions — the approach that recognises their vast range of functions and their interconnectivity is called green infrastructure. *Characterisation* Disciplines: Landscape architecture Key benefits: Multifunctional Scale: Landscape *Reference* Landscape Institute, 2009. Green Infrastructure Position Statement.
Definitions GI is the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect villages, towns and cities. Individually, these elements are GI assets, and the

roles that these assets play are GI functions. When appropriately planned, designed and managed, the assets and functions have the potential to deliver a wide range of benefits – from providing sustainable transport links to mitigating and adapting the effects of climate change Characterisation Disciplines: Landscape architecture and other development or land management related sectors. Key benefits: multifunctional. Scale: Landscape - local to regional. *Reference:* Landscape Institute 2013, Position Statement. Green Infrastructure: an integrated approach to land use
Definitions Connections between Natura 2000 sites. Valuable green urban areas and man-made bridges to natural areas, ecological corridors and zones where habitats merge. *Characterisation* Disciplines: Species conservation Key benefits: Species migration Scale: Landscape *Reference* European Commission (EC, 2011a).
Definitions Green infrastructure maintains and improves ecological functions in combination with multifunctional land uses. Natural and 'man-made' structures or a territory devoid of permanent man-made structures that provide — directly or indirectly, partly or totally — through the vegetation it supports, a series of services to society. *Characterisation* Scale: Species conservation Key benefits: Multifunctional Scale: Landscape *Reference* Marco Fritz, European Commission, Environment DG.
Definitions Green infrastructure is a strategic approach to land conservation, a 'smart' conservation that addresses the ecological and social impacts of sprawl and the accelerated consumption and fragmentation of open land. *Characterisation* Disciplines: Land conservation Key benefits: Conservation Scale: Landscape *Reference* The Conservation Fund's Green Infrastructure Leadership Program (Benedict and McMahon, 2002).
Definitions Green infrastructure is an approach to wet weather management that uses soils and vegetation to utilise, enhance and/or mimic the natural hydrologic cycle processes of infiltration, evapotranspiration and reuse. *Characterisation* Disciplines: Surface water management Key benefits: Water run-off control Scale: Urban *Reference* US Environmental Protection Agency, 2008, Managing Wet Weather with Green Infrastructure. Action Strategy.
Definitions Green infrastructure is the actions to build connectivity nature protection networks as well as the actions to incorporate multifunctional green spaces in urban environment. *Characterisation* Disciplines: Species conservation Key benefits: Nature protection Scale: Urban *Reference* EEAC, 2009, Green Infrastructure and Ecological Connectivity.
Definitions Green infrastructure is a concept that is principally structured by a hybrid hydrological/drainage network, complementing and linking relict green areas with built infrastructure that provides ecological functions. It is the principles of landscape ecology applied to urban environments. *Characterisation* Disciplines: Urban design Key benefits: Water run-off control Scale: Urban *Reference* Ahern, J., 2007, Green infrastructure for cities: The spatial dimension.
Definitions Green infrastructure is a strategically planned and delivered network of high-quality green spaces and other environmental features. It should be designed and managed as a multifunctional resource capable of delivering a wide range of environmental and quality‐of‐life benefits for local communities. Green infrastructure includes parks, open spaces, playing fields, woodlands, allotments and private gardens. *Characterisation* Disciplines: Land conservation Key benefits: Recreation Scale: Urban *Reference* Natural England (Natural England, 2010).

3. IEEP and Milieu (2013). The Guide to Multi-Benefit Cohesion Policy Investments in Nature and Green Infrastructure. By Peter Hjerp, Patrick ten Brink, Keti Medarova-Bergstrom, Leonardo Mazza, and Marianne Kettunen of IEEP, together with Jennifer McGuinn, Paola Banfi and Guillermo Hernández of Milieu. A Report for the European Commission. Brussels.

Form	*Where?*	*What?*	*Link to source*
Text, Table	Key definitions: Green Infrastructure	Description of GI	http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/guide_multi_benefit_nature.pdf

KEY DEFINITIONS: GREEN INFRASTRUCTURE

Green infrastructure has been described as 'the network of natural and semi-natural areas, features and green spaces in rural and urban, terrestrial, freshwater, coastal and marine areas, which together enhance ecosystem health and resilience, contribute to biodiversity conservation and benefit human populations through the maintenance and enhancement of ecosystem services19.

