



G5 AWARENESS CAMPAIGNS



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓	✓		✓	

Description

Raising the awareness of local stakeholders and citizens is vital to implement successful NBS programs. Increased public awareness and satisfaction with green infrastructure projects can lead to increased support for further projects as well as potential opportunities for private stakeholders to be a part of a wider transformation through NBS.

Potential Elements

- Development of a communication strategy targeting internal and external stakeholders
- Presentations and workshops to inform citizens and other stakeholders.
- Integration of NBS into the municipal presence on social media, city website etc.
- Pilot sites open for public, organised info walks, events, info sheets, etc.



G17 DEVELOP A MUNICIPAL DATA MANAGEMENT STRATEGY



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓		

Description

Data management is gaining importance in cities where there is an increasing adoption of new technologies as well as governance requirements. A comprehensive data management strategy should be derived from the local government's long-term objectives and legal requirements. A strategy can help cities to better encompass their data-related goals within sustainable development measures.

Potential Elements

- Definition of long-term objectives and legal requirements
- Definition of open data through an open data platform to citizens and other stakeholders
- Integration of standards and data platforms required by other governmental levels (e.g., regional, national or EU level).
- Regular updates on data management requirements and strategy itself



G4 DEVELOPMENT OF A RESILIENCE STRATEGY



Fotolia 53554413 L Risks

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓	✓	

Description

In order to effectively respond to anticipated future changes, cities need to undertake strategic action today to enhance their resilience in the future. NBS have been identified as an important tool to help improve urban resilience. Therefore, a good starting point to understand the true benefits of NBS is to look at the city through the lens of resilience. What are the main threats to the functioning of urban systems now and in the future? Which of these systems are crucial for the wellbeing of the citizens? How will climate change likely affect the city? What actions can be taken now to reduce potential shocks? Such questions need to be answered through the development of a comprehensive resilience strategy.

Potential Elements

- Assessment of risks and vulnerabilities in the city.
- Regular risk assessment (on an annual or biannual basis)
- Identification and selection of adaption options including potential NBS to reduce vulnerability to potential shocks
- Ensure sufficient funds for risk assessment and risk reduction measures



GO DEVELOPMENT OF SHARED VISIONS



Source: UNaLab D6.5 Joint Vision

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓	✓	✓		

Description

An important building block of long-term planning approaches begins with the development of a collective vision. Cities will struggle to define precisely how the city will be in the distant future, but the process of actively and collectively defining what the city should become can support as an effective “guiding star” for urban actors to work towards.

Potential Elements

- Visions at different levels (whole city, local) around different themes (e.g. sustainability, NBS etc.)
- Integration of a wide variety of key stakeholders
- Linking to goals and milestones
- Visual representation of the vision



G1 EMBEDDING NBS IN EXISTING PLANS AND STRATEGIES



MP2_127106065_M © vege - Fotolia

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓	✓	

Description

The action-oriented approach of developing “solutions” differentiate NBS from the other concepts in that it can be employed as a means for actors to achieve existing objectives. Therefore, rather than developing an individual strategy around NBS, there is significant potential to utilise NBS as a “tool” to achieve the objectives highlighted in existing or future strategies.

Potential Elements

- Obvious links to strategies such as Green/Blue Infrastructure; Climate Change Adaptation/ Mitigation; Biodiversity; Water Management etc.
- - Less obvious links to strategies such as Social Development; Smart City; Mobility; Energy etc.



G16 ENCOURAGING THE USE OF CERTIFICATION SCHEMES AND SUSTAINABILITY PROGRAMS



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
		✓	✓	

Description

Several certification schemes and sustainability programs exist with direct or indirect links to urban green and NBS. The main value of such certifications is that if incorporated well, they stand for objectivity, transparency and trustworthiness and are perceived as beneficial by most parties (private, public and citizens). Examples of existing certification systems which include NBS-specific criteria are BREEAM, LEED (building sector). Furthermore, cities have also been working with more organisation-related certification schemes such as EMAS, The Natural Step, or agreements such as the Aalborg Commitments to push sustainable and green practices more generally. Cities can encourage local actors to utilise such systems by providing incentives for them to do so.

