

THE MAKING OF
VIBRANT
CITIES

A COLLECTION OF ESSAYS COMPILED BY MUMBAI FIRST

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Foreword

N.K. Nayar

Chairman, Mumbai First

Mumbai First is privileged to have been given the opportunity to collaborate with the government of Maharashtra and the government of India to convene the first-ever BRICS Friendship Cities Conclave in Mumbai. The fact that India holds the BRICS Presidency from February 2016 makes this event even more momentous.

Today, the five BRICS nations represent almost 3 billion people, i.e., 40 per cent of the world's population, and have a combined GDP of nearly US\$17 trillion, approximately one-fourth of the world's gross GDP. We believe that some of the BRICS nations will dominate the world's economy by 2050, and urbanization will be a driver of future growth. This makes it opportune for the BRICS economies to work together and to learn from their collective experiences to drive development. So far, the BRICS nations have made major strides in developing political, economic, and social ties, and the opening of the New Development Bank with its headquarters in Shanghai bears testimony to this.

In our endeavour to contribute to this cross-border dialogue on urban development and renewal we have commissioned the book,

The Making of Vibrant Cities. The book, a collection of ideas on urban themes straddling urban governance, finance, land use and planning, transportation, sustainability and climate change, is an effort to bring together the thinking of various experts on meeting with the challenges of urbanization. We acknowledge that this book, the first of its kind on so vast a subject as urbanization, is neither complete nor fully representative of the views of all the experts in the country. However, it is an important milestone to enriching the dialogue on urbanization, and to contribute to the broader global discussions on urban development, with contributions from over thirty urban experts from prestigious organizations, and a group of renowned and independent experts and practitioners.

Another key reason for putting together this collection is to create a substantive body of work that can be referenced by city administrators since it draws upon various city experiences, and presents innovative ideas for deliberation and execution. Such a collection, as we envision it, will help city administrators, elected representatives and concerned representatives on issues ranging from waste management to capacity building to reforming urban governance. We hope this collection of essays will be of immense value to various students across disciplines as they choose to build their careers in the urban field.

Publishing this book would not have been possible without the unstinted efforts and contributions from various members of the BRICS Expert Committee that was constituted to curate and drive the development of the BRICS Friendship Cities Conclave.

In particular, I would like to acknowledge the invaluable contributions of Sunali Rohra, former Co-Leader of McKinsey & Company, Urban Practice in India and Shishir Joshi—CEO and Ashwini Thakar—Manager Programs & Projects at Mumbai First for conceiving and driving this ambitious project. I would also like to thank Linda Viegas and Trilby Valladares for their administrative support.

x ◀ N.K. Nayar

Coming so far would not have been possible without the cooperation and patience of Ritu Vajpeyi Mohan and Meenakshi Singh, at Rupa Publications. We are grateful for their painstaking editorial contributions to help us take this ambitious project to fruition. Most of all, we are indebted and deeply appreciate the interest and effort taken by each author who has made a contribution to this book, despite the tight timelines and their busy schedules. This book is a culmination of their collective vision, passion and commitment to take forward the urban dialogue in BRICS Nations. We are particularly thankful to Indostar Capital Finance Ltd. for supporting us in this venture.

We sincerely hope this book will serve as an ideas handbook for various stakeholders, and help steer policy research, design, and implementation efforts related to urban development to renewal across the BRICS nations.

Smart Solid Waste Management in BRICS Countries

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Environment in India Project

Introduction

Inadequate and ineffective solid waste management has significant public health and environmental consequences, including the spread of infectious diseases, water contamination, air pollution, greenhouse gas emissions, and damage to the ecosystems. Urbanization trends, governance issues, and lack of capacity building represent some of the important barriers to effective solid waste management.

As part of the objectives and the on-going work of the European Union Technical Cooperation for Environment in India Project, we believe it is important to introduce the key issues regarding solid

¹This essay has been prepared in the framework of the European Union Technical Cooperation for Environment in India Project.

waste management and share the best practices and policies.

