NBS Tools Catalogue

Nature Based Solutions tools for planning urban climate adaptation: state of the art

ACT on NBS: Adaptive Cities Through integrated Nature Based Solutions

Version: 21 April 2021

Nr.	Name	Acronym	Project and Owners/ Partners involved in the development of the tool	Website	Strong points	Scope & Limitations	Language						Type of resource						Accessibility				Type of data provided				Type of information provided					Climate hazards									Co-benefits										Planning perspective				Purpose				Phase of use				Spatial scale							Target group (users)								Known past applications							NBS implementation challenges adressed			
							English	Dutch/Flemish	French	Spanish	Italian	Other	Catalogue	Repository	E-Platform	Handbook/ Guideline	Software	Methodology	Free & Open Source	Commercial	Registration needed	Not found	Qualitative	Quantitative	Spatial	N/A	Spatial info	Economic info	Social info	Environmental info	Climate info	Heavy rainfall	Flooding	Drought	Heat waves	Cold waves	Landslides	Wild fires	Sea level rise	All	Not found	Nature & Biodiversity	Urban agriculture	Air quality	Energy	Socio-economic	Recreation	Noise reduction	Health & Wellbeing	Housing	Spatial planning	Financial planning	Environmental planning	Governance	Analytical	Planning & Design	Informative	Inspirational	Exploration phase	Preparation phase	Implementation phase	Sustainment phase	Country	Province-region	City	District	Neighbourhood	Street	Project	Decision-makers	Academics	Citizens	Public officers	Real Estate	Private secor	Consultants	Professionals	Africa	America	Asia	Europe	Oceania	Case Study Countries	Case study Cities/ Regions	lack of financial resources	lack of expertise, know-how or competence	collaborative governance and planning	the institutional setting
1	A Risk-Based Impact and Vulnerability Analysis Methodology	IVAVIA	Resin project, funded by the European Union's Horizon 2020 research and innovation programme	http://www.resin-cities.eu/resources/ivavia/	The IVAVIA methodology is designed to guide a risk-based vulnerability assessment as part of phase 1; helping you to map, analyse and communicate the impact of climate trends and weather events on key elements of your city's physical, social and economic fabric. IVAVIA provides guidance on how to prepare, gather, and structure data for your risk-based vulnerability assessment; to quantify and combine vulnerability indicators; to assess risk; and to present outcomes	IVAVIA consists of seven modules. Modules 0-2 allow a qualitative assessment, Modules 3-5 a more comprehensive, quantitative one, and Module 6 describes how to best present the outcomes of IVAVIA to your stakeholders.	1											1	1		1		1	1	1					1	1									1						1			1		1		1	1	1	1			1				1	1	1					1	1		1			1	1				1		Spain, Slovakia, UK, France	Bilbao, Bratislava, Manchester, Paris		1		
2	A Sourcebook for Climate-Proof Urban Development	Not found	CFCC (Cities Fit for Climate Change) project, Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)	https://www.giz.de/climate-proof-cities/#0	Clear explanation of key issues at the interface of climate change and urban development. Multiple references to further information.	Focused on the governance process	1						1		1	1		1	1				1						1	1	1	1	1	1	1				1											1		1	1		1	1	1	1	1					1					1			1				1	1	1	1	1		Many, in Europe: Germany, Spain, Sweden	Many, in Europe: Frankfurth, Leipzig, Malmo, Munich, Nuremberg, Stuttgart, Vitoria-Gasteiz (Spain)		1	1	1
3	Adaptation Support Tool	AST	Deltares, Alterra Wageningen UR and Bosch Slabbers Landscape Architects as part of the Climate KIC project Blue Green Dream	https://www.deltares.nl/adaptation-support-tool	AST estimates the performance of the measures for a number of key metrics, e.g. created storage capacity, frequency reduction of the normative runoff, heat stress eduction, extra groundwater recharge, water quality effects, costs and additional benefits.	Weather information is mainly for the Netherlands, though it can be adapted to other geographical regions in the world.	1	1									1			1				1	1		1	1		1		1	1	1	1							1				1					1		1	1		1	1		1	1						1	1	1		1		1	1				1	1	1		1		Mozambique, The Netherlands, UK, Germany, USA, Mexico	Chota district of Beira, Centre-West area of Utrecht, Amsterdam, The Hague, Decoy Brook catchment-London, Berlin, New Orleans, Oaxaca	1	1		
4	Benefits Estimation Tool	BEST	CIRIA, Susdrain	https://www.susdrain.org/resources/best.html	BEST aims to support practitioners to evaluate the multiple benefits of blue-green and wherever possible, determine the estimated monetary benefit. Developed by practitioners across a number of disciplines (such as drainage, landscape architecture, ecology, economics). The usability of BEST has been improved, it follows a simple structure that begins with coarse screening and qualitative assessments to quickly identify the benefits to evaluate further. It then provides support to help quantify and monetise each benefit. On completion of the evaluation, the tool provides a series of graphs and charts to present the benefits in terms of ecosystem services and natural, social and other capitals.	For use on PCs. It makes assessing the benefits of blue-green infrastructure easier, without the need for full scale economic inputs. BEST was first produced and released in 2015 and it has been updated in 2019.	1										1		1		1			1				1		1		1	1									1				1						1	1	1	1				1	1	1	1			1	1				1	1		1			1	1				1		UK	London	1			
