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Ministry of Public Works and Transport, Lao People's Democratic Republic
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Partnership on Sustainable, Low Carbon Transport
United Nations Economic and Social Commission for Asia and the Pacific, and
United Nations Office for Sustainable Development

INTERGOVERNMENTAL TENTH REGIONAL ENVIRONMENTALLY SUSTAINABLE TRANSPORT (EST) FORUM IN ASIA, 14-16 MARCH 2017, VIENTIANE, LAO PEOPLE'S DEMOCRATIC REPUBLIC

Insight to Implementation of the Bangkok 2020 Declaration ~ Policy Trends and Developments, Challenges and Opportunities

(Background Paper for EST Plenary Session-9)

Final Draft

UNCRD had commissioned Mr. Todd Litman, Founder and Executive Director of Victoria Transport Policy Institute (VTPI), Canada to conduct this study. The draft report was discussed in the Ninth Regional EST Forum which was held on 17-20 November 2015 in Kathmandu, Nepal. The current report is further upgraded based on the inputs received from participants and partners of the past EST Forums through a survey conducted by VTPI. The views expressed herein are those of the authors only and do not necessarily reflect the views of the United Nations.

Major Challenges, Progress and Achievements by Asian Countries on the Implementation of EST Policies and Measures from Aichi EST Forum (2005) to Kathmandu EST Forum (2015)

18 August 2016

2005 - Nagoya, Japan

2010 – Bangkok, Thailand

2015 – Kathmandu, Nepal

Summary

The *2015 Intergovernmental Ninth Regional Environmentally Sustainable Transport (EST) Forum in Asia*, held in Kathmandu, Nepal represents a decade of progress since the first EST Forum held in 2005. This is a good time to look back at what these events have already accomplished, and forward to future needs. This report summarizes the EST Forums' major achievements, challenges and opportunities, and provides recommendations for improvement.

Table of Contents

Executive Summary

Leadership is the ability to create a common vision, and to assemble the resources needed to make that vision a reality. The world badly needs leadership for more sustainable transportation, particularly in rapidly developing countries that are now establishing transport patterns that will exist for many decades into the future. It's a huge challenge and opportunity.

Who provides this leadership? We do! The public officials, advisors, practitioners and experts who participate in the *Intergovernmental Regional EST Forums (hereafter EST Forum) in Asia* provide essential leadership for creating more sustainable transport systems for more than half the world's populations.

Sustainable transportation planning balances economic, social and environmental objectives. It applies comprehensive analysis and integrated planning which coordinates decision-making between different jurisdictions, sectors and groups. This approach identifies *win-win* solutions, that is, strategies that provide multiple benefits, for example, the pollution reduction strategies that also help reduce traffic congestion and accidents.

This is a timely issue. Asian countries are experiencing growth and development at an unprecedented scale. As a result, Asian countries face severe problems including congestion and pollution, rising inequity and declining quality of life, plus climate change and associated threats such as sea level rise and extreme weather events. We need practical solutions.

Fortunately, sustainable transportation experts have swung into action, in part, through the EST Forums and related events. During the last decade these international conferences have helped change the way decision-makers think about transport problems, introduced new solutions, and helped forge critical alliances. They attract hundreds of participants who influence thousands of decisions that affect billions of people (Figure ES-1). Many concepts and methods presented at the EST Forums are being adopted throughout Asia.

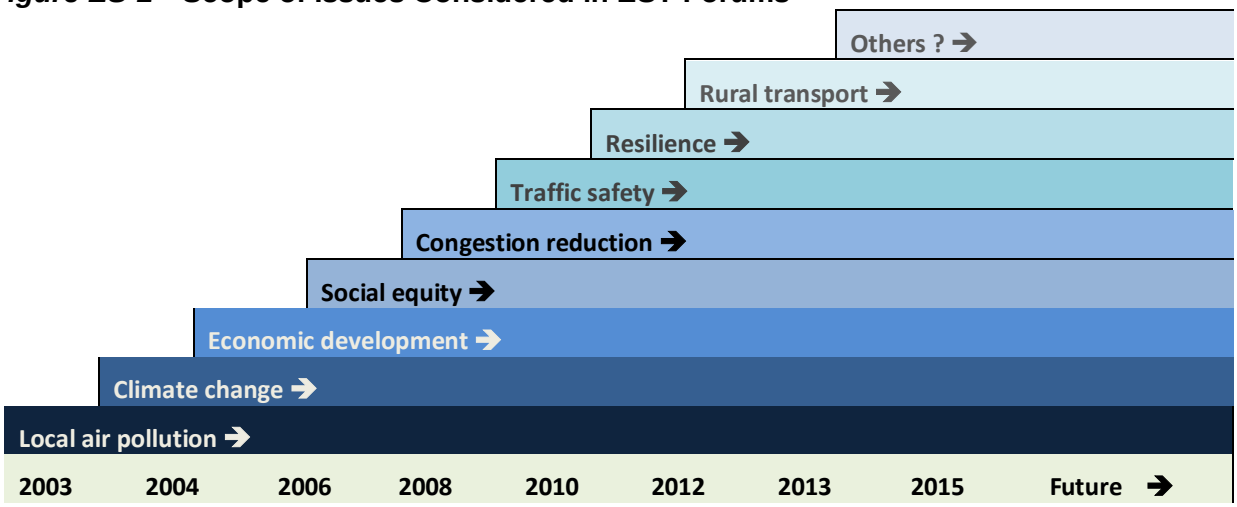
Figure ES-1 **EST Forum Leverage Effects**

The EST Forums, and related regional events, have huge leverage effects.

These events attract hundreds of participants who influence thousands of policies, which result in more sustainable transport planning, more diverse and efficient transport systems, and improved economic, social and environmental outcomes for billions of people throughout Asia.

During this decade we have gained a deeper understanding of sustainable transport issues, leading to more comprehensive and integrated planning. The EST Forums originally focused on air pollution problems, but incorporated other important issues over time, as illustrated below.

Figure ES-2 **Scope of Issues Considered in EST Forums**



The EST Forums originally focused on local air pollution problems, but over time have incorporated other important issues. This expanded scope reflects true sustainability, which balances economic, social and environmental goals, and attracts diverse stakeholders, which increases the Forums' influence.

More resource-efficient transportation provides diverse benefits (Table ES-1), including some that were traditionally overlooked and undervalued. For example, conventional planning overlooks the parking cost savings, trade deficit reductions, improved mobility for non-drivers, public fitness and health, and openspace preservation benefits that result when travelers shift from automobile to more efficient modes. As a result, more comprehensive planning tends to justify transportation demand management policies and programs.

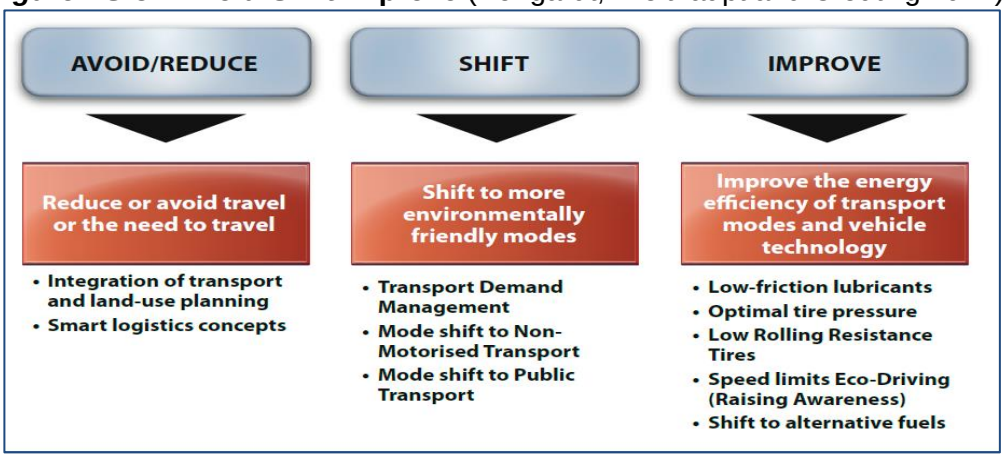
Table ES-1 **Benefits of More Efficient Transportation Systems**

Economic	Social	Environmental
• Traffic and parking congestion reductions • Infrastructure savings • Increased economic productivity • Reduced crash costs • Reduced trade deficits	• Basic mobility for non-drivers • Increased affordability and economic opportunity • Improved public fitness and health	• Reduced air, noise and water pollution • Openspace (farm and wildlife habitat) preservation • Improved livability (local environmental quality)

More sustainable transport provides diverse benefits.

Our understanding of sustainable transport improved during this decade. The EST Forums originally focused on reducing air pollution, but soon expanded to consider additional goals. It became evident that *everything is connected*, so successful solutions require comprehensive analysis of economic, social and environmental impacts in order to identify *win-win* strategies which help achieve multiple policy goals. These include policies that improve resource-efficient modes, such as walking, cycling and public transit; incentives for travelers to choose the most efficient mode for each trip; and more compact and multi-modal urban development which reduces the distances that people must travel to destinations. The *Avoid-Shift-Improve* approach provides a framework for prioritizing solutions to maximize benefits (Figure ES-3). This helps attract diverse stakeholders and build support for political and institutional reforms.

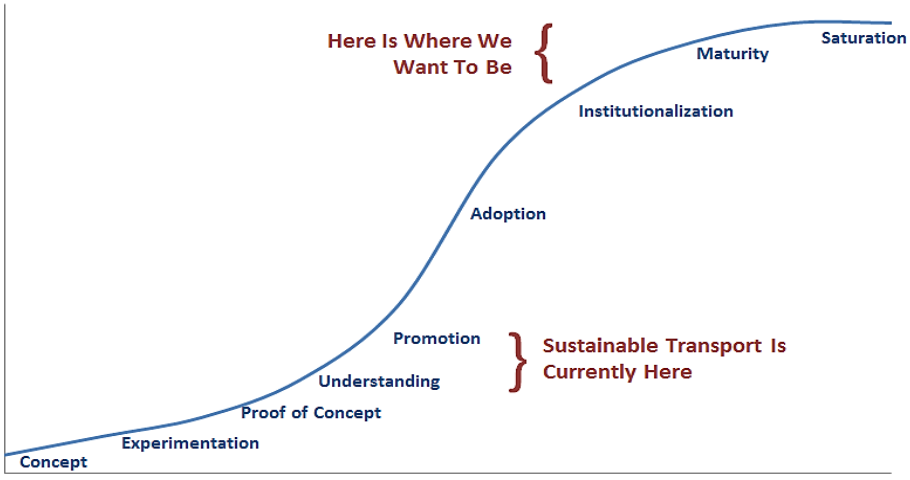
Figure ES-3 **Avoid-Shift-Improve** (Bongardt, Breithaupt and Creutzig 2011)



Avoid-Shift-Improve is a recipe for maximizing sustainable transport benefits.

Many win-win solutions have been thoroughly tested and proven their value. We now have a good understanding of where and how they should be implemented for maximum benefit. This means that we are now entering the promotion and adoption stage during which these concepts will be widely implemented (Figure ES-4). It is time to scale up!

Figure ES-4 **Where We Are and Where We Want To Be**



Sustainable transportation innovations are likely to follow a predictable growth pattern. Many strategies are currently in the "understanding" and "promotion" phases, and are starting into a "rapid adoption" phase. We should prepare to scale up to meet growing demands for smart solutions.

As part of this study we reviewed EST Forum progress reports and surveyed participants. Many of these documents reference and build on information and guidance from previous EST Forums. For example, many city and country reports indicate that government policies are changing in response to information presented at EST forums, and are working toward goals defined in EST Forum documents such as the Bangkok Declaration. This review indicates that the EST Forums have had the following impacts:

- They have introduced many decision-makers to sustainable transport concepts and strategies.
- They have helped make federal transport and environmental policies more sustainable. These federal reforms, in turn, leverage changes by other levels of government, in land use development policies, in the types of vehicles people use, and in travel patterns.
- They have supported policy changes by development banks and other international organizations that support more sustainable transport investments and planning.
- They have helped jurisdictions (countries and cities) establish sustainable transport planning goals, performance targets, standards and evaluation programs.
- They have responded to changing demands and emerging needs.
- They have helped create an information network including international organizations, government agencies and experts that produces and shares publications and analysis tools.

During the last decade the EST Forums, and related events, have helped create a shared vision and assemble the resources needed to create more efficient and equitable transport systems in Asia. As sustainable transportation planning expands it will be important to educate and inspire a much larger number of practitioners, the planners, engineers, designers, technicians and law enforcement officials who make many of the decisions that affect transport conditions and activities. There is a need for regional and local professional development programs, such as lectures, one-day workshops, webinars and training courses organized by professional organizations and universities.

The EST Forums in Asia demonstrate the value of leadership. Since the first EST Forum in 2005, these events have done much to create a shared vision and assemble the resources needed to create more efficient and equitable transport systems. But the work is certainly not done. Asian countries face severe challenges. Solving Asia's immense transportation problems will require many changes, including changes in the way we think about transport problems and evaluate solutions, changes in relationships between many organizations and groups, changes in the way governments plan and finance facilities and services, changes in transport prices and incentives, and ultimately, changes in the way we travel. Who will work to realize these changes? We will, the organizations and people of the EST Forums in Asia!

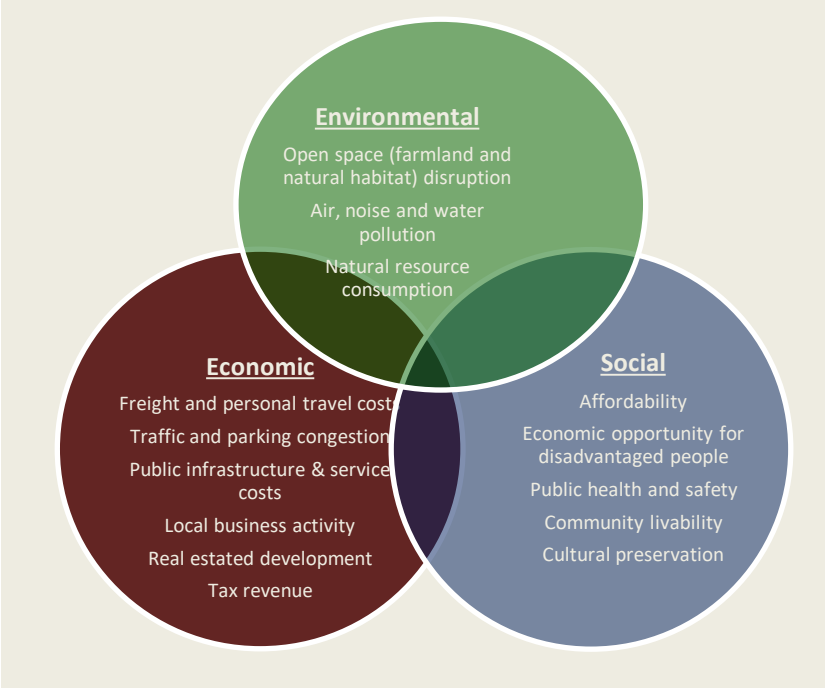
1. Introduction

Leadership is the ability to create a common vision, and to assemble the resources needed to make that vision reality. The world badly needs leadership for more sustainable transportation, particularly in rapidly developing countries that are now establishing transport patterns that will exist for many decades into the future. It's a huge challenge and opportunity.

Who provides that leadership? We do! The public officials, advisors, practitioners and experts who participate in the *EST Forums in Asia* provide essential leadership for creating more sustainable transport systems for more than half the world's populations. It's a huge challenge and a terrific opportunity to make the world better.

Transportation has diverse economic, social and environmental impacts (Figure 1). Conventional planning tends to focus on some impacts and overlook others, for example, it considers motor vehicle traffic delays but overlooking delays to pedestrians and cyclists, and considers traffic crash risks but overlooks the health risks of sedentary living. Sustainable transport planning applies more comprehensive analysis, which can result in more integrated planning. It can identify *win-win* solutions, that is, solutions to one problem that help achieve other planning objectives, for example, the congestion reduction strategies that also reduce pollution emissions, improve mobility for non-drivers, and increase public fitness and health.

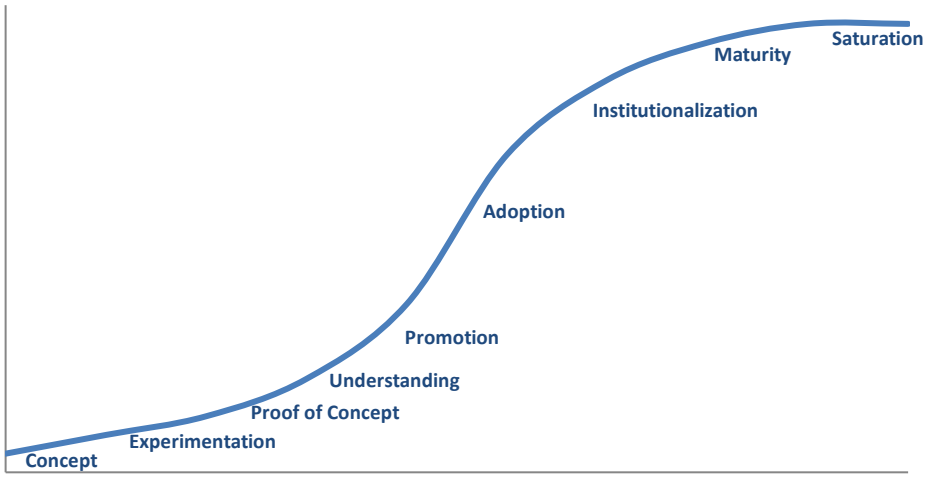
Figure 1 **Transportation Impacts**



Transportation policies have many environmental, economic and social impacts. Sustainability planning considers them all, including many that tend to be overlooked or undervalued in conventional planning.

Sustainable transportation planning requires a *paradigm shift*, a change in the way we define transport problems and evaluate potential solutions (ADB 2009). It supports innovative solutions, such as more integrated planning, pricing reforms, and new roadway management strategies. Such innovations usually follow an S-curve, starting with a concept that is tested, proven, promoted, adopted, institutionalized, and eventually matures and saturates (Figure 2).