In this essay, we present key global solid waste management facts, explain some important challenges, and make four recommendations to achieve smart solid waste management in BRICS countries. We cite examples and case studies from the European Union, India, Brazil and other countries to demonstrate the key points.

Solid Waste Management Facts

The annual generation of municipal solid waste across the world is in the range of two billion tonnes ([United Nations Environment Programme UNEP], 2015). This number largely depends on per capita waste generation levels (see Figure 1), the population, the level of development and other factors.



Figure 1: Waste Generation Per Capita in Kg/Year

Source: Waste Atlas²

Three billion people are without access to controlled solid waste disposal infrastructure while, according to the Intergovernmental Panel on Climate Change, in 2010, approximately 3 per cent of global

²Available at <http://www.atlas.d-waste.com>, accessed on 15 December 2015.

greenhouse gas emissions was related to solid waste management, mainly methane from landfill operations (UNEP, 2015 and Figure 2).

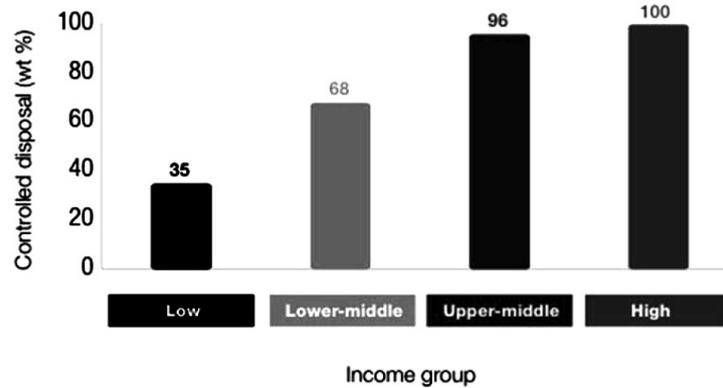


Figure 2: Levels of Controlled Disposal for Selected Cities

Source: Wasteaware and University of Leeds³

In terms of waste composition, organic material is dominant in low and lower-middle income countries, while paper, plastics and glass represent a larger fraction in upper-middle and high-income countries, compared to the other income categories (see Figure 3).

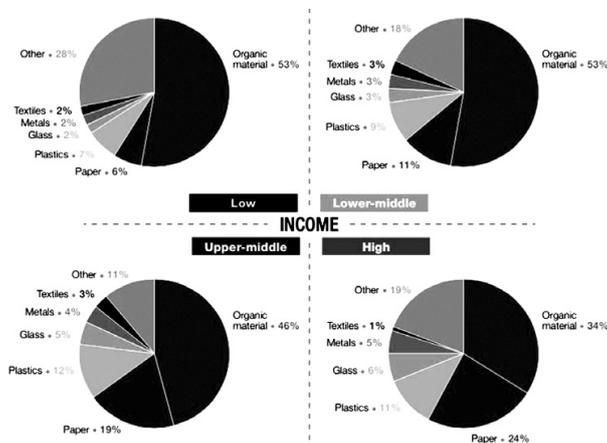


Figure 3: Municipal Solid Waste Composition by Country Income Levels

Source: UNEP, 2015

³See UNEP, 2015, p. 65.

Solid Waste Management Challenges

Many countries are facing significant challenges as their populations are growing, urbanization is increasing and the per capita waste generation too is rising. This is evident in Table 1 for BRICS countries. As the majority of solid waste is generated in cities, both per capita and total waste generation in urban areas are expected to increase significantly by 2025. For example, in the case of China, the per capita increase is at the rate of 67 per cent but, given the urbanization trends, the absolute increase is close to 170 per cent.