Potential Elements

- Embedding certification schemes in existing policy frameworks (coupling with existing incentives and regulations, e.g. building codes)
- Reviewing existing certification schemes to more specifically introduce NBS-related criteria
- Linking certification to the municipality's sustainability management system
- Establishing Incentives structures to encourage local private actors to utilise such systems

G26 ESTABLISH A “JUST-GREEN-ENOUGH” APPROACH



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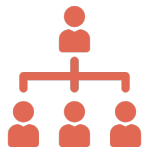
Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓				✓

Description

Curran & Hamilton (2012) propose a “just-green-enough” approach to establish green infrastructure while minimising the negative effects of green gentrification. The idea is that the marginal improvements in life quality as a result of green/blue space upgrades are limited beyond a certain degree of green space enhancement. This means that investments in larger green spaces tend to have limited advantages in terms of subjective well-being, while increasing real estate prices. By making an area “just green enough”, social as well as ecological objectives can be obtained without necessarily increasing housing prices significantly.

Potential Elements

- Study the interplay between housing prices and green space (quality and accessibility) for the local context
- Integrate related KPIs as a basis for future planning



G10 ESTABLISH A CENTRAL CONTACT POINT FOR NGOS



© Maksim Samasiuk

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓		✓

Description

Local NGOs represent an important potential supporter of NBS. Cities should be establishing effective channels of communication with these actors. This can often be difficult in the context of the dispersed nature of local non-governmental initiatives. The establishment of one NGO representative who acts as a spokesperson for local NGOs and offers a direct line of communication with the municipality can improve the collaboration between these actors and the municipality.

Potential Elements

- Financing through the municipality
- Election of the representative
- Cross-checking for project plans



G2 ESTABLISH EXPERIMENTAL AREAS FOR PILOT PROJECTS



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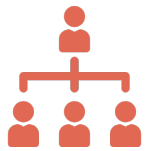
Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓	✓	

Description

Experimentation can allow for the development of locally attuned interventions whilst facilitating learning processes between municipal staff, citizens, developers and other possible stakeholders. Experimental areas can also be important mechanisms for cross departmental cooperation, bringing together actors from multiple departments, municipal agencies and other urban actors to work on a specific project. For successful learning and scaling up, it is essential that results of pilot scale interventions and lessons learned are used to systematically inform mainstream urban development.

Potential Elements

- Experimentation with new formats for public space development and management
- Exemption from certain codes and regulations
- Development of associated organisational units in the municipal organisation
- Temporary land-use conversions



G7 ESTABLISH FORMAL STRUCTURES FOR CROSS-SECTORAL COOPERATION



OS1 Fotolia_54491875_M © alphaspirt

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓		

Description

Cross-departmental structures can take different forms, such as ad-hoc teams, working groups with regular meetings and common work procedures, cross cutting programs based on city objectives, or new departments focusing on cross cutting themes or targeting a specific urban area. Cities should adopt the organisational structures that are best suited to their own institutional context.

Potential Elements

- Establishment of a cross-departmental body
- Development of interdisciplinary bodies linked to a specific geographical location
- Cross-cutting program structures linking departments based on defined strategic objectives of the city
- Physically locate relevant actors close to one another and provide common workspaces

G25 ESTABLISH MECHANISMS TO INFLUENCE HOUSING PRICES



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
				✓

Description

Many cities around the world have already experimented with different interventions to try to limit the displacement of long-term residents. These include different forms of rent controls and social housing minimums for new developments, along with different regulations and policies. Such interventions are very much context, country and city specific and there is no one-size-fits-all policy for every case.

Potential Elements

- Rent controls
- Social housing minimum quotas for new developments
- Bottom-up housing concepts/ building cooperatives

G23 ESTABLISH MECHANISMS TO SUPPORT FINANCING ACROSS MULTIPLE DEPARTMENTS



FP7 © pogonici - Fotolia

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓	✓	

Description

Local governments might expand the pool of available funding for NBS by coordinating funding across the budgets of multiple municipal departments. This coordination has potential to enable cost sharing across the budgets of different municipal departments. Also, better coordination across departments could potentially reduce the costs for implementation of NBS, through aligning implementation of NBS with the timing of other street reconstruction projects.