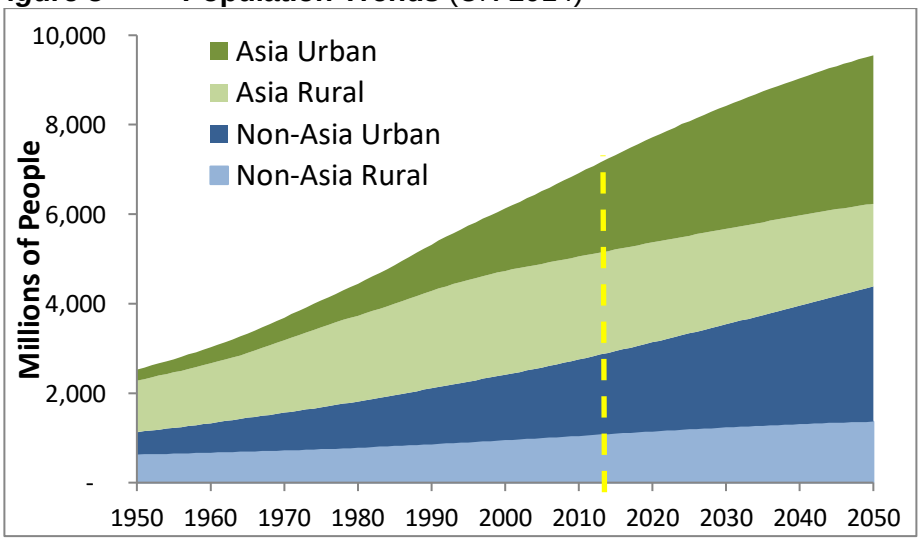
Figure 2 **Typical Innovation Deployment S-Curve**



Most innovations follow a predictable deployment curve, starting with a concept an eventually reaching saturation. Sustainable transport is currently in the early stages of this curve.

Most sustainable transportation innovations are in the early stages of this curve; they have been tested and proven, and are increasingly understood and promoted by experts, but have not been adopted or institutionalized as much as justified. For example, experts now have good information on how to implement more multi-modal planning, public transit priority, efficient transport pricing, and Smart Growth development policies, but for these strategies to achieve their full potential, they must be promoted to a larger audience of stakeholders, and institutions reformed to facilitate their implementation.

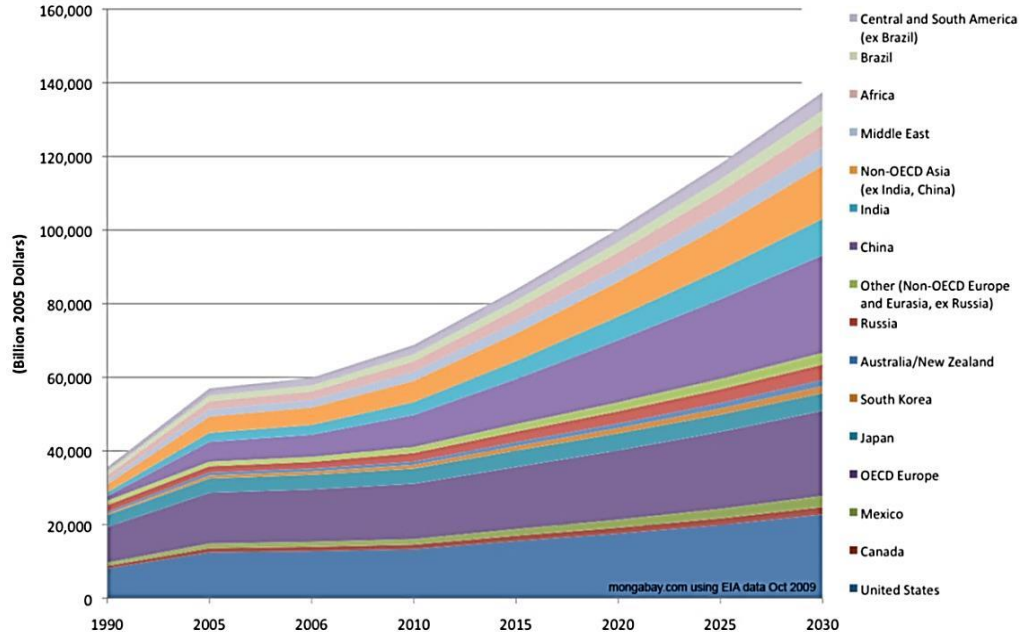
Figure 3 **Population Trends** (UN 2014)



Asian countries are growing and urbanizing. Between 2015 and 2050, Asian populations are projected to grow from 4.4 to 5.6 billion people, and Asian urban residents are projected to grow from 2.1 to 3.3 billion.

This is a timely issue. Our world is growing rapidly. Between 1950 and 2050 the world's human population is projected to quadruple, and economic activity will grow more than ten-fold, with most of this growth in Asia, as illustrated in figures 3 and 4. How we accommodate growing travel demands has huge economic, social and environmental impacts. Inefficient transport causes problems including traffic and parking congestion, high costs to households and governments, social inequity, traffic accidents, air and noise pollution, reduced public fitness and health, and open space (farmland and natural habitat) displacement. Sustainable transport policies can help reduce these problems.

Figure 4 **Gross Domestic Product (GDP) By Region** (EIA Data)



Asian countries are also experiencing rapid economic growth.

Decision-makers need practical guidance concerning how to implement these innovative solutions. During the last decade, the *Environmentally Sustainable Transportation (EST) Forums in Asia* have provided such guidance. Starting in 2005, high-level Asian officials and their advisors have met to discuss, learn and coordinate transport policies that balance economic, social and environmental goals. These forums provide a unique opportunity for decision-makers and experts to share information and coordinate programs.

How well are Asian countries implementing sustainable transportation planning? What roles have the EST Asia Forums played in this transition? What should it do in the future? This report examines these issues. It reviews the history of EST Forums, their accomplishments, the obstacles they face, and the roles they can play in the future. It provides recommendations for making EST Forums respond to evolving needs and increase its future benefits.

2. Context – Why Promote Sustainable Transport in Asia?

This section discusses some special reasons for Asia to implement more sustainable transport policies.

Sustainability emphasizes the integrated nature of human activities and therefore the need for coordinated planning among different sectors, groups and jurisdictions. *Sustainable transport planning* recognizes that transport decisions affect people in many ways, and so requires comprehensive analysis of impacts and options. Although they are called ***Environmentally*** *Sustainable Transportation Forums*, they actually consider a wider scope of issues, including economic development, social equity, health and safety, and institutional reforms. This reflects true sustainability which strives to balance economic, social and environmental goals.

The following are important context issues which make sustainable transport policies particularly important and timely in Asia.

2.1. United Nations Sustainable Development Goals

At the 2015 United Nations Sustainable Development Summit, world leaders adopted the *2030 Agenda for Sustainable Development*, which defines 17 Sustainable Development Goals (SDGs) to end poverty, fight inequality and injustice, and tackle climate change by 2030 (UNDP 2015).

Figure 5 **United Nations Development Goals** (UNDP 2015)

Several of these goals directly and indirectly relate to sustainable transportation, and so both support and are supported by the EST Forums:

Goal 1: No Poverty (indirect)
Goal 2: Zero Hunger (indirect)
Goal 3: Good Health and wellbeing (direct)
Goal 4: Quality education (indirect)
Goal 5: Gender equality (indirect)

Goal 7: Affordable and clean energy (direct)
Goal 10: Reduced inequalities (indirect)
Goal 11: Sustainable cities and communities (direct)
Goal 12: Responsible consumption and production (indirect)
Goal 13: Climate action (direct)
Goal 17: Partnerships for the goals (indirect)
Goal 13: Climate action (direct)

2.2. A Changing Transport Planning Paradigm

These Forums have occurred during a *paradigm shift*, a fundamental change in the way people think about transportation problems and evaluate potential solutions (ADB 2009; Litman 2013). The old paradigm evaluated transport system performance based primarily on *mobility* (physical travel), and so assumed that the goal is to maximize vehicle traffic speed and distance. This perspective tends to favor automobile travel. The new paradigm recognizes that mobility is seldom an end in itself, that the ultimate goal of most transportation is *accessibility* (people's ability to reach desired services and activities), and so considers a wider range of impacts and options. This perspective recognizes the important roles that walking, cycling and public transit can play in an efficient and equitable transport system, and supports more comprehensive planning that results in *win-win* solutions, that is, the solution to one problem that also help achieve other planning objectives. Table 1 compares various facets of this shift.

Table 1 **The Changing Transportation Planning Paradigm**

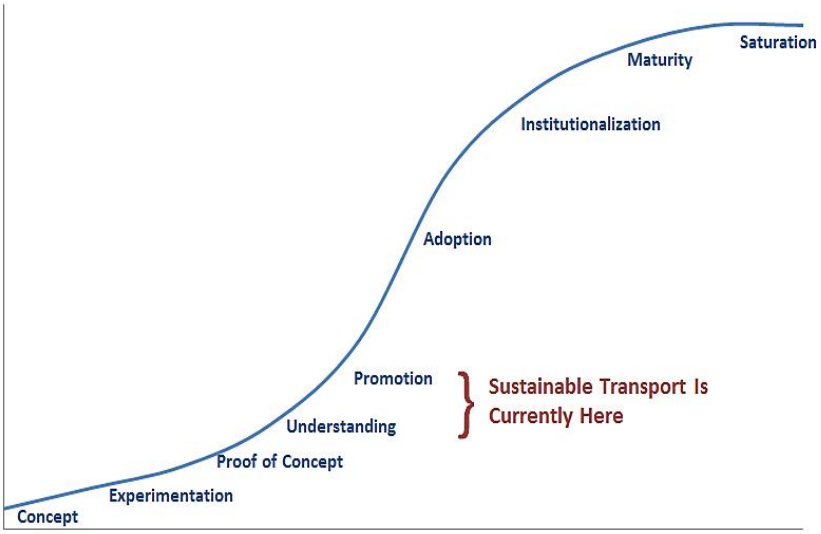
	Old	New
Definition of *Transportation*	*Mobility* (travel speed and distance)	*Accessibility* (ability to obtain goods, services and activities)
Modes considered	Motor vehicles. Walking, cycling and public transit are considered inferior, to be replaced by private motor vehicles when possible	Walking, cycling, automobile, public transit, delivery services and telecommunications are all recognized as important components of an efficient and equitable transport system
Impacts to consider (performance indicators	Traffic speed and delay, roadway level-of-service, vehicle operating costs, vehicle crash rates	Multi-modal level-of-service, land use accessibility, transport affordability, basic mobility for non-drivers, per capita crash rates, pollution emissions
Objectives	Maximize mobility (the amount people can travel)	Various economic, social and environmental objectives
Transportation improvement options	Roadway improvements to increase capacity, speed and safety	Improvements to various modes, transportation demand management, more compact, "Smart Growth" development

A paradigm shift is changing the way we think about transportation problems and evaluate solutions.

2.3. The Process of Change

Business as Usual (BAU) policies are not expected to achieve sustainable development goals. Sustainable transportation will require policy changes and innovative solutions. The key words are *change* and *innovation*, so it is useful to think about how such changes occur. Innovation deployment typically starts with a concept that is tested, proven, promoted, adopted, institutionalized and eventually matures and saturates, as illustrated by the figure below.

Figure 6 **Typical Innovation Deployment S-Curve**



Most innovations follow a predictable deployment curve, starting with a concept an eventually reaching saturation.

Most sustainable transport strategies are currently in the early stages of this curve, where we gain understanding and promote new concepts, but many are starting to experience rapid adoption.

Table 2 evaluates the current deployment status of various sustainable transport concepts. Most are currently in the early stages, they have been successfully tested and proven, and we are gaining understanding about where and how they should be implemented, so they are ready for promotion and much wider adoption. This suggests that many of these innovations are ready to scale up.

Table 2 **The Current Status of Sustainable Transport Concepts**

Concepts and Programs	Deployment Status
Multi-modal planning	Well understood by experts, but requires more promotion and wider adoption.
Bus Rapid Transit	Well tested and understood, and is increasingly promoted and adopted.
Complete Streets policies	Proven in developed countries and is being tested in developing countries.
Parking management	Has been tested and proven in some cities, but faces numerous obstacles and so requires more promotion and support for implementation.
Efficient road pricing	Successfully tested in a few cities, but many people misunderstand and so requires more promotion and support for implementation.

Sustainable transport policies and innovations are at various stages in the deployment cycle. Many are entering their promotion and rapid adoption stages in which they can expand significantly.

2.4. Integrated Policies and Planning Practices

Sustainable transportation planning requires integrated policies and planning practices. There are many aspects of integration, including coordination between different countries, jurisdictions, agencies and groups. The inefficiencies of contradictory policies and disjointed planning, and the need for better integration, are frequent topics at EST Forums. Independent international organizations, such as the EST Forums and their partners, can play important roles in helping to integrate policies and planning practices.

2.5. Understanding Impacts and Outcomes

Decision makers have certain policies, sometimes called *levers*, like the controls of a machine, which can influence change. Table 3 lists examples of sustainable transportation policy levers.

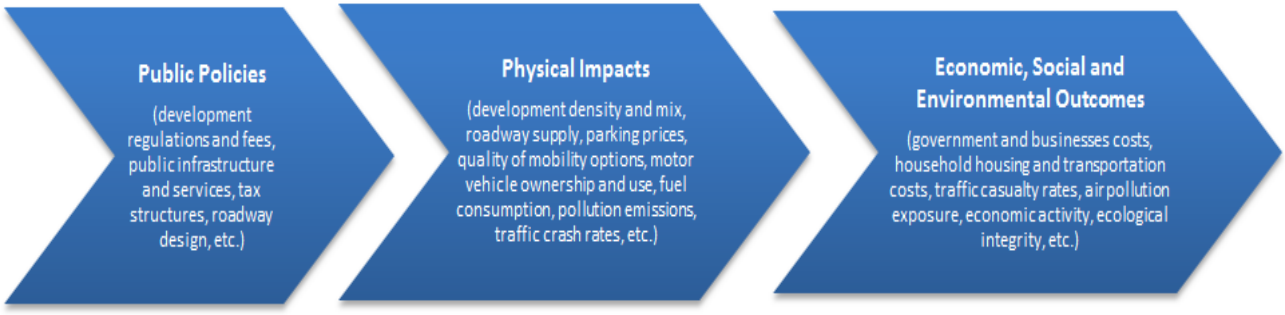
Table 3 **Examples of Sustainable Transport Policy Levers**

Transport	Land Use
• Roadway construction, design and operation • Provision of public vehicle parking • Road and parking pricing (tolls and fees) • Provision of footpaths, bikepaths and bicycle parking • Provision of public transit services • Regulations regarding private transport services • Transportation demand management programs	• Regulations that control where development is allowed • Provision of public infrastructure (roads, water, power, telecommunications, etc.) • Building regulations (allowable density, heights, allowable uses, etc.) • Parking requirements and regulations

Various policies can affect transport systems and land use development, and therefore help achieve sustainable transport goals.

To evaluate these policies it is important to understand their physical impacts and their ultimate economic, social and environmental outcomes, as illustrated in Figure 7. Although some of these relationships are obvious – for example, raising fuel taxes or parking fees tends to reduce affected vehicle travel, and public transit service improvements tend to increase ridership – specific impacts and outcomes can be difficult to predict. Targeted research can create models for predicting how particular policy changes affect sustainability goals.

Figure 7 **Policies, Impacts and Outcomes** (Litman 2014)



Effective analysis requires understanding how policies affect economic, social and environmental outcomes.

3. A Review of EST Forums History and Accomplishments

This section summarizes the history of the EST Forums and describes some key documents.

3.1. History

EST events began with the 2003 *International Conference on Environmentally Sustainable Transport in the Asian Region* and the 2004 *Manila Policy Dialogue on Environment and Transportation in the Asian Region*. This produced the *Manila Statement*, which asked the United Nations Centre for Regional Development (UNCRD) to help establish an ongoing regional forum for promoting environmentally sustainable transport. That led to the *EST in Asia Forums*. The table below summarizes these events.

Table 4 **Summary of EST Events**

Time and Place	Event	Documents	Countries	People
March 2003 Nagoya, Japan	International Conference on Environmentally Sustainable Transport in the Asian Region	*Nagoya Statement*		
January 2004 Manila, the Philippines	Manila Policy Dialogue on Environment and Transport in the Asian Region.	*Manila Statement*	13	
August 2005 Nagoya, Japan	First Meeting of the Regional EST Forum in Asia	*Aichi Statement*	13	80
December 2006 Yogyakarta, Indonesia	Second Meeting of the Regional EST Forum in Asia	*Meeting Summary*	14	100
April 2007 Kyoto, Japan	Asian Mayors' Policy Dialogue for Promotion of Environmentally Sustainable Transport	*Kyoto Declaration*		
March 2008 Singapore	Third Meeting of the Regional EST Forum in Asia	*Meeting Report*	22	120
November 2008 Bangkok, Thailand	Special Event of Asian Mayors for the Signing of the Kyoto Declaration for Promotion of EST	*Kyoto Declaration, Extension*		
February 2009 Seoul, Rep. of Korea	Fourth Meeting of the Regional EST Forum in Asia	*Seoul Statement*	22	150
March 2010 Seoul, Rep. of Korea	Special Event of Asian Mayors for the Signing of the Kyoto Declaration for the Promotion of Environmentally Sustainable Transport	*Kyoto Declaration, Addendum*		
August 2010 Bangkok, Thailand	Fifth Meeting of the Regional EST Forum in Asia. Adopted	*Bangkok Declaration for 2020*	22	200
December 2011 New Delhi, India	Sixth Meeting of the Regional EST Forum in Asia	*Chair's Summary*	21	160
April 2013 Bali, Indonesia	Seventh Meeting of the Regional EST Forum in Asia	*Bali Declaration*	*23*	*200*
November 2014 Colombo, Sri Lanka	Eighth Meeting of the Regional EST Forum in Asia	*Colombo Declaration*	*40*	*1,000*
November 2015 Kathmandu, Nepal	Ninth Meeting of the Regional EST Forum in Asia	*Chair's Summary*	26	350

Fourteen major international events have promoted sustainable transportation in Asia. They are helping to transform policies and planning practices to create more efficient and equitable transport systems

These events have the following goals (MoE 2013):

- Facilitate policy dialogue and sharing of best practices, policy instruments, tools, and technologies for environmentally sustainable transport among Asian countries.
- Facilitate and provide necessary advisory support for the formulation of national EST strategies and action plans.
- Support the implementation of action plans through the participation of international organizations and international development and donor agencies.
- Help establish linkages with other ongoing regional and international activities and initiatives.

Forum participants include a diverse range of government executives (ministers and mayors), policy advisors, government officials, development bank officials, representatives from international organizations, practitioners (planners, engineers and economists), researchers and academics.

These events attract numerous partners:

The Asian Development Bank (ADB), Adenauer Foundation, EMBARQ (The World Resources Institute's Center for Sustainable Transport), German International Cooperation (GIZ), International Council for Local Environmental Initiatives (ICLEI), Innovation Center for Mobility and Societal Change (InnoZ), Institute for Global Environmental Strategies (IGES), Institute for Transportation and Development Policy (ITDP), International Union of Railways (UIC), Partnership on Sustainable, Low Carbon Transport (SLoCaT), SAFER - Vehicle and Traffic Safety Centre, South Asia Co-operative Environment Programme (SACEP), TERI University, The Korean Transport Institute (KOTI), The World Bank (WB), University of Gothenburg, United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP), World Health Organization (WHO).

