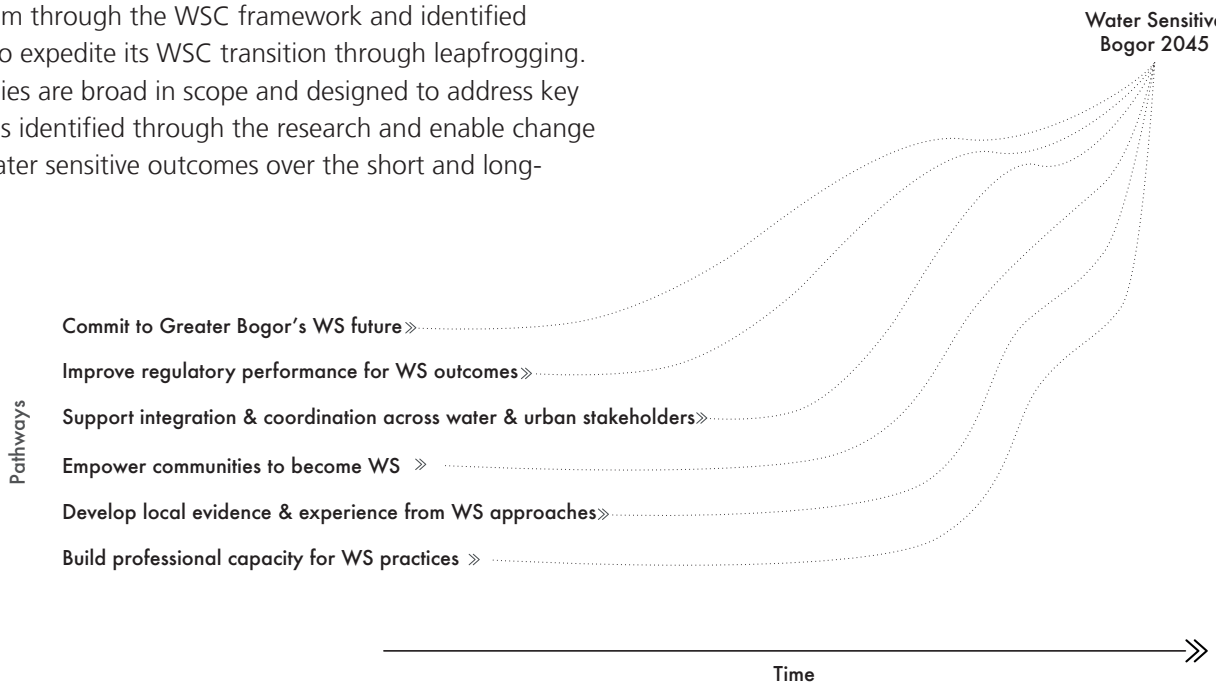
Leapfrogging pathways for a water sensitive Bogor

WSC Leapfrogging Pathways

Leapfrogging is a phenomenon in which developing countries—whose socio-technical systems are typically not yet fully-established—can adopt more advanced approaches to address pressing needs. Leapfrogging to a WSC may help Bogor avoid features of water servicing models seen in developed economies that lead to unsustainable outcomes, and adopt more integrated and sustainable water technologies and practices that are based on WSC principles.

The Urban Water Cluster has assessed Greater Bogor's current water system through the WSC framework and identified strategies to expedite its WSC transition through leapfrogging. The strategies are broad in scope and designed to address key water issues identified through the research and enable change towards water sensitive outcomes over the short and long-term.

The recommended strategies are organised into six leapfrogging pathways (figure below). The pathways are intended to be considered for investment as a whole, as the underlying strategies are often inter-related and mutually reinforce achievement of Greater Bogor's water sensitive aspirations. The alignment of each strategy indicates the likely time horizon for it to be feasibly implemented. Going from left to right: short-term (0-3 years), medium-term (3-10 years) and long-term (10 years onwards).



Short-Term Priorities

The recommended short-term strategies provide guidance on initiatives to progress as a priority in the coming years to rapidly advance Greater Bogor's water sensitive city leapfrogging journey.

It is recommended that the momentum of this Urban Water Cluster research be built upon to immediately establish a governance framework for implementing this WSC leapfrogging strategy (1.1). This framework would become a key driver of collaboration within and across organisations (3.2), underpinned by a strategic water sensitive city vision for Greater Bogor collectively developed by diverse government, industry, community and research stakeholders (1.2). The framework would also support the WSC Learning Alliance (6.1) established as part of this research to build capacity to adopt water sensitive practices amongst Bogor's water and urban professionals.

