ENVIRONMENTAL POLICIES IN ASIA

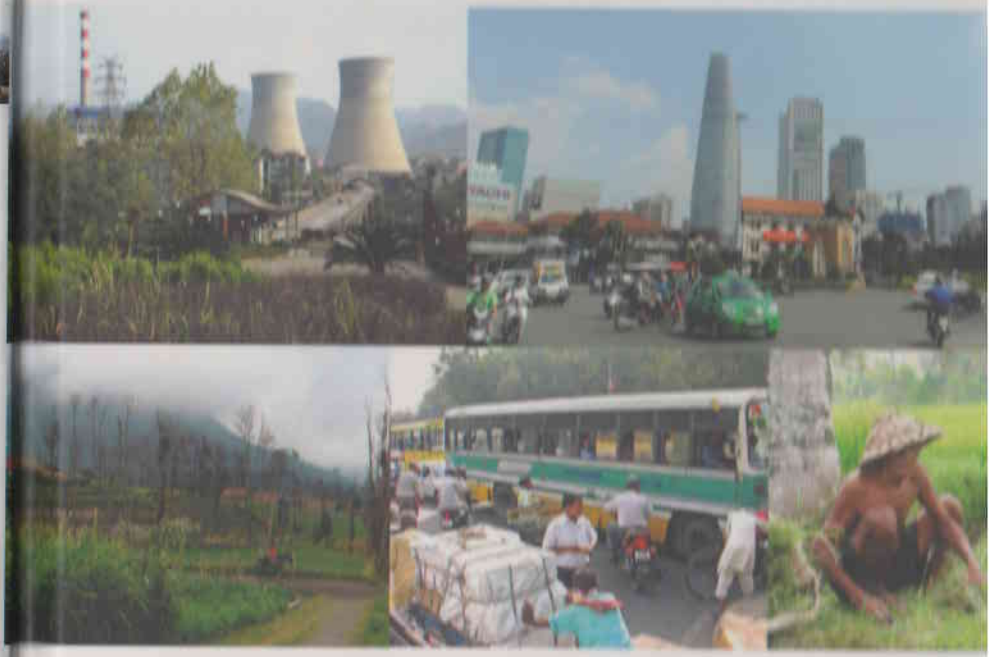
Perspectives from Seven Asian Countries

Environmental Policies in Asia highlights the environmental challenges Asian planners and policymakers face as the continent undergoes rapid economic growth in the 21st Century. Edited by Jing Huang and Shreekant Gupta, with contributions from leading Asian scholar practitioners, this timely and unique volume is the first of its kind to look at environmental policies and governance from the perspective of seven dynamic Asian countries. These include developed economies of Japan and Singapore, emerging giants such as China and India and rapidly developing nations such as Vietnam, Indonesia and Malaysia. The volume discusses environmental challenges that stem from issues as local as poor recycling practices, to ones that are as vast and complex as global climate change. Engaging, accessible, and pan-Asian in scope, the essays also present creative ways in which these challenges are being addressed. This book is valuable to anyone who is keen on understanding Asia, its growth, and whether its rise is environmentally sustainable.

HUANG
GUPTA

ENVIRONMENTAL POLICIES IN ASIA

ENVIRONMENTAL POLICIES IN ASI



Perspectives from Seven Asian Countri

Editors

Jing HUANG
Shreekant GUPTA

Published by

World Scientific Publishing Co. Pte. Ltd.
5 Toh Tuck Link, Singapore 596224
USA office: 27 Warren Street, Suite 401-402, Hackensack, NJ 07601
UK office: 57 Shelton Street, Covent Garden, London WC2H 9HE

Library of Congress Cataloging-in-Publication Data
Environmental policies in Asia : perspectives from seven Asian countries / edited by Jing Huang (Lee Kuan Yew School of Public Policy, National University of Singapore, Singapore) & Shreekant Gupta (Delhi School of Economics, India & Lee Kuan Yew School of Public Policy, National University of Singapore, Singapore).
pages cm
ISBN 978-9814590471 (hardback : alk. paper)
1. Environmental policy--Asia. I. Huang, Jing, 1956– editor of compilation.
II. Gupta, Shreekant, editor of compilation.
GE190.A78E586 2014
333.7095--dc23

2014000054

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library.

In-house Editor: Chye Shu Wen

Typeset by Stallion Press
Email: enquiries@stallionpress.com

Printed in Singapore by Mainland Press Pte Ltd.

Contents

news/2009/10/17/activists-push-govt-punish-polluting-firms.html. Last accessed on 12 August, 2013.

———. "Govt Doubtful to Punish 'Dirty' Firms." *The Jakarta Post*, October 16, 2009b. Available online at http://www2.thejakartapost.com/news/2009/10/16/govt-doubtful-punish-dirty039-firms.html. Last accessed on 12 August, 2013.

———. "KPK Searches Ministry for Adipura Scandal." *The Jakarta Post*, January 14, 2011a. Available online at http://www2.thejakartapost.com/news/2011/01/14/kpk-searches-ministry-adipura-scandal.html. Last accessed on 12 August, 2013.

———. "New Council to Restore Award's Tarnished Image." *The Jakarta Post*, March 29, 2011b. Available online at http://www2.thejakartapost.com/news/2011/03/29/new-council-restore-award%E2%80%99s-tarnished-image.html. Last accessed on 12 August, 2013.

The Jakarta Post. "Editorial: A Disastrous Award?" August 6, 2008. Available online at http://www2.thejakartapost.com/news/2008/08/06/editorial-a-disastrous-award.html. Last accessed on 12 August, 2013.

Widianarko, Budi. "Adipura Scandal a Slap in the Face for Indonesia." *The Jakarta Post*, February 6, 2011. Available online at http://www2.thejakartapost.com/news/2011/02/06/adipura-scandal-a-slap-face-indonesia.html. Last accessed on 12 August, 2013.

9. Environmental Law, Policy, Governance and Management for Cities: Getting it Right for a Sustainable Future — The Singapore Experience

LYE Lin-Heng

Sustainable Cities

The issue of the sustainability of cities is complex, as few can agree on what 'sustainability' means and how it is measured in the context of a city (Satterthwaite, 1999; Hall, 1996; Hardoy *et al.*, 1992; Dubois-Taine and Henriot, 2002; UN HABITAT, n.d). Although there is no consensus on the definition of the terms 'sustainable cities' or 'sustainable human settlements,' it is clear that a city encompasses many dimensions, including environmental, economic, social, political, legal, demographic, institutional and cultural.

Fundamentally, cities that strive to be 'sustainable' face the tensions between economic development and environmental stewardship. The Brundtland Commission's definition of 'sustainable development' is familiar to most — "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN, 1987).[1] The juxtaposition of the word 'development' with 'sustainable' highlights the dilemmas that confront all urban environments. As cities are almost invariably the engines of growth that fuel the economy of a nation, they are constantly at the forefront of new and myriad challenges that arise from the need to find food, shelter, employment, transport, energy sources, healthcare and other essential services for an ever-growing population. Indeed, it has been said that "the battle for sustainability will be won or lost in cities" (Djoghlef, 2009). How then, can a city ensure that its manifold activities are sustainable?

It should also be noted that the concentration of people, enterprises and motor vehicles in a city, while often viewed as a problem, can also bring certain advantages, such as lower costs per household and per enterprise for the provision of the environmental infrastructure and services — such as public transportation systems, sewage treatment plants and systems for the removal of domestic and industrial wastes (Satterthwaite, 1999). Cities with well-managed public transportation systems reduce stress on the natural environment, as a good public transport system will minimise the need for more private motor vehicles. Likewise, the concentrations of industries in particular industrial zones will facilitate the enforcement of environmental laws by reducing the length of journeys required for inspections by authorities. Indeed, with intelligent planning, the closer people live to their workplace, the greater the potential for resource efficiencies, and an enhanced quality of life.[2]

How then, do we measure the environmental performance of a city? Are the considerations similar between cities in developed and developing economies? Is it a matter of governance? If so, what are the ingredients required for sound environmental governance?

This chapter focuses on the tiny city-state of Singapore, and its transformation from a squalid Crown colony to a "Garden City",[3] its evolution to a "City in a Garden",[4] and now its blossoming into a "City of Gardens and Water" (Lee, 2006).[5] It first examines how Singapore managed to develop economically while cleaning up its environment.[6] It then focuses on the government's blueprint for the next 20 years entitled, *A Lively and Liveable Singapore: Strategies for Sustainable Growth* (hereinafter referred to as "the Blueprint"[7]), jointly published by the Ministry of Environment and Water Resources and the Ministry of National Development in 2009 (MEWRND, 2009).[8] It notes that Singapore has done remarkably well in cleaning up its environment in the course of its development and rightly deserves its place as an exemplar for developing cities. Credit must be given to a very far-sighted team of government leaders and civil servants who have conceived the right policies and implemented them efficiently and effectively. However, it also emphasises that there are still considerable inadequacies such as the lack of laws mandating environmental impact assessments as well as the lack of laws mandating recycling. The chapter concludes with an examination into these shortcomings and how they can be addressed.

Environmental Management Systems (EMS) for Cities: The Singapore Experience

> "We have built. We have progressed. But there is no hallmark of our success more distinctive and more meaningful than achieving our position as the cleanest and greenest city in Southeast Asia."
>
> — Mr. Lee Kuan Yew, Prime Minister of Singapore, at launching ceremony of the "Keep Singapore Clean" Campaign, 1 October 1968

The basic requirements for an EMS

A sound Environmental Management System (EMS) for a city starts with sound environmental management policies. These must then be implemented via effective institutional, administrative, legal and physical infrastructure. A sound EMS for a city should comprise the following:

1. Sound environmental policies implemented through effective institutional and administrative structures
2. Comprehensive land use planning
3. Effective environmental laws and enforcement
4. Physical infrastructure for the provision of essential services such as clean water, electricity, transport and communications
5. Physical infrastructure for pollution control including facilities for the collection and treatment of garbage, sewage and trade effluents, the management of hazardous substances, and control of air emissions.

It should be emphasised that there must be coherence in the various policies and in their implementation among the various institutions, and this must be integrated into national and local policy and legal frameworks. There must also be respect for the rule of law. These will now be examined in the context of Singapore.

An Overview: Singapore

The tiny city state of Singapore, referred to by a former Indonesian president as "the little red dot" (Chang Li Lin *et al.*, 2005) is one of the smallest and most densely populated countries in the world with a land area of only

715 square kilometres (Singapore, 2012)[9] housing a population of 5,312,000 as of 2012 (a density of some 7,430 persons per square kilometre). Strategically sited at the tip of the Malay Peninsula, it is at the crossroads of Southeast Asia. Founded by Stamford Raffles, an employee of the East India Company[10] in 1819 to serve as a trading outpost, it grew quickly into an important Crown Colony. It was occupied by the Japanese during the Second World War, returned to the British in 1945. It achieved self-governance in 1959 and joined Malaysia in 1963 and left on 9th August 1965 to become a sovereign state. It has been governed by the same political party that won the first elections in 1959, the People's Action Party (PAP), led by Prime Minister, Mr Lee Kuan Yew. English is the language of communication and of government, although the national language, as stated in its Constitution, is Malay.

Lacking in natural resources, Singapore has built on its strategic location, natural deep harbour and its people, to develop a robust open economy based on trade and services. Today, it has excellent transportation networks and telecommunication facilities. Its port[11] and airport[12] are among the world's busiest. In 2010 and 2011, it was ranked the world's easiest place to do business by the World Bank out of a list of 183 countries (World Bank-IFC, 2012a). Indeed, it has the remarkable distinction of moving "From Third World to First" in the space of some four decades, as states the title of the autobiography of Lee Kuan Yew, its first Prime Minister (Lee, 2000). Much of this success must be attributed to Lee, who was largely the chief architect of Singapore's success and continues to play a significant role as Minister Mentor.

In its early years, Singapore faced the same problems that beset developing countries today. These include the lack of proper sewage disposal facilities, highly polluted rivers and river basins, indiscriminate waste disposal leading to both land and water pollution, poor health management systems that led to periodic outbreaks of typhoid and cholera, polluted air from aging, inefficient gas works, and frequent flooding due to poor drainage.[13]

Today, Singapore's air and water quality are well within World Health Organisation (WHO) benchmarks.[14] All inland waters are able to support aquatic life, with coastal waters generally meeting recreational water standards. All homes receive piped, potable water; garbage is collected daily by licensed contractors, incinerated and the ash sent to an offshore landfill. The average life expectancy is 82 years while infant mortality is low at 2 per cent for every 1,000 live births (Singapore, 2011). Some 3.9 per cent of its GDP is spent on national healthcare.[15]

Notwithstanding that it is not a producer of oil, Singapore is the world's top bunkering port and the third largest oil refining centre in the world with more than four major oil companies (Shell, Caltex, BP and Exxon-Mobil) operating within its borders with a combined refining capacity of 1.395 million barrels a day.[16] Singapore has become a strong industrial base for electronics and precision engineering, chemical and petrochemicals, pharmaceuticals and biosciences. In recent years, Singapore has emphasised research and development in biomedical sciences, water and environmental technology, healthcare services, educational services, info-communications, logistics and transport as well as precision engineering.[17]

Singapore also has one of the best public housing schemes in the world. 82 per cent of the population live in government-subsidised public housing in more than two dozen new towns built by the Housing and Development Board (HDB).[18] Nearly nine out of ten Singaporeans have own their own homes on 99-year leases — thanks to mandatory employer and employee financial contributions to the Central Provident Fund (CPF), a social security savings programme that can be used for home purchases, healthcare and family protection, retirement and asset enhancement.[19] This policy of home ownership accounts for a large measure of the success of its public housing system. In contrast, most public housing schemes in developing as well as developed countries are leased to the public on short leases.[20]

The city state's transport policies have resulted in a highly efficient public transport road and rail system. The use of private motor vehicles is discouraged by raising the costs of motoring through innovative taxes and electronic road pricing systems.[21] Indeed, Singapore is one of the pioneers of congestion pricing.

Singapore is also well known for its draconian laws. It has made full use of the law to discourage unsociable and irresponsible behaviour. These include fines for littering, as well as for failing to flush public toilets after use. Blatant acts of vandalism are punished by caning as well as fines and imprisonment. Innovative penalties have been introduced, such as the Corrective Work Order (CWO) which requires those found guilty of littering to clean up public places. Vehicles used in illegal dumping may be forfeited. Buses are required to provide litter bins. Offences such as discharging a toxic substance into inland waters carry mandatory jail terms with fines of $100,000 or more[22] for second or subsequent transgressions.