5	Cities and Flooding: A Guide to Integrated urban Flood Risk Management for the 21st Century	Not found	The World Bank Group and GFDRR	http://www.zaragoza.es/contenidos/medioambiente/onu/805-eng.pdf	The guide takes a strategic approach to managing flood risk, in which appropriate measures are assessed, selected, and integrated into a process that both informs and involves the full range of stakeholders. Illustrated with more than 50 case studies, a series of "how to" sections, and a set of guiding policy principles, the guide embodies state-of-the-art integrated urban flood risk management	Focus on developing countries.	1			1		1				1		1	1				1				1	1	1	1	1	1	1	1	1				1		1					1					1	1	1	1	1	1	1	1	1	1	1	1		1	1						1						1	1	1	1	1	1		Indonesia, Germany, Mozambique, Argentina	Jakarta, Cologne, Maputo, Buenos Aires	1	1		1
6	CitiesWithNature	Not found	ICLEI, The Nature Conservancy, IUCN	https://cwn.iclei.org/	It provides a shared platform for cities and their partners to engage and connect, working with shared commitment towards a more sustainable urban world.	The CitiesWithNature provides a Knowledge & Research Hub which will be a "meeting place" and online resource library for practitioners, researchers and other e1perts, both public and private, to engage and contribute to emerging practices and scientific thinking related to nature in, and surrounding, cities and other urban spaces	1								1						1					1															1										1		1	1			1	1	1	1					1				1	1			1				1	1	1	1	1	1	Many countries.	Cities all over the world				1
7	Citydeal Klimaatadaptatie	Not found	City Deal is a collaboration agreement between seventeen public partners and seventeen (semi) private partners and the government.	https://www.citydealklimaatadaptatie.nl/publicaties/	Presents 'roadmaps'.	Focus on Dutch municipalities.		1						1		1			1				1							1	1											1	1	1	1	1	1	1		1					1		1	1	1	1											1	1		1					1				1		Netherlands	Den Haag, Amsterdam, Eindhoven, Dordrecht, Rotterdam, Breda, Zwolle, Amsterdam, Deventer, Groningen			1	1
8	Climate Actions Prioritisation MCA Tool	CLIMACT Prio	Erasmus University's Institute for Housing and Urban Development Studies in Rotterdam	http://city-development.org/tool-19-climact-prio/#1472660365357-fe4ea7fa-1d8b7466-96d4	A climate awareness, decision support and capacity building tool for the prioritisation and assessment of climate mitigation and adaptation options at a local level	Addresses the most important steps in decision making for climate adaptation planning, whilst also focusing on the possible challenges and trade-offs throughout the process	1											1	1				1	1				1	1	1	1									1						1					1	1	1	1		1	1	1	1	1					1					1			1			1	1				1		Bangladesh, Tanzania, European countries	Dhaka, Dar es Salaam, other?	1	1	1	
9	Climate Change Challenge Catalogue from URBAN GreenUP	Not found	URBAN GreenUP project, funded by the European Union's Horizon 2020 research and innovation programme	https://www.urbangreenup.eu/challenges/	A tool that allows practitioners to examine several societal city challenges in a simple way with accurate information about how these challenges might affect cities and how and why cities might come to understand urban vulnerability as soon as possible.	This tool covers a wide definition of "challenge". This was due to the fact that nature-based solutions (NBS) are solutions to a number of societal challenges and not only climate change issues.	1						1						1		1		1	1				1	1	1	1	1	1	1	1							1		1		1	1		1		1			1		1	1		1	1	1				1					1	1		1						1	1	1		Turkey, Spain, Italy, Germany, Colombia, China, Vietnam	Three runner cities: Izmir, Liverpool, Valladolid; Five follower cities: Mantova, Ludwigsburg, Medellin, Chengdu, Binh Dinh-Quy Nhon		1		
10	Climate risk typology	Not found	Resin project, funded by the European Union's Horizon 2020 research and innovation programme	http://www.resin-cities.eu/resources/risk-typology/	This interactive online portal provides data and functionality enabling users to visualise, describe, compare and analyse climate risk in European cities and regions.	The typology classes will usefully explain the climate risk characteristics of the majority of NUTS3 regions that fall within them. However, there will always be outliers that do not immediately appear to fit in. Here, the typology sub-classes are helpful as they further distinguish NUTS3 regions in terms of their underlying climate risk characteristics, although there may also be outliers at this scale of the typology.	1										1		1					1	1		1				1									1						1					1		1	1	1	1			1	1			1	1	1					1	1		1			1	1				1		Not found	Not found		1		
11	Collective Intelligence and Co-Creation Guidelines for NBS	Not found	ACTonNBS project, Innovation and Technology for Development Center (ITD), Universidad Politecnica de Madrid, EIT-Climate KIC	https://issuu.com/manuelalmestar/docs/handbook_v5	The purpose of this handbook is to promote collective Intelligence and co-creation for Nature Based Solutions (NBS), fostering new channels to raise awareness and encourage multi-actor engagement. Co-creation with different actors and especially designers, artists and architects becomes a convenient strategy to generate aesthetically appealing and socially acceptable NBS de-signs. The overall goal is demonstrate how co-creation should foster interdisciplinary collabora-tion, catalyze project impacts and enhance the participation of un-conventional and conventional actors in the whole process.	Contains a conceptual framework to co-creation for NBS, and describes the overall approach in-cluding a brief description of current NBS governance models. Discusses the concept of co-creation will be explained using various examples of successful NBS pro-jects in Europe which foster art mediation as core princi-ple in the process, in particular the case. Shifts the focus towards a wider practice-oriented scope, offering a step-by-step guide for the co-creation of NBS for practitioners, highlighting the engage-ment process of conventional and un-conventional ac-tors. Explores the digital layer of collective intelligence concept as an amplifier of social innovation.	1									1		1	1				1						1												1	1					1				1		1			1	1		1	1					1				1	1	1	1	1	1	1	1	1				1		Spain	Madrid (Matadero)			1	1