According to the Commission's Communication, green infrastructure is 'a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, green infrastructure is present in rural and urban settings.

4. Naumann, Sandra, McKenna Davis, Timo Kaphengst, Mav Pieterse and Matt Rayment (2011): Design, implementation and cost elements of Green Infrastructure projects. Final report to the European Commission, DG Environment, Contract no. 070307/2010/577182/ETU/F.1, Ecologic institute and GHK Consulting.

Form	*Where?*	*What?*	*Link to source*
Text	3.1 Definition of green infrastructure	Description of GI + references	http://ec.europa.eu/environment/enveco/biodiversity/pdf/GI_DICE_FinalReport.pdf

3.1 Definition of green infrastructure

"Green infrastructure is the network of natural and semi-natural areas, features and green spaces in rural and urban, terrestrial, freshwater, coastal and marine areas, which together enhance ecosystem health and resilience, contribute to biodiversity conservation and benefit human populations through the maintenance and enhancement of ecosystem services. Green infrastructure can be strengthened through strategic and co-ordinated initiatives that focus on maintaining, restoring, improving and connecting existing areas and features as well as creating new areas and features."

Different studies and reports present a variety of definitions of green infrastructure. These definitions are broadly consistent and overlapping, but may differ in their emphasis on the various components, features and characteristics of green infrastructure and the functions and services that

it provides.

Some definitions, for example, stress the importance of biodiversity conservation, through the role of green infrastructure in connecting ecological networks and contributing to landscape scale conservation. Others focus on the functionality of green infrastructure and stress its importance in providing ecosystem services, often comparing its role to man-made infrastructure such as engineered drainage systems and flood defences. In other contexts, the emphasis is on the benefits of green infrastructure to communities and the role it plays in enhancing the built environment and providing a resource for recreation, supporting human health and improving quality of life. Other definitions focus more on the role of green infrastructure as a management tool, providing a strategic approach to land use planning and conservation.

One of the unique features of GI is its multi-functionality benefits, in particular in relation to making the best use of land and natural resources by realising and valuing these multifunctional benefits in environmental, economic and social/cultural terms. For example, an urban car park with underground-source heating and cooling installed and with tree cover represents a valuable GI asset. The highest added value of GI can often be achieved once isolated GI components become part of a connected network which builds ecosystem resilience and makes significant contributions to biodiversity recovery on top of other economic and social benefits.

5. Lammerant, Johan; Peters, Richard; Snethlage, Mark; Delbaere, Ben; Dickie, Ian; Whiteley, Guy. (2013) Implementation of 2020 EU Biodiversity Strategy: Priorities for the restoration of ecosystems and their services in the EU. Report to the European Commission. ARCADIS (in cooperation with ECNC and Eftec).

Form	*Where?*	*What?*	*Link to source*
Text, glossary	2.2 Definitions for 'restoration' 2.3.2 Terms and definitions	Definition of restoration, restored and degraded ecosystems. Key terms + references	http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/RPF.pdf

2.2 Definitions for 'restoration'

Obviously definitions of 'restoration' and 'restored ecosystems' are closely related to definitions of 'degraded ecosystems'.

According to the recent IEEP- led study on the financing needs the EC definition as applied in the Biodiversity Strategy Impact Assessment is extremely ambitious. "In many cases full restoration would require measures to overcome the long-term impacts of some pressures, such as soil erosion, water pollution, acidification, nutrient enrichment and contamination with toxic substances. The full restoration of such areas would require very expensive and technically difficult actions, such as the removal of nutrient enriched or otherwise contaminated soils and sediments, and in some cases their replacement or augmentation with suitable soils. Furthermore, vegetation establishment takes time and some habitats will need to undergo natural succession processes to regain their original structures, ecological processes and composition."

The study also states that “restoration will be constrained by the absence of component species or even by the global extinction of some species”, and that “it is reasonably certain that all these constraints on restoration will be exacerbated by climate change."

