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# Regional Workshop on Integrated Resource Management in Asian Cities: The Urban Nexus Bangkok, 2-4 December 2013

## REPORT

## Introduction

The *Regional Workshop on Integrated resource management in Asian cities: the urban nexus* was organized by United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) in partnership with the German International Cooperation Agency (GIZ) and with funding from the German Federal Ministry for Economic Cooperation and Development (BMZ) on 2-4 December 2013.

Approximately 50 participants attended the workshop, including representatives from the central governments of Mongolia, Philippines, Thailand and Viet Nam, representatives from the cities of Ulaanbaatar (Mongolia), Naga and Santa Rosa (Philippines), Don Kaew, Chiang Mai and Korat (Thailand) and Da Nang (Viet Nam), as well as implementing partners ICLEI and the Fraunhofer Institute for Industrial Engineering (IAO), and resource persons.

The workshop was organized in the context of the project *Integrated resource management in Asian Cities: the urban nexus*, implemented by ESCAP and GIZ with funding from BMZ. Building on the outcomes of the *International conference on the nexus* organized by GIZ on 24-26 June 2013 in Bangkok, the workshop aimed to:

1. Review progress made so far in designing nexus project initiatives in participating countries and share experiences and ideas.
2. Review current policies and programmes in support of nexus approaches in participating countries and discuss the elements of a national policy framework required to enable urban Nexus initiatives to thrive.
3. Discuss the governance dimension of the urban nexus, and in particular institutional arrangements required for an effective implementation of nexus approaches on the ground.
4. Define the next steps to be undertaken by the project in the participating cities.

The workshop was opened by Dr. Thomas Multhaup, Counsellor for Economic and Commercial Affairs, Deputy Head of Economic Department, Embassy of the Federal Republic of Germany in Thailand and Dr. Donovan Storey, Chief, Sustainable Urban Development Section, Environment and Development Division, ESCAP. The workshop was divided in 6 sessions over two days. A special session for city representatives was held on the third day, to discuss the next steps to be taken in the project.

The following summary does not attempt to capture all of the issues raised by participants, but rather to synthesize the main points discussed. The key action points discussed by cities on the third day are presented in annex I.

## Summary of discussions

## Session 1: Relevance of the nexus approach for the Asia-Pacific region

This session introduced the opportunities brought about by adopting the nexus approach for cities in Asia and the Pacific and presented progress of the project to date.

Dr. Donovan Storey, ESCAP, provided an overview of the relevance of the urban nexus in the context of trends and challenges experienced by cities in Asia and the Pacific. The region has experienced rapid urbanization in recent decades, with urban growth patterns radiating-out and regionalizing instead of concentrating, leading to the development of megacities and mega-urban regions. This transformation has led to considerable environmental impacts and costs and pressure on already scarce resources, and in particular water, energy and food. Almost all cities have outgrown their original municipal jurisdiction and their urban areas now extend into at least one other neighbouring local government (and often many). In Asia-Pacific it is evident that managing the resource footprint of cities across various ecosystems calls for institutional coordination and other forms of collaboration - which has rarely been evident. Existing institutions require transformation and renewal; policy responses must consider impacts and relationships beyond urban boundaries and across sectors and a shift is required from short-term exploitation of natural resources to long-term investment.

Ms. Ruth Erlbeck, GIZ, provided an overview of the project and progress to date. It was noted that the objective of the project is to build capacities (institutional and personnel) for integrated resource management in Asian cities. Since the *International conference on the nexus* organized in June 2013 participating cities had provided baseline data, submitted nexus project proposals, and created Nexus Task Forces, while benchmarking systems were being developed. The international conference had allowed identifying a wide range of technical solutions, such as energy efficiency measures in buildings and innovative and decentralized infrastructure systems. Feasibility studies on the adoption of such solutions in participating cities were being carried out. It was noted that technical solutions for the urban nexus would need to be supported by a set of complementary measures, such as: a reform of tariffs (to be consumption oriented and cost covering) and other incentive mechanisms for water and energy efficiency; strengthening of regulatory measures, such as urban planning laws and building codes, as well as the adoption of integrated urban planning and design. A change in mindset would be required, to break the “silo” mentality. Committed leadership and “champions” would be decisive for such transformation to take place.