12	Developing with Nature Toolkit	Not found	Natural Cambridge Shire	https://naturalcambridgeshire.org.uk/wp-content/uploads/2018/10/nc-developing-with-nature-toolkit.pdf	This Toolkit has been produced to help developers and infrastructure providers to demonstrate their commitment to achieving a net biodiversity gain to the public, local authorities or shareholders. The Toolkit comprises a simple list of "10 Things to do for Nature".	The Toolkit is primarily intended for major developments requiring an Environmental Impact Assessment (new settlements, major urban extensions, housing developments above 100 dwellings, commercial developments greater than 1 Ha or 1,000m2 floor space, mixed use developments greater than 2 Ha, or major transport infrastructure projects). It should be used at the very outset of planning new developments, and ideally at the time of selecting sites to acquire for development.	1											1	1				1							1											1	1									1		1			1	1		1	1							1	1	1	1			1	1		1	1				1		UK	Cambridgeshire and Peterborough		1		
13	EGOKI Integrating Adaptation to climate change in spatial and urban planning	EGOKI	Navarre Network of Local Entities for Sustainability, with support of the Biodiversity Foundation and the Spanish Climate Change Office	https://www.adaptecca.es/recursos/buscador/adaptacion-al-cambio-climatico-de-las-entidades-locales-desde-el-planeamiento	The process guide is highly multi-stakeholder focused and its application in pilots has shown that the process is useful in identifying available and unavailable information necessary for integrating climate adaptation into spatial and urban planning.	It is a process guide in Spanish tailored for Navarre municipalities.	1			1								1	1			1	1	1						1	1	1	1	1	1			1								1			1		1			1		1	1		1	1					1					1			1				1					1		Navarra, Spain	Navarra			1	
14	Geo Cluster 4 NBS	Not found	Nature 4 Cities, funded by the European Union's Horizon 2020	https://geocluster4nbs.nature4cities-platform.eu/#/wizard	It has 43 pioneer projects database where users can explore the NBS projects map and get information on projects. Explores the NBS typologyand gets information on NBS. Helps to select NBS and projects from addressed challenges. Market push: check where a NBS can be replicated. Land owner: check if a project could be replicated on your site.	Databases and Typologies designed to be easily extended with new NBS.	1							1			1					1	1	1	1		1			1											1	1		1		1			1		1						1		1	1		1			1	1	1			1			1	1	1	1	1				1		Italy, Turkey, Spain & Hungary, Austria, Germany, The Netherlands, Switzerland, France	Genova, Milan, Rome, Ankara, Valladolid, Mérida, San Vicente del Raspeig, Barcelona, Vitoria-Gasteiz, Nagykovácsi, Budapest, Balatonfűzfő, Szeged, Vienna, Berlin, Freiburg, Almaar, Amsterdam, Zürich, Strasbourg, Lille, Bézannes, Bayonne, Gardanne, Marseille, Mouans-Sartoux, Saint-Etienne, Paris, Valenton, Bordeaux Métropole, Saint-Just, Nantes, Lorient		1		
15	Green City Development tool kit	Not found	Asian Development Bank	https://www.adb.org/sites/default/files/institutional-document/173693/green-city-dev-toolkit.pdf	It outlines a three-step city assessment framework and provides a summary of existing tools and resources for green and sustainable development. Users of the tool kit will gain a greater understanding of key issues for green city development that will assist in the preparation and design of green city development programs and projects in Asian cities.	A lot of information is provided, but per tool the information is limited.	1									1			1				1							1	1	1	1		1									1	1	1	1					1		1	1			1	1	1	1					1	1	1			1			1	1		1	1			1			Per tool a reference is given to a case study, but not presented.	Per tool a reference is given to a case study, but not presented.		1		1
16	Green Factor Tool	Not found	Iwater Project, City of Helsinki; from the INTERREG project website	http://www.integratedstormwater.eu/material/green-factor-tool	The tool is based on an excel spreadsheet and it is pretty easy to use. It provides easy to interpret results and it is mostly focus on water management and permeability. it includes a set of NBS to be tested.	It is mostly useful for water management and biodiversity of vegetal species	1											1	1					1				1		1	1																						1		1	1				1	1				1					1			1			1					1		Finland, Latvia, Sweden	Helsinki		1		
17	Green Infrastructure Wizard	GIWiz	United States Environmental Protection Agency (EPA); cross-agency collaboration involving EPA's Office of Research and Development, Office of Policy, Office of Water, and Regional staff.	https://cfpub.epa.gov/giwiz/	GIWiz provides access to tools and resources that can support and promote water management and community planning decisions. GIWiz is an interactive web application that connects communities to EPA Green Infrastructure tools & resources.	GIWiz is part of the Green Infrastructure Modeling Toolkit. The Toolkit aims to help decision makers with green infrastructure implementation decisions for stormwater management	1						1	1			1		1		1			1	1					1									1		1							1	1	1		1	1	1	1			1	1	1		1	1	1					1	1		1			1	1		1				United States	Not found		1		