Singapore's strict laws and their enforcement have ensured a low crime rate and provided a safe environment for its residents. Sound financial policies have resulted in the rapid growth of industries and service sectors that

have made major contributions to the economy. A 'clean' government has ensured that funds are available for the building of an excellent environmental infrastructure while sound land use planning policies have ensured the preservation of green areas for nature conservation and recreational use. Thus, a 'clean and green' physical environment has been secured. Indeed, in 2009, Singapore was commended for being "one of the cleanest and most welcoming cities in the world" by the World Bank in its World Development Report 2009.[23]

Singapore's environmental management system (EMS)

So how did Singapore pursue a policy of rapid industrialisation while ensuring the cleaning up of its environment? The fact is that a clean and green environment was part of the government's strategy in wooing investors in the early years following independence.[24] It may thus be said that the city-state of Singapore has an effective Environmental Management System (EMS) in place, starting with the identification of the types of industries that are allowed into the city-state and sound land use policies that determine where they are to be sited.

1. Sound Environmental Policies Implemented through Effective Institutional and Administrative Structures

The government leads environmental policy in Singapore. In the early years especially, it was very much a 'top-down' approach. Environmental matters were the province of the Ministry of Health[25] until 1972 when the Ministry of Environment (ENV) was formed.[26] It is significant that the Anti-Pollution Unit (APU) was established two years earlier in 1970 and brought under the purview of the Prime Minister's office. It was not until 1986 that the APU was merged with ENV. This is a clear indication of the importance that PM Lee placed on pollution control. On 1 July, 2002, the ENV was renamed the Ministry of Environment and Water Resources (MEWR), with two statutory boards under its purview — the National Environment Agency (NEA) and the Public Utilities Board (PUB).[27] The two statutory boards have a joint mission: "To deliver and sustain a clean and healthy environment and water resources for all in Singapore." MEWR now seeks "to manage Singapore's limited resources and address Singapore's environmental sustainability challenges through innovation, vibrant partnerships and co-operation across the 3P sectors — private, public and people."[28]

In the early years, the ENV was responsible for providing the infrastructure for environmental management, implementation and enforcement of the laws related to pollution control. ENV's Pollution Control Department managed environmental planning, working closely with other institutions to ensure that there was coordination in (i) the type of industries that were allowed to be established, (ii) where they can be sited and (iii) the control of emissions and effluents. Thus, the ENV worked closely with the Economic Development Board (EDB),[29] the Urban Redevelopment Authority (URA)[30] and the Jurong Town Corporation (JTC)[31] as well as other ministries and state agencies such as the Trade Development Board (now International Enterprise Singapore or IESingapore), the Ministry of Health (MOH), the Ministry of Manpower (MOM), the Maritime and Port Authority (MPA) as well as the Land Transport Authority (LTA). The 'command and control' approach was adopted and continues to be applied.

2. Land-use Planning

It must be emphasised that sound land-use planning plays an important role in effective environmental management. The conflict between development and conservation is particularly acute in an urban environment. Environmental considerations should therefore be incorporated in the early phases of development planning so that appropriate measures can be undertaken to address these challenges. Environmentally sensitive land-use planning provides the opportunity to institute proper measures and controls at an early stage in the development process. Chapter 10 of Agenda 21 (often referred to as 'Earth's Action Plan'), endorsed at the United Nations Conference on Environment and Development at Rio de Janiero in 1992, emphasises the importance of an integrated approach towards the planning and management of natural resources. Singapore's Master Plan, Concept Plan and Development Guide Plans ensure a comprehensive overview of land use for the entire island (Lye, 2007). These land use plans also anticipate and make provision for the city's future needs.[32]

In Singapore, pollution is controlled at the initial stages for all industries — starting first with sound land-use planning; the siting of industries in appropriate areas (highly polluting industries are located away from residential and commercial areas);[33] the mandating of pollution control studies to assess all sources of pollution; and the requirement of mitigating measures to be incorporated into the design and operation of the project.[34] Industries may also be required to self-monitor while the NEA is tasked with carrying out regular checks on source emissions and fuel

analyses. Industrial premises that are located close to residential areas and within the water catchment areas may only be occupied by clean or light industries.[35]

3. Laws, Implementation and Enforcement

Singapore has adopted the 'command and control' approach to environmental management. Thus, before a proposed development can be built, the developer must submit its building plans to the Building and Construction Authority (BCA) for approval.[36] These plans must also be submitted to and approved by various other authorities including the Fire Safety Bureau, the National Parks Board (NParks), and NEA's Central Building Plan Unit (CBPU). The CBPU scrutinises all building plans to ensure they comply with sewerage, drainage, environmental health and pollution control requirements. In particular, the CBPU will screen prospective industries to ensure that they:

- Are sited in designated industrial estates and are compatible with the surrounding land use;
- Adopt clean technology to minimise the use of hazardous chemicals and the generation of harmful wastes;
- Adopt processes to facilitate the recycling, reuse and recovery of wastes;
- Do not pose unmanageable health and safety hazards and pollution problems; and
- Install pollution control equipment that meet, discharge and emission standards.

When the factory building is completed, the CBPU will inspect the premises to check if the structure has been built in compliance with the requirements of the Sewerage, Drainage, Environmental Health, and Pollution Control Departments. The factory will only be given a Temporary Occupation Permit or a Certificate of Statutory Completion when all these conditions are met.

Next, the factory's operations must comply with the laws that govern their discharge of air emissions, trade effluent and wastes. These include the Environmental Protection and Management Act (EPMA), Environmental Public Health Act (EPHA), Sewerage and Drainage Act (SDA), Workplace Safety and Health Act (WSHA) and their subsidiary laws.[37] It should be noted that some laws reverse the onus of proof[38] and also allow a lifting of the corporate veil to enable officers and employees of a corporation to be charged for offences committed by the corporation.[39]

4. Building the Environmental Infrastructure

It must be emphasised that the best laws will not work without the provision of the environmental infrastructure — these include sewage treatment plants, scrubbers for air emissions from incinerators, air monitoring stations, effluent treatment plants, sanitary landfills and incinerators for hazardous and bio-hazardous wastes. As these require considerable capital expenditure, the provision of the physical environmental infrastructure is a constant challenge to many cities. While Singapore's economic policies have generated considerable wealth for the city-state, the judicious management of its finances by its "clean" government[40] has ensured that funds are available for the building of a first-rate environmental infrastructure. This, in itself, is an important component of sound environmental management.

Singapore has also resolved its lack of natural water resources by investing heavily in research and technology and the building of sound infrastructure for its water resources and supplies. Today, the country's water supply is derived from four different sources (the "Four National Taps") comprising water from local catchment areas, imported water (from the state of Johore in Malaysia), recycled water (called NEWater) and desalinated water.[41] Singapore also has five incinerators[42] and an offshore landfill site (NEA, 2002c), all of which were built at considerable costs. It has an efficient public transport system,[43] excellent transportation networks and telecommunication facilities.[44]

The healthier air and clean and green environment have made Singapore an increasingly popular base for foreign corporations. In contrast, despite its many advantages, increasing pollution in Hong Kong has driven investors to Singapore (Financial Times, 2006; The Stalwart, 2006). Indeed, studies have shown that good environmental governance is critical and it is "one reason why highly regulated Singapore has proven far better at combating pollution than laissez-faire Hong Kong."[45]

A healthy and pleasant living environment continues to play an important role in ensuring that Singapore remains an attractive place for investors, talented migrants and its own citizens.

Future Challenges

Singapore's environmental governance has focused on the control and management of pollution, the ensuring of a safe and reliable supply of water and the protection of its natural resources.[46] It has developed its industrial base and achieved high economic growth within a short span of four decades.

Environmental management policies were, at the outset, integrated with the economic policies of the country. Programmes were implemented to protect and clean up the environment at the early stages. Cleaning up, greening and protecting the environment were indeed a major part of Singapore's strategies for success. As stated by its first Prime Minister Lee, "In wooing investors, even trees matter."[47]

Today, the challenge of climate change looms large. There is a need to manage the rise of sea levels as well as implement strong policies on resource conservation and waste management.

This chapter now examines the government's priorities and strategies for the next 20 years under the government's Blueprint for Sustainable Development, entitled "A Lively and Liveable Singapore: Strategies for Sustainable Growth".[48] It will examine the strategies articulated, highlight the inadequacies and offer some suggestions for improvements.

The Singapore Blueprint for Environmental Sustainability

It should first be noted that the Blueprint defines "sustainable development" to mean "achieving the twin goals of growing the economy while protecting the environment in a balanced way."[49] To this, one should ask — who defines this 'balance'? Is there a role for the public here in determining what should be priorities in this context? To what extent is there public participation in environmental matters in Singapore? What laws are necessary to help achieve these objectives?

The Blueprint rightly emphasises that Singapore's resources are limited: land supply is scarce; energy, food and water have to be imported. It states that "with a small domestic market, we have to find creative ways to keep our economy growing and thriving while acting as stewards for the environment for present and future generations. Thus, a pragmatic approach has to be taken. While clear goals will be set and progress tracked, plans will have to be implemented in ways that will not sharply increase the costs for businesses, households and commuter." The government will invest SGD$1 billion over five years to support the implementation of plans in its Blueprint[50] which has identified a number of key strategies aimed at:

1. Boosting resource efficiency
2. Enhancing the living environment
3. Controlling pollution and waste management

4. Promoting clean technology and investing in research and development
5. Building capacity and encouraging public participation

These will now be briefly examined.

1. Promoting Energy Efficiency

This is targeted at different areas: industry, water, buildings, public housing and transportation.

Energy efficient industries: As the industrial sector accounts for more than 50 per cent of total national energy consumption, businesses must be encouraged to invest greater attention and resources in energy efficiency. This requires the raising of awareness on best practices, building capacity in energy management, the adoption of energy efficient designs in industrial facilities as well as energy-related benchmarking for key industrial sectors and the promotion of energy management systems within companies. A number of schemes have been devised by the NEA to assist companies[51] including helping investors with funding for new and more energy efficient facilities; co-funding energy audits and offsetting costs in the deployment of energy efficient measures as well as promoting co-generation and tri-generation technology.[52]

Enhancing Water Security and Efficiency: It is anticipated that water needs will increase as water-intensive industries such as petrochemical and wafer fabrication continue to grow. Thus, Singapore has to continuously develop alternative sources of water supply and promote water efficiency. The Blueprint has identified various additional efforts including expanding NEWater capacity to form an island-wide network of pipes while developing localised water supplies through recycling, desalination and promoting industry-led initiatives to identify areas for improvement in water conservation, starting with hotels, schools and commercial buildings. Again, some financial incentives have been provided by the State to drive these initiatives.[53]

Resource-Efficient Buildings: The Green Mark Scheme is a rating system that evaluates the environmental impact and performance of buildings via the Building Control (Environmental Sustainability) Regulations (2008). Buildings are awarded the following ratings if there is energy efficiency improvement:

- Certified Green Mark: 10 to 15 per cent improvement
- Gold Mark: 15 to 25 per cent improvement

- Gold Plus: 25 to 30 per cent improvement
- Platinum: more than 30 per cent improvement

These ratings will be implemented in various ways with incentives to cover new buildings, public sector buildings as well as existing buildings. The government will require all new buildings in key development areas[54] to achieve high Green Mark ratings (Platinum and Gold-Plus) as part of its land sales requirements.[55] These ratings will be tightened further in the longer term. Public sector buildings with more than 5,000 sqm air-conditioned floor area are required to achieve the Green Mark Platinum rating. For existing buildings, the government aims through various incentives to encourage 80 per cent to achieve the minimum Green Mark rating as this will improve energy efficiency by 5–10 per cent.

Resource-Efficient Public Housing:

The Blueprint seeks to make public housing more resource-efficient in three ways:

(a) The Housing and Development Board (HDB) will build a new generation of eco-friendly public housing, incorporating environmentally friendly features and green technology
(b) The HDB will also test-bed solar technology within 30 public housing precincts nation-wide at a cost of $31 million so as to see how it can incorporate solar technology into the design of new apartments.
(c) The HDB has embarked on projects to reduce energy consumption in existing estates by 20 to 30 per cent which include the replacement of outdoor and corridor high-energy lamps and common areas with more energy efficient lighting and lift systems.

Greener, Cleaner and More Efficient Transportation:

Singapore's roads take up 12 per cent of the total land area. The transport sector accounts for 13 per cent of the country's overall energy consumption and 50 per cent of the fine particulates (PM2.5) in the air. The Blueprint calls for a 'cleaner, greener and more efficient transport system' in four ways — by enhancing public transport, improving resource efficiency, tightening emissions regulations[56] and encouraging cycling and walking.

2. Enhancing the Quality of Life — A City of Gardens and Water

The Blueprint states that "we want to see our city nestled in greenery, our waterways come alive and our residents enjoy better access to nature and our rich biodiversity."[57] The key recommendations are:

Parks: More parks and nature-based leisure options will be created and their connectivity enhanced; sky rise greenery will be promoted including green roofs atop multi-storey car parks in public housing estates. More greenery must be provided in new developments and the URA will adopt a landscape replacement policy. All new developments in the downtown core area will have to provide landscape areas equal to the overall development site area in the form of sky-rise greenery and ground level communal landscape area.

Water bodies: The dense network of canals and waterways that have been developed to manage storm water and to meet the city state's water needs will be transformed to support recreational activities. By 2030, more than 130 projects will open up 900 ha of reservoirs and 100km of waterways for recreational uses.

Biodiversity protection and enhancement: Singapore's four legally protected nature reserves[58] and two protected national parks[59] cover more than 4.5 per cent of its land area. Due to the shortage of land, there is a constant tussle between development and conservation. The Blueprint endeavours to "keep the nature areas for as long as possible. The URA will also seek to focus on development in urbanised areas before undeveloped areas are opened up."[60] Where development must take place, measures will be undertaken to reduce the impact on biodiversity by linking parks and nature reserves with park connectors and the planting of suitable trees and shrubs to induce birds and butterflies to fly from park to park. Singapore's NParks has initiated a City Biodiversity Index, which was endorsed at the Nagoya meeting of the parties to the Convention on Biological Diversity in 2010.[61] In its application to Singapore, NParks will utilise parks for ex-situ conservation and to house or re-create ecosystems that have been lost. NParks is also studying the development of eco-links between nature reserves. The Blueprint states that "the government will take into account biodiversity issues when making decisions and adopt holistic approaches towards the conservation of our natural environment."