Priorities for on-ground action include learning from previous experiences as well as creating opportunities for new learning from laboratory testing and field demonstrations (5.1-5.3). Greater understanding of data requirements for optimal water system planning (6.2) and of the barriers for households to adopt water sensitive practices (4.1) will improve the effectiveness of policy implementation at different scales. Processes for inclusive and participatory strategic planning (3.3) and meaningful community engagement (4.2) are also important foundations of sustained support for the water sensitive agenda in Greater Bogor.

1.1 Establish a governance framework for implementing the WSC leapfrogging strategy

Immediate establishment of a working party to review and discuss in more detail the outcomes and recommendations of WSC research would help to co-develop a forward plan for addressing key priorities. From there, ongoing coordination and support from key agencies is needed to shape the innovative and adaptive strategic water management approaches promoted in this WSC leapfrogging strategy. A governance framework that addresses collective roles and responsibilities, shared learning needs, leadership capacity-building, and other directions for implementing key enablers of the water sensitive transition will be useful to drive and guide collective strategic action.

1.2 Collaboratively develop a strategic water sensitive city vision

A strategic vision for Greater Bogor, founded on water sensitive principles and building on pride in the city's existing attributes, will help build broad political and policy support for transforming practices and urban spaces to become water sensitive. Visioning processes are powerful when they engage with diverse stakeholders, have a cross-sectoral focus and capture the values and priorities expressed by the community.

1.3 Create and align government strategies and plans with the vision

Embedding Greater Bogor's strategic water sensitive city vision in government strategies and plans will help to institutionalise the commitment and clarify responsibilities for delivering the vision. Translating the vision into formal planning processes can also help coordinate resource allocation to support implementation.

1.4 Monitor progress towards the water sensitive city vision

The WSC Index is a useful tool for structuring evidence of the current performance of Greater Bogor with respect to a wide range of water sensitive city aspirations and diagnosing the pressing needs and priorities to inform policy and strategy. Periodic assessment with the WSC Index may be useful for accumulating system information and tracking progress towards Greater Bogor's water sensitive leapfrogging goals.

For more information see:

Establishing water sensitive governance in Greater Bogor
How water sensitive is Bogor? Benchmarking Bogor's water sensitive performance

Pathway 2. Improve regulatory performance for water sensitive outcomes

- 2.1 Evaluate the impact of water, environment and land use planning regulations
- 2.2 Develop standards and targets based on water sensitive city vision and objectives
- 2.3 Protect and leverage existing water system assets as a foundation for green infrastructure

2.1 Evaluate the impact of water, environment and land use planning regulations

Overcoming challenges to implement regulations will ultimately need to involve aligned action by all levels of government. Local government can take steps in the short-term to develop its regulatory practice by evaluating the performance of current regulation in meeting the intended outcomes, and its potential for enabling and driving the aspired water sensitive outcomes.

2.2 Develop standards and targets based on water sensitive city vision and objectives

Water system and land use standards and targets that reflect Bogor's WSC priorities, accompanied by technical guidance for their achievement, will help drive implementation. Standards and targets are best established through negotiated processes that capture community values and reflect local system data. However, in the short-term there may be value in reviewing those in use in other similar jurisdictions to determine their potential suitability for interim use in Greater Bogor.

2.3 Protect and leverage existing ecological and infrastructure assets as a foundation for green infrastructure

Existing ecological assets in Greater Bogor can provide an important base for expanding and enhancing green infrastructure in the city. This includes preventing loss and degradation of areas of ecological value, such as situs and green space, through stronger land use regulations and commitment to enforcement. In addition, existing infrastructure such as drainage channels has the potential to be repurposed or reconfigured to deliver broader benefits, including flood mitigation, water treatment, ecological functioning, and urban liveability.