18	GreenTool	Not found	VITO NV	https://groentool.antwerpen.be/	An overview of the existing environmental quality is provided allowing the existing environmental challenges to be identified. The effects of a large database of green and blue measures can be analysed for each topic. Suggestions of interesting measures to users for locations of their interest.	Cartography and analysis only applies to Belgium		1									1		1						1		1	1		1		1	1	1	1							1		1			1	1			1	1	1		1	1				1						1	1	1	1		1				1							1		Belgium	Antwerp, Belgium	1	1		
19	Integrated Valuation of Ecosystem Services and Tradeoffs	InVEST	Natural Capital Project, Sanford University	https://naturalcapitalproject.stanford.edu/software/invest	InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) is a suite of models used to map and value the goods and services from nature that sustain and fulfill human life. It helps explore how changes in ecosystems can lead to changes in the flows of many different benefits to people. InVEST models are spatially-explicit, using maps as information sources and producing maps as outputs. InVEST returns results in either biophysical terms (e.g., tons of carbon sequestered) or economic terms (e.g., net present value of that sequestered carbon). The spatial resolution of analyses is also flexible, allowing users to address questions at local, regional, or global scales.	InVEST models are based on production functions that define how changes in an ecosystem's structure and function are likely to affect the flows and values of ecosystem services across a land- or a seascape. The models account for both service supply (e.g., living habitats as buffers for storm waves) and the location and activities of people who benefit from services (e.g., location of people and infrastructure potentially affected by coastal storms). InVEST models are distributed as a standalone application that is independent of a GIS software. You need a mapping software such as QGIS or ArcGIS to view your results. Running InVEST does not require knowledge of Python programming, but it does require basic to intermediate skills in GIS software.	1										1		1					1	1		1	1		1	1		1		1							1		1		1	1		1		1		1	1	1	1			1	1	1	1		1	1					1	1		1			1	1		1	1			China and U.S.A.	Urban-InVEST. First applications in major Chinese cities (Beijing, Shanghai, Shenzhen, Dalian) and in Minneapolis-St Paul and the San Francisco Bay Area.	1	1		
20	Klimaateffectatlas Vallei en Veluwe	Not found	Wageningen Environmental Research, Climate Adaptation Services and SWECO	https://klimaatvalleienveluwe.nl/atlas/	The Climate Impact Atlas maps the urban flooding. In addition, the Climate Impact Atlas contains landscape soil / geomorphological maps (including urban and regional area). These maps provide insight into soil infiltration capacity, soil relief, etc., on the basis of which it can be assessed which adaptation measures make sense at which places	Limited to the Dutch region of Vallei and Veluwe.		1					1	1			1		1		1		1		1		1			1	1	1	1	1	1											1		1				1		1	1	1	1	1	1	1	1	1	1	1		1	1	1	1			1	1	1	1			1	1				1		Netherlands	Vallei and Veluwe region; 28 municipalities, 2 provinces, the water board, Vitens and Rijkswaterstaat		1		
21	Living Lab Handbook for Urban Living Labs Developing Nature-Based Solutions	UNaLab	UNaLab project, funded by the European Union's Horizon 2020 research and innovation programme. The UNaLab Consortium comprises of 28 partners from 10 cities across Europe and beyond, including municipalities, research, business and industry.	https://unalab.eu/system/files/2020-07	This handbook can be used to learn how to develop an Urban Living Lab, based on the experiences, research and practical experience from the UNaLab project. It provides tips and information onwhat questions need to be asked, who is working in a Living Lab and what obstacles you need to watch out for.	The focus is on Urban Living Labs – meaning Living Labs operating within an urban setting (in a city). This urban setting can be as narrow as a single street or as wide as the city as a whole. In Living Labs, the space for the experimentation is always a real-life setting: the solution is tested in the real-life environment, right where it is planned for (for example, on a street)	1									1			1				1						1												1					1					1			1		1	1	1	1	1	1				1	1	1	1	1	1		1	1		1		1				1		Finland, The Netherlands, Italy, Turkey, France, Spain, Czech Republic, Norway, Argentina, Hong Kong	Tampere (Finland), Eindhoven, Genova (Italy), Başakşehir (Turkey), Cannes, Castellón (Spain), Prague, Stavanger, Buenos Aires, Hong Kong			1	