Potential Elements

- Coordination among the “usual suspect” municipal departments of transportation, sanitation, green spaces, water management, housing and urban development
- Coordination with less obvious departments and agencies focusing on health and wellbeing or risk management
- Cross-departmental mandates
- Sustainability Budgets



G3 IMPLEMENT MUNICIPAL ENVIRONMENTAL AND SUSTAINABILITY MANAGEMENT SYSTEMS



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓	✓	

Description

“What gets measured, gets managed”: In order to ensure sustainability objectives in the municipality are being met, it is important that the sustainability performance is tracked and assessed in a systematic way. Effective sustainability and environmental management systems supports not only the uptake of NBS, but also paves the way for wider reaching approaches towards more sustainable local practices.

Potential Elements

- Performance monitoring linked to visions and goals related to sustainability and resilience co-defined by urban actors.
- Utilising existing environmental/sustainability management systems such as EMAS, ISO 1400, ecoBUDGET or the Integrated Management System” (IMS)
- SMART indicators (specific, measurable, achievable, relevant and time-bound) adapted to the city’s objectives and local context.
- Performance regularly published in a sustainability report

G27 IMPLEMENT PUBLIC PARTICIPATION GEOGRAPHIC INFORMATION SYSTEMS (PPGIS)



ID5 Fotolia 6955012 XL

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓		✓

Description

Public participation geographic information systems (PPGIS) can be an effective means of better understanding the quality of green space from the perspective of the users. Utilising online and offline formats, citizens are able to make contributions to a map regarding use and satisfaction with green space. Such an approach can be used instead of or in addition to more traditional approaches (surveys, questionnaires etc.).

Potential Elements

- Planning: e.g., identifying hotspots of value, potential development and redevelopment areas, better targeting green space functions
- Management: e.g., identifying areas of overcrowding/ lack of maintenance/ places where people feel insecure; better targeting resources and communication activities.
- Design: e.g., protecting valued space; redesigning areas experiencing conflicts; providing inspiration for design of new public spaces (more of what people like).



G18 IMPROVE DATA GOVERNANCE AND MANAGEMENT WITHIN THE MUNICIPALITY



DG2 Fotolia 105318178 S

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓		

Description

Data governance is a key element for sustainable data management and includes several elements to which the city has to pay attention: monitoring, management roles, data quality measuring, and operational rules.

Three important levels can be identified in the context of effective municipal data governance:

1. Within municipal departments and agencies
2. Between municipal departments and agencies
3. Within the wider local innovation ecosystem

1.

Potential Elements

- Defining data management roles and ownership for each data object
- Establishment of a departmental data model consistent with the city data model
- Continuously assessing data quality using metrics or key performance indicators
- Clearly deciding and defining what belongs to departmental data models and to city data models

G19 INCLUDE TOTAL ECONOMIC VALUE (TEV) FRAMEWORK IN COST BENEFIT ANALYSIS (CBA)



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
		✓	✓	

Description

As many goods provided by NBS are intangible, incorporating them into a traditional CBA is difficult. One way to address the problem could be to adopt a TEV framework, which is designed to account for intangible benefits delivered through the ecosystem services. It accounts for the use and non-use values of an environmental good or service. Adopting a holistic CBA would imply that not only the fiscal aspects of a project are taken into consideration, but also the project's effect on the social welfare.

Potential Elements

- Linking CBA to the ecosystem services
- Identifying the potential goods delivered by the selected ecosystem services (including the use and non-use values)
- Selecting appropriate valuation methods for the environmental goods and services delivered by NBS.
- Promoting cooperation with research institutions to carry out the valuation research



G14 INTRODUCING INCENTIVES TO ENCOURAGE PRIVATE SECTOR-DRIVEN NBS



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
	✓		✓	

Description

Although public green tends to be mainly financed and maintained through the city administration, there is a need to also encourage private land owners to develop and invest more in NBS. Incentives and market-based instruments are perceived as favourable option to create the necessary pull-factors and at the same time show the value that is being created through NBS.