In the light of the considerations set out above, the Financing Needs study calculated Target 2 costs on the basis of the restoration of the key species, properties and processes of ecosystems and their functions. This interpretation of the definition of restoration is also compatible with other definitions, perhaps most importantly with respect to Aichi Target 15 (CBD, 2011) (See Box 1). The CBD definition appears to be taken from the Society for Ecological Restoration (SER), a renowned international authority on restoration (see Box 1).

The financing needs study also points out that the CBD and SER do not in fact define restoration, but describe the process in a rather open manner, and as a result the intended end point is uncertain.
For the purpose of elaborating the prioritization framework on ecosystem restoration under the present contract, it was decided to apply the pragmatic definition of the CBD and the SER (see Box 1).

Box 1: Definitions

* European Commission Biodiversity Strategy Impact Assessment:
Ecosystem restoration: “The return of an ecosystem to its original community structure, natural complement of species, and natural functions”.
* CBD (2011):
Restoration : “The process of actively managing the recovery of an ecosystem that has been degraded, damaged or destroyed as a means of sustaining ecosystem resilience and conserving biodiversity”
* SER (2004):
Degradation : “subtle or gradual changes that reduce ecological integrity and health”
Damage : “acute and obvious changes in an ecosystem”
Destroyed : “when degradation or damage removes all macroscopic life, and commonly ruins the physical environment as well”
Ecological restoration: “The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed”
Transformation : “the conversion of an ecosystem to a different kind of ecosystem or land use type”
* IUCN (2012):
Degraded: “The simplification or disruption of ecosystems, and the loss of biodiversity, caused by disturbances that are too frequent or severe to allow natural ecosystem recovery in a relevant or ‘reasonable’ period of time. Degradation resulting from various factors, including climate perturbations and extreme events, as well as human activities, generally reduces flows of ecosystem goods and services.”
Ecosystem: Refers to ecosystem types defined in the context of MAES analytical framework4. Determining ecosystem condition (see ‘level’) in the context of the 4-level model takes place at the level of ecosystem patches within the Member State territory.
Modified ecosystem: In the context of the 4-level model modified ecosystems are those ecosystems which are heavily influenced by human activities, i.e. Intensive agriculture and silviculture, built urban areas, roads, airports, quarries, brownfield areas, heavily modified water bodies
Transformed ecosystem: In the context of the 4-level model transformed ecosystems are those

ecosystems which – in the framework of restoration – are transformed from one ecosystem type to another ecosystem type
Ecosystem patch: An ecosystem patch in the 4-level model is an ecosystem area that can be distinguished from other ecosystem patches based on its vegetation composition. Patches can be delineated by their specific boundaries.
Level: The model divides the continuum of ecosystem condition from poor to excellent into four distinct levels. For each level there are sets of ecosystem descriptors and associated threshold values that are regarded as typical for that level
Descriptor: A descriptor characterizes ecosystem condition. A descriptor consists of one or more indicators and distinguishes ecosystem condition levels by means of threshold values between levels
Indicator: For each descriptor an indicator and indicator unit (e.g. ha, %) needs to be defined. These indicators allow measuring the state of the descriptors. The choice of the indicators should be pragmatic and based on available information, applicable legislation, etc. As an example the indicator for the descriptor 'connectivity' is the level of fragmentation (see Box 3).
Threshold value: The transition values of applied indicators for moving between levels
Restoration: Moving from a lower level to a higher level in the 4-level model.
Degradation: Falling back to a lower level in the 4-level model
Restorable area: The total Member State territory minus the territory which qualifies as level 1
Baseline / Reference point: A fixed point in time to which progress towards the 15% restoration target can be measured

6. Medarova-Bergstrom, K, Kettunen, M, Rayment, M, Skinner, I and Tucker, G (2014) Common Framework for Biodiversity-Proofing of the EU Budget: General guidance. Report to the European Commission, Institute for European Environmental Policy, London.