Table 1: Municipal Solid Waste Generation in Urban Areas of BRICS Countries

Country	Current Available Data		2025	
	Kg/Capita/Day	Kg/Day	Kg/Capita/Day	Kg/Day
Brazil	1.03	149.000	1.6	331.000
China	1.02	521.000	1.7	1,398.000
India	0.34	110.000	0.77	377.000
Russian Federation	0.93	100.000	1.25	120.000
South Africa	2	53.000	2	72.000

Source: The World Bank, 2012

Often, the governance structure is not in line with solid waste management needs, and the problems are exacerbated by unclear or overlapping responsibilities, obsolete regulations and guidelines, lack of coordination and planning, and bureaucratic structures. Lack of technical capacity represents another important obstacle to the development of effective solutions. Furthermore, as human resources are sometimes scarce, knowledge sharing becomes even more important. The knowledge–capacity gap and the inadequate governance structure are sometimes partially filled by other stakeholders, such as non-governmental organizations. Moreover,

without the necessary technical capacity, projects that are more complex and that involve new technologies or processes cannot materialize or be maintained.

Finally, financial resources at the local or national level are limited, and international donors can only cover a small fraction of the needs. By 2025, the solid waste management costs for low-income and lower-middle income countries are estimated to exceed US\$ 90 billion (The World Bank, 2012). Therefore, financing these types of projects is going to be a great challenge.

Key Recommendations

‘There is no absolute definition of a smart city, no end point, but rather a process, or series of steps, by which cities become more ‘liveable’ and resilient and, hence, able to respond quicker to new challenges.’⁴

Going by the above statement, there is no absolute definition of smart solid waste management. Rather, it is important to identify the key issues that will make cities cleaner and more liveable.

A case in point is the European Union, which has implemented a number of policies on infrastructure development, capacity building, financing, target setting and other areas. For example, a minimum recycling target has been set for 2020 of 50 per cent for municipal waste and 70 per cent for construction waste. As a result, recycling rates have increased significantly (see Figure 4). These trends are likely to continue.

⁴UK’s Department for Business, Innovation and Skills, ‘Smart Cities Background Paper’, 2013, p. 7.

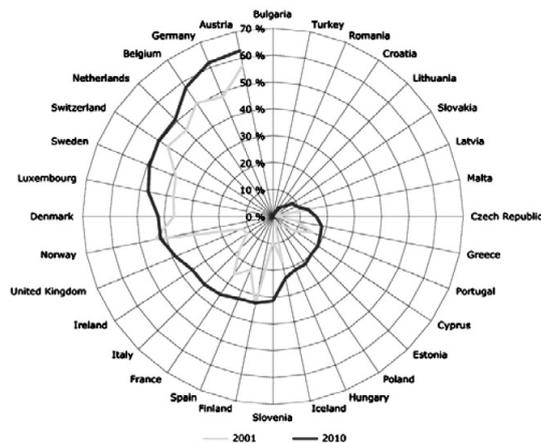


Figure 4: Municipal Waste Recycling Rates in 32 European Countries 2001–10
 Source: EEA, 20135

In this essay, we make four recommendations, which we consider of high importance for smart solid waste management in BRICS countries.

Embrace sustainable development goals

In 2015, the United Nations adopted the Sustainable Development Goals (SDGs), requiring action in seventeen areas (see Figure 5), in order to ensure sustainable development across the world by 2030. A number of goals are directly or indirectly related to waste management: Goal 3 (good health and well-being); Goal 6 (clean water and sanitation); Goal 7 (affordable and clean energy); Goal 11 (sustainable cities and communities); Goal 12 (responsible consumption and production); Goal 13 (climate action); Goal 17 (partnerships for the goals), and so on. As SDGs provide a comprehensive approach to development, BRICS countries are encouraged to embrace them and mobilise the essential resources for their long-term achievement.

⁵European Environment Agency, 2013. See: <http://www.eea.europa.eu/data-and-maps/figures/municipal-waste-recycling-rates-in>, accessed on 25 February 2016.