These events have inspired parallel events:

- The *Asian Mayors' Policy Dialogue for the Promotion of Environmentally Sustainable Transport in Cities*, during which mayors from 23 cities in 14 Asian countries shared best practices and adopted the Kyoto Declaration, which commits to further EST development in Asia. To date, 44 cities have signed the statement during the *Special Event of Asian Mayors for the Signing of the Kyoto Declaration*, held in 2008 and 2010.
- The *Sustainable Transport Forum for Latin América* (Foro de Transporte Sostenible para America Latina), which first met in June 2011 in Bogota, Columbia, and produced the *Bogota Declaration*.

EST Forums include plenary sessions during which delegations conduct formal business, plus extensive information sharing, including background papers, presentations, panel discussions, workshops and special events. For example, the 2014 Forum had 12 background papers, 11 city reports, and 16 country reports and more than a dozen presentations and workshops.

Aichi Statement Elements

1. Public health
2. Road safety and maintenance
3. Traffic noise management
4. Social equity and gender perspectives
5. Public transport planning and transport demand management (TDM)
6. Non-motorized transport
7. Environment and people friendly urban infrastructures
8. Cleaner fuels
9. Strengthening road side air quality monitoring and assessment
10. Vehicle emission control, standards, inspection and maintenance
11. Land use planning
12. Strengthening knowledge base, public participation and awareness

The first Forum held in Nagoya, Japan produced the *Aichi Statement*, which identified twelve elements for environmentally sustainable transport (above). Subsequent events have inspired several declarations and statements which establish sustainable transportation principles and goals, and allow countries and cities to reaffirm their commitment to work together for more sustainable transportation. The 2010 *Bangkok Declaration* established specific goals to be achieved by 2020, and identified indicators for measuring progress toward those goals.

EST Forum Declarations and Statements

Aichi Statement (2005)

Manila Statement (2004)

Kyoto Declaration (2007-2015)

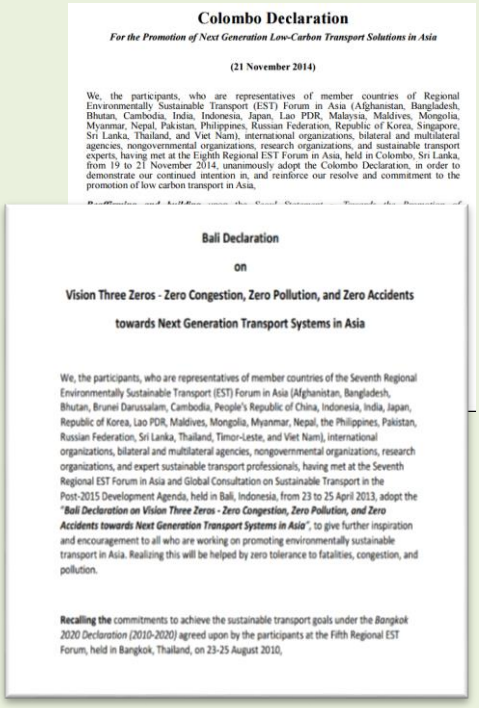
Seoul Statement (2009)

Bangkok 2020 Declaration (2010)

Bali Declaration (2013)

Colombo Declaration (2014)

The EST Forums in Asia have inspired several declarations and statements. These documents establish sustainable transportation principles and goals, and allow cities and countries to reaffirm their commitment to toward these goals. Below are examples:



Colombo Declaration

For the Promotion of Next Generation Low-Carbon Transport Solutions in Asia

(21 November 2014)

We, the participants, who are representatives of member countries of Regional Environmentally Sustainable Transport (EST) Forum in Asia (Afghanistan, Bangladesh, Bhutan, Cambodia, India, Indonesia, Japan, Lao PDR, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Russian Federation, Republic of Korea, Singapore, Sri Lanka, Thailand, and Viet Nam), international organizations, bilateral and multilateral agencies, nongovernmental organizations, research organizations, and sustainable transport experts, having met at the Eighth Regional EST Forum in Asia, held in Colombo, Sri Lanka, from 19 to 21 November 2014, unanimously adopt the Colombo Declaration, in order to demonstrate our continued intention in, and reinforce our resolve and commitment to the promotion of low carbon transport in Asia,

Bali Declaration

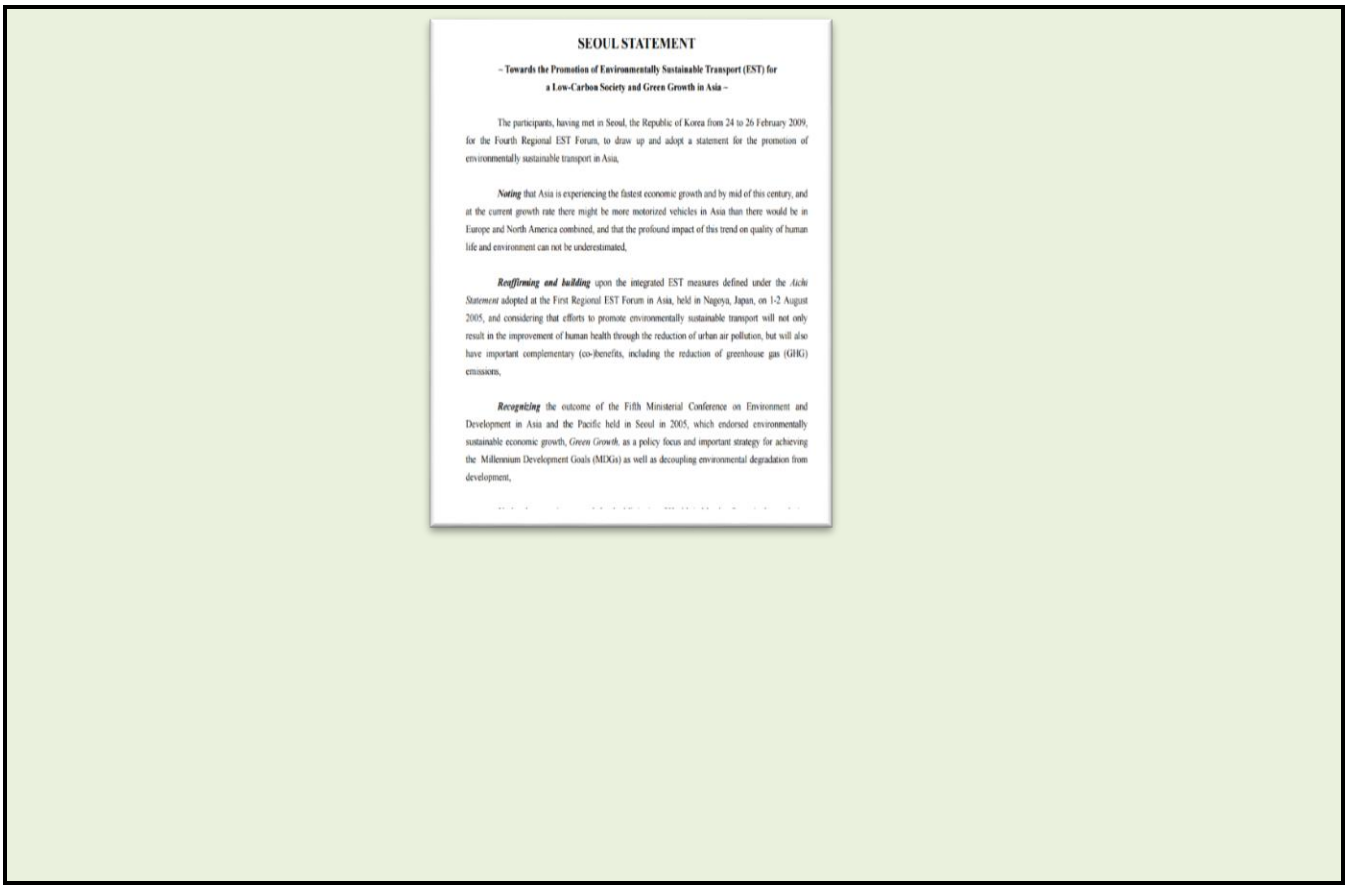
on

Vision Three Zeros - Zero Congestion, Zero Pollution, and Zero Accidents

towards Next Generation Transport Systems in Asia

We, the participants, who are representatives of member countries of the Seventh Regional Environmentally Sustainable Transport (EST) Forum in Asia (Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, People's Republic of China, Indonesia, India, Japan, Republic of Korea, Lao PDR, Maldives, Mongolia, Myanmar, Nepal, the Philippines, Pakistan, Russian Federation, Sri Lanka, Thailand, Timor-Leste, and Viet Nam), international organizations, bilateral and multilateral agencies, nongovernmental organizations, research organizations, and expert sustainable transport professionals, having met at the Seventh Regional EST Forum in Asia and Global Consultation on Sustainable Transport in the Post-2015 Development Agenda, held in Bali, Indonesia, from 23 to 25 April 2013, adopt the "***Bali Declaration on Vision Three Zeros - Zero Congestion, Zero Pollution, and Zero Accidents towards Next Generation Transport Systems in Asia***", to give further inspiration and encouragement to all who are working on promoting environmentally sustainable transport in Asia. Realizing this will be helped by zero tolerance to fatalities, congestion, and pollution.

Recalling the commitments to achieve the sustainable transport goals under the *Bangkok 2020 Declaration (2010-2020)* agreed upon by the participants at the Fifth Regional EST Forum, held in Bangkok, Thailand, on 23-25 August 2010,



SEOUL STATEMENT

– Towards the Promotion of Environmentally Sustainable Transport (EST) for a Low-Carbon Society and Green Growth in Asia –

The participants, having met in Seoul, the Republic of Korea from 24 to 26 February 2009, for the Fourth Regional EST Forum, to draw up and adopt a statement for the promotion of environmentally sustainable transport in Asia,

Noting that Asia is experiencing the fastest economic growth and by mid of this century, and at the current growth rate there might be more motorized vehicles in Asia than there would be in Europe and North America combined, and that the profound impact of this trend on quality of human life and environment can not be underestimated,

Reaffirming and building upon the integrated EST measures defined under the *Aichi Statement* adopted at the First Regional EST Forum in Asia, held in Nagoya, Japan, on 1-2 August 2005, and considering that efforts to promote environmentally sustainable transport will not only result in the improvement of human health through the reduction of urban air pollution, but will also have important complementary (co-)benefits, including the reduction of greenhouse gas (GHG) emissions,

Recognizing the outcome of the Fifth Ministerial Conference on Environment and Development in Asia and the Pacific held in Seoul in 2005, which endorsed environmentally sustainable economic growth, *Green Growth*, as a policy focus and important strategy for achieving the Millennium Development Goals (MDGs) as well as decoupling environmental degradation from development,

The Forums are well documented: each has a website that contains agendas, backgrounders, technical reports, presentations, city and country annual reports, and declarations.

EST Websites

Forum Documentation

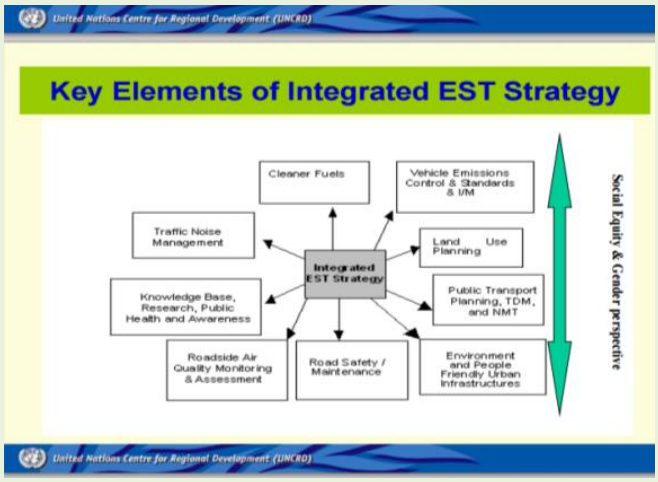
The EST Forums are well documented; each has a website where key documents are posted. Each country or city delegation submits an annual report based on standard questions. There are now several hundred reports.

About Regional EST Forums

Eighth Regional EST Forum (2014)
Seventh Regional EST Forum (2013)
Sixth Regional EST Forum (2011)
Fifth Regional EST Forum (2010)
Fourth Regional EST Forum (2009)
Third Regional EST Forum (2008)
Second Regional EST Forum (2006)
First Regional EST Forum (2005)

These documents provide a useful way to evaluate trends and progress over the last decade. Below are typical statements and observations from various Forum reports.

Examples from the Second EST Forum (2006)



Other Issues

- Long term vision required
- Governance Issues
- Institutional Strengthening and Capacity Development
- Climate change issues need to receive greater weight
- Second hand vehicles
- Unregistered vehicles and insurance issues
- Sustainable transport indicators: measurable
- Out-of-the-box thinking required but solutions need to be local
- Energy efficiency measures needed. Fuel economy standards

3.2. Current Conditions

Many reports, particularly those from lower-income countries, indicate that current transportation conditions are inefficient and unsustainable, including severe traffic and parking congestion, poor walking and cycling conditions, inadequate public transport services, high accident rates and severe pollution problems.

Examples from the Third EST Forum (2008)

Regional Dimensions

- Trade liberalization and its regional impacts
- The export of vehicles
- Time to take a regional perspective on vehicle standards, fuel issues, etc.
- Standards and regulations are important, but we need ACTION now

3.3. Policy Reforms and Planning Innovations

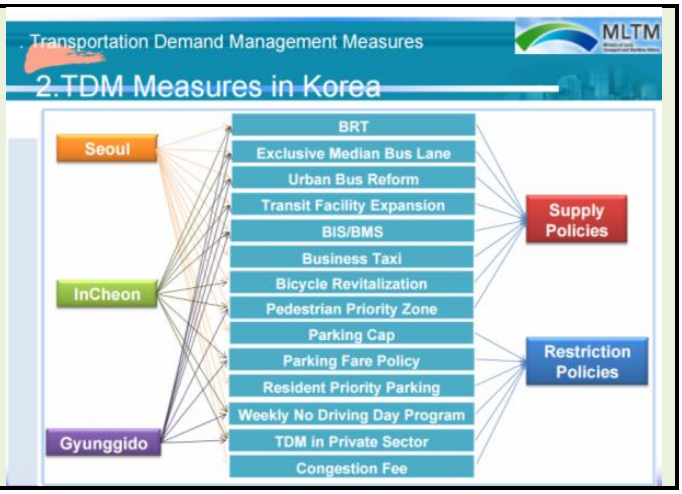
Many countries and cities report that, in response to EST Forum guidance, they are implementing major policy reforms, including changes in funding and planning priorities, and more strategic planning to support sustainable transport. Many also report changing transport planning practices, including innovative traffic management, pedestrian and cycling improvements, public transit improvements, more integrated planning, vehicle emission control and safety programs, and deployment of new technologies that facilitate green travel.

Examples from the Fourth EST Forum (2009)

Common Trends

Countries are now planning substantive EST Actions:

- Actively promoting mode shift from private motor vehicles to public transport (rail and bus)
- Change institutional structures to make EST possible
- Countries are also making financing available for EST
- NMT still has only modest priority
- EST is not (yet) driven by climate change but by local environment, safety, economics.



Examples from the Fifth EST Forum (2010)

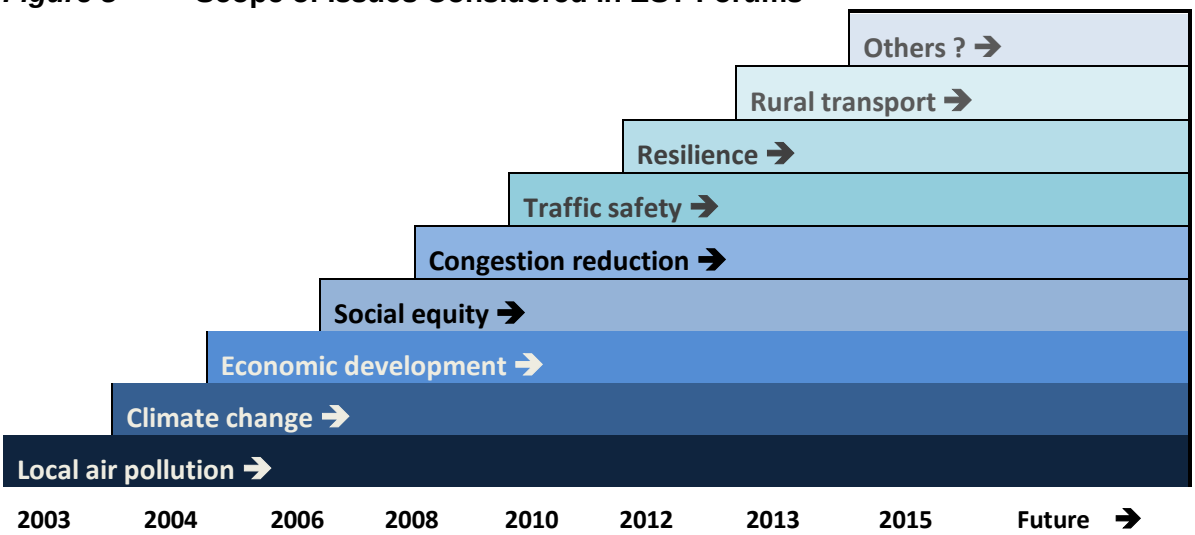
Urban Transportation Problems

- Uncontrollable car and motorbike growth
- Limited transportation network, preferable to cars
- Mismanagement of transportation facility utilisation
- Unstructured transportation network
- Uncontrollable urban development
- Population and economic growth with resulted to high demand growth

3.4. The Scope of Issues and Options Considered

The scope of issues considered in the EST Forums has expanded over time to include emerging perspectives and concerns. The Forums began as a way to address local air pollution problems but soon added additional issues and policy options. For example, the 2014 EST Forum highlighted "three zeros" (zero congestion, traffic deaths and pollution emissions), and the 2015 EST Forum also examined resilience (responding to climate change threats and other disaster risks) and rural transport planning objectives.

Figure 8 **Scope of Issues Considered in EST Forums**



The EST Forums originally focused on local air pollution problems, but over time have expanded their scope to include new issues. This expanded scope reflects true sustainability, which balances economic, social and environmental goals, and attracts diverse stakeholders, which increases the Forums' influence.

Similarly, the range of potential solutions has expanded over time to include a wide variety of policies, programs, incentives and technologies. For example, many Asian cities have developed bus rapid transit systems, street design manuals, new transit information and payment systems, and cleaner vehicle technologies, concepts that were little known previously.