Potential Elements

- Financial Incentives, e.g. subsidies, grant programs , rebates and tax incentives, fees, premiums and innovation vouchers
- Non-financial incentives, e.g. density bonuses, Application bonuses, Fast track processes Zoning upgrades, certification and advertising options.
- Application of polluter-pays principles to generate the resources needed for the incentives
- Communication strategies to make the incentives well-known and accessible to all stakeholders, as well as to educate about NBS benefits and values.



G12 INTRODUCING NBS-SUPPORTIVE BUILDING REGULATIONS



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
		✓	✓	

Description

Building codes are important instruments to steer urban development in a desired direction. These define and prescribe specific standards for constructed objects which development projects have to conform in order to obtain building permission. Here NBS should be more explicitly incorporated.

Potential Elements

- NBS-specific regulations, e.g. new buildings with suitable roofs have to be equipped with a green roof
- Target-oriented regulations, e.g. green space minimums for specific areas
- Preserving regulations, e.g. mandatory prefeasibility studies and respective water management plans, which demonstrate that the water retention capacity of the area is not negatively influenced by the proposed activities.



G13 INTRODUCING NBS-SUPPORTIVE ZONING REGULATIONS



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
		✓	✓	

Description

Zoning plans are an important factor in green space planning and are a means to include site-specific preconditions in urban development. Zoning plans are thus often linked to site-specific regulations and norms. In terms of NBS they often aim at protecting green elements or natural features. They are often the basis for more concrete building codes and regulation.

Potential Elements

- The integration and synchronisation of zoning plans into effective tools to facilitate and support the uptake of important norms and requirements (e.g. in GIS planning maps)
- Use of zoning regulations to limit the state of soil sealing in specific areas or zones (e.g. via sealing indexes, construction permits, or mandatory permeability).
- Protection and buying back of land that is of strategic importance, e.g. in terms of green space preservation, connectivity or accessibility.
- Systematic reactivation of plots with an unclear land ownership status

G21 ISSUING GREEN BONDS



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
	✓		✓	

Description

As NBS can support biodiversity conservation, climate change adaptation and other environmental efforts in cities, green municipal bonds could serve as a means for cities to secure funding for NBS implementation. Green bonds are essentially similar to regular bonds, the difference is that the capital raised by green bonds is used for projects with positive environmental outcomes. Lately, the interest for projects with social and environmental return has been increasing and thus the demand for green bonds. The revenues for green bonds can be achieved through various means ranging from public budget allocations to market returns.

Potential Elements

- Bundling of NBS projects
- Independent verification of project impacts
- The projects must generate revenue streams

G24 LINKING SOCIAL DEVELOPMENT STRATEGIES WITH GREEN SPACE PLANNING



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓			✓	✓

Description

Planners have to strike a balance between targeting NBS to the areas where the challenges (air pollution, urban heat island, flooding etc.) they are supposed to address are most pressing, on one hand, and ensuring that this does not worsen social disparities, on the other. A good approach is to see social issues themselves as a challenge to be partly addressed through NBS and target these areas accordingly.

Potential Elements

- Vulnerability assessments
- "Hotspot" definition with targeted budgets
- Implementation of qualitative and quantitative tools and standards for green space management

G20 RECONFIGURE FEES AND OTHER CHARGES TO REFLECT THE COSTS AND BENEFITS ASSOCIATED WITH NBS



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓	✓	

Description

The internal revenues could be strengthened by designing area-specific charges based on the additional infrastructure costs incurred because of the development/reconstruction of the urban districts. Such fees and charges could be targeted at the developers and/or business owners and tenants that would benefit from better infrastructure. In addition, the city can apply the “polluter-pays” principle, where fees and other charges target activities that have negative environmental consequences. The fee creates an incentive for actors to reduce the undesired activity, potentially creating a double-sided effect of reducing the challenge the NBS is to address while generating additional revenue sources for further NBS investment.