Figure 5: Sustainable Development Goals

Source: United Nations

Adopt the waste management hierarchy

The waste management hierarchy (see Figure 6) serves both as a communication tool, by presenting the waste management priorities in a visually appealing manner, as well as a policy tool since it introduces an order of preference regarding technology and policy options. Since one of the targets of Goal 12 is to ‘substantially reduce waste generation through prevention, reduction, recycling and reuse’. BRICS countries should adopt the hierarchy and create the essential conditions for its implementation.



Figure 6: Waste Management Hierarchy

Emphasize capacity building

Capacity building is an important element of smart solutions to solid waste challenges. It is also consistent with one of the targets of Goal 17, according to which it is important to ‘enhance international support for implementing effective and targeted capacity building in developing countries ...’

International donors have an important role to play. For example, as the largest single donor of development assistance, the European Union (EU) places a lot of emphasis on capacity building. A case study is presented in Table 2.

**Table 2:
India and the EU—Working Together on Capacity Building**

The Technical Cooperation for Environment in India is an EU project focusing on capacity building on solid waste management and sewage treatment for New Delhi and Mumbai, based on the experience of both India and the EU. The beneficiaries are ministries, state agencies, municipal corporations, non-government organisations, and other institutions.

Key activities include an analysis of training needs, training programmes and technical support; study workshops, consultation workshops, seminars; and knowledge management tools. The programme provides an opportunity to enhance technical and institutional capacity, to create an enabling environment promoting clean technologies, to formulate effective policies, to further improve skills and technical know-how, and to increase awareness.

The duration of the project is from 2014–18 and it has been developed in close cooperation with the Ministry of Environment: Forests and Climate Change, the Ministry of Urban Development, and the Ministry of New and Renewable Energy. It is being implemented by a consortium of IVL Swedish Environmental Research Institute, Sweden; the Danish Technological Institute, Denmark; and the Shriram Institute for Industrial Research, India.

Overall, BRICS countries should emphasize capacity building on

technical matters, such as new technologies and processes—as well as institutional topics, such as the legal framework and policies. UNEP has issued a series of training manuals on integrated solid waste management, providing a valuable approach on this issue.

Inspire good governance

Essential principles of good governance include clear responsibilities, accountability, planning and public participation. Along those lines, UNEP (2015) has recommended that, for good governance, it is necessary to rely on a combination of direct regulations, economic instruments, and social instruments, that is, communication/interaction with stakeholders. When governments adopt these principles, it can be expected that not only will waste management effectiveness increase but additional opportunities for funding and international cooperation too will materialize.

We wish to stress even more the importance of public participation, since, although local governments are in most cases responsible for waste management, a number of stakeholders can also play an important role in this process. Therefore, where the informal sector has been successful, the government should embrace it and work closely on common goals. This has been the case of waste picker organizations in Brazil (see Table 3).

Overall, BRICS countries should promote adherence to the principles of good governance, both at the local and the national levels.

In conclusion, BRICS countries should be committed to addressing the challenge of solid waste management in a comprehensive and smart way. In this short essay, we have introduced four key areas that we believe that should be prioritized. These areas should be supplemented by additional initiatives to achieve the objective of smart solid waste management.

**Table 3:
Waste Picker Organizations in Brazil**



Brazilian informal waste pickers, working individually, were dependent on middlemen for amassing adequate volumes and for access to recycling companies. Dissatisfied with their position, they started organizing and creating their own cooperative businesses in the 1990s. In addition to organizing meetings, they created the Brazilian National Movement of Recyclable Waste Pickers (MNCR) in 1999, currently representing hundreds of such cooperatives and associations. MNCR was instrumental in the establishment of an inter-ministerial committee in 2003 to coordinate public policies towards the social and economic integration of waste pickers.

Source: Fergutz et al., 2011⁶

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⁶Information obtained from UNEP, 2015, p. 179.

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