Form	*Where?*	*What?*	*Link to source*
Text, glossary box	Box 1.2. Glossary of terms	Glossary of key terms for biodiversity proofing	http://ec.europa.eu/environment/nature/biodiversity/comm2006/proofing.htm

Box 1.2. Glossary of terms

Biodiversity: means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. Source: CBD
Biodiversity proofing: a structured process of ensuring the effective application of tools to avoid or at least minimize harmful impacts of EU spending and to maximise the biodiversity benefits. It is applicable to all spending streams under the EU budget, across the whole budgetary cycle and at all levels of governance, and contributes to a significant improvement in the state of biodiversity according to the 2010 baseline and agreed biodiversity targets.
Biodiversity offsets: measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure, ecosystem function and people's use and cultural values associated with biodiversity. Source: Business and Biodiversity Offsets Programme.

Compensation measures: the term is used in this report in accordance with its meaning in the Habitats Directive, such that compensation measures aim to result in no overall impact on the coherence of the Natura network; which is broadly analogous to biodiversity offsets.
Ecosystem: A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. Source: CBD.
Ecosystem services: The direct and indirect contributions of ecosystems to human wellbeing. They can be categorised in four main types: provisioning services (e.g. food, water, fuel); regulating services (e.g. flood and disease control); supporting/habitat services (e.g. nutrient cycling); and cultural services (e.g. recreation).
Mitigation measures: Measures which aim to reduce impacts to the point where they have no adverse effects. Examples of mitigation measures include avoidance of sensitive sites or disruptive work at sensitive times (e.g. breeding seasons) and the use of best available technologies to reduce pollutants.
Mitigation hierarchy: the principle that appropriate actions to address potential biodiversity impacts are taken in the following order of priority: (1) avoidance of impacts; (2) reduction of negative impacts; (3) rehabilitation/restoration measures; and (4) compensation measures for significant adverse residual impacts.
Pressures: Habitat loss, overexploitation of natural resources, the introduction and spread of invasive species, pollution and climate change are the five key pressures on biodiversity.
Residual impact: The remaining adverse impact on biodiversity after appropriate avoidance, minimisation and rehabilitation measures have been taken according to the mitigation hierarchy.

C. Glossaries elaborated by Working Groups

1. Recommendations of (first) Working Group on GI (2012)

Form	*Where?*	*What?*	*Link to source*
Text	GI TASK 1/2/3 RECOMMENDATIONS	Description of GI functionalities	https://circabc.europa.eu/w/browse/194caec4-df33-4ffc-ae79-c9e53aa11e87

A glossary of terms is accessible on BISE – the respective glossaries of the MAES reports http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/pdf/MAESWorkingPaper2013.pdf and http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/pdf/2ndMAESWorkingPaper.pdf have been merged and are constantly updated on the web page.

MAES Glossary of terms

Assessment: The analysis and review of information derived from research for the purpose of helping someone in a position of responsibility to evaluate possible actions or think about a problem. Assessment means assembling, summarising, organising, interpreting, and possibly reconciling pieces of existing knowledge and communicating them so that they are relevant and helpful to an intelligent but inexpert decision-maker (Parson, 1995).
Assets: Economic resources (TEEB, 2010).
Benefits: Positive change in wellbeing from the fulfilment of needs and wants (TEEB, 2010).
Biodiversity: The variability among living organisms from all sources, including inter alia terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part, this