3. Enhancing Pollution Control and Waste Management

Air emissions will be tightened with PM2.5 (fine particles in ambient air of 2.5 micrometres or less in size) reduced from 16ug/m3 (microgram per cubic metre) in 2008 to 12ug/m3 by 2020 with the level expected to be maintained till 2030 through the introduction of vehicles using cleaner diesel fuels. The NEA also seeks to cap ambient sulphur dioxide (SO2) levels at an annual mean of 15ug/m3 in 2020 to be maintained at this level till 2030. It was recently announced that the NEA aims to raise the emission standard of petrol vehicles to Euro IV by January 2014, up from the current Euro II standard which has been in place since 2001 (Tan, 2012). The agency will work with major emitters such as oil refineries, petrochemical plants and power generation companies to use cleaner fuels and put into place more pollution control measures. Waste management and recycling are emphasised through the promotion of less packaging, the provision of financial support for recycling and the promotion of recycled products.

4. Promoting Clean Technology and Investing in R&D and Manpower

The government will invest more in developing clean technology and sustainable urban solutions as new growth areas expected to contribute to the economy. It will position Singapore as a Sustainable Development Hub, which will serve as a base for research and export of new technologies as well as an innovative thought centre on high-density living and sustainable development. The Economic Development Board (EDB) will seek to create a vibrant research environment in clean technology with considerable funds set aside for clean energy and water technology sectors, innovative design and integration of solar panels into buildings (Solar Capability Scheme) and research devoted to refinement of land use planning and high-density living.

5. Public Participation and the formation of local environmental non-governmental organisations (NGOs) will be encouraged, as well as partnerships with corporations and schools.

Evaluation and Critique

While the initiatives and strategies mentioned are highly laudable, there are two major inadequacies that need to be addressed:

1. Lack of laws mandating environmental impact studies/assessments; and
2. Lack of laws mandating recycling

1. Environmental Impact Assessments (EIA) and Public Participation

The essence of the EIA's assessment is to "Look before you Leap" which is a very important tool in planning for development projects. Environmental assessment is a process that ensures that the environmental implications are taken into account before decisions are made. It involves a series of steps to carefully analyse the potential impacts of a project on the environment. These steps include: screening, scoping, baseline studies and evaluation, impact prediction, community consultation and stakeholder engagement, mitigation, development of an environmental management plan, post-project audit and evaluation. A report must be prepared and disclosed to the public, who would be invited to give their comments in a public consultation exercise. The decision whether to proceed still lies with the government. However, this public examination and consultation will ensure that the decision is made with the fullest possible information, such that if the project is to proceed, effective mitigation measures can be implemented.[62] Many multilateral environmental instruments have called for states to implement EIAs. Principle 17 of the Rio Declaration on Environment and Development (1992) states that "environmental impact assessment as a national instrument shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority." The ASEAN Agreement on Nature and Natūral Resources (1985), the Convention on Biological Diversity (1992) and Agenda 21 (1992) which Singapore signed, ratified and endorsed respectively all emphasise the importance of EIAs and public participation.[63] The United Nations Environment Program (UNEP) which promotes the application of the EIA process in major projects has recommended that it should be used during the entire project cycle from planning through operation, to eventual closure.[64]

The nearest approximations of the EIA in Singapore are contained in sections 26 and 36 of the Environmental Protection and Management Act (EPMA). Section 26 relates to impact analysis studies of hazardous installations.[65] It empowers the Director of Pollution Control to require the owner or occupier of a hazardous installation to carry out impact analysis studies and identify all possible hazards; estimate their frequency or probability; quantify the consequences and risk levels; evaluate the effects of fires or other disasters and identify all necessary preventive measures. The Director

may also require that measures be undertaken to prevent, reduce or control potential hazards. Section 36 empowers the Director to require any person intending to carry out any activity that is "likely to cause substantial pollution" to first conduct a study on environmental pollution control and to submit a proposal for the reduction or control of pollution.

Both provisions fall short of an EIA as they focus only on industries or projects with high polluting capacity whereas EIAs require a comprehensive, integrated and detailed study of all potential impacts on the environment including ecological and sociological impacts. It is also a hallmark of EIA laws that they allow some measure of public participation, whereas sections 26 and 36 do not involve any third parties.

Environmental lawyers and planners have lamented the lack of EIA laws in Singapore.[66] Some of the controversies which raised the issue of the EIA include the following:

(1) *The 1992 proposal to convert part of the Lower Peirce Reservoir (gazetted as a nature reserve) into a golf course.* In response to calls for environmental impact studies to be undertaken, the authorities agreed to commission an EIA but declared the results to be confidential. This prompted the Nature Society to undertake and publish its own EIA Report which revealed that considerable damage to the eco-system and loss of biological diversity would ensue and would be irreparable.[67] While the project has been shelved for the time being, it is clear that such issues may well rise again in the future, and indeed it has.

(2) *Chek Jawa:* The EIA issue emerged again in 2001 with the government's proposal to reclaim a stretch of beach at Tanjong Chek Jawa on the offshore island of Pulau Ubin.[68] The proposed reclamation of Chek Jawa generated much interest and controversy. Concerned citizens, educators and non-government organisations tried hard to persuade the authorities to reverse its decision.[69] However, the Urban Redevelopment Authority maintained that reclamation would proceed. Fortunately, at the very last minute, the authorities relented and announced that Chek Jawa would not be reclaimed, at least for the next ten years. While the respite is clearly welcome, albeit for an uncertain duration, the fact remains that unlike the Lower Peirce Reservoir site, Chek Jawa was not legally protected, and the lack of any procedures for a proper EIA to be undertaken resulted in considerable damage to the eco-system, as specimens of flora and fauna were removed from the beach by members of the public with impunity. Chek Jawa is still not legally protected. With the decision not to proceed with the reclamation, NParks was placed in charge of Chek Jawa. A walkway for public viewing of the beach has since been built at a considerable expense to encourage public appreciation for this nature site and at the same time, reduce further damage to the eco-system.[70]

(3) *Bukit Brown Cemetery:* This is the latest controversy which erupted in 2012 stemming from the government's announcement that the site, which contains over 100,000 graves and is the largest Chinese cemetery outside China, was zoned for housing needs in the future. In the meantime, some 5,000 graves will be exhumed to make way for road expansion works. The Nature Society and the Singapore Heritage Society objected, maintaining that the site should be preserved as both a heritage and nature site. There was no public consultation prior to the announcement. Again, the EIA process would have required that the views of the public be sought and various alternatives to the road expansion carefully considered, such as the building of an underground tunnel or a viaduct.[71]

Today, EIAs continue to be done on an *ad hoc* basis although access has been given increasingly to non-government organisations such as the Nature Society. Announcements have been made on the Government Gazette informing readers where the EIA report can be viewed.[72] However, as there is no legislation mandating environmental impact studies, there is no system in place for the proper facilitation of such studies. There is no spelling out of the roles of the different parties, the right of the public to be informed and to be allowed to participate in the process of deliberation. This is a major inadequacy in our laws.

The challenges of further urbanisation and depletion of the natural environment have led to calls for more rigorous environmental planning procedures.[73] These include:

- Establishing a coordinating body which deals comprehensively and authoritatively with environmental planning matters;
- Establishing a definitive set of procedures that require developers and public agencies to adhere to and ensure a high degree of environmental sensitivity when undertaking major infrastructure construction;
- Ensuring the systematic collection and sharing of environmental data among the various agencies; and
- Introducing environmental impact studies as an integral part of the planning process.

There are also calls for ethical public land stewardship in Singapore, using the concept of the public trust whereby the state is viewed as a trustee of all publicly-owned lands for present and future generations of citizens, and is under an obligation to give due consideration to ecological concerns as well as facilitate public consultations in its deliberations on land use (Chun, 2005; Lye, 2010).[74] Indeed, the EIA and public participation in its deliberations should be viewed positively as a means for the authorities to obtain all relevant information so as to assist in their making of sound and reasoned decisions after considering all possible alternatives and mitigating factors. Thus, there are cogent and pressing reasons for the argument that EIAs should be legally mandated. The usual concerns that the consultative process may prolong the development and obstruct decision making can easily be resolved by clear laws and procedures with strict timelines for public consultation and feedback.

2. Lack of Laws for Recycling

There are no laws mandating recycling in Singapore which is a stark contrast to other Asian countries such as Taiwan, South Korea and Japan. The Environmental Public Health Act and its regulations govern the management of solid wastes in Singapore.[75] Refuse and garbage is collected daily by licensed general waste contractors.[76] The island is divided into nine geographical sectors and pre-qualified waste collection companies compete to provide refuse collection services for the designated domestic and trade premises. Successful bidders are awarded tenders to serve the respective sectors for a period of five to seven years. They are also required to provide door-to-door collection services for recyclable materials from households in their sectors under the National Recycling Programme.

In the case of condominiums and private apartments, the Building Maintenance and Strata Management Act[77] stipulate the need for management corporations to separate and prepare wastes for recycling. In the case of HDB apartments, a recycling bin is provided for every five blocks and these are collected every fortnight. This is clearly inadequate!

Apart from the above, there are no laws for the mandatory separation of wastes and recycling which is still voluntary. Incineration produced some 963 million kWh of electricity accounting for 2 per cent to 3 per cent of the total electricity generated in Singapore. However, more energy can be produced from incineration if wet wastes such as food and other organic wastes are first sorted out and separately treated. Legislation mandating

such practices would greatly ease the efforts of the private sector to collect and appropriately treat such wastes. There was only one plant that treated food wastes by converting them to compost through a process of bio-methanisation. It generated energy that was sold to the power grid. Regrettably, it was compelled to close down as it could not obtain sufficient food wastes.[78] This was clearly due to the lack of laws mandating the separation of wastes.

As wastes in Singapore are incinerated, thereby reducing their bulk very substantially, this may be a factor accounting for the reluctance to pass recycling laws. However it must be emphasised that the shortage of land requires that its sole offshore landfill site should be filled up as slowly as possible. Another factor is that a substantial number of apartments in Singapore are built with a private garbage chute in the kitchen area. This is a major impediment to recycling, as residents dispose of wastes in the privacy of their own homes. It would make the enforcement of recycling laws extremely difficult. In recent years, some attempts have been made to locate garbage disposal chutes in the common areas of apartments and to have separate chutes for garbage and for recyclable wastes. This is a welcome move but much more is needed. It must be emphasised that laws can still be passed for industrial and commercial buildings, restaurants and food courts. It is notable that the Blueprint does not mention that new buildings should not be built with private garbage chutes. It does not appear that there are any planning controls on this. Indeed, a new HDB estate, Casa Clementi, was built with just one garbage chute, located outside the apartments.

Conclusion

The issue of the sustainability of cities is highly complex and dependent on many factors. This chapter has examined the Environmental Management System (EMS) implemented in the city state of Singapore. Whether an EMS can be effectively implemented depends on many factors, particularly the political, social and economic contexts of that city. An effective EMS is a major step towards sustainability. It is part of good governance. Good governance also requires an honest and capable government with political will. It is submitted that while Singapore has done very well for the most part in protecting its environment and should be lauded for its honest and efficient government and administrative agencies, the lack of environmental

impact assessment (EIA) laws and absence of recycling laws are major inadequacies that should be remedied.

The authorities should view the EIA as a positive step in helping them in decision making, as the consultative process furnishes them with all relevant information. The wisdom of the EIA allows sound mitigating measures to be undertaken if the project has to proceed. It is also consistent with the wishes of a new citizenry which is better educated and takes a keener interest in the country's development and environment. This paves the way for more meaningful public participation and engagement, and is aligned with the view that the environment belongs to the citizens, with the government playing the role of a trustee for present and future generations of Singaporeans. It follows that, as beneficiaries, they ought to be consulted.

Laws should also be passed for the recycling of wastes. Only then can Singapore fully claim that it is a 'sustainable city' and that its green plans are in accord with the spirit and intent of Agenda 21, which Singapore endorsed at the United Nations Conference on Environment and Development (Earth Summit) held in Rio de Janeiro in 1992.

Endnotes

[1] That same year, the term 'eco-city' was coined with the book *Ecocity Berkeley: building cities for a healthy future*, by Richard Register. This chapter does not attempt to discuss eco-cities, as the few examples today are still in an embryonic stage. See "Sustainable Cities: Oxymoron or the Shape of the Future?", See Annissa *et al.* (2011). See also NUS (2009); Singapore (2009). Singapore and China are in collaboration to build two eco-cities in Tianjin (Sino-Singapore Tianjin Eco-City) and Nanjing (Eco-Hightech Island). See Singapore (2012); Huang (2010).

[2] According to Columbia University's Earth Institute, New York City is one of the most energy-efficient places in the United States, consuming a quarter of the national average in energy consumption and emitting a quarter of the national average of carbon dioxide. See CU (2011) and Naparstek (2009).

[3] "Lee Kuan Yew wanted Singapore to become a garden city, to soften the harshness of life in one of the world's most densely populated countries", Han *et al.* (1998: 1).

[4] See MND (n.d).

[5] "Efforts will include linking up Singapore's waterways, turning them into recreational spots and blending them in with parks and green spaces" (Lee, 2006).

[6] See Lye (2002, 2008a and 2013); Tookey (1998); and Foo *et al.* (1995).

[7] The paper states "This is our blueprint to realise this vision. It contains the strategies and initiatives we believe are needed for Singapore to achieve both economic growth and a good living environment over the next two decades." (p. 11)

[8] This blueprint was co-chaired by the two Ministers, with a three-member committee comprising the Minister for Transport, the Minister for Finance, as well as the Senior Minister for Trade and Industry. There were consultations with business and community leaders and members of the public.

[9] Singapore has added to its land area from time to time, by reclamation of land from the sea. In the 1960s, its land area was 581.5 square kilometres (224.5 sq mi).

[10] Stamford Raffles was Lieutenant-Governor of Java from 1813 to 1816 and was knighted in 1816 by the Prince Regent on his return to England. See NNDB (2012) and ERB (2012).

[11] See MPA (2009) Singapore was the world's busiest port since 1986, but it is now ranked third busiest after Shanghai and Ningbo-Zhoushan. See http://www.marineinsight.com/marine/top-10-biggest-ports-in-the-world-in-2011/.

[12] See Changi (2012).

[13] See (MOE, 1997).

[14] See (NEA, 2008/09).

[15] See MOH (2012).

