

Building urban resilience through strategic and environmental planning from source to sea

Urban areas face challenges from rapid increases in urban population, pressure on infrastructure and services, land-use change, and the impacts from climate change. Local authorities are called upon to respond to these challenges through a wide range of tools such as planning. Many challenges have sources outside of local authority boundaries and require coordination with other institutions and stakeholders to resolve, including those with significant upstream–downstream linkages. Tools and concepts are emerging to support this need, including source-to-sea management.



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This policy brief explores barriers that local authorities face when addressing multiple challenges through activities such as urban planning. It also examines the opportunities and benefits that the application of source-to-sea perspectives or the use of tools such as the source-to-sea approach have for building urban resilience.

In many parts of the world there has been a steady population drift from rural areas to urban areas, and this trend continues apace. Most regions will continue to see an increase in the proportion of their populations located in urban areas, with 68 per cent of the population anticipated to be living in urban areas by 2050, compared with 55 per cent at present (UN DESA, 2019). With increased urbanization comes challenges over solid and liquid waste management, increases in natural hazard risk, air pollution, reductions in natural areas, biodiversity decline, and water pollution. When combined with anticipated climate change impact, urban areas will require much more attention and resources to reduce the impacts from these, often interconnected, challenges.

Urban areas must respond to interconnected challenges

While many challenges can be addressed within jurisdictional or geographical boundaries, others have sources outside their boundaries and resolving them requires coordination with other institutions and stakeholders. These include environmental problems that have significant upstream–downstream components, such as water pollution and sedimentation, and those challenges where attention to different segments of a value chain is required, such as in the production, use, collection, and disposal of plastic products and packaging (see Figure 1). Urban areas are often reliant on upstream parties to act, but those parties may lack the tools or resources to either act or undertake such action, and parties within the affected location lack the mandate or tools to address the source themselves.

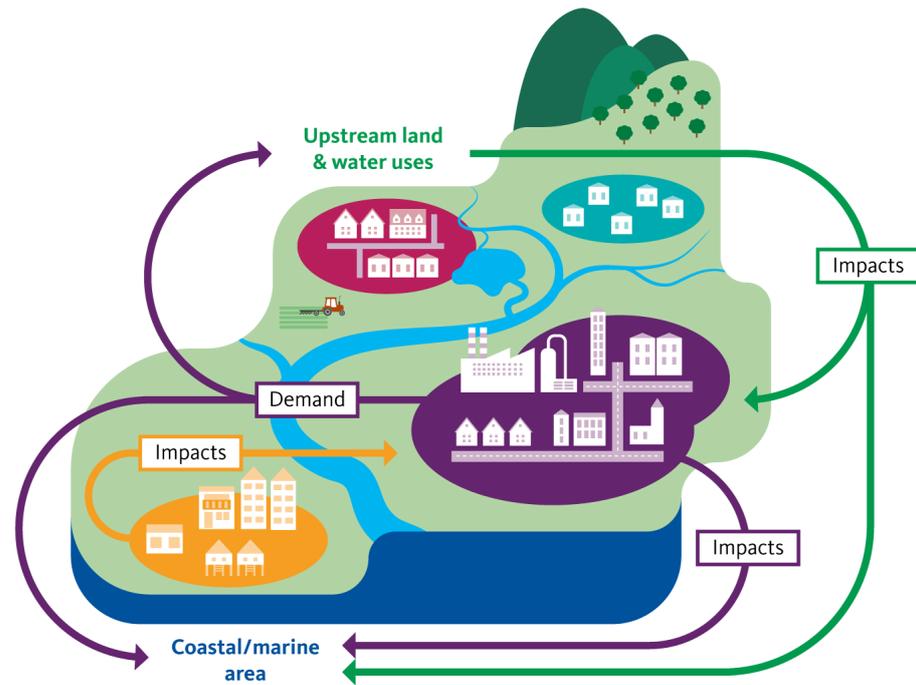


Figure 1. Urban area connections to upstream and downstream locations through demand and impacts.