Examples from the Sixth EST Forum (2011)

Expected Outcomes

- Improved traffic flow in the locations of project intervention due to reduced congestion.
- 10% increase in vehicular traffic throughout particularly for those who use non-motorized vehicles and public transport, especially women
- 10% decrease in the number of traffic accidents

Complements Bangkok 2020 Goals

This ability to respond to emerging concerns and integrate multiple planning objectives reflects true sustainability, and helps the Forums attract participants with diverse perspectives and goals, which can increase political and institutional support for implementing solutions. It means, for example, that organizations interested in economic development, affordability, social equity and public fitness and safety have reasons to join and support the Forums.

Examples from the Seventh EST Forum (2013)

Urban Transport Challenges

- Lack of institutional framework
- Gaps in capacity
- Low penetration of public transport
- No enabling environment for NMT
- Poor road quality
- Limited use of technology & innovation

Bangkok Declaration for 2020

- Sustainable Transport Goals for 2010 - 2020

Name of Policy or Strategy	SHIFT				IMPROVE				CROSS-CUTTING STRATEGIES					
	Goal 4	Goal 5	Goal 6	Goal 7	Goal 8	Goal 9	Goal 10	Goal 11	Goal 13	Goal 14	Goal 15	Goal 16	Goal 18	Goal 19
National EST Strategy	x	x										x		x
. Promotion of BRT system for metro cities		x										x		
. Expansion of urban rail in Metro Manila		x												
. Replacement of 2-stroke tricycles		x											x	
. Bike on Bike off - LRT	x													
Alternative Fuels														
. Biofuels as transport fuels					x									
. Natural gas for public transport					x							x		
. Autogas (LPG) program					x									
. Jeepney engine replacement to LPG					x								x	
Fuel Efficiency														
. Road Transport Patrol									x					
Nautical Highway System (RRTS)				x										
Tricycle Management														
Bikeways and Walkways Program in Metro Manila	x													
Road User's Tax Law – Special fund for air pollution control													x	
Public transport strategic plan for Metro Cebu		x												

3.5. 2016 Participants' Survey

For this ten-year review we surveyed past EST Forum participants to obtain feedback concerning their experience and suggestions for improvement. Below are some highlights.

Impact of EST Forums

- Most respondents indicated that the EST Forums have helped their countries implement more sustainable transport policies, and provided specific examples, such as improving public officials' knowledge, development of new policies, programs and technologies, and implementation of new non-motorized and BRT projects.
- The EST Forums inspired the National Environmentally Sustainable Transport Strategy for the Philippines (NESTSP), and the Philippines National Climate Change Action Plan (NCCAP).

Sustainable Transportation Implementation Obstacles and Solutions

- Respondents cited various obstacles, including poor coordination between government policies and agencies, inadequate and conflicting institutions, conflicting laws, inadequate professional capacity (particularly at the local level), inadequate funding, inadequate data, and a lack of public understanding of these issues.
- Several respondents suggested that the EST Forums can help overcome these obstacles by providing more technical support and training, and information on potential funding options for financing sustainable transport programs.

EST Forum Strengths and Weaknesses

- Respondents indicate that the EST Forums provide very useful information, with something for everybody, peer-to-peer sharing, and support for policy reforms.
- Respondents mentioned several weaknesses. General weaknesses include inadequate assistance for meeting the specific needs of countries and local governments. Specific weaknesses about the Forums include presentations that are too fast, and inflexible agendas that fail to encourage audience interactions ('back seat driving').

EST Forum Goals (e.g., Bangkok Declaration)

- Respondents indicated that all goals are important, but their relevance to a particular country or agency depends on its characteristics and perspectives. For example, a Japanese respondent emphasized more citizen participation, and Sri Lanka respondents emphasized the importance of non-motorized and public transit improvements.

New Media Campaigns and Planning Tools

- Most respondents indicate that their organization would support new media campaigns, and some provided examples of their current programs, such as Japan's *Smart Move* and Bhutan's *Road Safety* programs.
- Many respondents supported or requested new evaluation and planning tools, such as guidebooks, evaluation software, databases and case studies,

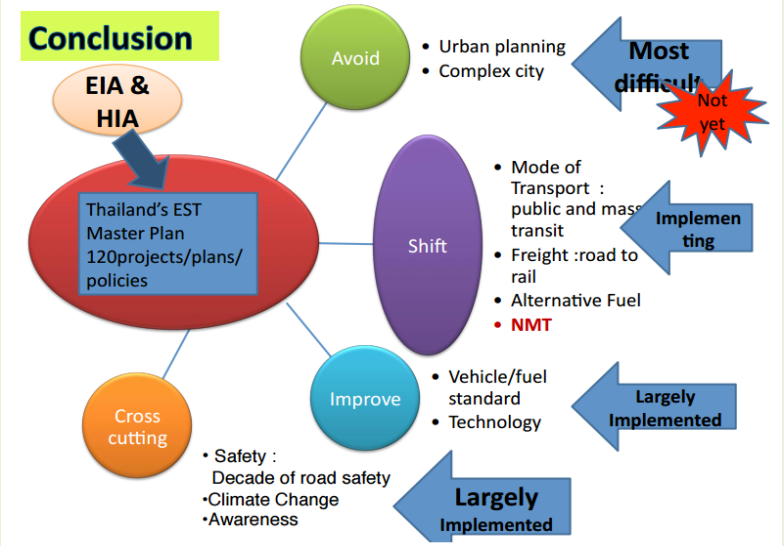
Other Organizations and Regional or National Forums

- Respondents listed various other organizations and groups that should be involved in future EST Forums, including development agencies, ministry of finance officials, local officials, traffic safety and police and academics.
- Almost all respondents support the organization of smaller, regional/national forums (the importance of involving local officials is mentioned many times in response to various questions), possibly as biannual events that alternate with the international EST Forum in Asia.

Other Suggestions for Improving Future EST Forums

- More information on potential funding sources.
- More focused themes.
- Earlier distribution of background papers.
- Better time management of sessions.
- Involve private enterprise, for example, by allowing exhibitions.
- Have countries identify one contact person who is responsible for monitoring and reporting on their country's progress toward targets.

Examples from the Eighth EST Forum (2014)



Major achievements/new initiatives based on Bangkok Declaration

- Most urban centers now have integrated land use and transport plans
- Nationwide backbone fiber-optic network
- Transport identified as top sector in Technology Needs Assessment
- National Appropriate Mitigation Actions (NAMAs) for Transport sector is being developed
- Plan for BRT drawn but remains unimplemented due to high cost of related infrastructure and buses
- More comfortable and less polluting inter-city buses
- Reserved seats for people with special needs

3.6. Bangkok 2020 Declaration

The *2010 Bangkok Declaration* established twenty specific sustainable transport goals, with measurable performance indicators, to be achieved by 2020.

Bangkok Declaration 2020 Goals (http://bit.ly/1WFyhU3)

*I. Strategies to **Avoid** unnecessary travel and reduce trip distances*
1: Formally integrate land-use and transport planning
2: Achieve mixed-use development and medium-to-high densities along key corridors
3: Institute policies, programmes, and projects supporting Information and Communications Technologies (ICT) as a means to reduce unneeded travel.

*II. Strategies to **Shift** towards more sustainable modes*
4: Require Non-Motorized Transport (NMT) components in transport master plans
5: Improve public transport services
6: Reduce the urban transport mode share of private motorized vehicles through Transportation Demand Management (TDM) measures
7: Achieve significant shifts to more sustainable modes of inter-city passenger and goods transport

*III. Strategies to **Improve** transport practices and technologies*
8: Diversify towards more sustainable transport fuels and technologies
9: Set progressive, appropriate, and affordable standards for fuel quality, fuel efficiency, and emissions
10: Establish effective vehicle testing and compliance regimes
11: Adopt Intelligent Transportation Systems (ITS)
12: Achieve improved freight transport efficiency

IV. Cross-cutting strategies
13: Adopt a zero-fatality policy
14: Promote monitoring of transport health impacts
15: Establish country-specific air quality and noise standards
16: Implement sustainable low-carbon transport initiatives to mitigate the causes of global climate change and to fortify national energy security
17: Adopt social equity as a transport planning and design criteria
18: Encourage innovative financing mechanisms for sustainable transport
19: Encourage widespread distribution of information and awareness on sustainable transport
20: Develop dedicated and funded institutions that address sustainable transport-land use policies

Reports presented at subsequent EST Forums indicate a country's progress toward the twenty Bangkok Declaration goals, the challenges they face, and further actions they plan to take to achieve their goals. This information helps identify ways that the EST Forums can help countries overcome these obstacles and implement policy reforms. Table 5 summarizes 74 reports presented at the Sixth (2011) through the Ninth (2015) EST Forums. The table indicates the number of times a goal was mentioned, and how many were rated, "Not Yet," "Some Progress," "Largely in Place" or "Fully Completed." Since most progress reports only describe a minor portion of a country's activities, many are doing much more to achieve the Bangkok Declaration goals than the table indicates.

Table 5 **State of Implementation of Bangkok 2020 Declaration (2010-2020) in EST Countries of Asia** (From Appendix 3)

Bangkok 2020 Declaration Goals	Mentions This Goal	"Not Yet"	"Some Progress"	"Largely in Place" or "Completed"	Remarks and Examples of Progress Since 2011
I. ***Strategies to Avoid unnecessary travel and reduce trip distances***					
1. Formally integrate land-use and transport planning	60	4	45	11	Many countries have established integrated urban transport and land use planning. For example, Bangladesh established a National Integrated Multimodal Transport Policy in 2013
2. Achieve mixed-use and higher densities along key corridors	44	3	35	6	Many countries now have policies supporting TOD. For example, Malaysia finalized its Transit Oriented Development (TOD) and Compact City guidelines
3. Institute policies, programmes, and projects supporting ICT	40	3	26	11	Most countries are developing electronic information services, and some, including Japan, R. of Korea, and Singapore, are world leaders.
II. ***Strategies to Shift towards more sustainable modes***					
4. Require NMT components in transport master plans	57	2	45	10	Most countries are implementing NMT policies and programs with EST Forum support and encouragement. For example, Indonesia is developing pedestrian and bicycle facilities in cities.
5. Improve public transport services	71	0	59	12	Many countries are implementing transit improvements, particularly new BRT projects. For example, Pakistan is implementing several major public transit projects with support of the Japan International Cooperation Agency and The World Bank
6. Reduce private motor vehicle travel through TDM measures	53	3	43	8	Varies widely. Some cities have "carfree days," and a few have road tolls or expanded parking fees. For example, Bhutan is planning to implement a package of fiscal measures (parking fees, road tolls, higher fuel taxes, etc.) and car-free days.
7. More sustainable inter-city passenger and goods transport	41	0	32	10	Many countries are improving rail and marine transport, and support logistics innovations. For example, Thailand supports freight road-to-rail.
III. ***Strategies to Improve transport practices and technologies***					
8. More sustainable transport fuels and technologies	64	2	57	5	Varies widely. Many countries encourage CNG/LNG, bio-fuels and electric vehicles. For example, the Philippines supports cleaner Jeepneys.
9. Set fuel quality, efficiency, and emissions standards	54	1	42	11	Several countries implemented new standards. For example, Viet Nam established national automobile and motorcycle emissions regulations.

10. Establish effective vehicle testing and compliance regimes	53	2	36	15	Many countries now have vehicle inspections and air monitoring systems. For example, Nepal recently established a network of DoT vehicle fitness centres.
11. Adopt Intelligent Transportation Systems	48	5	35	9	Many are implementing ITS, and some (Singapore, Japan and Korea) are world leaders. For example, Bangladesh is implementing electronic fare collection.
12. Achieve improved freight transport efficiency	47	4	33	9	Varies widely. Some countries are just developing basic freight systems, such as paved highways and new ports, while others are world leaders in logistics
IV. *Cross-cutting strategies*					
13. Adopt a zero-fatality policy	53	4	31	18	Most countries have established traffic safety goals and programs. For example, Bhutan's target is to reduce from 17 to below 5 deaths per 100,000 pop.
14. Promote monitoring of transport health impacts	37	6	28	3	Most countries have emissions and crash reduction programs, but fewer have physical fitness or other health programs. For example, Thailand now applies health impact assessments to planning analysis
15. Establish country-specific air quality and noise standards	49	4	35	10	Most countries now have programs, some adopted with EST Forum guidance. For example, Mongolia now has a National Committee on Air Pollution Reduction.
16. Implement low-carbon transport to mitigate climate change	48	1	37	10	Most countries have some GHG emission goals and targets. For example, in 2013 Afghanistan became party to Kyoto Protocol.
17. Adopt social equity as a transport planning and design criteria	42	4	31	7	Many countries have discounted fares, preferential seating or separate vehicles for vulnerable groups. For example, India has women only buses and train cars.
18. Encourage innovative financing mechanisms	37	8	21	8	Some countries use PPP or BOT project delivery, and new funding sources such as parking fees and tolls. For example, the Philippines has a pollution control.
19. Encourage distribution of sustainable transport information	40	5	24	11	Some countries have information campaigns or training programs. For example, the Maldives promotes green vehicle and vessel use.
20. Develop sustainable transport-land use policy institutions	27	3	13	11	Sustainable transport planning responsibility is often distributed among multiple agencies, bus some countries are improving coordination. For example, Japan has a National Institute for Land and Infrastructure Mgt.
Totals	*964*	*64*	*704*	*196*	

This review of 74 Bangkok Declaration progress reports indicates that most countries are making significant progress toward their goals, often based on guidance and support provided through the EST Forums.

3.7. Conclusions Concerning EST Forum Accomplishments

This review suggests that, despite large geographic and economic differences, Asian countries and cities follow similar patterns: as they develop economically, motor vehicle ownership tends to increase, creating significant problems including traffic and parking congestion, accidents, pollution, and inadequate mobility options for non-drivers. The EST Forums help countries respond. They provide a way for government officials, policy advisors, practitioners and civil organizations share information and develop practical solutions.

Many of the survey responses and progress reports examined in this review reference and build on information and guidance from previous EST Forums. They indicate that government policies are changing in response to information presented at EST forums, and are working toward goals defined in EST Forum documents such as the Bangkok Declaration. During the decade, EST Forum participants gained a better understanding of sustainable transport concepts, including how to more clearly define problems, evaluate potential solutions, establish objectives and targets, develop integrated programs, and monitor outcomes. Although it is impossible to determine how much these policies and programs would have been implemented anyway, this review suggests that the EST Forums made a substantial difference; by helping countries set goals and targets, and exposing public officials and practitioners to new ideas and methods, the Forums accelerated and expanded policy changes and program developments that will help create more sustainable transportation systems in Asian countries.

The EST Forums have had the following impacts:

- They have introduced many decision-makers to sustainable transport concepts and strategies.
- They have helped make federal transport and environmental policies more sustainable. These federal reforms, in turn, leverage changes by other levels of government, in land use development policies, in the types of vehicles people use, and in travel patterns.
- They have supported policy changes by development banks and other international organizations that support more sustainable transport investments and planning.
- They have helped jurisdictions (countries and cities) establish sustainable transport planning goals, performance targets, standards and evaluation programs.
- They have helped create an information network including international organizations, government agencies and experts that produces and shares publications and analysis tools.

This indicates that the EST Forums' impacts are large and increasing. Without these events, similar policies would probably have been implemented, but many years later, after less cost-effective solutions were tried and failed. Their benefits are likely to increase in the future as Asian countries continue to develop, increasing the need for sustainable transportation policies.

4. Progress and Challenges of Key Sustainable Transport Factors

This section provides more detailed discussion of various factors related to sustainable transport policy implementation.

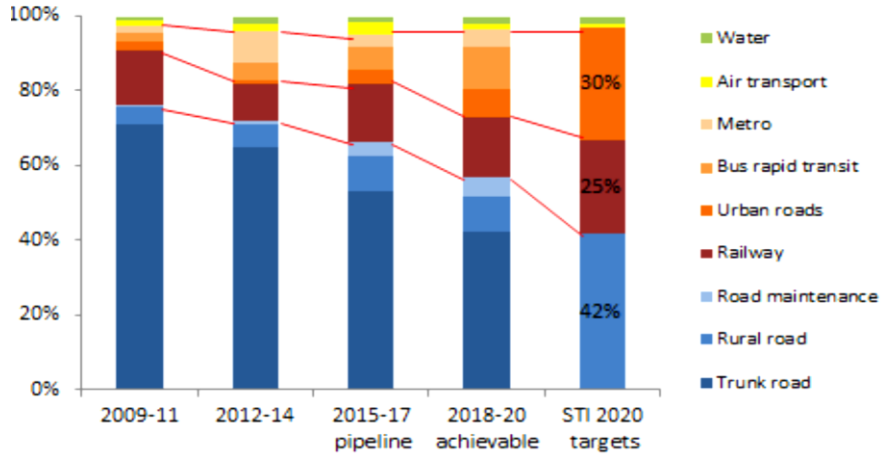
4.1 Sustainable Transport Policies and Programs

Some Asian regions are still developing basic transport infrastructure, such as paved roadways, rail networks and ports. However, once this basic infrastructure exists, it is increasingly important to implement multi-modal planning and demand management strategies to ensure that those facilities meet diverse needs are used efficiently.

Progress

Asian countries and cities are making significant progress toward more sustainable transport policies. One of the most profound changes involves more sustainable policies and planning practices by development agencies such as the Asian Development Bank (ADB) and the Japan International Cooperation Agency (JICA). For example, the ADB established a Sustainable Transport Initiative (STI) in its *Strategy 2020* strategic plan, and is developing technical resources to support this initiative. The plan's transport subsector targets include major shifts from roadway to urban transport and railways investments, as illustrated in Figure 9. These changes are very important because of their leverage effects: if development banks favor more sustainable investments, many jurisdictions will change their planning practices in response.

Figure 9 **Asian Development Bank Transport Lending Trends** (ADB 2014)



The Asian Development Bank is shifting a significant portion of its lending from roadways to more multi-modal investments that reflect its Sustainable Transport Initiative (STI). These leverage much larger shifts in the types of transport projects funded at the local level.

Many countries and cities are also making policy shifts toward more sustainable transport. For example, the Republic of Korea has "green" transportation policies that support resource efficiency, land preservation and urban quality of life (KOTI 2011). Similarly, the Indian Ministry of Urban Development's *National Transport Policy Development Committee* (NTDPC 2012) recommends that, "Urban transport should grow along a sustainable path to support the desired economic growth, protect the environment and to improve the quality of life," and provides specific recommendations for this based on the principles of *Avoid, Shift and Improve*.

Challenges

Despite important reforms, many jurisdictions still apply automobile oriented planning, with continued construction of urban highways and flyovers, and much smaller investments in walking, cycling and bus transit. Similarly, many cities continue to restrict urban development density and heights, and impose high minimum parking requirements.