[16] According to the 2012 BP Statistical Energy Survey, Singapore had a 2011 refinery capacity of 1,395,000 barrels per day, 1.5 per cent of the world total. See BP (2012) The major oil refineries in Singapore have the following capacities: ExxonMobil Jurong Island Refinery (605,000 bbl/d), Shell Pulau Bukom Refinery (500,000 bbl/d) and Singapore Refining Corporation (SRC) Jurong Island Refinery (290,000 bbl/d) (Reuters, 2011).

[17] See EDB (2012).

[18] See HDB (2012). Only Singapore citizens and permanent residents are allowed to purchase HDB apartments.

[19] See CPFB (2012).

[20] See AHI (2012).

[21] See Lye (2001; 2009).

[22] See Lye (2008).

[23] See World Bank (2009).

[24] See Lee Kuan Yew (2000).

[25] For an early history of Singapore's environmental organisation, see Chapter 2, "How it Began" in *Singapore — My Clean and Green Home,* Ministry of the Environment, 1997, published to commemorate the 25th Anniversary of the Ministry.

[26] This was the year of the United Nations Conference on the Human Environment at Stockholm meeting, attended by many heads of state, that resulted in

the Stockholm Declaration on the Human Environment and the formation of the UN Environment Programme (UNEP: 1972). Thereafter, many countries, including Singapore, set up a separate institution/ministry focusing on the environment.

[27] MEWR (2012).

[28] *Ibid.*

[29] The EDB was established in 1961 to promote industrial development by encouraging and facilitating foreign investors to locate their manufacturing in Singapore. See EDB (2012b).

[30] The URA is Singapore's national land use planning and conservation authority. It adopts a long term and comprehensive planning approach in formulating strategic plans such as the Concept Plan and the Master Plan, to guide the physical development of Singapore in a sustainable manner. See URA (2010).

[31] Singapore's first industrial estate was sited in Jurong. The JTC was established in 1968 and pioneered the building of the industrial infrastructure, producing low cost factories and housing for workers in the early years. JTC continues to play a vital role today. See JTC (2012).

[32] See URA (2012).

[33] Highly pollutive industries must be sited in specially designated areas such as Jurong Island with measures to control, manage and minimise pollution as well as to maximise industrial and technological synergies. In particular, the PCD will examine measures to control air, water and noise pollution, the management of hazardous substances, and the treatment and disposal of toxic wastes.

[34] See NEA (2002a), and Lye (2008).

[35] See NEA's Code of Practice http://app2.nea.gov.sg/codeofpractice.aspx.

[36] See *Building Control Act* (Cap. 29, 1999 Rev. Ed. Sing.).

[37] Singapore's laws, including subsidiary legislation can be found at AGC (n.d.).

[38] See s. 17 EPMA — if a toxic substance is found in the drains of a factory, the factory owner is presumed to have caused it.

[39] See s. 71, EPMA.

[40] Singapore has frequently been voted 'the least corrupt in Asia'; see *ibid.*; see Asia One (2011).

[41] See PUB (2012).

[42] See Let's Recycle (2010).

[43] See LTA (2012).

[44] See Point Topic (2011); see also IDA (2012).

[45] See TIME (2006).

[46] See also Lye (2002; 2003).

[47] Senior Minister Lee Kuan Yew on the 35th Anniversary of the Economic Development Board (August 1, 1996). See Koh Kheng Lian (n.d.).

[48] See *Sustainable Singapore* (n.d.).

[49] *Ibid.*, p. 6.

[50] *Ibid.*, p. 116.

[51] See Energy Efficient Singapore (n.d) and their publication *E2 Singapore* at Energy Efficient Singapore (n.d).

[52] See the Design for Efficiency Scheme (DfE), Energy Efficiency Improvement Assistance Scheme (EASe) and the Investment Allowance Scheme.

[53] The Water Efficiency Fund helps industries defray part of the capital costs of water recycling programmes; the Water Efficient Buildings programme encourages the use of water-efficient fittings and assists building owners in monitoring their water consumption.

[54] These include Marina Bay and the Central Business District, Jurong Gateway, Kallang Riverside and Paya Lebar Central (Blueprint, p. 47).

[55] It is unclear what will happen if these new buildings fail to achieve these ratings.

[56] Singapore will be adopting the World Health Organisation (WHO) Air Quality Guidelines (AQG) for particulate matter 10 (PM10), Nitrogen Dioxide, Carbon Monoxide and Ozone, and the WHO AQG's Interim Targets for PM2.5 and Sulphur Dioxide, as Singapore's air quality targets for 2020. See NEA (2002b).

[57] See 'Sustainable Singapore', p. 66.

[58] These are the Bukit Timah Nature Reserves, Central Catchment Nature Reserve, Sungei Buloh Wetland Reserves, and Labrador Nature Reserves. See Lye (2008b).

[59] These are the Botanic Gardens and Fort Canning Park.

[60] See 'Sustainable Singapore', p. 73.

[61] See CBD (n.d).

[62] See guidelines from the European Union; available online at http://ec.europa.eu/environment/eia/.

[63] See Article 14 of the ASEAN Agreement; Article 14 of the *CBD*; and Section III of the Agenda 21.

[64] See http://www.unep.fr/pc/pc/tools/eia.htm.

[65] The *Code of Practice on Pollution Control*, *supra* note 88 at 11, refers to Quantitative Risk Assessments ("QRA Study") without making reference to section 26 of the *EPMA*.

[66] See Foo *et al.* (1995) see Malone-Lee (2002) Lye (2010).

[67] See *Proposed Golf Course at Lower Peirce Reservoir — An Environmental Impact Assessment* (Singapore: Nature Society, 1992).

[68] "Discovered only last December, the unique mud and sand flat at Chek Jawa may be the last of its kind here. Too bad its destined for the bulldozer." See Wee (2001); see also Chun (2006), and Lye (2010).

[69] See *The Straits Times* (2001).

[70] Websites have been set up for Chek Jawa; see Chek Jawa (n.d. 2; 3).

[71] See NSS (n.d) See "Call for Moratorium over Plans for Bukit Brown" April 24, 2012; available online at http://sosbukitbrown.wordpress.com/author/bukitbrown/page/2/.

[72] See the EIA commissioned by Jurong Town Corporation, relating to the reclamation of Pulau Ular. This appeared in the Government *Gazette* on 13 July 2006, informing the public that the EIA can be viewed at their office. See *Government Gazette* (2006). See also *Habitat News* (2006). Available online at http://habitatnews.nus.edu.sg/news/pulauhantu/2006/01/call-to-view-marine-eia-for-proposed.html.

[73] See Malone-Lee (2002), see also Chun (2005), and Lye (2010).

[74] See also Lye (2010).

[75] These include the *Environmental Public Health (Public Cleansing) Regulations* (2000 Rev. Ed. Sing.); and the *Environmental Public Health (General Waste Collection) Regulations* (2000 Rev. Ed. Sing.).

[76] See NEA (n.d1)

[77] See NEA (n.d2)

[78] "Recycling firm IUT Global being wound up", 22 March 2011, *The Business Times* — IUT's owner said the only way for recycling companies to make money in Singapore is to have laws. 'We get most of our food waste from the industrial and commercial areas, but there is about 30–40 per cent impurities, such as glass and plastics, in it. Sorting out that waste only added to our labour costs, and increased our operating costs.' He earlier explained that the lack of recycling laws here also meant that IUT cannot collect from the many places that generate food waste, such as hawker centres. See http://www.timesdirectories.com/environmental/news/xxx/711763.

References

AHI (Affordable Housing Institute). "Home." 2012. Available online at http://affordablehousinginstitute.org/. Last accessed on 6 November, 2012.

Alusi, Annissa and others. *Sustainable Cities: Oxymoron or the Shape of the Future?* Boston, MA: Harvard Business School Press, 2011. Available online at http://www.hbs.edu/research/pdf/11-062.pdf. Last accessed on 6 November, 2012.

Asia One. "Singapore No Longer Top of Least-Corrupt Countries." December 2, 2011. Available online at http://news.asiaone.com/News/AsiaOne%2BNews/Singapore/Story/A1Story20111202-314074.html. Last accessed on 30 October, 2012.

BP (British Petroleum). "Statistical Review of World Energy." 2012. Available online at http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2011/STAGING/local_assets/pdf/statistical_review_of_world_energy_full_report_2012.pdf. Last accessed on 30 October, 2012.

CBD (Convention on Biodiversity). "City Biodiversity Index (or Singapore Index)." n.d. Available online at http://www.cbd.int/authorities/getting involved/cbi.shtml. Last accessed on 6 November, 2012.

Chang, Li Lin and Tommy Koh, eds. *The Little Red Dot- Reflections by Singapore's Diplomats.* Singapore: Institute of Policy Studies and World Scientific Publishing Co. Ltd, 2005.

Changi. "About Changi Airport: Awards." 2012. Available online at http://www.changiairport.com/our-business/about-changi-airport/awards. Last accessed on 29 October, 2012.

Chek Jawa. "Chek Jawa Homepage." Available online at http://chekjawa.nus.edu.sg/. Last accessed on 26 August, 2013.

_____. "Remember Chek Jawa" Available online at http://rememberchekjawa.wordpress.com/%3E. Last accessed on 26 August, 2013.

_____. "Wild Singapore." Available online at http://www.wildsingapore.com/places/cj.htm. Last accessed on 26 August, 2013.

Chun, Joseph. "Reclaiming the Public Trust in Singapore." *Singapore Academy of Law Journal* 17 (2005): 717–737.

_____. "Beyond Real Estate: Sowing the Legal Seeds for an Ethical Public Land Stewardship in Singapore." *Macquarie Journal of International and Comparative Environmental Law* 3, No. 1 (2006): 1–34.

CPFB (Central Provident Fund Board). "Overview." 2012. Available online at http://mycpf.cpf.gov.sg/CPF/About-Us/Intro/Intro.htm. Last accessed on 29 October, 2012.

CU (Columbia University). "Events: New York a Sustainable City." 2011. Available online at http://www.columbia.edu/event/new-york-city-sustainable-city-48283.html. Last accessed on 22 October, 2012.

Djoghlef, Ahmed. "Statement Made by Executive Secretary at the Convention on Biological Diversity." 2009. Available online at http://www.cbd.int/doc/speech/2009/sp-2009-02-10-cbi-en.pdf. Last accessed on 6 November, 2012.

DSS (Department of Statistics Singapore). "Statistics." 2012. Available online at http://www.singstat.gov.sg/stats/keyind.html. Last accessed on 29 October, 2012.

Dubois-Taine, Genevieve. "Introduction." In *Cities of the Pacific Rim — Diversity and Sustainability*, edited by Genevieve Dubois-Taine and Christian Henriot. Paris: Institut Des Sciences De L'homme, 2002.

EC (European Commission). "Environmental Assessment." 2012. Available online at http://ec.europa.eu/environment/eia/. Last accessed on 6 November, 2012.

EDB (Economic Development Board). "Why Singapore." 2012a. Available online at http://www.edb.gov.sg/content/edb/en/why-singapore.html. Last accessed on 6 November, 2012.

———. "About." 2012b. Available online at http://www.edb.gov.sg/content/edb/en/about-edb.html. Last accessed on 29 October, 2012.

Energy Efficient Singapore. "Home." Available online at http://app.e2singapore.gov.sg/. Last accessed on 19 August, 2013.

———. "E2 Singapore." Available online at http://app.e2singapore.gov.sg/DATA/0/docs/Booklet/E2S%20Publication.pdf. Last accessed on 19 August, 2013.

ENV (Ministry of the Environment), Government of Singapore. "Singapore — My Clean & Green Home." 1997.

ERB (Encyclopedia Britannica Online). "Sir Stamford Raffles." 2012. Available online at http://www.britannica.com/EBchecked/topic/489451/Sir-Stamford-Raffles. Last accessed on 23 October, 2012.

Financial Times. "Hedge Funds Flee Hong Kong Pollution for Singapore." *Financial Times*, 2006.

Foo Kim Boon, Lye Lin Heng and Koh Keng Lian. "Environmental Protection — the Legal Framework." In *Environment and the City — Sharing Singapore's Experiences and Future Challenges*, edited by Ooi Giok Ling. Singapore: Institute of Policy Studies, Times Academic Press, 1995.

Government Gazette. July 13, 2006. Available online at http://www.egazette.com.sg/Document/gg/2006/065016.pdf.

Habitat News. "Call to view the marine EIA for proposed reclamation works at Pulau Ular." January 13, 2006. Available online at http://habitatnews.nus.edu.sg/news/pulauhantu/2006/01/call-to-view-marine-eia-for-proposed.html. Last accessed on 26 August, 2013.

Hall, Peter. *Cities of Tomorrow*. Oxford: Blackwell, 1996.

Han Fook Kwang, Warren Fernandez and Sumiko Tan. *Lee Kuan Yew: The Man and His Ideas*. Singapore: Singapore Press Holdings, 1998.

Hardoy, Jorge E., Diana Mitlin and David Satterthwaite. "Sustainable Development and Cities." In *Environmental Problems in Third World Countries*. London: Earthscan Publications, 1992.

HDB (Housing and Development Board). "HDB History." 2012. Available online at http://www.hdb.gov.sg/fi10/fi10320p.nsf/w/AboutUsHDBHistory?OpenDocument. Last accessed on 29 October, 2012.

Huang, Jo-ann. "Singapore-Nanjing Eco High-Tech Island to Attract More Foreign Investment." *channelnewsasia.com*, 2010. Available online at http://www.channelnewsasia.com/stories/singaporebusinessnews/view/1075103/1/.html. Last accessed on 22 October, 2012.

IDA (Infocomm Development Authority of Singapore). "About Us." 2012. Available online at http://www.ida.gov.sg/About-Us.aspx. Last accessed on 6 November, 2012.

IFC-World Bank. "Economy Rankings Benchmarked to June 2011." 2012a. Available online at http://www.doingbusiness.org/rankings. Last accessed on 30 October, 2012.

IFC-World Bank. "Doing Business 2010: Reforming through Difficult Times." 2012b. Available online at http://www.doingbusiness.org/rankings. Last accessed on 6 November, 2012.

JTC (Jurong Town Corporation). "About JTC: Our History." 2012. Available online at http://www.jtc.gov. sg/About-JTC/Pages/Our-History.aspx. Last accessed on 30 October, 2012.

Koh, Kheng Lian. "Garden City to Model Green City." ESCAP Virtual Conference. Available online at http://www.unescap.org/drpad/vc/conference/bg_sg_14_gcm.html. Last accessed on 1 September, 2012.