In recognition of these shortcomings, there have been increased calls for coordinated planning and action across multiple tiers of governance to address the growing weight of, often interconnected, environmental challenges such as climate change, water security, solid waste management, urban resilience, and pollution (OECD, 2020). For example, one of the targets of the Agenda for Sustainable Development, Sustainable Development Goal (SDG) 11, notes the need to have more coherent plans, from national to local levels. However, despite recognition of this need, such coordination remains very rare, especially at subnational levels such as in urban authorities, and coordination is often difficult to initiate. Tools and concepts are emerging to support this need, including source-to-sea management (Mathews et al., 2019).

Source-to-sea management refers to the establishment of governance, operations, practices, and finance that increase collaboration and coherence across the source-to-sea system and reduce alteration of key flows (water, pollution, sediment, materials, biota, ecosystem services), resulting in measurable economic, social, and environmental improvement across freshwater, coastal, nearshore, and marine environments.

Why is incorporating source-to-sea perspectives in planning important for urban resilience?

The term ‘source-to-sea’ is increasingly used to describe how land, freshwater, coasts, and the ocean are connected, meaning that what happens in one place will have social, environmental, and/or economic implications elsewhere. Including **source-to-sea perspectives** in urban and regional planning means that these geographic and sectoral linkages within a source-to-sea system are included in, and inform, decision-making on interventions, investments, and policies. This can also lead to the definition of objectives, activities, and goals that explicitly provide benefits and co-benefits across multiple sectors or geographical segments.

Incorporating source-to-sea perspectives in planning will improve urban resilience when facing source-to-sea challenges, that is environmental, social, and economic issues that cannot be solved without involving upstream and/or downstream actors and multiple sectors. The **source-to-sea approach** has been developed to support multi-stakeholder and cross-sectoral collaboration. It is a structured six-step approach to prepare coherent plans of action that, in turn, improve the coordinated implementation of environmental or strategic plans and strategies (Figure 2). The source-to-sea approach is valuable as a structured means of understanding connections between environmental challenges, identifying the full range of stakeholders that impact on implementation success, and exploring connections to other challenges being faced by the local authority. Each step provides a base for the next and helps users to generate knowledge on how proposed activities and responses are connected to any final objectives chosen by the urban authority.

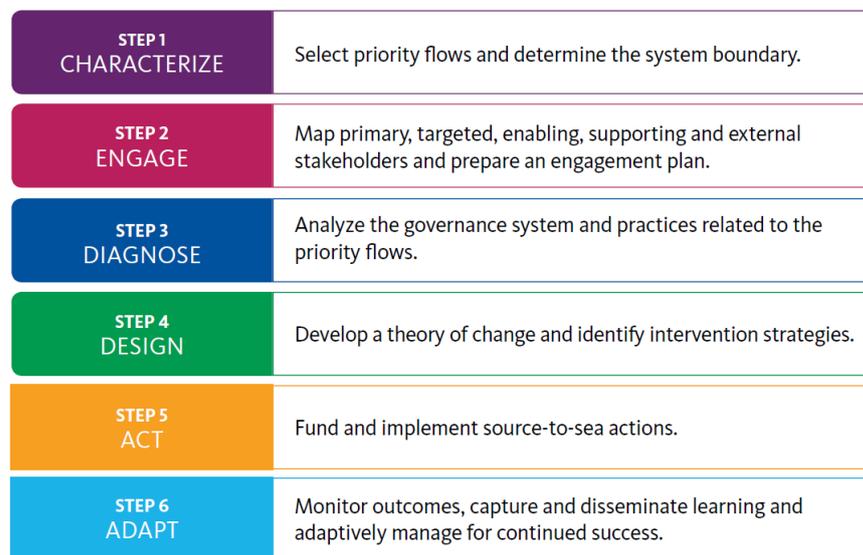


Figure 2: Six steps of the source-to-sea approach. Source: Mathews et al. (2019).