A major challenge is the large number of existing policies and planning practices that must be changed for more sustainable transportation. For example, developing a Bus Rapid Transit (BRT) network usually requires changing regional transportation plans, funding practices, roadway designs, traffic management and enforcement, transit payment systems, user information, zoning codes, development requirements, and parking management practices. Many policies that affect transport are not directly controlled by transport agencies, such as those in Table 6. For example, governments often help develop offices and housing, but such development often occurs where land is cheap, even if such locations are isolated and increase transport problems. More integrated policies help ensure that development occurs in accessible, multi-modal locations.

Table 6 **Policies Not Directly Controlled by Transport Agencies**

Policy	Impacts on Sustainable Transport Outcomes
Domestic vehicle production subsidies	Increases motor vehicle ownership
Fuel subsidies and low taxes	Increases motor vehicle travel
Restrictions on urban infill development densities, and minimum parking requirements	Reduces development density and increases automobile ownership and use
School consolidation	Students must travel further, resulting in more vehicle trips
Public housing development on cheaper land at the urban fringe	Encourages households to own more cars and drive more than they otherwise would
Citing of high employment industries in areas with poor travel options	Encourages automobile commuting

Many policies that affect transportation sustainability are not directly controlled by transport agencies.

Another major challenge is the long time-frame required for many policy changes to achieve desired effects. For example, a policy to improve active transport (walking and cycling) may require two or three years to develop a plan and design guidelines, and it may take a decade or more to develop enough sidewalks, crosswalks and bike lanes to create a functional network that substantially change how people travel. Similarly, changes in development policies to encourage more construction of affordable-accessible housing can usually only affect a small portion of a city's total housing supply; much of the additional housing developed will be completed decades in the future. For these reasons, sustainable transport planning requires long-term thinking, and patience.

4.2. Institutions Cooperated under Regional EST Forum in Asia

Many Asian government, research and academic organizations now support sustainable transport, and some are EST Forum participants. During the last decade these institutions have expanded, matured, and become more influential. Examples are described below.

Government Ministries and Agencies

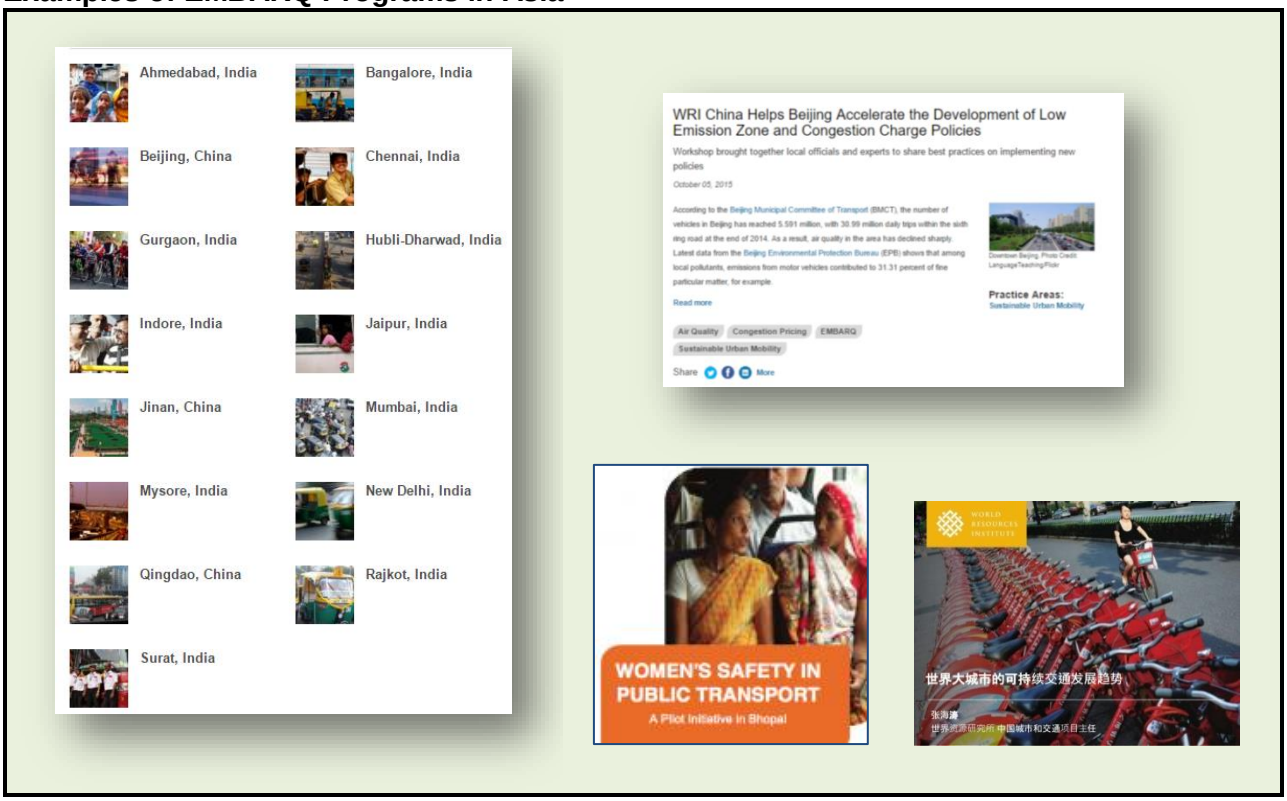
Government ministries and agencies have important roles to play in creating more sustainable transportation. These organizations affect transport policies and planning practices in many ways. As the review of EST country and city reports indicates, many Asian transportation agencies are implementing more sustainable policies and planning practices.

International Organizations

EMBARQ

Since 2002, EMBARQ has worked to make sustainable transport a reality in cities throughout the world. It has offices in Brazil, the People's Republic of China (hereafter China), India, Mexico, Turkey, and the United States. It works with local and national authorities, businesses, and civil society to create safe, accessible, and attractive urban mobility solutions. EMBARQ is part of Word Resources Institute (WRI) Ross Center for Sustainable Cities. It is an EST Asia partner.

Examples of EMBARQ Programs in Asia



EMBARQ works to promote sustainable urban development around the world, particularly in Asia. It sponsors research, information sharing, publications and professional development programs.

German International Cooperation

The German International Cooperation (GIZ) Sustainable Urban Transport Project (SUTP) provides policy advice and capacity building to help create more sustainable cities. During last decade, SUTP has published dozens of documents and sponsors numerous technical sharing programs, many targeted to Asian countries. It is an EST Asia partner.

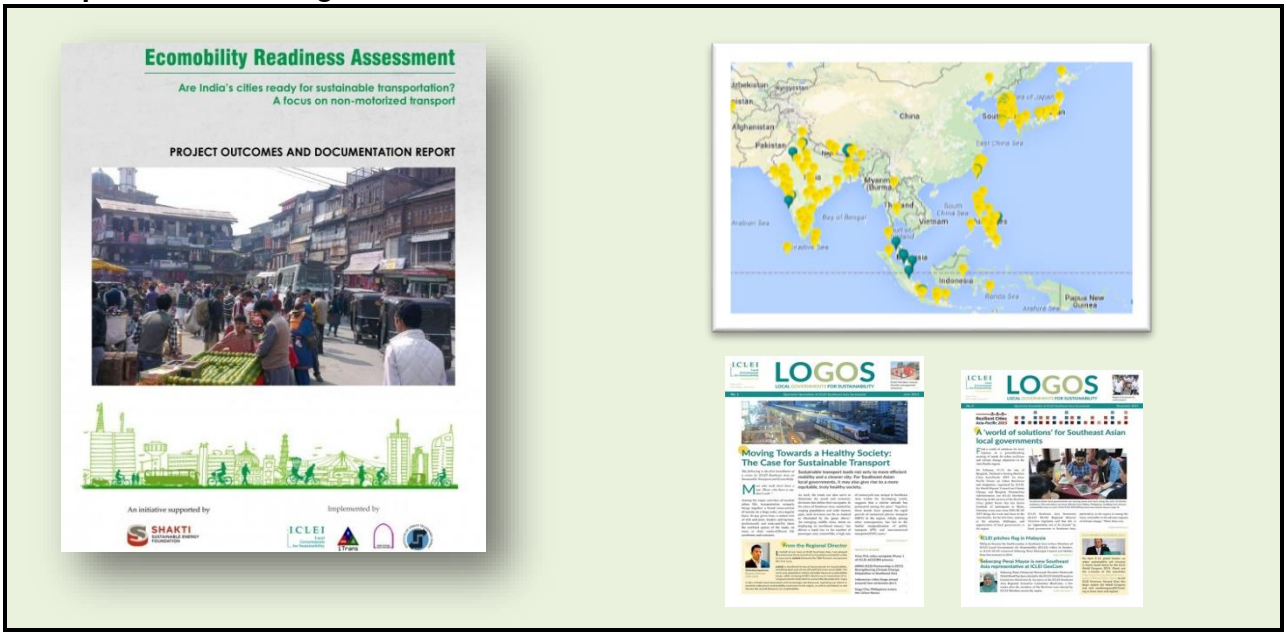
Examples of GIZ Sustainable Urban Transport Project Resources in Asia

The GIZ Sustainable Urban Transport Project (SUTP) provides policy advice and capacity building to help create more sustainable cities.

ICLEI-Local Governments for Sustainability

The International Council for Local Environmental Initiatives (ICLEI) includes more than 1,000 regions, cities and towns, containing more than 20% of the world's population, that are committed to building a sustainable future.

Examples of ICLEI Programs and Resources in Asia

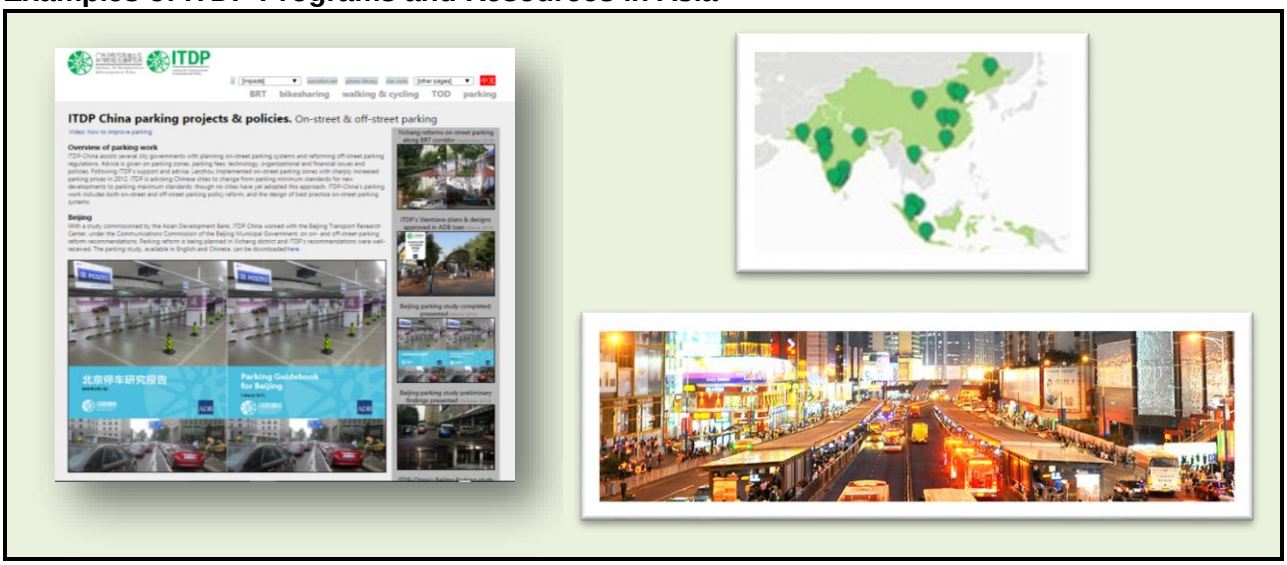


The International Council for Local Environmental Initiatives (ICLEI) provides policy advice and information.

Institute for Transportation and Development Policy

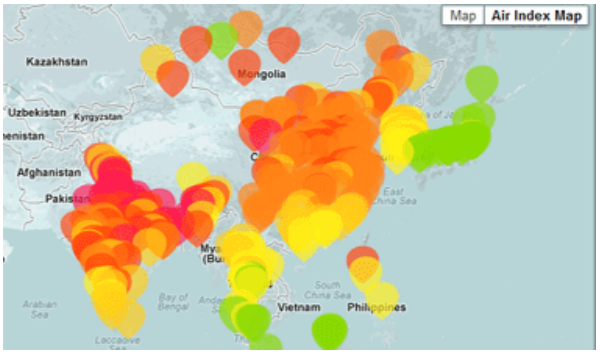
The Institute for Transportation and Development Policy (ITDP) works around the world to support transport policies and planning practices that make cities more livable, equitable, and sustainable. ITDP uses its know-how to influence policy and raise awareness globally of the role sustainable transport plays in tackling greenhouse gas emissions, poverty and social inequality. ITDP has offices around the world, including China, India and Indonesia.

Examples of ITDP Programs and Resources in Asia



The Institute for Transportation and Development Policy (ITDP) provides policy advice and information to support sustainable transport planning. Its programs have been very successful in Asia.

Partnership on Sustainable, Low Carbon Transport



The Partnership on Sustainable, Low Carbon Transport (SLoCaT) promotes the integration of sustainable transport in global policies on sustainable development and climate change. SLoCaT consists of a multi-stakeholder partnership of over 90 organizations, which is supported by the SLoCaT Foundation. It is a multi-stakeholder partnership with more than 90 members. SLoCaT provides coordination among these organizations, and leadership on key issues such as its *Global Transport Intelligence Initiative*, which is working to improve and standardize planning data collection, and efforts to include sustainable transport in world economic development and climate change emission reduction agreements. It is an EST Asia partner.

Asia Regional Organizations

Clean Air Asia

Clean Air Asia is an international non-governmental organization that leads the regional mission for better air quality and healthier, more livable cities in Asia. Its goal is to reduce air pollution and greenhouse gas emissions in 1000+ cities in Asia through policies and programs that cover air quality, transport and industrial emissions and energy use. It works with ministries (energy, environment, health and transport), the private sector and development agencies to provide leadership and technical knowledge on science-based, practical solutions. Its biannual *Better Air Quality Conference*, held since 2002, attracts over 1,000 policy makers, practitioners and industry leaders in achieving cleaner air and more livable cities.

Institute for Global Environmental Strategies

The Institute for Global Environmental Strategies (IGES) was established in March 1998 under an initiative of the Japanese government and the Kanagawa Prefecture based on the *Charter for the Establishment of the Institute for Global Environmental Strategies*. Its goal is to achieve a new paradigm for civilization and conduct innovative policy development and strategic research for environmental measures, reflecting the results of research into political decisions for realizing sustainable development both in the Asia-Pacific region and globally.

South Asia Co-operative Environment Programme

South Asia Co-operative Environment Programme (SACEP) is an inter-governmental organization, established in 1982 by the governments of South Asia to promote and support protection, management and enhancement of the environment in the region.

National and Local Organizations

Center for infrastructure, Sustainable Transportation and Urban Planning

The Center for infrastructure, Sustainable Transportation and Urban Planning (CiSTUP) of Indian Institute of Science, established in 2009, provides sustainable transportation research and training in India and abroad. It is working urban and community planning and mobility issues, including analysis of the causes and consequences of urban sprawl, strategies for more integrated urban land use and transport planning, plus planning and zoning regulation reforms to achieve sustainable development goals.

Centre for Science and Environment (CSE)

The Centre for Science and Environment (CSE) is a network of professionals interested in environmental and sustainable development issues, located in New Delhi, India.

The Korean Transport Institute

The Korean Transport Institute (KOTI) is an official research agency for the government of the Republic of Korea. Its mission is to provide information and policy guidance for creating optimal transport systems in Korea and around the world.

China Urban Transport Research Centre

Established in 2006, with the support of Volvo Research and Educational Foundations, The China Urban Sustainable Transport Research Center (CUSTReC) strives to be a national, regional, and international Center of Excellence for research and development, communication, education and training in future urban transport.

China Sustainable Transport Center

The *China Sustainable Transportation Center* (CSTC) is the technical center for China Sustainable Cities Program. CSTC is dedicated to creating sustainable urban and transport systems, promoting compact land use and transit-oriented development patterns, relieving urban

congestion and reducing greenhouse gas emission, and therefore creating low-carbon, sustainable and livable cities. It supports sustainable city planning, sustainable transportation design, and research on relevant policies in China.

Beijing Transport Demand Management

TDM in Beijing – Emission Reduction in Urban Transport is a Sino-German project that works to identify and evaluate suitable non-technical measures to reduce vehicle traffic and associated pollution emissions. According to the 2009 action plan and the 2011 development plan, the municipal government intends to implement an ambitious programme of policies and measures. The project partners will focus on innovative, non-technical measures.

Challenges

Although some public and private institutions are leaders in promoting and applying sustainable transportation planning in Asia, others are only starting to understand the concepts. Because transportation affects and is affected by many factors, sustainable transportation planning requires coordination between different jurisdictions, agencies and community organizations. For example, in order to create a high quality public transit network with transit-oriented development it is necessary to coordinate public or private transit service providers, roadway planners, municipal planning agencies, commercial developers, property owners, and neighborhood associations. Such networks often connect multiple municipalities, and so require reginal planning and inter-jurisdictional cooperation. Some countries have governance structures that support coordinated planning, but many do not. Where it is lacking, governance reforms, such as the creation of regional planning and financing organizations, may be critical to success.

Most developed countries have well-established professional development programs, including requirements for professionals to regularly upgrade and update their skills (for example, requirements for a certain number of professional development credits each year), and professional organizations that meet regularly to share information and hear speakers. These provide an excellent way to disseminate information and support new ideas related to sustainable transport planning. Many Asian countries could benefit from expanded professional development resources and requirements for planners and engineers.

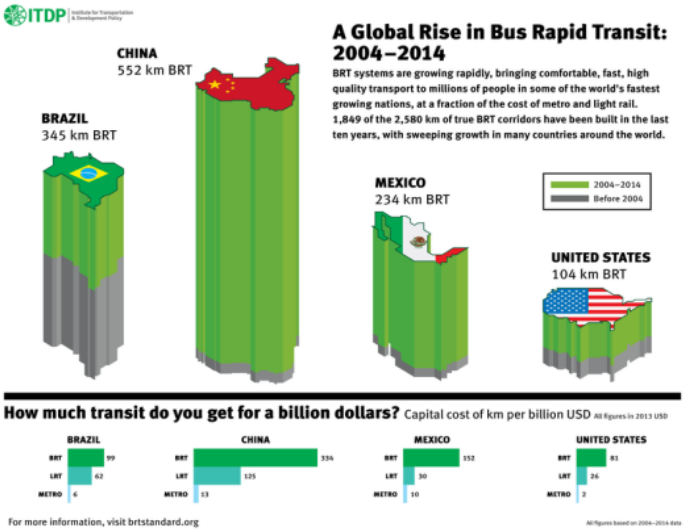
4.3. Infrastructure Development

Asian countries are currently engaged in major infrastructure development programs, including trillions of dollars in highway, rail, port and airport construction projects. During the last decade, there have been growing efforts to incorporate sustainability concepts into these programs (Venkatachalam 2010). However, there are often major gaps between official policy goals and actual planning practices. Some examples of these changes are examined below.