Lee, Kuan Yew. *From Third World to First — The Singapore Story: 1965–2000 — Singapore and the Asian Economic Boom*. New York: Harper Collins Publishers, 2000.

———. "Greening Singapore." Chap. 13 In *From Third World to First: The Singapore Story: 1965–2000*. New York: Harper Collins Publishers, 2000.

Lee, Lynn. "PM's Call: Make Singapore a City of Gardens and Water." *The Straits Times*, 2006.

Let's Recycle. "Singapore's Tuas Incinerator officially opened." August 4, 2010. Available online at http://www.letsrecycle.com/news/special-reports/singapores-tuas-incinerator-officially-opened. Last accessed on 19 August, 2013.

LTA (Land Transport Authority). "Home." 2012. Available online at http://www.lta.gov.sg/content/ltaweb/en.html. Last accessed on 30 October, 2012.

Lye, Lin-Heng. "Transport-Based Air Pollution Management — The Singapore Experience." *Asia Pacific Journal of Environmental Law* 6, No. 3 (2001): 333–348.

———. "Singapore." In *Environmental Law and Enforcement in the Asia-Pacific Rim*, edited by Terri Mottershead. 395–434. Hong Kong: Sweet & Maxwell, 2002.

———. "Environmental Pollution Laws in Singapore." *American Bar Association Newsletter*, Section on Environment, Energy & Resources, Special Issue on Environmental Protection in the Asia-Pacific Region, February 2003.

———. "Land Use Planning, Environmental Management and the Garden City as an Urban Development Approach in Singapore." Chap. 21 In *Land Use for Sustainable Development Series*, edited by Patricia Kameri-Mbote, Nathalie J. Chalifour, Lin Heng Lye and John R. Nolon. 374–396. New York: Cambridge University Press, 2007.

———. "A Fine City in a Garden-Environmental Law and Governance in Singapore." *Singapore Journal of Legal Studies* (2008a): 68–117.

———. "Nature Conservation Laws — the Legal Protection of Flora and Fauna in Singapore." In *Singapore Red Data Book*. 2008b.

———. "Environmental Law, Singapore." In *Kluwer International Encyclopedia of Laws* (2008c) edited by Roger Blanpain, pp. 1–128. New York: Watter Kluwer, 2013.

———. "Environmental Taxation in the Management of Traffic in Singapore." In *Critical Issues in Environmental Taxation: International and Comparative Perspectives*, edited by Janet E. Milne, Lin-Heng Lye, Hope Ashiabor, Kurt Deketelaere and Larry Kreiser. Oxford: Oxford University Press, 2009.

———. "Land Law and the Environment: Re-Examining the Concept of Ownership and Forging New Rights and Obligations in a Changed World." *Singapore Academy of Law Journal* (2010): 189–228.

Malone-Lee, Lai Choo. "Environmental Planning." In *Capacity Building for Environmental Law in the Asian and Pacific Region — Approaches and Resources*, edited by Nicholas A. Robinson, Koh Kheng-Lian and Donna G. Craig, pp. 606–615. Manila: Asian Development Bank, 2002.

MEWR (Ministry of Water and Environment), Government of Singapore. "About Us." 2012. Available online at http://app.mewr.gov.sg/web/Contents/Contents.aspx?Id= 189. Last accessed on 6 November, 2012.

MEWRND (Ministry of the Environment and Water Resources and Ministry of National Development), Government of Singapore. "A Lively and Livable Singapore: Strategies for Sustainable Growth." 2009. Available online at http://app.mewr.gov.sg/data/ ImgCont/1292/sustainblebluepr int_forweb.pdf. Last accessed on 23 October, 2012.

MND (Ministry of National Development), Government of Singapore. "From Garden City to City in a Garden." Available online at http://www.mnd.gov.sg/MNDAPPImages/About%20Us/From%20Garden%20City%20to%20City%20in%20a%20Garden.pd. Last accessed on 23 October, 2012.

MOH (Ministry of Health), Government of Singapore. "Our Healthcare System." 2012. Available online at http://www.moh.gov.sg/content/moh_web/home/our_healthcare_system.html. Last accessed on 6 November, 2012.

———. "Population and Vital Statistics." 2013. Available online at http://www.moh.gov.sg/content/moh_web/home/statistics/Health_Facts_Singapore/Population_And_Vital_Statistics.html. Last accessed on 24 August, 2013.

MPA (Maritime and Port Authority). "Premier Hub Port." 2009. Available online at http://www.mpa.gov.sg/sites/maritime_singapore/what_is_maritime_singapore/premier_hub_port.page. Last accessed on 20 October, 2012.

Naparstek, Aaron. "New York City Wins the 2009 Sustainable Transport Award." *Streetsblog.org*, January 13, 2009. Available online at http://www.streetsblog.org/2009/01/13/new-york-city-wins-the-sustainable-transport-award/. Last accessed on 22 October, 2012.

NEA (National Environment Agency). "Code of Practice on Pollution Control." 2002a. Available online at http://app2.nea.gov.sg/data/cmsresource/20090312534898283541.pdf. Last accessed on 6 November, 2012.

———. "Singapore to Adopt Higher Air Quality Targets." 2002b. Available online at http://app2.nea.gov.sg/news_detail_2012.aspx?news_sid=20120823135426553232. Accessed on 6 November, 2012.

———. "Semakau Landfill." 2002c. Available online at http://app2.nea.gov.sg/semakaulandfill.aspx. Accessed on 6 November, 2012.

———. "Annual Report." 2008/2009. Available online at http://web1.env.gov.sg/cms/ar2009/content/nea-annual_report.pdf. Last accessed on 29 October, 2012.

———. "Code of Practice for Licensed General Waste Collectors." Available online at http://www.nea.gov.sg/cms/esd/cop_general_waste_collector.pdf. Last accessed on 6 November, 2012.

———. "Guidebook on Setting up Structured Waste Recycling Programme in Condominiums and Private Apartments."

NNDB. "Sir Stamford Raffles." 2012. Available online at http://www.nndb.com/people/709/000104397/. Last accessed on 23 October, 2012.

NSS (Nature Society Singapore). "Nature Society (Singapore)'s Position on Bukit Brown." n.d. Available online at http://www.nss.org.sg/documents/Nature%20Society's%20Position%20on%20Bukit%20Brown.pdf. Last accessed on 6 November, 2012.

———. *Proposed Golf Course at Lower Peirce Reservoir — an Environmental Impact Assessment*. Singapore: The Nature Society, 1992.

NUS (National University of Singapore). "Centre for Sustainable Asian Cities." Singapore: School of Design and Environment, 2009. Available online at http://www.sde.nus.edu.sg/csac/index.htm. Last accessed on 22 October, 2012.

Point Topic. "Broadband Operators and Tariffs." October 4, 2011. Available online at http://point-topic.com/content/operatorSource/profiles2/singapore-broadband-overview.htm. Last accessed on 19 August, 2013.

PUB (Public Utilities Board). "Overview." 2012. Available online at http://www.pub.gov.sg/water/Pages/default.aspx. Last accessed on 30 October, 2012.

Register, Richard. *Ecocity Berkeley: Building Cities for a Healthy Future*. Berkeley, CA: North Atlantic Books, 1987.

Reuters. "Factbox: Major Oil Refiners in Southeast Asia." May 13, 2011. Available online at http://www.reuters.com/article/2011/05/13/us-refiners-seasia-factbox-idUSTRE74C0PV20110513. Last accessed on 29 October, 2012.

Satterthwaite, David. "Cities as Solutions in an Urbanizing World, UN Centre for Human Settlements." In *The Earthscan Reader in Sustainable Cities*, edited by David Satterthwaite. Oxford: Blackwell, 1999.

———. "Sustainable Cities or Cities That Contribute to Sustainable Development?" In *The Earthscan Reader in Sustainable Cities*, edited by David Satterthwaite. Oxford: Blackwell, 1999b.

SHS (Singapore Heritage Society). "SHS Response to Announced Road Alignment at Bukit Brown." 2012. Available online at http://www.singaporeheritage.org/?p=2346. Last accessed on 6 November, 2012.

Singapore. "Centre for Livable Cities." 2009. Available online at http://www.clc.gov.sg/AboutUs/Aboutclc.htm. Accessed on 22 October, 2012.

———. "Statistics." 2011. Available online at http://www.singstat.gov.sg/stats/keyind.html#popnarea. Accessed on 6 November, 2012.

———. "Tianjin Eco-City." 2012. Available online at http://www.tianjinecocity.gov.sg/. Last accessed on 22 October, 2012.

Straits Times. "Chek Jawa's Natural Beach Should Be Preserved." July 16, 2001. Available online at http://www.ecologyasia.com/news-archives/2001/jul-01/straitstimes.asia1.com.sg_forum_story_0,1870,57586,00.html. Last accessed on 6 November, 2012.

Sustainable Singapore. "What is Sustainable Development?" Available online at http://app.mewr.gov.sg/web/Contents/ContentsSSS.aspx?ContId=1034. Last accessed on 19 August, 2013.

Tan, Christopher. "Singapore to Raise Vehicle Emission Standard." *The Jakarta Post*, August 9, 2012. Available online at http://www.thejakartapost.com/news/2012/08/09/singapore-raise-vehicle-emission-standard.html. Last accessed on 6 November, 2012.

The Stalwart. "Hong Kong Pollution Sends Expats to Singapore." May 23, 2006. Available online at http://www.thestalwart.com/the_stalwart/2006/05/hong_kong_pollu.htm. Last accessed on 30 October, 2012.

TIME. "Asia's Environment — Visions of Green." October 2, 2006.

Tookey, Douglas. "Singapore's Environmental Management System: Strengths and Weaknesses and Recommendations for the Years Ahead." *William & Mary Environmental Law and Policy Review* 23, No. 1 (1998): 169–270.

UN (United Nations). "Report of the World Commission on Environment and Development — Our Common Future." 1987.

UNEP (United Nations Environment Programme). "The 10yfp Adopted at Rio+20." n.d. Available online at http://www.unep.fr/scp/. Last accessed on 6 November, 2012.

———. "Declaration of the United Nations Conference on the Human Environment." 1972. Available online at http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97&articleid=1503. Last accessed on 29 October, 2012.

UN-Habitat. "Habitat Debate." Available online at http://www.unhabitat.org/categories.asp?catid=9. See also http://www.unhabitat.org/pmss/searchResults.aspx?sort=relevance&page=search&searchField=title&searchstring=habitat+debate&x=26&y=9. Last accessed on 23 August, 2013.

URA (Urban Redevelopment Authority). "About Us: Introduction." 2010. Available online at http://www.ura.gov.sg/about/ura-intro.htm. Last accessed on 30 October, 2012.

———. "Publications: Overview." 2012. Available online at http://www.ura.gov.sg/publications/. Last accessed on 30 October, 2012.

Wee, Lea. "Chek out this Hidden Eden." *The Straits Times*. July 8, 2001. Available online at http://chekjawa.nus.edu.sg/articles/AG/AGart-ref.htm#3. Last accessed on 18 August, 2013.

World Bank. "World Development Report." 2009. Available online at http://siteresources.worldbank.org/INTWDR2009/Resources/4231006-1225840759068/WDR09_01_Overviewweb.pdf. Last accessed on 6 November, 2012.

Judicial Commissions and Climate Justice in Pakistan

Dr. Parvez Hassan

A paper presented at the Asia Pacific Judicial Colloquium on Climate Change: Using Constitutions to Advance Environmental Rights and Achieve Climate Justice, Pearl Continental Hotel, Lahore, Pakistan, 26-27 February 2018

Table of Contents

Judicial Commissions and Climate Justice in Pakistan [*]

Dr. Parvez Hassan[**]

Pakistan has a remarkable story in its efforts for environmental protection, sustainable development and climate justice. Beyond the stellar leadership provided by Pakistan as Chair of G77 at the Earth Summit in Rio de Janeiro, Brazil in 1992,[1] its superior judiciary has been the centre-piece for providing direction and a national compass. The judiciary did this with innovative interpretation and totally undeterred by the lack of the right to the environment as a fundamental right in the country's Constitution. It has progressed from an ownership of the precautionary principle in the Shehla Zia case in 1994[2] to a bold declaration of environmental justice and climate justice in the Asghar Leghari case in 2018[3]. It has done so with the support of judicial commissions and implementation bodies that it now routinely appoints in complex environmental issues. I have been involved to head twelve (12) of these – ranging from examining the degradation of water quality by coal-mining activities, to solid waste management, clean air, smog, heritage public park, hospital waste, Islamabad's environment, climate change, houbara bustard and child care. My presentation here today is the telling of that remarkable story.

A. Constitutional Foundations of Fundamental Rights

The Constitution of the Islamic Republic of Pakistan, 1973 (the "Constitution"), includes a catalogue of "Fundamental Rights" for the enjoyment and protection of which any person can directly approach the High Courts under its Article 199. The Constitution affirms that this justiciable character of fundamental rights "shall not be abridged" (Article 199(2)). The fundamental rights include Article 9 which deals with the right to life and Article 14 that provides for the dignity of man:

> 9. Security of person. No person shall be deprived of life or liberty save in accordance with law.
>
> 14. Inviolability of dignity of man etc. (1) The dignity of man and, subject to law, the privacy of home, shall be inviolable….

[*] A paper presented at the Asia Pacific Judicial Colloquium on Climate Change: Using Constitutions to Advance Environmental Rights and Achieve Climate Justice at Pearl Continental Hotel, Lahore, Pakistan, 26-27 February 2018. This presentation is a part of the author's book, Resolving Environmental Disputes in Pakistan: The Role of Judicial Commissions, under publication by Pakistan Law House (2018).

[**] B.A. (Punjab), LL.B. (Punjab), LL.M. (Yale), S.J.D. (Harvard), Senior Partner, Hassan & Hassan (Advocates), Lahore, Senior Advocate, Supreme Court of Pakistan, President, Pakistan Environmental Law Association, and former Chairman, World Commission on Environmental Law, IUCN.

[1] See, generally, Parvez Hassan, (1) U.N Summit on Environment: The Rio Declaration, The Nation, 15 May 1992, (2) Rio '92 – Prospects and Challenges, The Nation, 9 June 1992, (3) Environment: Time for Action, The Dawn, 24 August 1992, and (4) The Rio Summit: An Assessment, The Nation, 25 August 1992.

[2] PLD 1994 Supreme Court 693.