Mr. Martin Schreiner, Urban Development Specialist, presented the framework for integrative urban development in Germany and lessons that could be drawn for integrated planning for the nexus in Asian cities. It was noted that energy generation and distribution, freshwater procurement and wastewater treatment, and agricultural production had a common feature: all required space. In the context of rapid urbanization all three sectors face challenges from the conversion of agricultural and other non built-up areas into built-up land. In this regard it was important to note that spatial expansion had been twice as fast as population growth. Integrative and well-organized

spatial planning had, therefore, become a necessity. In Germany, the urban master plan represents a pivotal tool for steering urban development, as it covers the whole city, including agricultural and forest areas within city boundaries. Its time horizon is 10-15 years and it is the central instrument to shape medium-term settlement expansion and development. In order to identify, measure and forecast environmental impacts, a landscape program and other sectoral environmental plans are prepared. All the findings of these documents are incorporated in the environmental assessment. The environmental assessment is then integrated into the urban master plan; this is both an administrative and political process, which allows balancing competing interests. The strength of the urban master plan lies also in the fact that it is legally binding and construction permits are issued based on it.

Ms. Catherine Diomampo, ICLEI Southeast Asia, highlighted some of the challenges facing cities in Asia-Pacific and features of urban nexus approaches to respond to these challenges, including ICLEI's role as an implementing partner of the project. This would center on a five-pronged strategy. First, promote nexus activities, including introducing innovative approaches of integrated and cross-sectoral city planning. Second, develop nexus protocols, including a methodology to assess nexus initiatives and analyze impacts. Third, build capacities on integrated resource management by providing tools and holding training. Fourth, promote regional knowledge sharing and management and, lastly, promote replication and up-scale of the nexus approach in the region.

## Session 2: Urban nexus in practice

This session allowed reviewing project proposals and progress made to date by participating cities, while also highlighting some of the challenges facing implementation.

All cities emphasized the importance of adopting a nexus approach to natural resource management and infrastructure development in urban areas, noting the challenges brought about by rapid urbanization. These included:

- Rapid conversion of agricultural land to built-up areas, increasing demand for imported food.
- Improving infrastructure to meet rapid population growth, including provision of basic infrastructure to informal settlements;
- Water resource shortages and conflicts between different uses;
- Contamination of groundwater resources;
- Improper wastewater disposal and/or lack of proper wastewater treatment facilities;
- High energy consumption, in particular in buildings and for the management of centralized and inefficient water supply and waste-water treatment systems;
- Increasing volumes of solid waste and lack of resource recovery and appropriate treatment facilities.

Important progress had been made in all participating cities since the conference held in June 2013. Initial project ideas presented on that occasion had been further developed; opportunities for applying a nexus approach identified and concrete nexus project proposals had been formulated in almost all cities. Moreover, Nexus task-forces had been officially established in Ulaanbaatar, Naga, Santa Rosa, Korat and Da Nang. The project could also count on a highly committed leadership in these cities, as was also shown by the participation in the workshop of high-level

delegations from the cities, including Ms. Arlene Arcillas, Mayor of Santa Rosa, Mr. John G. Bongat, Mayor of Naga City, and Mr. Badral Bold, General Manager, Ulaanbaatar.

Priority projects identified by participating cities included: application of wastewater to energy to both centralized and decentralized systems combined with urban agriculture (Naga, Santa Rosa and Da Nang); improvement of wastewater treatment (Don Kaew, Chiang Mai); increasing energy efficiency of water provision and wastewater management (Korat); conversion of solid waste to energy (Santa Rosa); and heat energy savings through insulation of public and private buildings (Ulaanbaatar). These projects would allow demonstrating the synergies that can be achieved in terms of energy, water and food security, as well as testing innovative technologies such as the vacuum sewer, with a view to up-scaling and further replicating such nexus solutions.

Policy initiatives would also need to be implemented in order to support such infrastructure projects. For example, Ulaanbaatar plans to introduce a consumption-based heating tariff as incentive for the introduction of energy efficiency technologies and changes in consumer behaviour, while Naga plans to integrate the nexus approach in the formulation of its new comprehensive land use plan and the approved low cost housing scheme. At the same time, enforcement of already existing regulations would be necessary. In Korat, for example, wastewater treatment fees had been approved twenty years ago but to date had never been collected.