includes diversity within species, between species, and of ecosystems (cf. Article 2 of the Convention on Biological Diversity, 1992).
Biophysical structure: The architecture of an ecosystem as a result of the interaction between the abiotic, physical environment and the biotic communities, in particular vegetation.
Biophysical valuation: A method that derives values from measurements of the physical costs (e.g., surface requirements, labour, biophysical processes, material inputs).
Conservation status (of a natural habitat): The sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species (EEC, 1992).
Conservation status (of a species): The sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations (EEC, 1992).
Drivers of change: Any natural or human-induced factor that directly or indirectly causes a change in an ecosystem. A direct driver of change unequivocally influences ecosystem processes and can therefore be identified and measured to differing degrees of accuracy; an indirect driver of change operates by altering the level or rate of change of one or more direct drivers (MA, 2005).
Ecological value: Non-monetary assessment of ecosystem integrity, health, or resilience, all of which are important indicators to determine critical thresholds and minimum requirements for ecosystem service provision (TEEB, 2010).
Economic valuation: The process of expressing a value for a particular good or service in a certain context (e.g., of decision-making) in monetary terms (TEEB, 2010).
Ecosystem: A dynamic complex of plant, animal, and microorganism communities and their non-living environment interacting as a functional unit (MA, 2005). For practical purposes it is important to define the spatial dimensions of concern.
Ecosystem assessment: A social process through which the findings of science concerning the causes of ecosystem change, their consequences for human well-being, and management and policy options are brought to bear on the needs of decision-makers (UK NEA, 2011).
Ecosystem condition: The capacity of an ecosystem to yield services, relative to its potential capacity (MA, 2005). For the purpose of MAES, ecosystem condition is, however, usually used as a synonym for 'ecosystem status'.
Ecosystem degradation: A persistent reduction in the capacity to provide ecosystem services (MA, 2005).
Ecosystem function: Subset of the interactions between biophysical structures, biodiversity and ecosystem processes that underpin the capacity of an ecosystem to provide ecosystem services (TEEB, 2010).
Ecosystem process: Any change or reaction, which occurs within ecosystems, physical, chemical or biological. Ecosystem processes include decomposition, production, nutrient cycling, and fluxes of nutrients and energy (MA, 2005).
Ecosystem service: The benefits that people obtain from ecosystems (MA, 2005). The direct and indirect contributions of ecosystems to human well-being (TEEB, 2010). The concept 'ecosystem goods and services' is synonymous with ecosystem services. The service flow in our conceptual framework refers to the actually used service.
Ecosystem state: The physical, chemical and biological condition of an ecosystem at a particular point in time.
Ecosystem status: A classification of ecosystem state among several well-defined categories. It is usually measured against time and compared to an agreed target in EU environmental directives (e.g. HD, WFD, MSFD), e.g. “conservation status”.
Energy inputs: Subsidies added to ecosystems such as fertilizers, fossil fuel, or labour that are required to turn ecosystem functions into ecosystem services and benefits.
Functional traits: A feature of an organism that has demonstrable links to the organism’s function.

Habitat: The physical location or type of environment in which an organism of biological population lives or occurs. Terrestrial or aquatic areas distinguished by geographic, abiotic and biotic features, whether entirely natural or seminatural.
Human well-being: A context- and situation dependent state, comprising basic material for a good life, freedom and choice, health and bodily well-being, good social relations, security, peace of mind, and spiritual experience (MA, 2005).
Indicator: Observed value representative of a phenomenon to study. In general, indicators quantify information by aggregating different and multiple data. The resulting information is therefore synthesised.
Socio-economic system: Our society (which includes institutions that manage ecosystems, users that use their services and stakeholders that influence ecosystems)
Value: The contribution of an action or object to user-specified goals, objectives, or conditions (MA, 2005).

References:

CBD, 1992.Convention on Biological Diversity. United Nations.

EEC, 1992. Council directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

MA, 2005. Ecosystems and Human Wellbeing: Current State and Trends, Volume 1, Island Press, Washington D.C.

Parson, E.A., 1995. Integrated Assessment and Environmental Policy Making, in Pursuit of Usefulness, Energy Policy, 23(4/5), 463–476.

TEEB, 2010. The Economics of Ecosystems and Biodiversity: Ecological and economic foundation. Earthscan, Cambridge.

UK NEA, 2011. The UK National Ecosystem Assessment Technical Report. UNEP-WCMC, Cambridge

2. Glossary of NNL (2014)

Form	*Where?*	*What?*	*Link to source*
Glossary document	Whole document	Description of 7 key terms relevant for NNL	http://ec.europa.eu/environment/nature/biodiversity/nnl/pdf/NNL_Glossary.pdf

The WG on NNL has elaborated a glossary document (pg. 32) on seven key terms relating to no net loss:

- Mitigation hierarchy (MH)
- Additionality
- Equivalence
- Ratio/ multipliers
- Compensation/Offset
- Bio/Conservation/habitat/mitigation banking
- Metrics.