[3] Lahore High Court Writ Petition 25501 of 2015.

Article 184(3) of the Constitution even empowers the Supreme Court of Pakistan to directly take up matters involving the enforcement of any of the fundamental rights if it considers that such enforcement involves a question of public importance.

There is no Article in the Constitution that frames the "right to the environment" as a fundamental right. The reference to "environmental pollution and ecology" in Item 24 of the Concurrent Legislative List enabled both federal and provincial legislative competence. But the Concurrent List was deleted under the 18th Constitutional Amendment in 2010 leaving environmental matters almost solely within provincial domains.

B. Growing Practice of Appointing Commissions in Public Interest Environmental Litigation

The Pakistani judiciary has, in the past over twenty five (25) years, developed a dense jurisprudence of public interest environmental litigation ("PIEL") to enforce the constitutionally protected Fundamental Rights of the public.[4]

The need, rationale and justification for developing the PIEL jurisdiction has been explained by Mr. Justice Tassaduq Hussain Jillani in State vs. M.D. WASA:

> The rationale behind public interest litigation in developing countries like Pakistan and India is the social and educational backwardness of its people, the dwarfed development of law of tort, lack of developed institutions to attend to the matters of public concern, the general inefficacy and corruption at various levels. In such a socio-economic and political milleu, the non-intervention by Court in complaints of matters of public concern will amount to abdication of judicial authority.[5]

In the landmark PIEL decision in Shehla Zia vs. WAPDA,[6] the Supreme Court of Pakistan held that the right to a clean and healthy environment was part of the Fundamental Right to Life guaranteed by Article 9 and the Right to Dignity guaranteed by Article 14 of the Constitution. In this case, the Supreme Court also introduced the Precautionary Principle of environmental law, included in the Rio Declaration,[7] into Pakistani jurisprudence.

Over the years in dealing with environmental cases, the superior courts of Pakistan have adopted a unique and innovative approach of appointing Commissions to investigate the issues and to make recommendations. This pioneering corpus of practice has come mostly from the vision of

---

[4] For a detailed survey of public interest litigation in Pakistan, see Werner Menski, Ahmad Rafay Alam and Mehreen Raza Kasuri, Public Interest Litigation in Pakistan (Pakistan Law House, Karachi, 2000), Mansoor Hassan Khan, The Concept of Public Interest Litigation and its Meaning in Pakistan, PLD 1992 Journal 84, and Parvez Hassan, "Judiciary Leading the Way" (1998) 15(1) The Environmental Forum 48. For a general review of trends, in respect of public interest litigation, in the region, see Dr. Parvez Hassan and Azim Azfar "Securing Environmental Rights Through Public Interest Litigation in South Asia" (2004) 22 Virginia Environmental Law Journal 215. Jona Razzaque, Public Interest Environmental Litigation in India, Pakistan and Bangladesh (Kluwer 2004) provides a seminal over-view of this subject.

[5] 2000 CLC 471 (Lahore).

[6] Supra note 2.

[7] The Rio Declaration on Environment and Development was adopted at the 1992 United Nations Conference on Environment and Development.

Justices Saleem Akhtar and Tassaduq Hussain Jillani (we environmental lawyers call them "green" Judges). In 2011, the Chief Justice of Pakistan, Mr. Justice Iftikhar Muhammad Chaudhry, led a bench of the Supreme Court to endorse the practice of looking to Commissions/Committees for mediating environmental disputes. And, in a yet more recent case, in 2015, Mr. Justice Mansoor Ali Shah, the then Green Judge of the Lahore High Court, got international attention when he appointed a Climate Change Commission to facilitate the implementation of the National Climate Change Policy. He followed by appointing the Houbara Bustard Commission, the Smog Commission and the Child Care Commission.

I have had the privilege of being associated with most of the important environmental cases in which judicial commissions and implementation bodies were appointed in Pakistan. The eloquent story of PIEL in Pakistan, from 1991 to date, has unfolded to the following details:

1. The Asphalt Plants Case (1991)

The first appointment of a Commission in the field of environment in the country in a public interest litigation was most probably in United Welfare Association, Lahore vs. Lahore Development Authority (Writ Petition No. 9297 of 1991) before Mr. Justice Khalil-ur-Rahman Khan of the Lahore High Court. The intervention of the court was sought for getting certain asphalt plants removed from the Petitioners' sites in Lahore on account of serious health hazards the plants were posing for the residents. Dr. Justice Nasim Hasan Shah comments on this case:

> The anxiety felt by the Court on hearing this complaint is manifest from the order it passed on 15 October 1991. Herein after noticing the contention of the petitioner it not only called upon the Lahore Development Authority to answer the allegations contained in the petition but also requested a renowned environmentalist namely Dr. Parvez Hassan, Advocate to visit the area "to verify the complaint made and then suggest to the Court the measures to be adopted".[8]

I visited the area, with scientific support from Pakistan Council of Scientific and Industrial Research (PCSIR), and reported to the Lahore High Court that:

> The air-borne pollutants, from the operational activity of the plant, are dispersed over a large area. ... [and that these pollutants were emitting] toxic substances like sulphur dioxide, nitrogen oxides, hetrocyclic compounds and hydrocarbons besides colossal quantities of air-borne fine dust emitted through the crush unloading at the site and during its processing at the plant.

I recommended to the Court that:

> The continued operation of these plants is inconsistent with the rights of the adjoining residential areas to a clean and healthy environment. The residents are continually exposed to the obnoxious fumes and the potential health hazards unleashed by these asphalt plants. These should be removed from the site and relocated in areas where there is no danger to the environment. Even at the reallocated sites, the activities of the plants

[8] Environment and the Role of the Judiciary, PLD 1992 Journal 21, at 27.

should be monitored with a view to minimize the impact of their environmental degradation.

As a result of this report, the Director General, Lahore Development Authority, passed orders for the shifting of the asphalt plants.

2. The Shehla Zia Case (1994)

In the Shehla Zia case, in which I was counsel to the petitioner, the Supreme Court was presented a unique petition when some residents of a residential area of Islamabad approached the Court regarding the construction of a high voltage grid station by the Water and Power Development Authority (WAPDA). The residents, led by Ms. Shehla Zia, apprehended that the electro-magnetic radiation of the grid station could be harmful for their health.

In adjudicating this case, the Supreme Court pioneered the use of judicial commissions in Pakistan to tackle complex environmental issue and to present suitable options. In its order, the Supreme Court gave significant relief to the petitioners by staying the construction of the grid station until further studies were done to establish the nature and extent of the threat posed by electro-magnetic radiation emitted by power plants. Drawing on the experiences of the Indian courts, the Supreme Court set up a commission of experts to study the technical dimensions and to submit a report in this respect:

> 16. In the problem at hand the likelihood of any hazard to life by magnetic field effect cannot be ignored. At the same time the need for constructing grid stations, which are necessary for industrial and economic development, cannot be lost sight of. From the material produced by the parties it seems that while planning and deciding to construct the gird station WAPDA and the Government Department acted in a routine manner without taking into consideration the latest research and planning in the field nor any thought seems to have been given to the hazards it may cause to human health. In these circumstances, before passing any final order, with the consent of both the parties we appoint NESPAK as Commissioner to examine and study the scheme, planning, device and technique employed by WAPDA and report whether there is any likelihood of any hazard or adverse effect on health of the residents of the locality… as suggested above (emphasis added).[9]

The public utility concerned was also directed to make a public-friendly administrative approach a norm in its future work. The Shehla Zia case unleashed a new paradigm in public interest litigation on environmental issues in Pakistan as the superior courts grew more receptive to appointing Commissions to progress environmental rights.[10]

3. The Salt Miners Case (1994)

In 1995, the Supreme Court appointed a Commission, with me as the Chairman, in General Secretary, West Pakistan Salt Mines Labour Union (CBA) Khewra, Jhelum vs. Director,

[9] Supra note 2, at 715.

[10] See generally Parvez Hassan, "Shehla Zia vs. WAPDA: Ten Years Later", PLD 2005 Journal 48, also published in International Environmental Law Committee Newsletter of the American Bar Association's Section on Environment, Energy and Resources 13-19 (May 2005).

Industries and Mineral Development, Punjab, Lahore,[11] to visit the site of extensive mining activity and to recommend remedial measures. The Commission was given powers to inspect, record evidence and examine witnesses under the Civil Procedure Code.

The Commission visited the site in Khewra, Jehlum, held public meetings and made several recommendations which were adopted by the Commission by consensus to their acceptance by the Supreme Court[12].

As counsel of the petitioners in the Shehla Zia case, and the Chairman of the Commission appointed in the Salt Miners case, I had a hand in shaping the orientation of the Pakistani courts to the use of judicial commissions in public interest environmental litigation. The basic approach that was followed was to recommend to the court how commissions, in other countries, have helped provide science/technology-based solutions which lie outside the expertise of the Courts. Apart from providing the court expert guidance, the other limb of this approach was to highlight the importance of a non-adversarial, public-private partnership model for handling the most intractable civic problems.

The pattern of appointing court-empowered expert commissions with broad participation of the stakeholders and involving site visits and public hearings and "consensus" recommendations adopted in this case was to imprint on the future environmental commissions in the country.

4. The Solid Waste Management Commission (2003)

In 2003, in an intra-court appeal, City District Government vs. Muhammad Yousaf,[13] challenging the use of a site for dumping solid wastes, a Division Bench of the Lahore High Court appointed the Solid Waste Management Commission to review the suitability of Mahmood Booti as a site for solid waste disposal. The Court also directed the Commission to advise on the optimal environmentally appropriate manner for the disposal of solid wastes in Lahore as well as to recommend other sites for the disposal of solid wastes as per Lahore's requirements.

I was appointed the Chairman of the Commission comprising, on my recommendation, a broad section of representatives from both the public and private sectors. This roundtable included government officials and city administrators including the District Nazim (the Mayor of Lahore), the District Co-ordination Officer, the Director, Solid Waste Management, Government of Punjab, Director General, EPA, Punjab, Secretary, Health, Punjab, academics and scientists, parliamentarians, specialists, environmentalists, and members of civil society (representatives of IUCN Pakistan and WWF-Pakistan). The Commission set up a sub-committee for hospital waste

[11] 1994 SCMR 2061.

[12] Order of the Supreme Court dated 8 July 2002 in HRC No. 120 of 1993 included the direction that:

> …. recommendations of the Commission shall be complied with in letter and spirit by the lease holder of the mines and no violations shall take place on the respective sites.

In April 2015, the Supreme Court, through its order dated 7 April 2015 in HRC No. 120 of 1993, appointed another Commission to verify the implementation of the recommendations of the earlier 1994 Commission.

[13] I.C.A No. 798 of 2002 filed before the Lahore High Court.

disposal under the Provincial Secretary, Health, who is in charge of all the public sector hospitals. It is also a reflection of the public-private sector partnership and harmonious working of the Commission that it persuaded the City District Government Lahore to arrange and finance the Environmental Impact Assessment ("EIA") of Mahmood Booti by NESPAK, a consultancy firm chosen by the Commission.

As in the Salt Miners case, the Commission was successful in orchestrating a consensus of the members of the Commission in their final recommendations which were accepted by the High Court.[14]

On 23 March 2005, Lahore inaugurated the construction of its first integrated compost and landfill plant at Mahmood Booti and the plant was commissioned one (1) year later with private sector participation on a build, operate and transfer basis. According to The News, "Lahore's first compost plan will transform around 20 percent of the city's solid waste into 250 tonnes of organic fertilizer on a daily basis".[15] The Solid Waste Management Commission moved with dedication and resolve to provide a model environmentally appropriate solid waste disposal regime for Lahore, hopefully to be replicated in other parts of the country.[16]

5. The Lahore Clean Air Commission (2003)

In Syed Mansoor Ali Shah vs. Government of Punjab,[17] The Lahore High Court appointed, in July 2003, a Lahore Clean Air Commission, also chaired by me and co-chaired by the Advocate General, Punjab, to recommend measures for the improvement of Lahore air quality. This Commission, on my request, similarly included representatives from both the private and public sectors including the City District Government Lahore. It set up sub-committees with respect to (1) clean fuel, (2) rickshaws, (3) public transport and (4) coordination with local councils. The Rickshaws sub-committee, for example, worked under the chairmanship of the Provincial Secretary, Environment, and the Clean Fuel sub-committee worked under the chairmanship of the District Coordination Officer, Lahore. Syed Mansoor Ali Shah, the coordinator of both this and the Mehmood Booti Commission, chaired the sub-committee on public transport and held public hearings at the City Government conference room. All the oil companies were invited by the Clean Fuel sub-committee to assist the work of the Commission.

The Lahore Clean Air Commission similarly finalized its Report on 21 May 2005 with a developed consensus of all stakeholders including the manufacturers and users of public transport and rickshaws. These recommendations, including of four stroke engines for rickshaws and CNG use, were filed in the Lahore High Court. In 2006, the Secretary, Transport, Government of Punjab, joined in supporting the recommendations of the Commission before the Lahore High Court.

[14] Order of the Lahore High Court dated 25 January 2005 in I.C.A No. 798 of 2002.
[15] Aoun Sahi, The News on Sunday (9 April 2006).
[16] It was a measure of the gratitude of the city of Lahore for the work and role of the Solid Waste Management Commission that the speakers at the commissioning of the Plant acknowledged the pivotal role of the Commission in forging a science-based consensus on an acrimonious issue and thereby avoiding long years of litigation and appeals.
[17] Writ Petition No. 6927 of 1997 filed before the Lahore High Court.

The Lahore High Court adopted the recommendations of the Commission. It went further. In order to ensure the implementation of the recommendations of the Commission, Mr. Justice Hamid Ali Shah directed the establishment of a Standing Body of the Commission, with me as Chair, to remain operational till the implementation of the recommendations of the Commission.[18] In this manner, the Court also provided a means for ensuring compliance and enforcement of PIEL judgments.

6. The Lahore Canal Road Mediation Committee (2011)

In May 2006, the Traffic Engineering and Planning Agency ("TEPA") of the Lahore Development Agency began preparations to cut down trees along the Lahore Canal Road in order to widen it for the purposes of reducing congestion. The move was resisted by a civil society organization by the name of the Lahore Bachao Tehreek ("LBT"). LBT's activism secured an EIA of the road widening project. The LBT challenged the approval given to the EIA by the EPA, Punjab but the case remained pending in the Lahore High Court. In 2009, when the provincial government sought to proceed with the road widening project, the Supreme Court took suo motu notice[19] of the environmental harm that would result in the felling of trees. On 14 February 2011, the Supreme Court appointed me as the mediator between the LBT and the Government of Punjab with powers to associate others for the purposes of the mediation.