Challenges foreseen in implementation included: (i) fragmented institutional arrangements (e.g. water and sewage often rest with an external independent agency); (ii) retrofitting existing systems and revisions to project master plans; (iii) operation, monitoring and maintenance both in terms of costs and the need to build capacities of technical and skilled labour, and (iv) understanding and acceptance of the nexus concept by beneficiaries.

A number of recommendations for the promotion of the urban nexus were set forth, including the following:

- The necessary regulatory framework (laws, building codes, standards, etc) should be developed;
- Incentives and support should be provided to households to adopt resource-efficient technologies and behaviours (such as preferential loans or consumption-based tariffs);
- Political support for innovative solutions should be built, considering that some nexus solutions may provide significant savings over the long term but incur in higher investment costs upfront.
- Municipal governments should consider allocation of land for urban agriculture through urban planning and policies;
- Mechanisms should be put in place to develop partnerships among government, enterprises, academia and farmers.

## Session 3: Benchmarking the nexus

This session discussed how to appraise the performance of projects in relation to the nexus for benchmarking and for sharing progress and lessons learnt across cities.

Ms. Constanze Heydkamp, Fraunhofer Institute for Industrial Engineering (IAO), presented the Institute's "Morgenstadt" approach to city profiling and benchmarking, which had been developed

by 12 Fraunhofer Institutes and various other partners in the course of 2012-2013. After an initial screening of a large number of cities worldwide, 6 cities had been analyzed in detail, and 83 key action fields for sustainable urban development and 140 impact factors across cities had been identified in relation to 8 key sectors. The most important impact factors identified were the geographical parameters (e.g. landscape, location, climate), highlighting the fact that city development strategies need to be localized and not all cities can be compared to each other. A tailor-made version of the "Morgenstadt" approach would be applied to some of the cities taking part in the Nexus project, in which only 4 sectors would be highlighted – water, energy, food and governance. The city profiling would allow identifying key indicators to model performance, as well as understanding how cities currently address sustainability and what works or does not.

Ms. Kathrine Brekke, ICLEI World Secretariat, presented ICLEI's current research on the operationalization of the urban nexus in metropolitan regions. She noted that cities are complex systems but modern urbanism tends to divide them into parts, while contemporary practices of performance benchmarking, monitoring and evaluation focus on institutional/management performance and not system-wide performance. The nexus approach offers an opportunity to "re-integrate" the city and a meaningful performance measurement approach should measure system-wide performance, focus on context- and project-specific objectives in order to support customized solutions, and support continuous learning and innovation by various stakeholders. The analytical framework developed was currently being applied to two case studies, including the city of Nashik in India.

Mr. Ralph Trosse, GIZ, presented examples of technical solutions for the urban nexus related to resource efficient low cost housing and sustainable waste water systems. Low cost housing is a key priority in the region as millions lack adequate shelter and local governments struggle to keep pace with high urban population growth and consequent housing demand. It was noted that low cost should not be a synonym of low quality. On the contrary, it is vital that low cost housing be resilient to disasters. Moreover, housing could be made resource efficient by designing it in an energy efficient manner, having waste water treatment planned at the level of the whole settlement and introducing re-use of clarified waste water for urban agriculture. Vacuum sewage systems were presented as an effective solution for sustainable waste water systems. Advantages included no contamination of groundwater and no infiltration of external water. Moreover, vacuum sewers can reduce costs by 25-40% compared to gravity sewers and are easier to install and maintain. Lastly, vacuum sewers can facilitate solutions for the production of biogas from waste water.

## Session 4: Enabling policy frameworks for the nexus

This session allowed reviewing current policies and programmes in support of nexus approaches in participating countries and discussing the elements of a national policy framework and institutional relationships required to enable urban nexus initiatives to succeed.

Dr. Donovan Storey, ESCAP, provided some insights on the role of local governments in the promotion of the urban nexus and the main gaps affecting their ability to do so effectively. Cities are key actors in nexus strategies, but they require supportive partnerships and enabling environments. Changing the way cities function will require new forms of planning and urban governance. However, city management systems face considerable challenges. In particular, important gaps exist in terms of mandates, financing and capacities. In order to address these

challenges, there is an urgent need to foster critical reforms addressing: (a) provision of appropriate mandates and systems for national and sub-national governments to plan for sustainable urban economic development; (b) formation of appropriate and inclusive governance mechanisms to be representative of all urban stakeholders; (c) incentive systems for funding the investment needed to underpin the transition; (d) collaborative organizational structures to maximize participation in, and manage, necessary reforms; and (e) strengthening capacities required to bring about necessary change.