Bus Rapid Transit in Asian Cities

Bus Rapid Transit (BRT) is a high-quality bus transit system that includes design features which result in fast, frequent, convenient and comfortable service. Compared with roadway expansions and rail transit systems, BRT tends to be very cost effective and quick to develop. During the last decade, the number of BRT systems, and ridership on those systems, has grown rapidly, particularly in Asia. Many EST Forum participants support BRT development, and have used previous Forums to share information about this concept (EMBARQ India 2009 & 2014). It is unlikely that such rapid BRT system growth could have occurred without it.

Figure 10 **BRT Systems in Asia** (http://brtdata.org and ITDP 2014)



During the last decade Asia has embraced BRT. There are now more BRT systems in 41 Asian cities, and more are being developed, due largely to EST Forum members' leadership.

Despite this rapid growth, BRT has only achieved a small portion of its total potential. In smaller, developing cities, BRT can provide higher quality transit service than is currently provided by informal taxis and buses. In larger and more affluent cities, BRT can attract discretionary travelers (people who would otherwise travel by automobile), which helps reduce traffic and parking congestion, accidents and pollution emissions. Even in cities with rail transit services, BRT can provide efficient feeder services and accommodate continued growth. As a result, virtually every city should have an integrated network of high-quality, high-frequency bus routes with dedicated bus lanes.

Improving Active Transport (Walkability and Cycling) Conditions

Although active transport modes (walking and cycling) are common travel modes in Asia, and play important roles in an efficient and equitable transportation system (see box below), they tend to be overlooked and undervalued in conventional transport planning. In the 1980s, the World Bank and other major development agencies were criticized for ignoring these modes (Hook 1994); to its credit, the Bank responded by hiring some of their critics as non-motorized transport policy consultants (Replogle 1992). In recent years, there has been a boom in active transport planning by many agencies and organizations.

Active Transport Roles in An Efficient and Equitable Transport System

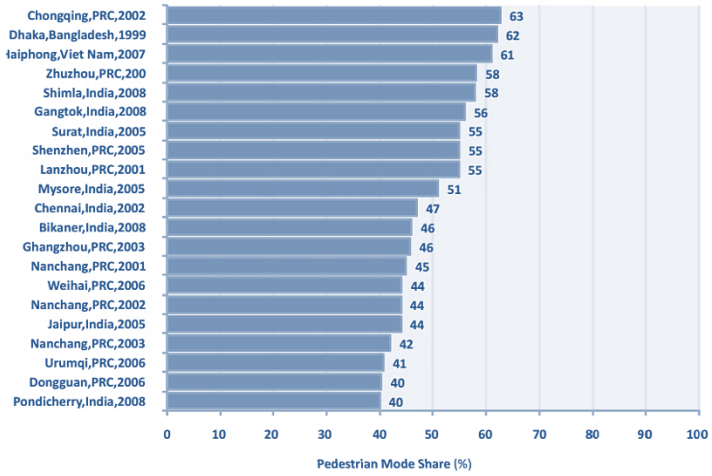
- A major portion of trips are made entirely by active modes, and even trips that involve motorized travel usually include active links. For example, most public transit trips include walking and cycling links and motorists walk between parked cars and their destinations. As a result, walking and cycling improvements can help improve public transit travel, and by expanding the pool of parking spaces that serve destinations, help solve parking problems.
- Active transport improvements can help achieve many planning objectives including reduced traffic and parking congestion, energy consumption and pollution emissions, and help create more compact, Smart Growth urban development.
- Walking and cycling provide affordable, basic transport. Physically, economically and socially disadvantaged people often rely on walking and cycling, so improving active transport can help achieve social equity and economic opportunity objectives.
- Active transport is the most common form of physical exercise. Increasing walking and cycling is often the most practical way to improve public fitness and health.
- Pedestrian environments (sidewalks, paths and hallways) are a major portion of the public realm. Many beneficial activities (socializing, waiting, shopping and eating) occur in pedestrian environments. Residential and commercial districts and resort communities depend on good walkable environments to attract customers.
- Walking and cycling are popular recreational activities. Improving walking and cycling conditions provides enjoyment and health benefits to users and supports related industries including retail, recreation and tourism.

The ADB report, *Walkability and Pedestrian Facilities in Asian Cities: State and Issues*, (Leather, et al 2011), and pedestrian-oriented planning in specific cities (Efroymson 2012) are examples of these efforts by major infrastructure investment agencies. These studies examine existing walking conditions, identify problems and recommend reforms. The ADB report concludes:

> "These actions need the support of key stakeholders, identified to be the national government, city government, civil society, development agencies, and the private sector. The city government is identified as the key stakeholder group for pedestrian facility development and implementation. The national government's substantial role is in the development of policies catering to pedestrians or building the capacity of city governments' efforts to develop their own policies.

There is a pressing need to overhaul the existing pedestrian guidelines or develop appropriate guidelines for Asian cities. The available guidelines are often ambiguous or inequitable and rarely enforced in cities. Traffic experts still rely on speed as the basis of performance measurement in urban areas, as found in the United States Highway Capacity Manual. This antiquated view emphasizes the improvement of speed rather than planning for streets that promote accessibility for all users. In practice, many pedestrian level-of-service concepts are based on vehicle travel, in which faster speed indicates efficient flow of foot traffic."

Figure 11 **Pedestrian Mode Share in Asian Cities** (Leather, et al. 2010)



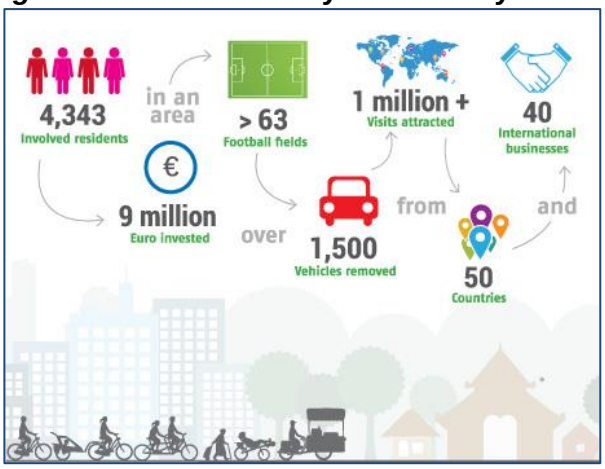
Although walking is the most common travel mode in most Asian cities, it often receives little consideration in conventional transport planning. Sustainable transport planning recognizes the important roles that walking plays in an efficient and equitable transport system and so tends to provide far more support for this mode. New planning resources help make this possible.

China's Ministry of Housing and Urban-Rural Development has produced the *Guideline for Urban Pedestrian and Bicycle Transportation System Planning and Design*, the first national-level technical policy document of its kind in the field. The Guideline was developed by China Academy of Urban Planning and Design (CAUPD) and China Sustainable Transportation Center (CSTC), supported by the Energy Foundation China Sustainable Cities Program (CSCP).

Figure 12 **Chinese Active Transport Planning Guidelines** (CAUPD & CSCP 2014)

The Republic of Korea has made major commitments to active transport (Shin, et al. 2013). For example, the *EcoMobility World Festival* held September 2013 in Suwon, South Korea, showcased an ecomobile urban lifestyle in the neighborhood of Suwon City, which became car-free for the month. The Festival was jointly implemented by the City of Suwon under the leadership of Mayor Yeom, ICLEI and UN-HABITAT.

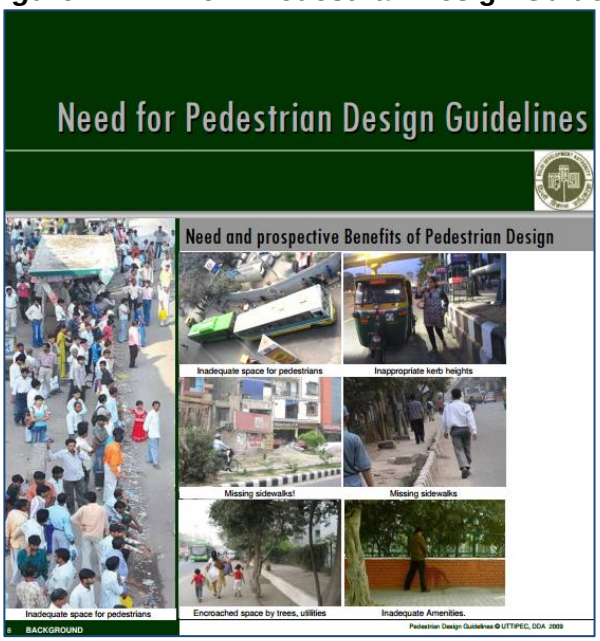
Figure 13 **Suwon City EcoMobility World Festival (**http://emwf2013.iclei.org**)**



The EcoMobility World Festival held September 2013 in Suwon is an example of the Republic of Korea's efforts to promote active transport. Other Korean cities are also devoting significant resources to improving and encouraging walking and cycling.

Civic groups in India are working to improve walking and cycling conditions (CSE 2009), and some government agencies including the National Transport Policy Development Committee and the Delhi Development Authority, which published the *Pedestrian Design Guidelines: Don't Drive…Walk*, are institutionalizing more pedestrian-oriented urban transportation planning.

Figure 14 **Delhi Pedestrian Design Guidelines**



Design guidelines help institutionalize new concepts and practices, such as this document for improving the accommodation of pedestrians in Indian cities.

Clean Air Asia (CAA 2012) conducted a walkability study in six Indian cities, including three big cities (Chennai, Pune and Bhubaneshwar), and three smaller but growing cities (Surat, Rajkot and Indore). The project's objective is to improve the state of walking and pedestrian facilities in Indian cities by policy, strategic documents, regulations and project development. Based on the study findings it developed specific recommendations for improving walking conditions, and identified various stakeholders who should play a role in developing policies and projects to improve walkability in Indian cities.

Complete Streets refers to roadway design and operating practices intended to safely accommodate diverse users and activities including pedestrians, cyclists, motorists, public transport users, people with disabilities, plus adjacent businesses and residents. Complete Streets planning recognizes that roadways often serve diverse functions including through travel, recreational walking, socializing, vending, and nearby living, which must be considered and balanced in roadway design and management. Complete Streets planning is an effective way to implement more multi-modal planning and encourage more compact development. It is supported by many professional organizations such as the Institute of Transportation Engineers and the American Planning Association, and although Asian transport planners increasingly understand the importance of accommodating diverse modes and users (NTDPC 2012), the term, Complete Streets, is only starting to be recognized in developing countries.

Challenges and Recommendations

New transportation infrastructure is being developed throughout Asia. A major challenge is to incorporate sustainable planning and design principles at each stage of development, for example, to ensure that new roadways are planned and built to safely accommodate multiple modes (walking, cycling and public transport for all social groups), and to support TDM policies and Smart Growth principles.

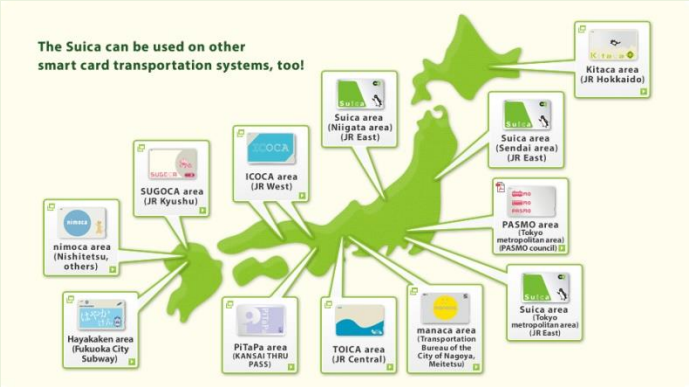
One specific challenge is the need for credible modelling tools that can predict the impacts, including greenhouse gas emission reductions, from more sustainable policies and projects in a particular situation (Bongardt, et al. 2011). In some cases, targeted funds and credits are available for strategies that reduce emissions, but only if funders and regulators have confidence that projected benefits will occur.

4.4. Technologies

Some Asian countries are world leaders in developing and operating state-of-art transportation systems, including sophisticated traffic management and user information, payment technologies, and traffic control systems. Technology implementation is particularly high in Singapore, Japan and the Republic of Korea.

Contactless Transit Fare Payment Systems in Japan and South Korea
(http://bit.ly/1NFQcVV), 17 April 2014

More than 90% of the total global value of Near Field Communication (NFC) payment transactions was generated in the Asia Pacific region, particularly in Japan and South Korea. Japan has more than 70 million NFC-enabled devices, compared with approximately 3 million in the US. In December 2010 alone, 9.8 million Japanese consumers used their mobile wallet to make a purchase, including 2.7 million public transport fare purchases using mobile telephones. More than 30 million Suica Cards have been issued, which can be used for transport fare and other purchases.



South Korea's contactless payment market has at its centre the T-money services, which were first implemented in 2004 as a basic transit fare card in Seoul, but evolved into a rechargeable smart card that can be used to purchase public transit fares in all major Korean cities and for other purchases. T-Money 'cards' come in different shapes and sizes ranging from standard credit cards, key chains, charms, watches, rings, stuffed animals, and embedded in mobile phones.

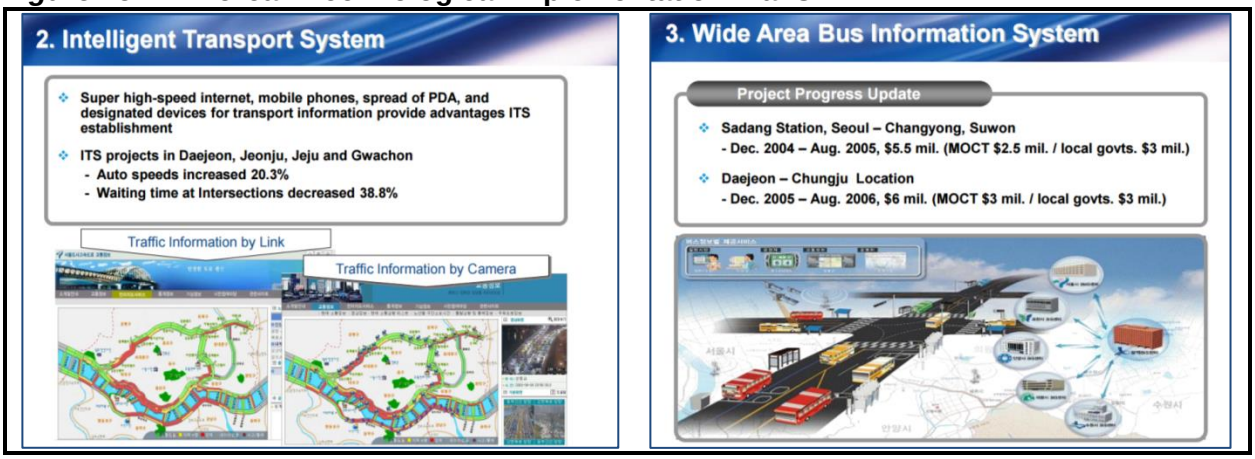
New technologies, including improved logistics, vehicles and terminals, are also important for improving freight transport sustainability (CAA 2015). Freight is the fastest-growing source of transport emissions around the world. Sustainable transport policies tend to focus on personal travel and often overlook freight. Fright transport efficiency can be improved by policies that result in cleaner fuels, higher fuel economy, infrastructure improvements, fleet upgrades and information technology. Clean Air Asia's *Green Freight Website* provides access to information on policies and programs, technologies and logistics, and data relevant to the freight sector, especially for developing countries.

Challenges and Recommendations

Despite major progress in some cities, many Asian cities still use older technologies and lack implementation plans to deploy better technologies, or are failing to integrate programs so new information or payment systems only function on a portion of the transport network. For example, as automobile ownership increases in a city, it is useful to develop a standard regional platform for parking information and payment systems that includes both municipal and commercial parking facilities. Similarly, as public transit systems evolve from informal taxi and buses services to formalized public bus systems, it is useful to establish a regional platform for transit information and fare payment systems, accessible by Internet and mobile telephones.

Integrated technological implementation requires coordinated planning between public agencies, private companies and users. This can be challenging. Without government leadership, the technological platforms may become fragmented, reducing the quality of service provided to users.

Figure 15 **Korean Technological Implementation Plans**

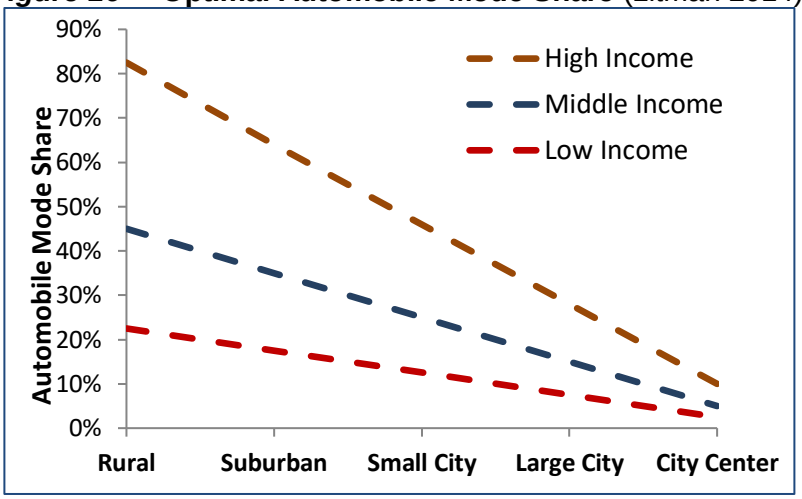


In order to maximize impacts and benefits, technological innovation often requires strategic planning and coordination between various stakeholders.

4.5. Transportation Demand Management

Cities are, by definition, places where many people and activities locate close together, so urban space is always scarce and valuable. As a result, efficient and equitable urban transport requires limiting vehicle ownership and use to what city streets can accommodate (Figure 16). Many Asian cities are implementing transportation demand management (TDM) strategies to reduce vehicle travel to what roadways can efficiently accommodate. TDM strategies can significantly reduce the growth in vehicle travel and associated problems (ITF/OECD 2015).