By now, I had developed a successfully-experienced criteria for the appointment of Commissions. One, it must include the highest level Governmental functionaries who will ultimately be responsible for the implementation of the proposals of the Commission. Two, a member of the Provincial or National Assembly elected from the area under consideration by the Commission adds to the focus of the Commission. Three, experts must be included from Universities or with well-recognized specializations. Four, representation from civil society organizations active in the field helps the work of the Commission in their respective fields. I have always included IUCN Pakistan, WWF-Pakistan, Sustainable Development Policy Institute (SDPI) and LEAD Pakistan in most Commissions that I head. I have held leadership positions in each of these organizations in the past and receive utmost co-operation and support from them. Five, a well-regarded member of the media helps in disseminating the work of the Commission. But above all is the consideration that each member of the Commission must bring unchallenged integrity to his work in the Commission. I used this criteria to request eight (8) eminent citizens, elected representatives and government officials, representing the cross-section of stakeholders to participate as a Committee.

The Committee held its four (4) meetings in an open and informal manner at the Beaconhouse National University ("BNU") and the Lahore University of Management Sciences ("LUMS") in Lahore to enable their students and faculty to participate in a dispute resolution effort impacting on the city of Lahore. Resultantly, the participants at these meetings included students and faculty members not only from LUMS and BNU, but also from Kinnaird College, Lahore and the Lahore School of Economics. Comments from the public were also invited. Mian Amer Mahmood, a former Nazim (Mayor) of Lahore, participated in the public hearings. Moreover, the Committee made a site visit which extended from Jallo Mor on the Canal to Thokar Niaz Beg so as to give the Committee members an opportunity to view and appreciate the entire stretch of the Canal.

[18] PLD 2007 Lahore 403, at 422.
[19] Suo Motu Case No. 25 of 2009.

The Commission also involved eight (8) experts in its work. The experts helped the Committee, among others, in developing the understanding of the botanical and horticultural characteristics of the natural environment along the canal as well as the international standards of road safety.

The Report of the Committee was finalized on 14 May 2011. The Committee approached its mandate with a view to protecting and sustaining the heritage of the Lahore Canal. The Committee felt responsible for preserving this heritage for future generations. It was mindful of the jurisprudence of the superior courts wherein the Doctrine of Public Trust[20] has been applied to public spaces and was inspired by the experiences of protecting public spaces in other jurisdictions. The Committee held up the common man as the centrepiece of its concerns and attention in order to promote social equity. The "consensus" Report included eighteen (18) recommendations, the most important of which included the declaration of the Lahore Canal area as a Heritage Urban Park, re-engineering of the junctions along the Canal Road, ecosystem preservation and people-centric planning. The Committee also proposed a draft of the Lahore Canal (Heritage Urban Park) Act, 2011. The Supreme Court accepted the entire recommendations of the Committee.[21] And, pursuant to the recommendations of the Committee, the Lahore Canal Heritage Park Act, 2013, was passed by the Punjab Assembly on 7 January 2013.

7. Islamabad Environmental Commission (2015)

In 2011, several writ petitions were filed before the Islamabad High Court in respect of the environment in Islamabad in which grievances relating to the inaction and non-performance of the statutory duties by the federal EP Agency and the Capital Development Authority (the "CDA") were raised. It was contended in the petitions that certain actions and omissions of the federal EP Agency and the CDA had adversely affected the environment of Islamabad.

On 20 February 2015, the Islamabad High Court constituted the Islamabad Environmental Commission, and appointed me as the Chair of this Commission to investigate the grievances raised in the petitions and make recommendations to prevent the further "destruction" and "degradation" of the environment of Islamabad.[22] I was also given powers to associate others in the Commission. Accordingly, the government officials, representing the cross-section of stakeholders, civil society organizations, public representatives, representatives from the media and the academic/scientific community were requested to become a part of the thirteen (13) members Commission.

The Commission held six (6) meetings. It formed six (6) sub-committees to look at the various environmental and regulatory issues, including air and water pollution, encroachments, solid waste management and legal and regulatory framework. The sub-committees were enabled to co-opt members from in and outside the Commission.

[20] See, generally, Sindh Institute of Urology and Transplantation vs. Nestle Milkpak Limited, 2005 CLC 424 (Karachi) and Muhammad Tariq Abbasi vs. Defence Housing Authority, 2007 CLC 1358 (Karachi).
[21] See, Cutting of Trees for Canal Widening Project, Lahore (Sou Moto Case No. 25 of 2009), 2011 SCMR 1743. See also, Lahore Bachao Tehrik vs. Dr. Iqbal Muhammad Chauhan, 2015 SCMR 1520.
[22] By its order dated 20 February 2015 in Shiraz Shakeel vs. CDA, Writ Petition No. 1276 of 2011.

Inasmuch as the major complaints related to changes in the Master Plan of Islamabad, the Commission turned to the expert guidance of the nationally prominent urban planner, Mr. Arif Hasan, and requested his presence as a "special invitee" at one of the meetings of Commission. On the aspect of the major issue of hospital waste, the Commission benefited from the guidance of another "special invitee", Dr. Javed Akram, Vice Chancellor, Pakistan Institute of Medical Sciences ("PIMS"), the largest hospital in Islamabad.

The Commission also requested the comments of the public. A public hearing was also held by the Commission which was attended by over 150 persons.

Along with some members of the Commission, I also met with the representatives of several hospitals, including Dr. Javed Akram, Vice Chancellor, PIMS, in Islamabad on 6 October 2015 at the Ministry of Climate Change. Valuable feedback was received during this meeting which helped in the formulation of recommendations, particularly regarding hospital waste management in Islamabad.

The Report of the Islamabad Environmental Commission was finalized on 19 October 2015. The Report contained as many as twenty-three (23) recommendations but with the developed consensus of all the members and stakeholders. These recommendations, including safeguarding the Master Plan of Islamabad, solid and hospital waste management, and better co-ordination of environmental agencies, were filed in the Islamabad High Court on 20 October 2015.

The Islamabad High Court directed the appointment of an Implementation Committee to implement the recommendations of the Islamabad Environmental Commission. The appointment of the Implementation Committee has been notified.

8. Climate Change Commission (2015-2018)

In Asghar Leghari vs. Federation of Pakistan[23], the Lahore High Court was approached by the petitioner for the enforcement of his fundamental rights under Articles 9 and 14 of the Constitution. The petition contended that the increased heat trapping of carbon dioxide (CO_2) and other greenhouse gases in the atmosphere is increasing the global temperature which, in turn, is adversely affecting the climate of Pakistan. The petition further submitted that to combat the threat of climate change in Pakistan, the Government of Pakistan, through the Ministry of Climate Change, had introduced the National Climate Change Policy, 2012 (the "Policy") and the Framework for Implementation of Climate Change Policy (2014-2030) (the "Framework"), but that no implementation of the Policy and the Framework has taken place.

On 14 September 2015, the Lahore High Court constituted the Climate Change Commission and appointed me as the Chair of this Commission with powers to associate others and to facilitate the effective implementation of the Policy and Framework. As the Lahore High Court enabled the Commission to co-opt other members, the Commission exercised this power to draw from governmental Ministries, Departments and Agencies, civil society organizations, representatives from the media and the academic/scientific community.

[23] Supra note 3.

Accordingly, the thirty (30) member Commission comprised me as the Chair, Mr. Arif Ahmed Khan, Secretary, Climate Change (Vice Chair), and several Federal Secretaries (including of Finance, Water and Power, National Food, & Research and Planning, Development and Reform) and Secretaries, Government of Punjab (including of Irrigation, Agriculture, Food, Forest, Health, and Environment Protection), civil society organizations, Universities and media representatives.

The Commission held twelve (12) meetings during 2015-2018. The Framework specifies strategies for the implementation of the Policy which are time-bound as follows:

(1) Priority Actions (within 2 years);

(2) Short term (within 5 years);

(3) Medium term (within 10 years); and

(4) Long term (within 20 years).

I proposed, at the outset, that the best course of action for the Commission would be to focus on the Priority Actions because if these are implemented in their entirety, a substantial part of the Framework would have been implemented and will also serve to form the foundation of the other Short Term/Medium Term/Long Term Actions.

During its second meeting on 17 October 2015, the Commission appointed six (6) Implementation Committees to review the implementation of the Priority Actions under the Framework. These were (1) Water Resources Management, (2) Agriculture, (3) Forestry, Biodiversity, and Wildlife, (4) Coastal and Marine Areas, (5) Disaster Risk Management, (6) Energy. The Chair of each of the Implementation Committees was enabled to co-opt other members from within or outside the Commission.

The Climate Change Commission, largely facilitated by the work of its Implementation Committees, submitted a Report on 16 January 2016. The Report contained sixteen (16) recommendations which had the consensus and backing of all the stakeholders. These recommendations, among others, included climate change awareness and monitoring, financial allocation, food security and protection of ecologically sensitive habitats and species. Also, a proposal to set up a Climate Change Authority was discussed in the Commission. This was later included in the Climate Change Act, 2017.

The Lahore High Court accepted all the recommendations of the Commission and to ensure the effective implementation of these recommendations, Mr. Justice Syed Mansoor Ali Shah, on 18 January 2016, directed that:

> 3. I have gone through the Findings and Recommendations of the Commission. The Commission has done wonderful work and each member of the Commission has meaningfully contributed under the able leadership of the Chairman. It is clear that the Policy, as well as, the Framework were almost untouched till the Commission was constituted by this Court, resulting in mobilizing the government machinery. Since then there has been modest progress in achieving the objectives and goals laid down under the Policy and the Framework. The Report submitted by the Commission deals with priority

actions under the Framework and reveals that the priority actions which were to be achieved by 31st December, 2015, have not yet been fully achieved.

4. The Commission shall ensure that the priority items under the Framework, as far as the Province of Punjab is concerned, are achieved latest by June, 2016. The Commission is additionally tasked to look into the short term actions under the Framework and come up with a workable and achievable timetable for the same.[24]

In its Report dated 16 January 2016 to the Lahore High Court, the Commission had reported on the progress in the implementation of the Priority Areas (PAs) upto 31 December 2015. On the review of this Report, the Lahore High Court ordered, on 18 January 2016, that the "Commission is additionally tasked to look into the short term actions under the Framework and come up with a workable and achievable timetable for the same."

The Supplemental Report dated 24 February 2017 responded to the order of the Lahore High Court dated 18 January 2016. It included the Reports of six (6) Implementation Committees, giving an update on their actions on the Priority Actions. Overall, of the 242 Priority Areas given in the Framework, the six (6) Implementation Committees reported progress on 144 PAs and that is about 60 percent of the total Priority Areas. The progress on 144 PAs is uneven and at various stages of progress, and many will need more time and resources for completion.

The recommendations of the Commission in the Supplemental Report were adopted, on 28 February 2017, by (now) Mr. Chief Justice Syed Mansoor Ali Shah:

CLIMATE CHANGE ORDER-19.

Chairman, Climate Change Commission **("Commission")** has tendered appearance and placed on record Supplemental Report dated 24.02.2017 making the following recommendations:-

Recommendations

"**The Commission recommends** that the Secretary P&DD should submit plans for initiation of remaining about 100 PAs and also compile a quarterly report on completion of work on ongoing 144 PAs.

Priority Projects in ADP 2016-2017: Since the last submission, the Commission has helped some GOPb departments prioritize 15 'climate smart' projects of which 13 were finally approved by P&DD for inclusion in the ADP 2016-2017. The Commission learnt that the financial value of these projects was relatively miniscule in percentage terms of the total development budget of the province.

The Commission recommends that in the next FY, this number should ramp up substantially and that this allocation should include specific budget lines for social and softer components – and not just the infrastructural investments. The Commission, if requested by the Departments will be pleased to review and guide on selected projects….

[24] Order of the Lahore High Court dated 18 January 2016 in Writ Petition No. 25501 of 2015.

1. The Framework for Developing and Assessing Climate-Smart Projects under Annual Development Plans be used/piloted by each GOPb department to develop their requests for ADB allocations. The preparations for the next ADP have just begun and the timing is perfect. If requested, the Commission can assist with capacity building of the concerned officers in the province.

2. Each GOPb Departments should develop its plans of action, giving a list of priority projects/areas of investment. The Commission can assist them in developing their plans of action and determine their strategic priorities for the next 2-3 year's ADPs.

3. P&DD needs to develop a template/criteria that could guide the decisions on the requests from the departments. The Commission can work with the officers at the P&DD develop such a template and operationalize for the next years' ADP."

Considering that these recommendations are an outcome of the deliberations of the Commission, which includes members of the Government, therefore, I make these recommendations part of this order and direct the concerned Ministries/Departments of Federal, as well as, Provincial Governments to implement the same (emphasis added).

The Chair of the Commission with the Secretary of the Commission and the Chairs of the Implementation Committees met with the Chairman, Planning and Development, Government of Punjab, on 17 April 2017, to facilitate the mainstreaming of climate change in the policies and upcoming budget of the Government of Punjab. The Chair of the Commission, in this meeting, made many suggestions including the following:

1. The Framework approved by the Commission can help the process of mainstreaming climate compatible development. The Commission recommends that the Framework should be used for designing and developing projects for upcoming ADP, at least for some projects by select departments. We recommend that each department should be advised to apply the framework and 2-3 projects from each department should be selected for their application the Framework.

2. Each GoPb department should develop an action plan, outlining a list of priority projects/areas of investment for mainstreaming climate considerations. The Commission can provide assistance in this regard.

3. P&DD should develop a template/criteria that could guide the decisions on the requests of departments (and not restricting decisions only to the financial or other such considerations). Again, the Commission can work with officers of P&DD to develop such a template and operationalize for next years.

The Chairman, P&D, GoPb, responded well to the work and suggestions of the Chair of the Commission and this highlighted the growing impact of the judiciary-backed contribution of the Commission to the climate change agenda in Punjab in particular and the country in general. This presents an exciting first of a direct interface between the consultative processes of Commissions appointed by the Court with the highest decision-making body in the Government.

The Commission and this case continued before the Lahore High Court for over two (2) years. The work and effectiveness of the Commission was immeasurably enhanced by the regular listing of this case before the Lahore High Court with the full attendance of concerned governmental functionaries, both federal and provincial, and the numbered Climate Change Orders passed at each hearing. These Orders were promptly put on the website of the Court.