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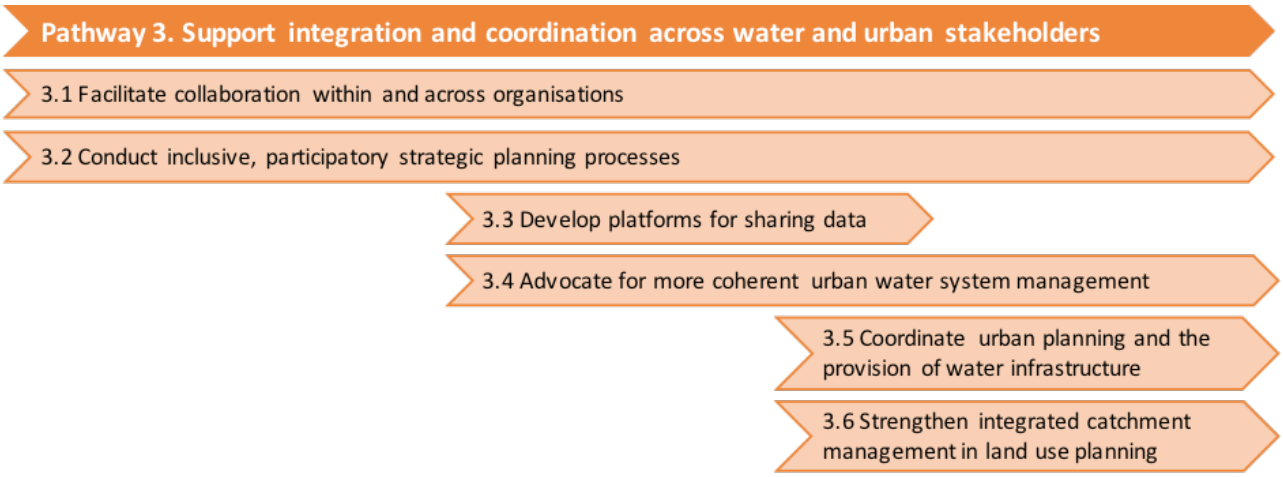

3.1 Facilitate collaboration within and across organisations

Platforms that bring together government agencies, non-government organisations, academia and the community to collaborate will help to drive coherent city-wide action. Such platforms could include policy forums that can promote reform in the mono-disciplinary cultures of agencies to introduce innovations and multi-agency project teams that break down barriers between organisations. Professionals with specialist skills and an ability to cross organisational and disciplinary boundaries can be valuable team members in infrastructure and planning units.

3.2 Conduct inclusive, participatory strategic planning processes

An inclusive approach to setting the long-term water sensitive vision and leapfrogging objectives will be important. Dedicated resources are needed to identify and target important stakeholders, develop attractive messages to encourage effective engagement, and to facilitate forums for capturing useful feedback for strategic planning purposes.

3.3 Develop platforms for sharing data

Mechanisms for sharing data and information are crucial to achieve coordinated planning and infrastructure development. New systems and policies can enable data to be accessed and analysed by users across organisations to create integrated outcomes in system planning. This would need investment in systems for standardising data quality control procedures and data management across Greater Bogor, and the development of accessible platforms for sharing data and analysis.

3.4 Advocate for more coherent urban water system management

Institutional reforms to achieve more effective water system management need careful consideration and direction from central and provincial government. Local government can help to build the case for reform by collecting and reporting supporting evidence, engaging with the community about water management and bringing issues and opportunities to high-level forums.

3.5 Coordinate urban planning and the provision of water infrastructure

Local, provincial and central government agencies have a role to play in the planning and implementation of water sensitive solutions. Urban planners and landscape architects should engage with those involved in water sensitive solution design at the outset of development planning to make the best use of available assets and to create multi-functional systems.

3.6 Strengthen integrated catchment management in land use planning

Efforts to strengthen catchment-based strategic planning would enable settlement planning to achieve integrated outcomes agreed to by all urban and water stakeholders. Outcomes may include protecting flood prone areas from inappropriate development, consistent measures to reduce stormwater flows from impervious surfaces, coordinated planning for effective solid waste management, and efficient funding of flood management works.

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Guidance on developing infrastructure adaptation scenarios for Bogor's water sensitive transition
Water sensitive design interventions for Bogor neighbourhoods: Pulo Geulis
Water sensitive design interventions for City Masterplan: Cibinong Situ Front City

Pathway 4. Empower communities to become water sensitive

- 4.1 Understand barriers to the adoption of household water sensitive practices
- 4.2 Implement meaningful community engagement processes for water projects
- 4.3 Develop knowledge and skills in citizens to adopt water sensitive practices
- 4.4 Support water sensitive greening of the private realm

4.1 Understand barriers to the adoption of household water sensitive practices

To increase the impact of community interventions, it is important to better understand the barriers to adoption of water sensitive practices such as rainwater capture or effective waste disposal. Information gained from community social research can be used to design more effective strategies to enlist the community to undertake desired behaviours.

4.2 Implement meaningful community engagement processes for water projects

Consistent and open consultation practices early in the planning and design process would help support community participation in water planning. Effective approaches embrace the social and commercial use of public space by providing integrated solutions that can accommodate the current activities while providing ecological services and amenity for users.