Potential Elements

- Development exactions and impact fees
- Business improvement districts (BIDs)
- Collecting stormwater/run-off fees
- Compensation schemes for depleted ecosystem services

G22 REFORM MUNICIPAL PROCUREMENT CRITERIA TO BETTER REFLECT SOCIAL AND ENVIRONMENTAL ASPECTS



FP6 Fotolia 110869323 M © georgejmclittle - Fotolia

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
		✓	✓	

Description

If NBS are to be adopted in the mainstream city development, the often prevailing “lowest price offered” mentality in public procuring needs to be transformed to better reflect social and environmental aspects within the existing legal framework. One approach includes the Most Economically Advantageous Tender (MEAT) criterion when evaluating the bids. This criterion enables the procurement officers to consider qualitative aspects of the proposed solution, in addition to the price dimension.

Potential Elements

- Emphasis on innovation and overall quality over lowest price-offering of the tendered service or a solution
- Assessment criteria reflecting estimated impact on the lives of the target group
- Most Economically Advantageous Tender (MEAT) criterion



G11 REVIEW OF THE EXISTING POLICY FRAMEWORK AROUND NBS



© Rawpixel - Fotolia

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓	✓	

Description

NBS as such are often not explicitly targeted through local regulations and incentives. Still, as an integral and highly cross-sectoral part in the urban system, they are both supported and inhibited by various policies from different areas. An important step in developing a coherent policy framework is to identify potential synergies and bottle-necks to a desired development trajectory. E.g. do incentives and regulations exist that steer in an undesired direction and how can these be reconfigured to encourage a desired development path? A targeted review and evaluation of the existing policy framework could help to achieve this.

Potential Elements

- The involvement of various stakeholders and actors in the review process
- Achieving a good balance of regulations (command-and-control mechanisms) and incentives (market-based instruments)
- Reduction of bureaucracy through removal of redundant rules and regulations
- Streamlining of national, regional, and local policies to better realise the overarching goals and targets.



G8 STRENGTHEN INFORMAL NETWORKS THROUGH OPPORTUNITIES FOR EXCHANGE BETWEEN KEY ACTORS



Fotolia_48083232_M_Network

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓		

Description

The establishment of formal cross-sectoral bodies is a central starting point for breaking down silos in the municipality. However, informal networks are an additional factor promoting cross-cutting actions and establishing trust between actors. It is important for local actors to know representatives from other departments personally and be able to contact them directly to organise a meeting or discuss relevant points.

Potential Elements

- Spatially locating actors together (in some cases in the same building) to reduce the costs of interaction and facilitate 'natural' opportunities to interact
- Providing opportunities for municipal workers potentially interested in NBS and/or similar cross-cutting topics to interact
- Organisation of events (seminars, workshops etc.) to bring potentially interested parties together
- The provision of time and resources to municipal workers to self-organise

G28 TARGETED PARTICIPATION PROGRAMS FOR INCLUSIVE GREEN SPACE DEVELOPMENT



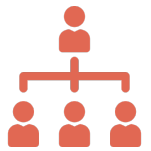
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Description

Increasing the opportunities for different actors to take an active part in different stages of the planning process will foster inclusivity in green space planning. This can be supported by a variety of different plans and policies such as comprehensive urban development strategies or green space plans. By making social inclusion a key element of these plans, different perspectives can be integrated into the planning process.

Potential Elements

- Municipal participation and communication facilitator
- Awareness campaigns
- Participatory budgeting
- Institutionalised co-creation workshops