The Commission held its final meeting on 20 January 2018 and submitted its Final Report to the Lahore High Court on 25 January 2018. The Chief Justice of the Lahore High Court, Syed Mansoor Ali Shah, just before his elevation to the Supreme Court, passed judgment in the case in February 2018.[25] The Court appreciated the work of the Commission to supporting 66% implementation of the Priority Actions of the National Climate Change Policy, and, on dissolving the Commission, the High Court set up a Sanding Committee on Climate Change with me as the Chair and five (5) members, including Governmental representatives, to facilitate the future work on climate change. The judgment moved the jurisprudence of the superior courts well beyond Shehla Zia to a robust formulation of environmental justice and climate justice. Equally important, the Lahore High Court took an important initiative in the implementation of the National Climate Change Policy.

9. Houbara Bustard Commission (2017-2018)

Pakistan has, over the past several decades, developed a practice of issuing permits to Arab dignitaries (including from the U.A.E., Saudi Arabia, and Qatar) to hunt the Houbara Bustard in areas allocated to these dignitaries. This migratory bird winters in several areas of Pakistan and the Arab Shaikhs falcon-hunt it, every year, in specific areas allocated by the Government to these hunters. The hunting permits are handled by the Ministry of Foreign Affairs highlighting their importance in the country's relations with the Arab dignitaries. A typical permit includes important conditions of hunting in terms of the timing and bag limits. It is noted that the permits allow hunting only through falconry. Guns and use of firearms are not allowed.

Owing to the "vulnerable" status of the Houbara Bustard, the Courts of Pakistan have been repeatedly drawn to protect them against the grant of these permits and illegal hunting. This public interest litigation has involved the High Courts of Sindh, Balochistan and the Punjab and even the Supreme Court of Pakistan. Some judgments have moved to ban the issuance of the hunting permits to others that require regulation over such hunting.[26] None of these judgments required or used population Surveys to determine whether the hunting was sustainable. They relied generally, instead, on the status of the Houbara Bustard under the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES), Convention on the Conservation of Migratory Species of Wild Animals (CMS), other international declarations and national laws.

The Chief Justice of the Lahore High Court, in Naeem Sadiq vs. Government of Pakistan (Writ Petition No. 32 of 2014), appointed the Houbara Bustard Commission with me as its Chair. The terms of reference included "field Surveys to assess whether hunting of the Houbara Bustard is a

[25] sys.lhc.gov.pk/appjudgments/2018LHC132.pdf

[26] See, e.g., Province of Sindh vs. Lal Khan Chandio, 2016 SCMR 48; Government of Punjab vs. Aamir Zahoor-ul-Haq, PLD 2016 SC 421; Tanvir Arif vs. Federation of Pakistan, 1999 CLC 981 (Karachi); M.D. Tahir, Advocate vs. Provincial Government, 1995 CLC 1730 (Lahore); Society for Conservation and Protection of Environment (Scope) Karachi vs. Federation of Pakistan, 1993 MLD 230 (Karachi).

sustainable activity in Punjab" and "to assess whether the said hunting is beneficial to the local community". The Commission, including my recommendees, comprised eleven (11) members.

The Houbara Bustard Commission held its first meeting in my office on 15 July 2017 and recommended, as a first and preliminary measure, the conduct of a survey in four (4) districts frequented by the migratory Houbara Bustard. This was approved by the Lahore High Court to be held between the second week of December 2017 till the second week of January 2018. The Commission developed a methodology for the surveys in consultation with the expertise available in and outside Pakistan. The Commission also facilitated the capacity-building of the staff and officers of the survey teams.

The Houbara Bustard Commission conducted population Surveys of the Houbara Bustard through three (3) separate teams in December 2017 in the Districts of Rahim Yar Khan, Rajanpur and Bhakkar in the Punjab. The Report of the Commission, based on the Survey Reports of these teams, was unanimously approved by the Houbara Bustard Commission at its meeting on 23 January 2018 and submitted to the Lahore High Court in the same month.

10. Smog Commission (2017-)

By his Order dated 19 December 2017 in Walid Iqbal vs. Federation of Pakistan, Writ Petition No. 34789 of 2016, the Chief Justice of the Lahore High Court has appointed a Smog Commission, among others, to "formulate a holistic Smog Policy for Punjab which identifies the root causes and prescribes a plan to protect and safeguard the life and health of the people of Punjab". The author has been appointed Chairman of the Smog Commission which is to include the Secretaries, Government of Punjab, of (a) Environment, and (b) Health, and leading civic and professional leaders. The Commission has so far held two (2) meetings and set up specialized sub-Committees.

11. Child Care Commission (2017-)

On 22 December 2017, the Chief Justice of the Lahore High Court, in Syed Miqdad Mehdi vs. Government of Punjab, Writ Petition 107273/2017, constituted the Child Care Commission with the author as the Chairman and with detailed terms of reference including the "shifting from a segregated system of education for special needs children to a system of inclusive education, designed to meet Pakistan's commitments under the Convention on the Rights of Persons with Disabilities, 2006 and the Convention on the Rights of the Child, 1989", and to address several enumerated requirements of "special needs children". The membership of the Child Care Commission includes the Secretaries, Government of Punjab, of (a) Special Education, (b) School Education, and (c) Health, as well as prominent lawyers and recognized experts. The Commission has held only one (1) meeting so far.

C. My Experience as Chair of Commissions

It is likely that no person has had the privilege and pleasure to head as many Commissions constituted by the superior courts of Pakistan as I have. I am humbled by this opportunity to make a small contribution to environmental protection in Pakistan, a mission that I singly started in my country in the 1970s. It has been a remarkable journey since then and the opportunities offered in shaping and progressing judicial environmental commissions have been immensely gratifying. So is the fact that the full recommendations of each Commission were adopted by the

Courts without any exception. This success was enhanced by some Courts even appointing Implementation Committees/Standing Bodies to implement the recommendations of the Commissions (Lahore Clean Air Commission, Islamabad Environmental Commission and the Climate Change Commission). The Courts, additionally, facilitated the interim recommendations of the Climate Change Commission and the Houbara Bustard Commission.

With the commissioning of the Compost Plant in Lahore, it was remarkable that the public and private sector partnership reflected in the membership of the Solid Waste Management Committee facilitated this success and demonstrated the value to civil society of avoiding protracted, contentious, divisive and adversarial proceedings before the courts of Pakistan. The model, instead, was to resolve complex issues by the use of science, technology and dispassionate technical advice with the willing co-operation and support of the City Government. Each metropolis is unique but it is hoped that the experience of the Solid Waste Management Committee in Lahore may provide some useful lessons for urban environmental management in Pakistan. Equally useful would be a consensus-building approach of the Lahore Clean Air Commission, the Lahore Canal Road Committee, the Islamabad Environmental Commission, and the Houbara Bustard Commission.

The use of court-appointed Commissions to resolve complex environmental issues in Pakistan has already shown promise. Moving away from an adversarial ethos of a court room to a more informal round-table of a Commission by itself promotes a dialogue and discussion between the stakeholders. Moreover, when care is taken toward an all-inclusive process of enabling all the stakeholders from both the public and private sectors to be represented in the Commission, the credibility of its work and success is significantly assured. It is particularly important to include in the Commission those Departments or Ministries of the Government that would ultimately be responsible for the implementation of the recommendations of the Commission. Eminent scientists and experts drawn from Universities and academia can anchor the work of the Commission by providing "neutral" and state-of-the-art technical and science-based advice on the complex issues before the Commission.

For a Chairman, the biggest challenge is in picking the members of the Commission. If they are to be from the most effective decision-makers in the Government, from civil society, from academia, from the legislatures and the media, each of them would be pro-occupied with his/her other commitments and may not readily find time for the Commission.

On appointing me as the Chairman of the Commission, the Court always offered that it could include in its Order any membership that I suggested to it. But I found it more effective, before hand, to reach out personally to each person that I thought could bring value to the work of the Commission. I would typically request about 60 hours of the person's time for the work of the Commission in the next 4-6 months and would recommend to the Court the inclusion of that person in the Commission only if I got that commitment. The larger appeal for the person was the possibility of contributing to a cause of the community or the city or the nation that the Commission was expected to serve. In many cases, the person was already familiar with my work in the environment and invariably agreed to my request to join the Commission. This brings me to my grateful and proud statement that nobody ever refused my request to join a Commission headed by me.

Selecting members for the Commission becomes all the more challenging when the Chair insists on handling all the work, as I invariably did, on a pro bono basis. No member of any

Commission that I headed received any remuneration and yet I am grateful for the prolific support that each member gave for the work and result of the Commission. The Commissions improvised their own methods of financing their work requirements. In the Solid Waste Commission, for example, the District Nazim (Mayor), Lahore, a member of that Commission, undertook to finance the costs of an EIA directed by the Commission. Similarly, in the Islamabad Environmental Commission, IUCN Pakistan, a member of that Commission, on the request of the Chair, paid the travel costs of Mr. Arif Hasan, urban planner in Karachi, to attend a meeting as a special invitee of the Commission in Islamabad.

In the hearings of the Commissions, we also included those stakeholders that may be adversely affected by our recommendations. Thus, vehicular traffic was an important consideration in the Lahore Clean Air Commission. When we considered proposals for the improvement of air quality through improved vehicular traffic, we specifically reached out to Qingqi, the motor cycle rickshaw company that is an important player in this field, and tried to carry it in our recommendations. We similarly reached out to the car and motor cycle manufactures and assemblers.

The role of the Chairman can also be important in the impartiality and fairness with which he conducts the proceedings of the Commission and enables public participation and hearings to factor different points of view. The success of the Chairman lies ultimately in persuading the members of the Commission and other participants to move away from the narrower mindset and language of "I" "you" "mine" and "yours" to a more appropriate "we" "us" and "ours". Only when this central aspect of a common ground for the needs of a city or civil society is recognized and realized can a Commission succeed in the important tasks entrusted it by the Courts.

But the use of judicial commissions is by no means a panacea as the technique can only work effectively where expert opinion is not divided[27] and there is a fair chance that a consensus can emerge amongst the diverse group of stakeholders. The greatest strength that a Commission can have is the unanimity or consensus on its recommendations. I have been particularly fortunate in developing a consensus in each Commission that I have headed. The Courts see the quality of the membership of the Commission and the unanimous/consensus voice with which the Commission speaks following an open, inclusive and participative process of public hearings and site visits to fully endorse the recommendations of the Commission.

With the high level/status membership of the Commissions, many Judges expressed surprise at the regular attendance of the members of the meetings of the Commission. The response has been a very good fortune in the leadership I provide to each Commission. It has to do with my involving the members in the work of the Commission, in shaping the process of our work, in developing their ownership of what we did, and in fixing the meetings of the Commission to the convenience of the maximum members. In one case, the appointing Court had directed the attendance of the members at the meetings of the Commission. But I requested the Court that it is

[27] In the Indian dam case, Tehri Bandh Virodhi Sangarsh Samiti v. State of U.P (1992) Supp 1 SCC 44, the Supreme Court held that it did "not possess the requisite expertise to render any final opinion on the rival contentions of the experts. In our opinion the Court can only investigate and adjudicate the question as to whether the Government was conscious to the inherent danger as pointed out by the petitioners and applied its mind to the safety of the dam. We have already given facts in detail, which show that the Government has considered the question on several occasions in the light of the opinions expressed by the experts. The Government was satisfied with the report of the experts and only thereafter clearance has been given to the project."

not necessary to coercively (through orders of the Court) secure the attendance of the Commission members and that, instead, I would rather have them do so voluntarily out of their own commitment to their responsibilities on the Commission and to the respect that they may have for its leadership. This proved a far more effective means of building the team work and a sense of ownership in the Commission members.

It may reflect on the measure of the success of Commissions appointed by the Courts in environmental matters that the Government of Punjab has, through its Secretary, Environment, appointed, on 11 December 2017, an Advisory Committee with broad-ranging terms of reference including for the "protection of environment and ecological stability of the Environmentally Sensitive Areas of Murree, Kotli Sattian and Kahuta". The author has been appointed the Chairman of the Committee with Secretaries, Government of Punjab, of (a) Environment, (b) Forest, Wildlife and Fisheries, and (c) Law and Parliamentary Affairs, as members. Also included as members of the Committee are Commissioner, Rawalpindi, prominent academics, and representatives of civil society and professional organizations.

D. Limitations in Work of Judicial Commissions

Even though the advent of public interest litigation and innovative procedural pathways such as judicial commissions threaten to obliterate the law/policy divide, the successes of the new approach in India and Pakistan have been welcomed by a public that has long been used to an apathetic legislature and a weak executive.[28] As long as environmental protection remains a low priority item for the political establishment and the state machinery, courts in Pakistan will increasingly be called upon to give practical significance to the fundamental rights guaranteed under the Constitution. However, it should be borne in mind that the activism of the courts is not a substitute for proper policy making and implementation as judicial intervention is by its very nature reactive and hemmed in by the procedural pathways that are peculiar to the legal process. The countries of South Asia are still in the early stages of environmental consciousness[29] and although public awareness of environmental issues is improving with each passing year, prioritizing environmental concerns in national planning and steady implementation of laws and policies is of paramount importance.

[28] See Ashok Desai and S. Muralidhar, "Public Interest Litigation: Potential and Problems" in B.N. Kirpal et al., (ed.) Supreme But Not Infallible: Essays in Honour of the Supreme Court of India, Oxford (2000) 159 , on the appeal of public interest litigation in India despite the lingering questions about its constitutional legitimacy. For the Pakistan over-view, see generally Parvez Hassan and Azim Azfar, supra note 1 at 216-217.

[29] The dissemination and easy availability of information is crucial to any public attempt to improve environmental consciousness and activity. Jona Razzaque notes that "in India, Pakistan and Bangladesh, there is no right to environmental information or right of public participation in decisions-making…There should be a specific Act or guidelines to deal with the availability of environmental information, outlining which information is available and how to go about asking for it from the government, from private individuals and companies". See Jona Razzaque "Human Rights and the Environment – National Experience" (2002) 32 Environmental Policy and Law 99, at 107. On this and other requirements for good environmental governance, see generally, Parvez Hassan, "Elements of Good Environmental Governance" (2001) 6 (1) Asia Pacific Journal of Environmental Law 1, also in Donna G. Craig, Nicholas A. Robinson and Koh Kheng-Lian, Capacity Building for Environmental Law in the Asian and Pacific Region – Approaches and Resources, Volume II, at 985.