4.3 Develop knowledge and skills in citizens to adopt water sensitive practices

Several critical knowledge and skills gaps will need to be addressed to support citizens to implement water sensitive solutions. These include what citizens should do before, during and after floods, how to increase the productivity of local urban farming, water-related small business and other sustainability activities, and how to sustainably adapt to climate change.

4.4 Support water sensitive greening of the private realm

Water sensitive greening of the private realm is critical for Bogor to achieve its vegetation cover target and other local water sensitive aspirations. A range of linked socialisation and behavioural change strategies are recommended alongside planning controls. These could include information sessions, competitions for greening kampungs, programmes to support local residents' urban greening groups, whole-of-city mobilisation behind a 'Green Bogor', and technical support from international NGOs and development assistance agencies.

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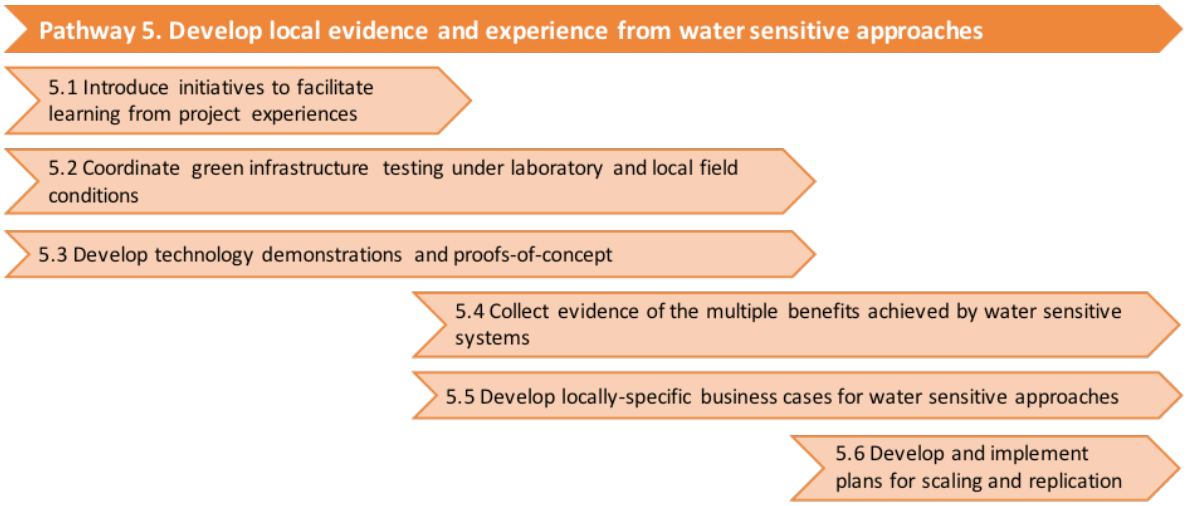

5.1 Introduce initiatives to facilitate learning from project experiences

It is important to capture detailed documentation of (previous and current) projects at key stages of development and host databases and case studies in central repositories that are widely accessible to decision-makers, practitioners and researchers. It is also important to promote learning from specific projects in place, for example through use of signage and site tours to explain water sensitive projects.

5.2 Coordinate green infrastructure testing under laboratory and local field conditions

Green infrastructure needs to be tested under a variety of conditions to enable designs to be adapted to best suit local conditions and to develop an understanding of appropriate local construction, operation and maintenance procedures and costs. Such work is key to providing a foundation for local adoption guidelines for green infrastructure. Although several organisations in Bogor already undertake testing, its significance needs to be bolstered and its coordination would realise more strategic contributions to practice.

5.3 Develop technology demonstrations and proofs-of-concept

Demonstration projects that provide on-ground examples of an innovative water sensitive solution are critical for local proof-of-concept and as a learning opportunity for stakeholders. It is important to capture all potential lessons from demonstrations, including social, technical and economic evidence and insights, through detailed documentation and dissemination.

5.4 Collect evidence of the multiple benefits achieved by water sensitive systems

Information that quantifies the multiple benefits of water sensitive systems or improves understanding of system costs is important to collect. It may be useful to build partnerships with the community sector, academia or international organisations to apply evaluation techniques that capture social, environmental and economic benefits.

5.5 Develop locally-specific business cases for water sensitive approaches

Model business cases for multi-functional water sensitive infrastructure for the local Bogor conditions will be important to show why diverse stakeholders benefit from and should contribute towards initiatives such as rainwater harvesting or stormwater runoff diversion and treatment in parks and public open space.