22	Natural Solutions Toolkit	Not found	The Nature Conservancy along with global, regional and local partners.	https://coastalresilience.org/natural-solutions/toolkit/	With this mapping platform users can: • view potential impacts of sea level rise, surge from storms and hurricanes, and inland flooding • optimize the design of new marine protected areas to deliver multiple benefits, from fish production to coastal protection to carbon storage and tourism value • visualize a snapshot of a country's potential to mitigate climate change using nature • identify watersheds where land-based conservation activities have the greatest potential to contribute to water security and other sustainability goals • see how water management decisions made far upstream affect coastal resources downstream • identify countries and river basins where water market strategies can be used to reduce human and ecological impacts from water shortages	A variety of programs and projects use the Toolkit: Coastal Resilience program, Floodplains by Design program, Natural Resource Navigator, Blueways Conservation decision support tool, Freshwater Network, Mapping Ocean Wealth, Protecting Water Atlas, Natural Climate Solutions (NCS). With a common goal of highlighting the value of nature in reducing risk and enhancing resilience in cities, counties, provinces, states, and across nations, the Toolkit provides effective communications in science and technology across environments	1										1		1				1	1	1		1	1		1			1						1			1									1		1		1	1	1	1	1	1			1	1	1						1		1			1	1		1	1		1	Caribbean, Me1ico and Central America, North America, Indonesia, Australia	Global, Country, Regional and City level	1	1		
23	Nature Insurance Value: Assessment and Demonstration - Business models for NBS	NAIAD	NAIAD project, funded by the European Union's Horizon 2020 research and innovation programme	http://naiad2020.eu/about-the-e-guide/tools/natural-assurance-schemes-nas-canvas-and-successful-business-model-examples/	To contribute, through financially viable and technically sound NBS informed decision support and planning tools, to socio-economic prosperity and sustainability of the natural environment.	Only includes EU projects	1											1	1				1	1				1	1	1			1	1								1									1	1	1	1	1		1	1	1	1	1			1	1	1				1	1	1	1	1		1					1		Denmark, Poland, Netherlands, Spain, France, Romania, France, United Kingdom, Slovenia	Copenhagen, Lodz, Rotterdam, Medina del Campo aquifer, La Brague basin, Lower Danube basin, Lez Mediterranean basin, Thames basin, Glinscica catchment	1			
24	Nature-Based Solutions Business Model Canvas	NBS BMC	Connecting Nature project, funded by the European Union's Horizon 2020 research and innovation programme	https://connectingnature.eu/financing-and-business-models	The Nature-Based Solutions Business Model Canvas is an easy-to-use tool to help you capture in a visual format the business model of your Nature-Based Solution (NBS). The NBS Business Model Canvas has been used as a tool to support the initial stages of planning the implementation of NBS in the cities engaged in the Connecting Nature project.	The Nature-Based Solutions Business Model Canvas provides a simple way of telling others what you want to do and why, who needs to be involved and how you're going to make it happen.	1											1	1		1		1	1				1	1												1					1						1			1	1			1	1					1	1	1		1	1	1	1	1	1	1						1		Belgium UK Poland	Genk Glasgow Poznan	1			
25	Nature-Based Solutions Handbook	Not found	Think Nature, European Union's Horizon 2020 research and innovation programme	https://platform.think-nature.eu/system/files/thinknature_handbook_final_print_0.pdf	This Handbook has been developed in the framework of the ThinkNature project. Its main objective is to gather and promote state-of-the-art knowledge regarding Nature-Based Solutions (NBS), comprising a comprehensive guide to all relevant actors. To this end, each aspect of NBS is investigated, from project development to financing and policy making, and is presented in a concise and comprehensive way, in order to be easily understandable.	Each chapter focuses on a separate issue (analysed and documented through specific subtopics) and targets different types of NBS stakeholders. In general, Chapters 1-4 provide general background knowledge, useful for everyone involved in NBS initiatives; Chapters 5-7 are more specialised, addressing issues relevant to different NBS stakeholder groups (i.e. Chapter 5 for research and innovation, Chapter 6 for business sector, and Chapter 7 for policy sector); and Chapter 8 concludes with key recommendations.	1									1			1				1					1	1	1	1	1	1	1	1				1			1	1	1	1	1	1	1	1		1		1	1		1	1		1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		The ThinkNature case studies portfolio currently consists of 122 case studies.				1
26	NATURVATION social and cultural value and benefit categories for NBS	Not found	Naturvation project, funded by the European Union's Horizon 2020 research and innovation programme	https://naturvation.eu/result/social-and-cultural-values-and-impacts-nature-based-solutions-and-natural-areas	Based on a literature review they came up with adjusted social and cultural value and benefit categories for nature-based solutions.	Very theoretical.	1							1					1				1						1	1											1					1	1		1				1	1			1		1	1					1	1	1	1	1	1	1	1	1	1	1	1	1				1		Not found	Not found				1
27	NATURVATION Value and Benefit Assessment Methods Database for Urban Nature-based Solutions	Not found	Naturvation project, funded by the European Union's Horizon 2020 research and innovation programme	https://naturvation.eu/result/value-and-benefit-assessment-methods-database-urban-nature-based-solutions	The database provides open access to knowledge about where, when, and under which circumstances, integrated multi-functional and systemic impacts of nature-based solutions can be assessed. This database was created from a review of assessment methods (i.e. frameworks, models and tools) currently used to assess the ecological, economic and social benefits of urban NBS.	Not user friendly.	1											1	1				1	1				1	1	1	1										1					1						1			1				1	1									1	1	1					1	1						Not found	Not found	1			