The source-to-sea approach can also be used to improve implementation of measures included in existing environmental plans and strategies, as it helps to highlight direct and indirect connections between different environmental challenges and key stakeholders and/or governance mechanisms. This can be used to build action

coalitions that raise the priority and profile of an environmental impact and increase the likelihood that decision-makers invest in solutions. Widening problem identification, the range of stakeholders involved, and access to resources enables the inclusion of broader sets of measures than would otherwise be applied by institutions operating in isolation.

SDG 11 – Make cities and human settlements inclusive, safe, resilient and sustainable



Meeting the wide range of targets included within SDG 11 will involve actions to be taken by a wide range of institutions with different and sometimes conflicting mandates. Reducing the risk of conflicts between these mandates requires that responses from multiple institutions or departments be coordinated. Achieving SDG 11 requires a holistic approach and further accentuates the need to incorporate the consideration of source-to-sea linkages in urban and regional planning.

Target 11.1 – By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

Basic services generally cover water supply, hygiene, and energy services, plus solid waste management and wastewater services. Urban authorities play a critical role in the provision of such services, whether through providing the services themselves, contracting services to others, or providing the regulatory framework for the provision of such services. Failure to provide basic services is often a significant causal factor in environmental pollution. Applying a source-to-sea perspective to service provision can help visualize connections between a failure to provide services and environmental impacts, including those happening downstream from the urban area. Recognition of a wider set of benefits can help raise the priority of investing in improvements in service provision.

Target 11.6 – By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

Urban areas have a substantial environmental impact on their surrounding hinterlands, both upstream and downstream. Urban areas are magnets for resources – e.g. for road and building materials, energy resources, and through being a market for food – which catalyse upstream and downstream land-use changes. Urban areas can generate large quantities of waste materials and pollution that, if poorly managed, can affect downstream locations and other users such as fishing communities and coastal tourism. The actions needed to address these impacts can beneficially be informed by involvement of the impacted parties. This will direct investments towards actions that benefit both those living within an urban area and those outside it. Including source-to-sea linkages in action identification, analysis, and selection may result in the need for coordinated and collective action across several jurisdictions.

Benefits of source-to-sea perspectives in urban and regional planning

The inclusion of source-to-sea perspectives can help to identify challenges that cross jurisdictional, geographical, and sectoral boundaries. Source-to-sea challenges necessitate evaluation of sources, impacts, and solutions, and the trade-offs between them. Doing so can lead to a more proactive use of objectives, activities, and goals that explicitly provide for benefits and co-benefits across multiple sectors or geographical segments. This results in more efficient and effective use of institutional resources and forms the basis for building urban resilience, as the whole urban area is examined within the context of the larger source-to-sea system, rather than focusing on single sectors, impacts, or segments.

Increasing coherence across national, regional, and subnational institutions and instruments supports urban planning that accrues multiple benefits. By coordinating policies, planning, and implementation across institutions at different levels, there is more potential for catalysing synergistic effects that have longer-term impact and optimize benefits for the source-to-sea system as a whole. This can result in financial savings by providing multiple and co-benefits and avoiding sunk costs. This can also streamline monitoring efforts and improve data-sharing, which can result in further savings.

Improving coordination by bridging sectoral and geographic silos during planning can lead to financial benefits over the long term. Joint identification and implementation of actions can reduce the risk of isolated actions having negative or conflicting impacts on others' actions and/or priorities. Incorporating source-to-sea perspectives in urban and regional planning can identify situations where there is more benefit in pooling multiple small resources from different sources and aggregating them to reach a critical threshold. This will avoid isolated spending that is insufficient to make meaningful impact.