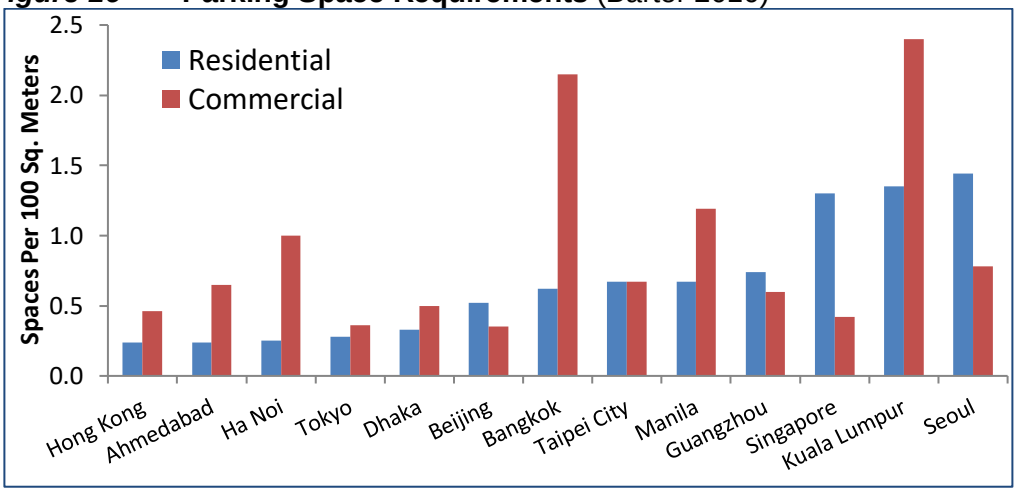
Figure 16 **Optimal Automobile Mode Share** (Litman 2014)



As cities become larger and denser, the portion of trips made by automobiles should decline. With an efficient transport system, even wealthy people walk, bicycle and use public transit for a major portion of urban trips.

An important TDM strategy is to reduce or eliminate minimum parking requirements for new developments, and shift to more market-based parking supply, so motorists pay directly for the parking spaces they use. Many Asian cities continue to impose high minimum parking requirements on new developments (Figure 16), but this is changing as sustainable transportation advocates and practitioners become more familiar with more efficient parking management strategies (SUTP 2010; Weinberger, et al. 2013).

Figure 16 **Parking Space Requirements** (Barter 2010)



Many Asian cities require developers to provide large amounts of parking. Such policies subsidize vehicle ownership and use, and discourage affordable urban infill, which contradicts sustainable transport goals.

Some jurisdictions, most notably Tokyo, require motorists to demonstrate that they have an off-street parking space in order to register a vehicle in that city. This rule reduces on-street parking congestion problems and has reduced per capita private car ownership (Di 2013).

Singapore uses a combination of high vehicle licensing fees and road tolls to control vehicle ownership and use. Hong Kong Special Administrative Region of China (hereafter Hong Kong) does not directly restrict vehicle ownership but has very high parking prices and crowded streets. These policies significantly reduce vehicle ownership and use, even in these affluent and economically successful cities: Singapore has just 10.1 cars per 100 residents, and Hong Kong has just 6.3 cars per 100 residents (Di 2013).

Singapore Vehicle Control Strategies

New car buyers are required to purchase one of a limited number of *Certificate of Entitlement* (COE) which are auctioned to the highest bidders.

Motorists are charged for driving on major roads using an Electronic Road Pricing (ERP) system. Cars are equipped with an In-Vehicle Unit (IU), which automatically deducts a fee each time the vehicle passes under a gantry.

Singapore uses Electronic Road Pricing (ERP) that charges for driving on major roads during peak periods

Chinese cities have adopted various programs to restrict private vehicle ownership and use (Suwei and Qiang 2013). Shanghai holds auctions, Beijing uses lotteries, and Guangzhou uses a hybrid system to allocate vehicle licenses. Since 2008, Beijing prohibits vehicles from driving on public roads one day per week based on their license plate numbers, and since 2009, prohibits vehicles that have not passed emission tests (called “yellow-label”) from driving in the city center. These programs provide real world testing of innovative strategies.

Challenges and Recommendations

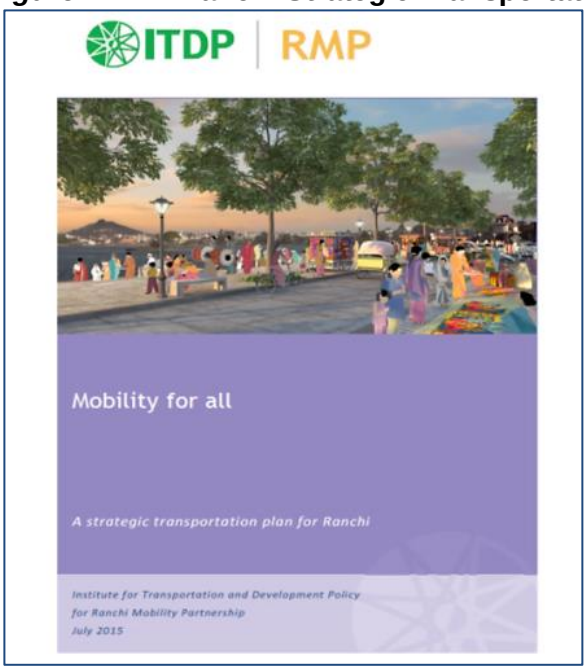
TDM can provide many large benefits, in fact, it is critical for achieving many sustainable transportation goals (ITF/OECD 2015), and considering all impacts is often more cost-effective than road and parking facility expansion, but it faces significant political and institutional obstacles. There is often significant political opposition to more efficient transportation pricing or road space reallocation, and transportation budgets often have funds dedicated to roads and parking facilities that cannot be used for alternative modes or demand management programs.

Overcoming these obstacles requires public education about the overall benefits of TDM, more comprehensive evaluation which considers all impacts when evaluating TDM strategies, and least-cost funding, which allows TDM programs to be implemented whenever they are the most cost effective solution to transport problems.

4.6. Strategic Transportation Plans

Strategic transport plans are key to assembling the combination of policies and projects for more sustainable transportation in an urban region or city. A good example is the strategic transport plan created for Ranchi, India, the capital of Jharkhand. Ranchi and the other cities of Jharkhand are growing rapidly. The use of personal motor vehicles is expanding rapidly in Ranchi, leading to congestion in central areas and safety challenges. Ranchi current lacks a formalized public transport system; most people rely on walking and paratransit for their day-to-day travel. Until recently, the city's solution to traffic problems consisted primarily of road widening and flyovers. To develop more equitable, affordable, safe, accessible, and sustainable transport in Ranchi, a variety of civil organizations with diverse interests and backgrounds established the Ranchi Mobility Partnership (RMP). The RMP obtained a grant to lead a comprehensive, multi-stakeholder strategic planning process which produced the report, *Mobility for All: A Strategic Transportation Plan for Ranchi*.

Figure 17 **Ranchi Strategic Transportation Plan** (ITDP 2015)



The Ranchi Mobility Partnership obtained a grant to fund the development of a comprehensive, multi-stakeholder strategic planning process for more equitable, affordable, safe, accessible, and sustainable transport in their city.

The process began by developing the *Ranchi Mobility Charter* which outlines the coalition's position on mobility issues. It established the principles that should guide transport planning:

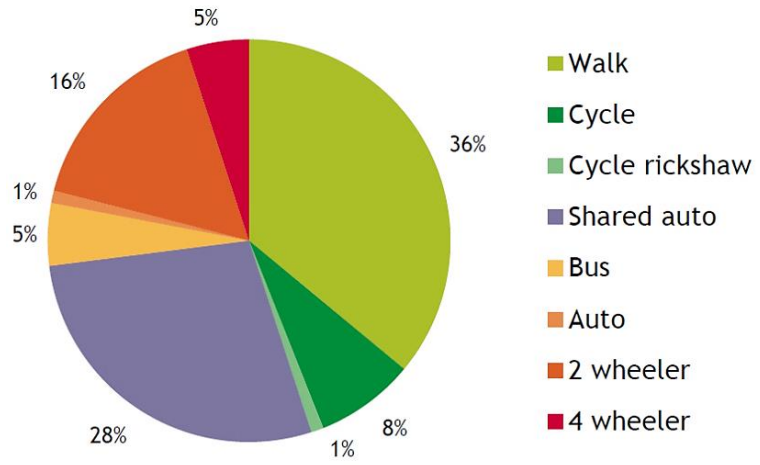
- *Equity:* The needs of all people (including the differently able), regardless of the modes of transport they use, should be the primary criteria in the design of transport systems.
- *Sustainability:* The transport system should consume as few resources as possible; yet provide attractive, comfortable, and convenient service. The resources in this context include urban space, clean air, fossil fuels
- *Liveability:* Urban landscapes should provide ample public spaces for uses like casual recreation, relaxation, social gathering, and managed street-side vending.

RMP's Charter stresses that transport planning should focus on the movement of people, not vehicles, a goal clearly expressed in the National Urban Transport Policy (NUTP), but reflects a major change from traditional traffic and transport studies that emphasize movement of vehicle traffic. In light of these principles, the Mobility Charter calls on the city to carry out a specific set of infrastructure initiatives:

- Improve, expand, and manage a high-quality, bus-based public transport system.
- Develop design guidelines for complete streets that take into account all street users, especially pedestrians, cyclists, and various stationary activities.
- Construct complete streets that allocate street space equitably among all users.
- Develop an effective parking management framework.
- Develop compact, pedestrian friendly neighbourhoods around public transport

The planning process used comprehensive and multi-modal analysis, including a comprehensive travel survey that included all demographic groups (Figure 18). It also investigated specific concerns and problems, such as special risks that women, transit service quality, vehicle parking problems, and air pollution. The results provide a foundation for rational transport planning that serves all system users and addresses diverse planning objectives.

Figure 18 **Ranchi Mode Share Data** (ITDP 2015)



The strategic planning process included comprehensive travel surveys:

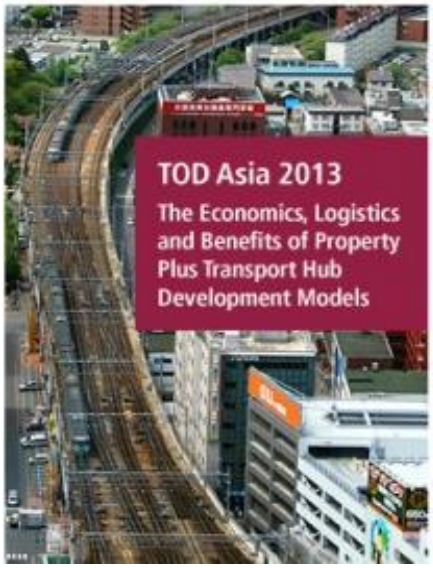
A household survey of 7,100 individuals in various demographic groups.

- *On-road, interview-based surveys.*
- *Traffic counts at various strategic locations.*
- *Surveys of public transport users.*
- *Mapping of existing street and transit services.*
- *Government data on the vehicle population, traffic accidents, and ambient air quality.*

Based on this research, the researchers developed specific recommendations for roadway and public transit service improvements, roadway design and operational changes, parking management, and land use development policies, that reflect international best practices for more efficient and equitable, and therefore more sustainable, urban transportation planning. The study also includes detailed administrative and funding proposals, a five-year implementation plan, and analysis of resulting economic, social and environmental impacts.

4.7. Integrated Transport and Land Use Planning

Transportation and land use planning can be integrated in ways that support more sustainable transportation. For example, development policies can support more compact, mixed walkable development, along major transit corridors, in order to maximize transit ridership; this is often called *transit-oriented development* or *Smart Growth.*

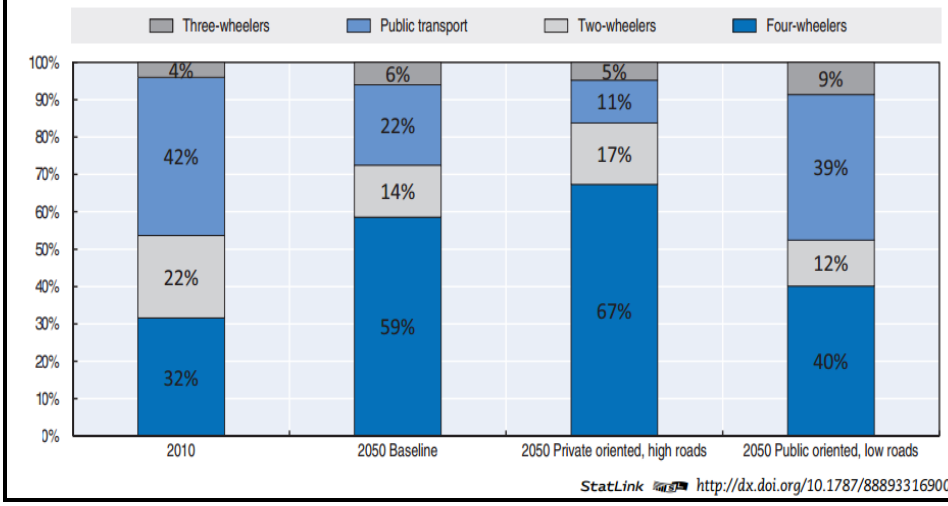


Most transportation professionals understand the basic concepts of integrated planning, and a number of good resources are now available to provide guidance, but there are still major problems with implementation (Suzuki, Cervero and Iuchi 2013). For example, many cities restrict development densities, impose minimum parking requirements, or in other ways compact urban infill development (Litman 2014). In other cases, municipal governments encourage greenfield development outside existing urban areas, which isolates residents and increases their transport costs.

4.8. Transportation Demand Management in Developing Country Cities

The study, *Urban Passenger Transport Scenarios for Latin America, China and India* (ITF/OECD 2015) used the MoMo model to predict how various policy scenarios could affect future travel patterns in rapidly-developing Latin American, Chinese and Indian cities. The analysis indicates that if urban policies continue to promote private motor vehicle use by permitting sprawl, letting public transport expansion lag population growth, significant roadway expansion and low fuel prices, public transport accounts for only 11% of urban mobility in Latin America and India, and 9% in China by 2050. In contrast, polices that limit sprawl, prioritise public transport over urban road expansion and raise fuel prices can significantly increase public transport travel and reduce automobile travel, and associated costs.

Figure 19 **Modal Share Projections in Indian cities, 2010 and 2050** (ITF/OECD 2015)



Policies that improve public transit services, reduce sprawl and discourage automobile travel result in large increases in public transit mode share and reductions in motorcycle and car travel, and associated costs in rapidly developing cities.

4.9. Rural Transportation Planning

Although EST Forum members are experiencing rapid urbanization, and environmental problems such as air and noise pollution tend to be most severe in cities, the Forums also acknowledge the importance of improving rural transport. And estimated 30% of the global population will remain rural in 2030, more than 1 billion people worldwide currently lack access to an all-season road, and nearly 80% of the extreme poor live in rural areas. As a result, rural transport improvements are essential for achieving several recently-adopted Sustainable Development Goals (SDGs) and associated targets. Rural transport makes direct contributions to Targets 1.4 (access to basic services), 2.1 (access to nutritious food), 9.1 (reliable and resilient infrastructure), and 11.2 (sustainable transport systems). Rural transport also makes indirect contributions to Targets 6.1 (access to safe drinking water), 12.3 (reduction of food loss), and 13.1 (climate adaptation).

Efficient rural transport is crucial to ensuring food security, developing agriculture, and reducing rural poverty. Reducing rural transport costs can raise farm-gate prices, increase farmers' incomes and reduce urban food prices. It can also facilitate delivery of farm inputs, increase agricultural yields, and reduce post-harvest losses, which amounts to approximately 40% of total production in some countries due in part to inadequate rural transport options.

Bangkok Declaration progress reports indicate that many countries are implementing innovative rural transport improvements. The Rural Access Programme of Nepal promotes economic development by developing gender-equitable approaches to rural road project management, and Afghanistan's National Rural Access Programme aims to improve all-season accessibility in four provinces, expand maintenance practices, and build local capacity. India is implementing the Prime Minister's Rural Roads Program (PMGSY), which is to provide all-season farm-to-market connectivity in all villages with more than 500 people (about 180,000 villages) and develop capacity of Indian States.

In defining rural resilience, we must not focus solely on climate or disaster resilience, but also on socio-economic resilience. Improved rural transport systems and connectivity can increase productivity, incomes and livelihoods in rural communities and thus their contribution to GDP. Furthermore, improved rural transport can support more efficient evacuation, relief mobilization, and rehabilitation. Importantly, investment in resilient rural transport infrastructure and services can progressively reduce government expenditures by limiting the extent of damages and losses during extreme events.

Many countries lack adequate coordination among key sectors (e.g. transport, agriculture, health care), so the EST Forums can provide important rural transport planning guidance and support. The 2015 Forum emphasized the importance of raising the political priority of rural transport at national and global levels; prioritizing funding for rural passenger and freight transport, and accelerating efforts to increase rural transport resilience. The Forum confirmed that effective rural transport programs require an active involvement of communities. Participants endorsed the continued integration of rural transport in the EST Forum.

5. Key Lessons Learned

This section summarizes key lessons learned from a decade of EST Forums in Asia.

Most important, the Forums demonstrate the value of leadership. They show that, given suitable opportunities and coordination, diverse countries and organizations can create a common vision for a better future, and assemble the resources needed realize that vision.

The EST Forums also demonstrate that the transport planning paradigm is shifting: a growing portion of policy makers, practitioners and the general public understand the value of more comprehensive analysis and integrated solutions that address social equity and community livability objectives.

It is important to recognize the diversity of transportation issues. Transport policies affect virtually every aspect of our economies, communities and lives. As a result, transport planning should be comprehensive – it should consider diverse impacts, objectives and options and develop integrated solutions. Asia is extremely diverse. The continent contains the world's tallest mountains, some of the largest deserts, many of the largest and most affluent cities, and some of the least developed regions on earth. As a result, the problems communities face, and the solutions they choose, vary tremendously and must be tailored to each situation. One size does not fit all!

Asia's diversity is a challenge, but also an opportunity – it means that we can build broad coalitions to support sustainable transport if they respond to partners' diverse perspectives and needs. For example, some people are more concerned about affordability or safety than environmental protection, and so will support win-win solutions that help achieve all of those objectives. Fortunately, many do – our challenge is to effectively communicate their value to various audiences.

One of the most dramatic changes over the last decade is the growth and increasing sophistication of international, regional and national sustainable transportation research and advocacy organizations. These organizations produce high quality reports, fact sheets, websites, videos and software programs. Some of these are being translated into multiple languages and tailored to specific audiences. Such organizations are important EST Forum partners and make important contributions to positive change.

Some specific lessons are summarized below:

What went right?