28	Oppla	Not found	Over 60 universities, research institutes, agencies and enterprises have contributed to the development of Oppla as part of a joint activity between the OPERAs and OpenNESS projects, funded by the European Commission FP7 Programme	https://oppla.eu/	Oppla is the EU Repository of Nature-Based Solutions. It provides a knowledge marketplace, where the latest thinking on natural capital, ecosystem services and nature-based solutions is brought together. Its purpose is to simplify how we share, obtain and create knowledge to better manage our environment.	Oppla is an open platform that is designed for people with diverse needs and interests - from science, policy and practice; public, private and voluntary sectors; organisations large and small, as well as individuals.	1							1	1				1	1			1	1				1		1	1										1	1	1	1	1	1	1	1	1		1	1	1	1	1	1			1	1				1	1	1	1			1	1	1	1	1	1			1	1	1	1		242 case studies	242 case studies		1		1
29	PANORAMA	Not found	PANORAMA is jointly implemented by the following organisations: GIZ, IUCN, UN Environment, GRID-Arendal, Rare, IFOAM – Organics International, UNDP. The PANORAMA partners e1press their thanks to the following funding agencies: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of the Federal Republic of Germany (BMU) and Global Environment Facility (GEF)	https://panorama.solutions/en	Provides per type of ecosystem information about: - biodiversity, - climate change, - ecosystem conservation, - financing, - gender mainstreaming, - governance, - human development, - infrastructure, - islands, - local communities, - management planning, - outreach & communications, - science and research, - sectors, - standards/certification, - waste and resource efficiency, - world heritage.	The information that is provided per 'solution', is limited to a summary.	1		1	1			1	1					1				1	1					1	1		1	1	1	1		1	1	1			1	1	1	1	1	1				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Many countries. In Europe: France, Germany, UK, Finland, Czech Rep., Denmark, Georgia, Italy, Bosnia and Herzegovina, Austria, Switzerland, Serbia, Netherlands, Portugal, Albania, Armenia, Croatia, Greece, Sweden	A lot of cities. In Europe: - London (UK, multiple cases), - Kamen (Germany), - Bad Schandau (Germany), - Malmo (Sweden), - Munchen (Germany), - Dortmund (Germany), - Stuttgart (Germany), - Vienna (Austria)		1		1
30	RainBo innovative tools for planning and timely responding to floods in urban areas	RainBO	Lepida Spa is project coordinator, involved partners are Arpae Emilia-Romagna, Servizio Idro-Meteo-Clima, Nier Ingegneria SpA, Meeo Srl and the Municipality of Bologna	https://www.rainbolife.eu/en	The overall objective is to develop and improve methods and tools to predict severe rainfall events and their impact, focusing on the hydrologic response of the small watercourses within the urban area of Bologna	It is in Italian and tailored only for Bologna.					1						1	1	1				1	1	1		1			1	1	1	1														1					1			1	1		1		1	1					1	1	1				1		1					1			1		Italy	Bologna		1		
31	REnovation of public Buildings and Urban Spaces	REBUS	Regione Emilia Romagna	https://territorio.regione.emilia-romagna.it/urbanistica/rebus-r-laboratorio-sulla-rigenerazione-urbana-e-i-cambiamenti-climatici#autotoc-item-autotoc-4	Well done for communication purposes, good catalogue of available NBS. For each city, the interdisciplinary teams competed by drawing up a project proposal based on a law and a (fake) call for the allocation of funding. From the I to the IV edition, the contents and requests formulated in the law and in the call for applications have grown in number and level of complexity up to the definition of criteria for the design of eco-neighborhoods and public spaces for the mitigation and adaptation to climate change .	Good for dissemination and strategic thinking based on NBS. In less than 3 days, each team developed urban regeneration strategies and projects to improve the quality of public spaces, rethinking the use of greenery, managing the urban water cycle, mineral and vegetable materials, structures / equipment that can make public spaces more comfortable, attractive and livable. During the workshops, the effectiveness of the projects in terms of comfort and thermal mitigation and the environmental benefits of the green infrastructure were assessed					1		1			1		1	1				1				1			1	1	1	1	1	1								1								1						1	1	1	1					1	1	1					1	1		1		1				1		Italy	Bologna, Ferrara		1	1	
32	Sustainable Drainage Systems Manual	SuDS Manual	CIRIA, Susdrain	https://www.ciria.org/ItemDetail?iProd	This guide covers the planning, design, construction and maintenance of Sustainable Drainage Systems (SuDS) to assist with their effective implementation within both new and existing developments. It looks at how to maximise amenity and biodiversity benefits, and deliver the key objectives of managing flood risk and water quality. There is also supporting information covering topics such as materials, landscape design, maintenance, community engagement and costs and benefits.	Performance of the different tools is not evaluated	1									1			1											1	1	1	1	1	1	1						1		1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1	1		1	1	1	1	1	1	1		1	1	1	1	1	1		1		1		UK, USA	22 case studies in the UK and a couple in the USA		1		