G9 TRAINING OF ADMINISTRATIVE STAFF IN CROSS-CUTTING ISSUES



Copyright: © Jacob Lund Photography

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓		✓	✓	

Description

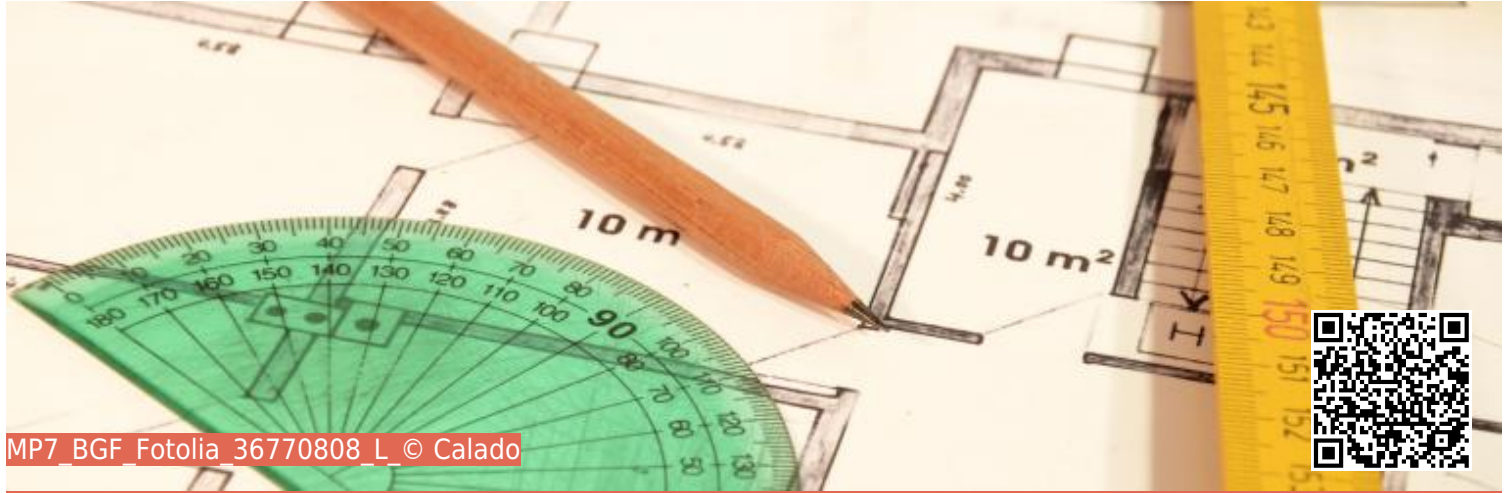
Personnel development and training in cross-sectoral issues is an essential part of a learning organisation. Training fosters knowledge transfer, enhances innovation among the employees and improves efficiency.

Potential Elements

- Training and capacity building, targeting processes and methods (e.g. co-creation, design thinking, stakeholder engagement, project management, moderation, communication, etc.)
- Mentoring programs
- Staff-exchange between departments and municipalities
- Excursions to other cities



G6 USE OF BLUE-GREEN FACTORS



MP7_BGF_Fotolia_36770808_L © Calado

Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
		✓	✓	

Description

The Blue Green Factor (BGF) is a factor-based policy instrument to ensure and maintain desired levels of green and blue in new development projects. As a non-economic valuation method, it scores the relative importance of different green or blue elements at a given site through assessing the ratio of the ecologically effective surface area as a factor of the total land area. This instrument allows developers and designers the freedom to decide how green or blue elements should be incorporated in the respective plans and, at the same time, can be used as evaluation criteria in public procurement or in the distribution of land.

Potential Elements

- Assessment targeting solely storm water retention performance
- Additional inclusion of climate impact, landscape ecology, diversity, social values of lots, etc.
- Basic excel spreadsheet or a digital app
- Development of a BGF map for the whole city for monitoring purposes



G15 USE OF COMPENSATION SCHEMES FOR ECOSYSTEM SERVICES



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Knowledge & Awareness	Political Commitment	Organisation	Perceived Costs & Benefits	Social & Environmental Justice
✓			✓	

Description

Compensation schemes are mechanisms which ensure that the overall function (e.g. ecosystem services) of a specific site is being preserved. Plot owners and developers are requested to provide compensation for depleted ecological services (e.g. through sealing new surfaces; cutting down significant trees etc.).

Potential Elements

- Direct substitution through restoring depleted ecosystem services or installing NBS on the same plot, including clear compensation criteria and monitoring of the compensation measures.
- Financial compensation coupled to a compensation funds, which can be used to realise NBS projects throughout the city if direct compensation on-site is not possible.
- Involving a pool of professionals and specialists to support the procedure and evaluation of measures.