5.6 Develop and implement plans for scaling and replication

Demonstration projects can create significant momentum amongst stakeholders and potential investors. It is important to develop and implement plans to harness this momentum for scaling and replication of water sensitive projects across Bogor. Dedicated resources to review lessons from demonstration projects will help inform plans to do this efficiently and effectively.

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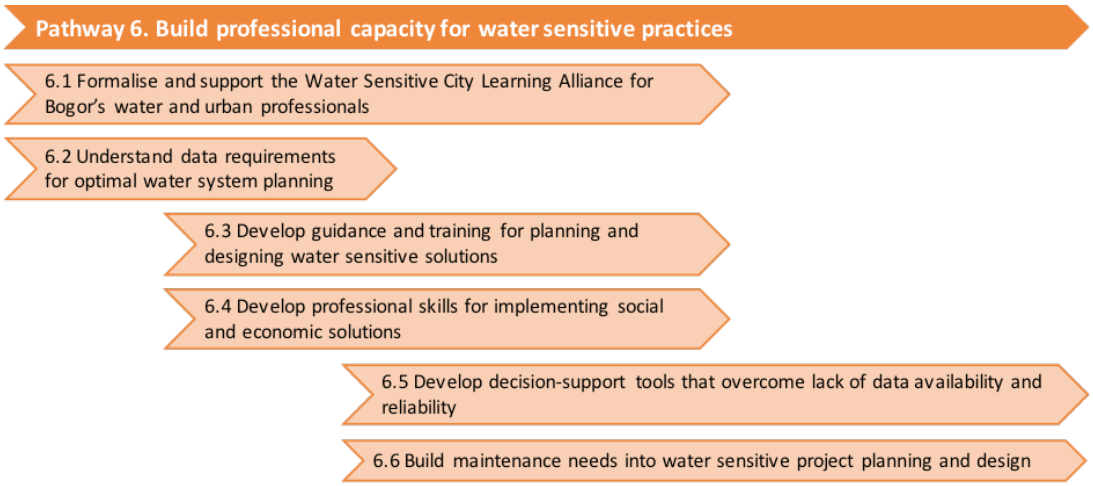

6.1 Formalise and support the WSC Learning Alliance for Bogor's water and urban professionals

Leapfrogging to a water sensitive city will involve the adoption of new practices and diffusion of water innovations. Professionals involved in these changes, across government, industry and academia, need the opportunity to learn together to build collective knowledge and experience. Agency leadership is important for formalising the Learning Alliance and facilitating networks that can cut through silos both within and between organisations. Individual water sensitive city champions are important participants in the Learning Alliance to build momentum and influence. Local and international universities, and other research centres with expertise in water sensitive approaches, would be valuable for the Learning Alliance to engage and partner with.

6.2 Understand data requirements for water system planning

A framework for prioritising investment in data collection and analysis should be developed to inform long-term data resourcing decisions. A data management framework would describe the data requirements for integrated water system planning, identify foundational datasets that are critical in the short-term, and define the degree of aggregation suitable for effective decision-making.

6.3 Develop guidance and training for planning and designing water sensitive solutions

While comprehensive guidance based on local evidence is desirable over the long-term, initial steps could focus on assessing the suitability of existing guidance from other jurisdictions and making adaptations for local use. Technical advice from universities and international agencies may be useful to inform planning and design guidance. Relevant agencies may find it useful to promote general training and capacity building in the application of existing planning and design tools.

6.4 Develop professional skills for implementing social and economic solutions

Improving the capacity to deliver social and economic interventions can create new pathways for delivering water sensitive outcomes. Such solutions could include incentive schemes, regulation, participatory processes and community engagement campaigns. Building public sector skills and capacity to evaluate the full range of implementation options may reveal the most cost-effective means of achieving water sensitive policy objectives. A particular focus on skills to engage in multi-disciplinary programs and innovative multi-stakeholder water projects is important for Bogor.

6.5 Develop decision-support tools that overcome lack of data availability and reliability

For Bogor, it is useful to understand deficiencies in data quality to reinforce advocacy for improvements. In the meantime, it may be useful to develop robust tools that consolidate and integrate different sources of data, including contextual knowledge as well as new data capturing techniques (e.g. drone surveys), to support planning and decision-making until more comprehensive data can be established.

6.6 Build maintenance needs into water sensitive project planning and design

Improved water infrastructure maintenance is a pressing need for Greater Bogor's existing system. This will continue to be important as green infrastructure is deployed as part of Greater Bogor's transition to a water sensitive city. Maintenance needs should be incorporated during project planning and design. Key considerations are the degree of sophistication of the system, the scale of its operation and the likely responsible stakeholder and budget allocation for implementing the maintenance regime.

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