33	Technical Handbook of Nature-based Solutions	Not found	UNaLab project, funded by the European Union's Horizon 2020 research and innovation programme. The UNaLab Consortium comprises of 28 partners from 10 cities across Europe and beyond, including municipalities, research, business and industry.	https://unalab.eu/en/documents/unalab-technical-handbook-nature-based-solutions	The handbook provides accurate, detailed information on the full range of potentially applicable nature-based solutions (NBS) to support urban climate and water resilience, their anticipated or demonstrated performance, and their limitations.	first draft version of its Technical Handbook of Nature-based Solutions. Focused on water resilence	1						1	1		1			1				1							1		1	1	1								1				1					1		1			1	1		1	1	1				1	1	1				1		1			1	1						Not found	Not found		1		
34	The Adaptation Wizard	Not found	UK Climate Impacts Programme, UKCIP	https://www.ukcip.org.uk/wizard/	The Wizard is structured around a five-step process that users can employ to assess their climate risks and establish an adaptation strategy.	Adopts the use of SMART (specific, measurable, achievable, results-oriented, and time-bound). It is a generic decision-support tool that encompasses all elements of climate risk assessment and adaptation within a single process.	1											1	1				1	1						1	1										1					1					1				1	1			1	1									1						1						1		UK	Port of Feli1stowe and Midcounties Cooperative		1		
35	The Economics of Ecosystems and Biodiversity-City	TEEB-stad	Initiative of the municipality of Apeldoorn and implemented by Witteveen + Bos. TEEB city tool, developed by Fabrique, LUZ architects and Buck Consultants International (BCI).	https://www.teebstad.nl/	The Teeb-stad method has been developed to reason, calculate and earn with the benefits of greenery and water. Using this method, CBAs (Social Cost-Benefit Analysis) have been drawn up for the various projects of the municipalities involved, which showed that significant positive social effects can be expected: these were 1.5 to 2 times higher than the costs.	It is only in Dutch and for Dutch municipalities. The tool was developed in consultation with a learning group of civil servants, designers and consultants and was made possible in part by the Product Board for Horticulture (in collaboration with the VHG).		1									1		1		1			1				1		1			1		1								1			1	1	1		1	1		1	1			1	1		1	1					1	1	1		1	1	1		1	1		1	1				1		The Netherlands	Apeldoorn and other Dutch municipalities	1	1		
36	The RESIN Urban Adaptation E-Guide	Not found	Resin project, funded by the European Union's Horizon 2020 research and innovation programme	http://e-guide.resin.itti.com.pl/	It is a decision-support tool which provides an overview of methods and tools in support of a stakeholder analysis for the various steps and stages of preparing for and developing and implementing climate adaptation strategies. The method stresses the need for local knowledge, and recognizes that this may be held by different organisations or departments.	Includes an Adaptation Library which contains EbA measures	1						1					1	1				1								1										1			1		1					1			1	1	1	1		1	1					1					1			1			1	1	1		1	1		European countries	A database of casestudies, Bratislava, Manchester, Bilbao			1	1
37	Think Hazard Tool	ThinkHazard!	Global Facility for Disaster Reduction and Recovery (GFDRR) Innovation Lab, in collaboration with BRGM (the French geological survey), Camptocamp, and Deltares.	https://understandrisk.org/tool/think-hazard-online-resource-thor/	An online tool for the development community, which enables non-experts to consider natural hazard information early on in project design. ThinkHazard! is a simple and quick, yet robust, analytical tool that enables development specialists to determine for a given project location the potential likelihood of 11 natural hazards, and what actions they should take to make their project resilient. The tool analyzes hazard under current climate conditions but also provides guidance from IPCC on how climate change may alter hazard frequency and intensity into the future.	Hazard data may be available with global, regional or national coverage, depending on the scope of the generating project, or intended primary use of the data. ThinkHazard! can accept all levels of data, and implements a hierarchical selection to prefer local data (regional and national) where it is available, over global data. Global data can provide a consistent view of hazard across all (or most) countries and is valuable in the absence of data with more local extent, which is expected to be of greater fidelity due to its more focused scope.	1		1	1							1		1				1	1	1		1			1	1		1	1	1		1	1	1												1		1		1	1	1		1	1	1	1	1	1	1					1	1	1	1	1	1	1	1	1	1	1	1	1	Version 1 was used in 200 countries, and has been adopted into World Bank Operations Portal for core use in project planning.			1		
38	Think Nature Platform	Not found	Think Nature, European Union's Horizon 2020 research and innovation programme	https://platform.think-nature.eu/	A multi-stakeholder communication platform supporting the understanding and promotion of Nature based Solutions. The ThinkNature platform is an umbrella for all projects on Nature-Based Solutions funded by the EU H2020 program. These projects include: Eklipse, Inspiration, NAIAD, Nature4Cities, Naturvation, Biodiversa, URBAN Green-UP, Unalab, GrowGreen and Connecting Nature.	A continuous dialogue & interaction on NbS to: steer dialogue through forums and debates; identify, communicate & promote successful NbS; identify regulatory, economic & technical barriers; foster collaboration at local, regional, national & EU levels; develop synergy with other projects on NbS.	1								1				1				1		1																1	1				1			1		1	1	1	1			1	1	1	1					1					1	1	1	1	1	1	1	1	1	1	1	1	1	Not found	Not found			1	1