Prof. John Minnery, University of Queensland, presented the lessons that could be drawn from Queensland, Australia, in terms of effective governance arrangements for the urban nexus. The city of Brisbane and the broader South-East Queensland Region have undergone great changes over the decades and different forms of governance and relationships between state and local governments have been established and tested to respond to its challenges. Regional plans have evolved over time, often in response to previous shortcomings and barriers in implementation. The following lessons could be drawn from the experience in Queensland: (i) needs for metropolitan planning and coordination change over time and so do the responses; (ii) both institutions and mechanisms are required to overcome fragmentation; (iii) a technically competent regional plan is not enough – it requires broad consensus by means of participation of various stakeholders, as well as the necessary legal status and authority; and (iv) it is important to connect land use planning, infrastructure and budgets.

Participating countries presented current policies and initiatives in support of the nexus in the urban context and elaborated on their effectiveness or otherwise.

In Mongolia key policy areas aimed to ensure sustainable, broad-based and equitable growth. In particular, the green development concept aimed at adjusting population settlement planning and development with natural resources and local capacities. A State Policy on Urban Development was being developed, while the National Population Settlement Master Plan was awaiting approval by parliament. Several other plans had been developed or were being developed, such as the Ulaanbaatar Development Master Plan. Moreover, a considerable number of laws related to sustainable urban development were either being drafted or undergoing revisions or amendments. Specific initiatives included the *ger* area redevelopment and infrastructure supply, and various green building projects. Policies supporting the adoption of green technologies had also been adopted, such as tax rebates and exemptions. Lastly, legislation enabling collaborative project implementation (such as public-private partnerships) and foreign direct investment was in place.

The Philippines could also count on a comprehensive policy framework, with key legislation on integrated resource management in place, including on integrated water resource management, integrated coastal resource management, and basic environmental laws, such as the Clean Water Act, or the Presidential Decree on Environmental Impact Assessment. Other relevant programmes and strategies related to the nexus included the Philippine Energy Efficiency Project, the National Renewable Energy Program and Philippine Agriculture 2020. It was felt that the existing framework and mechanisms for integrated resource management, while effective in planning and policy setting, were not as effective in translating policies, plans and strategies into concrete actions, as local governments, who are tasked to implement the plans, lack the financial and technical capacities. Moreover, there would be a need to: clearly define different agency mandates and harmonize common roles and responsibilities on water, energy and food security; enhance and

update science-based nexus related information; review and update watershed and coastal management plans and mainstream the nexus approach in local development planning processes.

In Thailand the focus of national development policy has shifted over the years from natural resource exploitation (1950s to 1980s) to a green economy and sustainable development. One key piece of legislation was represented by the National Environmental Quality Plan (2012-2016), which focuses on 6 key areas: (i) sustainable production and consumption; (ii) sustainable conservation and restoration of natural resources; (iii) environmental governance; (iv) good environmental quality for all; (v) resilience to climate change and natural disasters, and (vi) human development as a basis for an environmentally responsible society. Moreover, a number of initiatives have been launched by the Office of Natural Resources and Environmental Policy and Planning (ONEP) to support municipalities, including on environmentally sustainable cities. At the same time, the National Housing Authority (NHA) is supporting the development of low cost housing through a number of initiatives, providing financial assistance to low income groups and building communities. NHA is also promoting environmental considerations in its programmes, including through "eco-community" and the development of guidelines for tropical climate construction.

In Viet Nam water resources have long been recognized as critical for the development of the country. In the late 1990s the process of public administration reform and the emergence of the resource management concepts coincided and saw the adoption of landmark legislation, including the Law on Water Resources, the creation of the National Water Resource Council for inter-ministerial coordination and the creation of the Ministry of Natural Resources and the Environment. However, a number of governance challenges persist, including: the need to clarify mandates at all administrative levels, build capacities (e.g. for integrated water resource management), foster a more efficient and strategic use of available finances and increase community awareness and participation. Charting a way forward would require: (i) improving policy and planning at national, river basin, provincial and local levels; (ii) establishing regulatory frameworks to clearly define rights and responsibilities, including licensing and improved assessment procedures; (iii) encouraging water efficiency measures, and (iv) encouraging community participation in water resource management through participatory mechanisms as well as education and awareness raising.

## Session 5: The governance dimension