Using the source-to-sea approach to prepare coherent plans of action can, in turn, improve the coordinated implementation of environmental or strategic plans and strategies. Applying the source-to-sea approach helps reduce the risk of stand-alone actions affecting other parts of a wider system in a negative way. Its use helps to explicitly identify and connect activities of different stakeholders, as it considers the links between the challenges and the different types of stakeholders that are necessary for success. This is especially relevant when limited resources are available to a subnational entity to undertake activities, and/or when prioritization within activities is necessary.

The steps of the source-to-sea approach help to generate knowledge on how well activities are in alignment with planning objectives. Its use helps to highlight direct and indirect connections between different environmental challenges and key stakeholders and/or governance mechanisms. Engaging stakeholders across multiple sectors and those who have well-defined upstream or downstream interests can clarify the interdependencies between different components of the source-to-sea continuum, such as land and water, or rural–urban linkages. This understanding can be fundamental in catalysing shifts in behaviour that are needed to reach planning objectives and long-term goals.

The source-to-sea approach can improve implementation of measures included in existing environmental plans and strategies. It can help stakeholders better understand the relationships within and between institutions, as it helps outline the different responsibilities held by each party. It also allows for the identification and inclusion of a wider range of stakeholders that have different roles in addressing an issue beyond what a single sector would likely have. This can be used to build action coalitions that raise the priority and profile of an environmental impact and increase the likelihood that decision-makers invest in solutions as part of their environmental plans or strategies. Widening problem identification, the stakeholder base, and access to resources enables the inclusion of broader sets of measures than would otherwise be applied by institutions operating in isolation. Clarifying what each entity is accountable for and to whom they are accountable may ease implementation challenges and foster collective action towards a shared vision.

Applying source-to-sea perspectives or the use of the source-to-sea approach can be a core exercise that provides benefits for ‘normal’ urban planning approaches. Incorporating source-to-sea perspective into urban and regional planning should not be seen as a separate exercise that creates extra work. However, the inclusion of source-to-sea perspectives can take time to take root and be accepted as part of institutional processes. It is therefore important to take available opportunities to apply source-to-sea thinking, even small-scale opportunities, as this enables parties to build experience and learn, which can be a foundation for larger-scale applications. Over time, recognition of the contributions to building urban resilience that come from incorporating source-to-sea perspectives in planning activities will grow and become standard practice.



Chau Doc city, An Giang Province, in the Mekong Delta region of Viet Nam. Photo: Shutterstock.

Recommendations

Local authorities should identify and take opportunities to mainstream source-to-sea perspectives across their day-to-day activities, whether in the design and implementation of projects, or inclusion in planning processes, governance frameworks, and investments. Such use will foster holistic analysis of system relationships that are important for building climate resilience in urban areas.

National, regional, and local governments should use tools, such as the source-to-sea approach, to engage a wider range of stakeholders in decision-making processes. Engaging a wide set of stakeholders will lead to a more thorough consideration of challenges and solutions than can arise from a single sector perspective.

At the national level, resources must be provided to support coordination between different sectors and tiers of governments, and cooperation across geographic segments. Strengthening coordination across levels and sectors of government is required to reduce conflicts, overlaps, and gaps between institutional mandates and to create a coherent governance system. Cooperation between upstream and downstream actors is needed to ensure that allocated resources achieve their intended outcomes, thereby reducing the risk of wasteful funding.

Project sponsors, whether international, regional, national, or local, should assess project planning, design, and implementation through the source-to-sea lens. Urban resilience will be strengthened if projects are planned, designed, and implemented to achieve benefits across the source-to-sea system. This holistic approach will not only support the achievement of SDG 11 targets, but will also contribute to achieving the broader sustainable development agenda at local, regional, and national levels.

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About SIWI

SIWI is a leading water institute, focused on water governance and capacity building in order to reach a just, prosperous and sustainable water wise world. It is well-known for its research, knowledge generation, and applied science, which helps to develop policy recommendations and supports the implementation of programmes. In addition, SIWI uses its trusted convening power to facilitate multi-stakeholder dialogues, most evident in its annual event, World Water Week.

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