39	Tools for Assessing and Managing Forests and Community Trees	i-Tree	The U.S. Forest Service, Davey Tree E1pert Company, National Arbor Day Foundation, Society of Municipal Arborists, International Society of Arboriculture, and Casey Trees	https://www.itreetools.org/	By understanding the local, tangible ecosystem services that trees provide, i-Tree users can link forest management activities with environmental quality and community livability.	i-Tree reports on individual trees, parcels, neighborhoods, cities, and even entire states. i-Tree offers several desktop and web-based applications. Based on years of US Forest Service research and development, these innovative applications provide managers and advocates with tools to quantify ecosystem services and benefit values of community trees and forests at multiple scales.	1										1		1		1			1	1		1			1		1	1	1	1							1		1					1		1		1		1	1			1	1	1	1			1	1	1	1	1		1		1	1		1	1		1	1	1	1	USA, UK, Australia	Baltimore, Minneapolis, Reno, London, Sidney		1		
40	Urban Green-Blue Grids	Not found	AtelierGROENBLAUW	https://www.urbangreenbluegrids.com/	To provide a toolbox to help in the realisation of green-blue urban grids and to illustrate and explain the synergetic potential of the various measures. The tool aims to ensure that those grids are integrated into the urban designs in a manner that is both aesthetic and acceptable to the citizens.	Only the Design tool is accessible online, the SPONGE Toolbox is not accessibel yet (or Premium, needs to be clarified by the authors). The Blue-green grid toolbox is based on the book Urban Green-Blue Grids Manual for Resilient Cities (2016).	1	1										1	1	1			1							1		1	1	1	1							1				1					1		1			1	1		1	1						1	1	1				1	1				1		1	1	1		The Netherlands, UK, France, Germany, Switzerland, Sweden, USA, Singapore (literature review)	Collection of Dutch, EU and worldwide city/neighborhood projects (literature review)		1	1	
41	Urban Nature Atlas from Naturvation	Not found	Naturvation project, funded by the European Union's Horizon 2020 research and innovation programme	https://naturvation.eu/atlas	The Urban Nature Atlas is the most comprehensive database of Nature Based Solutions (NBS) for cities created to date. The Urban Nature Atlas has been produced as the result of a systematic survey of NBS interventions in 100 European cities and provides the basis for the analysis of socio-economic and innovation patterns associated with urban NBS in Europe.	Only includes EU cities projects	1						1				1		1				1		1		1			1		1	1	1	1							1				1	1		1		1		1	1		1	1		1						1	1				1	1	1	1	1		1					1		European countries	100 European cities		1		1
42	UrbanProof Toolkit	Not found	Life UrbanProof Project, LIFE programme for the Environment and Climate Action (2014-2020).	https://tool.urbanproof.eu/	Increase the resilience of municipalities to climate change equipping them with a powerful tool for supporting better informed decision making on climate change adaptation planning.	Support tool for adaptation planning presented in a user-friendly, graphical layout. A number of small-scale green and soft adaptation measures will be implemented based on the results of the tool.	1				1	1					1		1					1	1		1				1		1	1	1			1							1				1		1		1		1	1	1		1	1	1			1	1						1	1		1				1				1		Greece, Italy, Cyprus	Peristeri, Reggio Emilia, Strovolos and Lakatamia		1		
43	Water Climate Toolbox	Not found	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH	https://wocatpedia.net/images/c/c7/Waterclimatetoolbox.pdf	The Toolbox presents a number of tools and techniques to support adaptation action. From each tool or technique the definition and objective is described, as well as the issues to consider, advantages and challenges.	The scope of the toolbox is limited to the water sector. No estimation of costs (nor financial or in time) and no quantitative estimation of 'saved' water is presented.	1						1						1				1						1	1	1	1	1	1																	1	1	1	1			1	1	1	1	1	1		1	1	1	1		1	1		1	1		1		1						Not found	Not found		1		
44	Water Sensitive Cities Scenario Tool	WSC Scenario Tool	Cooperative Research Centre for Water Sensitive Cities Ltd.	https://watersensitivecities.org.au/solutions/water-sensitive-cities-scenario-tool/	The Water Sensitive Cities Scenario Tool (WSC Scenario Tool) is a planning-support tool that enables users to assess the evolution of urban infrastructure, water networks and population demographics over time. Users can create personalised adaptation planning strategies and test them under dynamic what-if scenarios with a wide variety of stakeholders.	Results of the Scenario Tool should only be used for high-level assessments. The quantified indicators represent differences across scenarios and are not to be used as targets for monitoring & evaluation program. The current beta release includes an extreme heat assessment module and 30 adaptation nodes. Several modules are under development and testing, which includes TARGET thermal comfort module, an urban water cycle module, a simple flood module (requires SWMM file). Users can learn more about each module in the documentation page, or by clicking 'Learn More' when selecting the module for project assessment.	1										1		1		1		1	1	1		1				1	1			1												1					1		1		1	1			1	1	1				1	1	1	1	1		1		1	1			1			1		1	Australia, China	New South Wale, Queensland, Victoria and Western Australia. Kunshan, China		1		