- The EST Forums have helped improve our understanding of sustainable transport concepts. Policy makers, practitioners and the general public increasingly understand the importance of comprehensive analysis and integrated solutions.
- The EST Forums help governments establish clear goals and measurable targets, and through the country and city reports, track progress toward achieving those goals. This is an effective way to focus attention and stimulate progress on these issues.
- The EST Forums contribute to more multi-modal planning. Many jurisdictions, transport agencies and professional organizations are changing their policies, investments and planning practices to give more consideration to walking, cycling and high quality public transit services.
- Many cities have implemented, or are in the process of deploying, technologies that improve traffic and public transit operations, and facilitate payments for public transit fares, parking fees and road tolls. In many countries, most residents have access to mobile telephones and Internet access that can make travel more convenient and safer.
- Fuel subsidies are declining, and some cities are implementing parking pricing reforms.

What went wrong?

- There are still frequent conflicts between the transport policies of different jurisdictions and agencies, such as federal governments that subsidize vehicle fuel, while regional governments invest in public transit, while municipal governments require generous parking supply.
- Although most people agree on the importance of social equity objectives (such as ensuring basic mobility for physically and economically disadvantaged people, increasing affordability, and reducing traffic risks to vulnerable users), these are often treated as special issues rather than incorporated into day-to-day planning decisions.
- Some social women, girls
- There has been little progress with pricing reforms. More efficient road tolls and parking pricing often face severe political opposition. Road and parking pricing are sometimes implemented to generate revenue, but seldom as demand management strategies.
- Many countries provide little support for professional development by transport planners and engineers, so many practitioners continue to use outdated methods.
- Many cities have inefficient land development policies. They fail to effectively guide development, resulting in too few housing options or too much sprawl.
- Some new public bus systems, including some BRT systems, have failed to achieve their ridership and revenue targets, often because they are built without integrated planning and incentives to encourage ridership.
- New technologies are sometime difficult and costly to implement. As a result, many areas still lack services such as integrated public transit information and payment systems.
- Many cities lack effective traffic and parking regulation enforcement, and driver training.

- Many jurisdictions lack data needed for planning and evaluation.

Have Asian countries and cities been successful in addressing social equity objectives?

- In many Asian communities, physically and economically disadvantaged people endure very poor travel conditions due to a combination of inadequate facilities (sidewalks and paths), inadequate or expensive public transit services, and rapid increases in automobile traffic. In some cities, conditions are getting worse, rather than better, due to increased vehicle traffic speeds and volumes, and parking on walkways, which make walking on roadways infeasible.
- In many cities, a major portion of lower-priced housing is located at the urban fringe, leaving low-income households isolated. In a modern, industrialized economy, providing affordable housing within convenient walking distance of urban jobs and services is an important way to improve disadvantaged people's economic opportunities.
- There is evidence that women are frequently harassed while walking, cycling and using public transport. Although some agencies are trying to address these problems, progress is slow.

What are critical EST areas for Asian countries over the post-2015 development era?

- Many countries need to better coordinate the policies of various ministries, agencies and jurisdictions to allow more integrated transportation policies and planning practices. For example, transport, environment and health agencies should coordinate their efforts to encourage shifts from private automobile travel to more efficient, less polluting and healthier travel modes, and transport and housing ministries should integrate development policies to create more compact, multi-modal cities.
- Governments need to develop better funding options. Federal governments can establish optional taxes that municipal governments can use to support sustainable transport, such as high quality public transit, and walking and cycling facility improvements.
- Practitioners (analysts, planners and engineers) need better tools for evaluating the full costs of business-as-usual, and the full benefits of sustainable transport policies and projects. We need better models for predicting how specific transport system and land use development changes will affect travel activity (how and how much people travel), and tools for quantifying the resulting economic, social and environmental impacts.
- Sustainable transport advocates need better resources for responding to common criticisms and political attacks on sustainable transport policies and programs. For example, we need information and community advocacy that can counter motorists' opposition to bus- and bike-lanes, and efficient parking pricing.
- Governments, advocacy organizations, and universities can promote a culture of innovation that encourages public officials and practitioners to implement pilot projects to test new ideas, with a plan identifies how it can be scaled up if the concept proves to be successful.
- We need better data for planning, evaluation and research purposes. The EST Forum can help develop global or regional standards and best practices for planning data collection.
- To help public officials and practitioners understand the problems that people with disabilities face while traveling, they should spend a few days traveling their city in a wheelchair.

6. Key Challenges and Recommendations

This section discusses some important challenges for more sustainable transportation development.

6.1. Urban Livability and Social Equity

The combination of rapid urbanization and motor vehicle growth, plus limited planning resources has resulted in many Asian cities lacking quality-of-life features such as safe and attractive streets, public parks and playgrounds, shade trees and preservation of cultural amenities. To create more livable and equitable cities, Asian urban development policies can incorporate the following features:

- *Complete streets policies.* Design and manage streets to ensure safe and comfortable walking and cycling, with speed control, sidewalks, crosswalks, and bike lanes where appropriate.
- *Streetscaping.* Design streets with amenities such as shade trees, benches, and garbage cans.
- *Parks and recreation.* Develop parks and recreation facilities within a five-minute walk of most houses, and devote at least 20% of the urban area to public openspace.
- *Housing diversity.* Build diverse and affordable housing so all households can find housing options that meet their needs.
- *Culture and heritage.* Support community resources that preserve cultural identity and history.

6.2. Motorcycles and Scooters

One issue that is particularly important in Asian cities is the large number of motorized two-wheelers (motorcycles and scooters). This provides both benefits and costs. Two-wheelers are less expensive, require less space for travel and parking, and consume less fuel than automobiles, but still cause significant congestion, accident risk, noise and air pollution, and so should be discouraged, particularly in dense urban areas.

To minimize noise and air pollution some cities banned fossil fuel motorcycles and scooters, which created demand for electric scooters that are now widely used in those cities and elsewhere around the world (Cherry, et al. 2007). This significantly reduces pollution emissions, and because electric scooters tend to have lower maximum speeds, can reduce accident risk.

6.3. Regional Research and Knowledge Sharing

Other world regions have well-established organizations which coordinate major transport research programs and knowledge sharing:

- In 1953 16 European countries established the *European Conference of Ministers of Transport* (ECMT), which in 2006 established the OECD *International Transport Forum* (ITF). Although the OECD and ITF are global, their members, offices and events are primarily located in Europe.
- The *Transportation Research Board*, a division of the U.S. National Academy of Sciences, was established in 1920 as the National Advisory Board on Highway Research to sponsor research and exchange information about highway technologies. In 1974 it became the *Transportation Research Board*. It continues to support research and information sharing, and sponsors many events including an Annual Meeting which now attracts more than ten thousand participants.

These organizations, and the programs and events they support, provide a foundation for research, information exchange and professional development. Although some Asian countries have national transport research programs and support academic networks, there is no major international organization in the Asian region. The EST Forums have already started to fill that role; they give policy makers, experts and researchers an opportunity to develop a strategic vision and share emerging information. For example, the 2015 Forum introduced emerging information on why and how Asian countries can improve their transport system resilience. To better fill this gap the EST Forums could directly support research and information dissemination programs, or help sponsor a new organization with that mandate, comparable to the OEDC's sponsorship of the International Transport Forum

6.4. Data Quality

Planning, evaluation and research all require high quality data, such as those listed in Table 7. These data must be comprehensive, accurate, consistent, transparent, and available. Sustainable transportation planning requires new data in order to account for more impacts and modes than conventional planning.

Table 7 **Examples of Transport-Related Data**

Facilities and Services	Activities	Impacts	Land Use
Road and railroad supply and quality	Vehicle ownership (by type and user)	Transport facility and service expenditures	Density and mix
Parking supply and price	Vehicle travel (by type, purpose and location)	Household transport expenditures	Various measures of accessibility
Public transit service supply and quality	Freight transport	Traffic accidents and casualties by mode	Portion of land devoted to transport facilities
Walking and cycling facility supply and quality	Person travel (by mode, purpose and location)	Energy consumption	Land valuation (as impacted by transport facilities and services)
Port and airport size and condition	Mode share	Pollution emissions and exposure	Costs and market values
Transport system connectivity	Non-motorized travel	Traffic and aircraft noise	
Accessibility indicators	Travel speeds and delay (congestion)	Transport quality for disadvantaged groups	

This table lists various types of data needed for transport policy, planning and research.

Currently, the quality of Asian transport planning data is highly variable. Some jurisdictions have excellent data, but others lack basic data, such as motor vehicle ownership and type, roadway quality, and traffic casualties. Even where high quality data are available, they are often incompatible with those collected at other times and places, making it less useful for research and evaluation purposes. This may be an opportunity to improve transport planning data by establishing Asia-wide standards basic data collection practices, similar to current efforts to standardize European transport statistics (EuroStat 2014). This effort could be coordinated with international organizations.

7. The Way Forward

This analysis indicates that the EST Forums in Asia are overall effective and beneficial. As a result, the best way forward is to continue these events, and adjust them to better meet future needs.

The value of sustainable transportation policies is likely will increase significantly in the future, due to growing populations and economic activity, urbanization, and environmental concerns. Many sustainable transport concepts have been tested and proven their value, we have good knowledge about how and where they should be applied, so they are now ready for promotion and rapid application. This suggests that this is a good time for EST Forums to help scale up deployment of these innovations.

Although the EST Forums have proven effective at building leadership at the national level, and in some cities, these only directly involve a small portion of the decision-makers who affect transport policies and planning practices. For this reason, it may be time for EST Forums in Asia to support the development of many smaller-scale events with similar goals and methods, at the national, regional and local levels. These Forums can involve a similar set of policy makers and their advisors, practitioners, advocacy groups, and experts who can work together for more sustainable transport policies in their communities. Several examples exist, including the *Urban Mobility India* conference held annually in New Delhi, and regional conferences and workshops sponsored by planning and engineering professional organizations.

The International Transport Forum (ITF), the Transportation Research Board (TRB) and the Institute of Transportation Engineers (ITE) are examples of large international organizations that support research and knowledge dissemination. They focus on Europe and North America; Asia badly needs similar organizations. The EST Forums in Asia can either expand to fill those needs or help create a new organization, as the OECD created the ITF.

One possible reform is to change the name from *Environmentally Sustainable Transportation Forums* to *Economic, Equitable and Environmentally Sustainable Transportation (EEEST or 3EST) Forums*, in recognition that sustainability balances economic and social as well as environmental goals. This reflects our evolving understanding of the meaning of *sustainability*, and can help build partnerships with organizations that have other priorities besides environmental protection.

8. Conclusions

Wow, a lot can happen in a decade!

Asian countries are experiencing growth and development at an unprecedented scale. Billions of people whose grandparents and parents lived in traditional villages are moving to cities where, for better and worse, their grandchildren will live modern urban lifestyles. These changes affect every aspect of the economy, society and the environment.

Increasing motor vehicle travel and more sprawled development are causing severe problems in Asian cities including traffic congestion, accidents, pollution, rising inequity, and declining quality of life, plus climate change and associated threats such as sea level rise and extreme weather events. Rural communities face different but equally severe challenges due to inadequate basic transport infrastructure and connectivity. Existing institutions are unsuited to addressing such complex and interconnected problems, they require more integrated and innovative solutions.

Fortunately, a group of organizations and people have responded, in part, through EST Forums and related events that have occurred during the last decade. This review of EST Forum activities and accomplishments indicates that they are a catalyst for more sustainable transport. These events have helped change the way many people think about and solve transport problems, and helped forge alliances between diverse stakeholders. The hundreds of Forum participants influence many thousands of planning decision that affect billions of people (Figure 20). Many ideas and methods that were introduced at EST Forums are now being widely adopted throughout Asia.

The Forum has played a critical role in shaping of regional views and perceptions towards next generation transport solutions for the world's most populous and economically dynamic region.

- The Forum provides a strategic and knowledge platform for sharing experiences and disseminating among senior government officials concerning best practices, policy instruments, tools, and technologies for sustainable transport, underlined in the Aichi Statement (2005), Seoul Statement ~ Towards the Promotion of Environmentally Sustainable Transport (EST) for a Low-Carbon Society and Green Growth in Asia, the Bangkok 2020 Declaration (2010-2020), Private Sector Declaration on Green Freight in Asia towards a Green Economy, the Bali Declaration on Vision Three Zeros – Zero Congestion, Zero Pollution, and Zero Accidents (Bali Vision Three Zeros), and the Colombo Declaration for the Promotion of Next Generation Low Carbon Transport Solutions in Asia.

- The Regional EST Forum in Asia has played an instrumental role in bringing together Asian City Mayors and representatives to sign the Kyoto Declaration (2007, Kyoto/Japan) and Addendum to Kyoto Declaration - For the Promotion of Environmentally Sustainable Transport Towards Realizing Resilient, Smart and Liveable Cities in Asia (2014, Sri Lanka).

- The Regional EST Forum in Asia has influenced a number of countries to develop comprehensive national EST strategies with an objective to integrate EST in overall national policy, planning and development towards sustainable development (Cambodia, Indonesia, Lao PDR, Nepal, the Philippines, Viet Nam).

- The Regional EST Forum in Asia has also emerged as a potential ground for bilateral and multilateral donor agencies, development banks, and international organizations to identify areas for possible capacity building, technical cooperation and investments.

Figure 20 **EST Forum Leverage Effects**

EST Forums, and related regional events, attract hundreds of participants who influence thousands of policies, which result in more sustainable transport planning, more diverse and efficient transport systems, and improved economic, social and environmental outcomes for billions of people throughout Asia.

- As opposed to conventional thinking that mostly relies on policies and programs that induce more motorization at the expenses of other critical needs for achieving safe, resilient, inclusive and livable society, the Regional EST Forum has been able to generate growing interest in the regional to address a number of key, but often neglected, areas and contemporary thinking in transport sector, such as- regional connectivity (intra-region/rural-urban linkage) for sustainable development; building smart, safe and resilient communities through EST measures; dedicated NMT (promotion of national bicycle schemes) and road safety for social equity; greening the freight and logistics sector / intelligent freight system; improved accessibility to essential utilities and services; financing needs for next generation sustainable transport solutions; institutional arrangements in realizing next generation sustainable transport systems; expansion of e-Mobility and railways as next generation solutions; intelligent transport system (ITS) for efficiency, safety, green jobs, pollution reduction; smart growth, transit oriented developments (TODs), low carbon transport solutions and development path; and Implications of Bali Vision Three

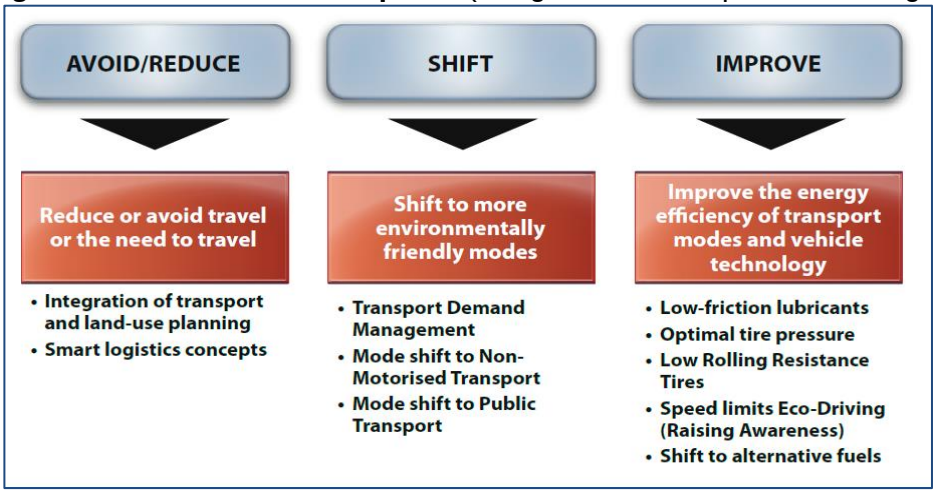
Zeros (zero congestion, zero pollution and zero accidents) on human development and national productivity.

The Asian EST process has further contributed in creating vital enabling conditions for the countries and cities for effective implementation of 2030 Agenda / SDGs such as-enhanced technical capacity at national and local level; sustainable transport strategies through interagency coordination process at national level (MoE, MoT, MoH, MoUD, etc); better policy and institutional insights to transport and sustainable development issues; better implementation framework for sustainable transport (e.g., Bangkok 2020 Declaration, Bali Vision Three Zeros ~ Zero Congestion, Zero Pollution, Zero Accidents); better understanding of the nexus between sustainable transport and SDGs; improved regional (Asia-wide) consensus on the role of regional connectivity and green-freight development for regional economic integration/development, among others.

Although it is difficult to measure the full extent of these impacts, they are probably very large, and their importance will increase in the future.

We gained a better understanding of sustainable transport during this decade. The EST Forums originally focused on reducing air pollution, but soon expanded to consider additional goals. It became evident that *everything is connected*, so successful solutions require comprehensive analysis of economic, social and environmental impacts in order to identify the *win-win* strategies which help achieve multiple policy goals. These are often organized in the *Avoid-Shift-Improve* framework, which helps prioritize solutions in order to maximize their benefits.

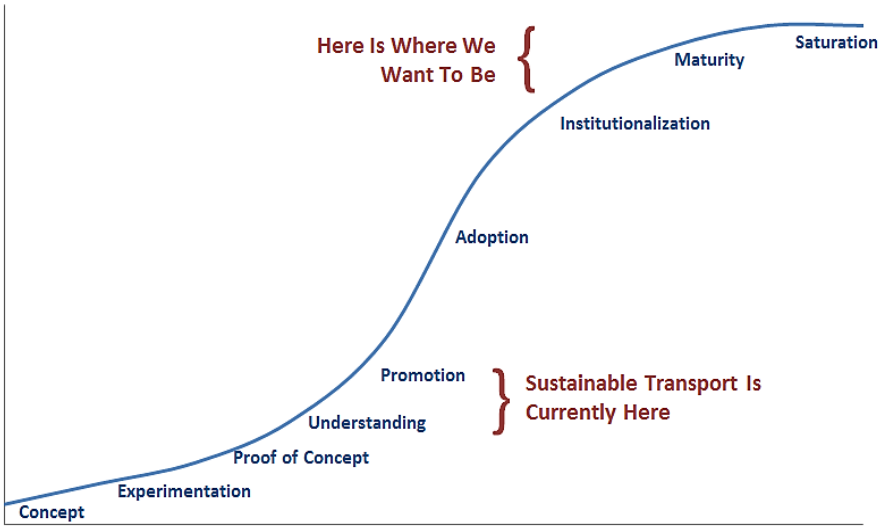
Figure 21 **Avoid-Shift-Improve** (Bongardt, Breithaupt and Creutzig 2011)



Avoid-Shift-Improve is a recipe for maximizing sustainable transport benefits.

Many of these strategies are relatively new, but have been tested and proven their value, and we have developed good understandings of where and how they should be implemented for maximum benefit (Figure 22). We are now entering the promotion and adoption stage during which these concepts will be widely implemented. It is time to scale up.

Figure 22 **Where We Are And Where We Want To Be**



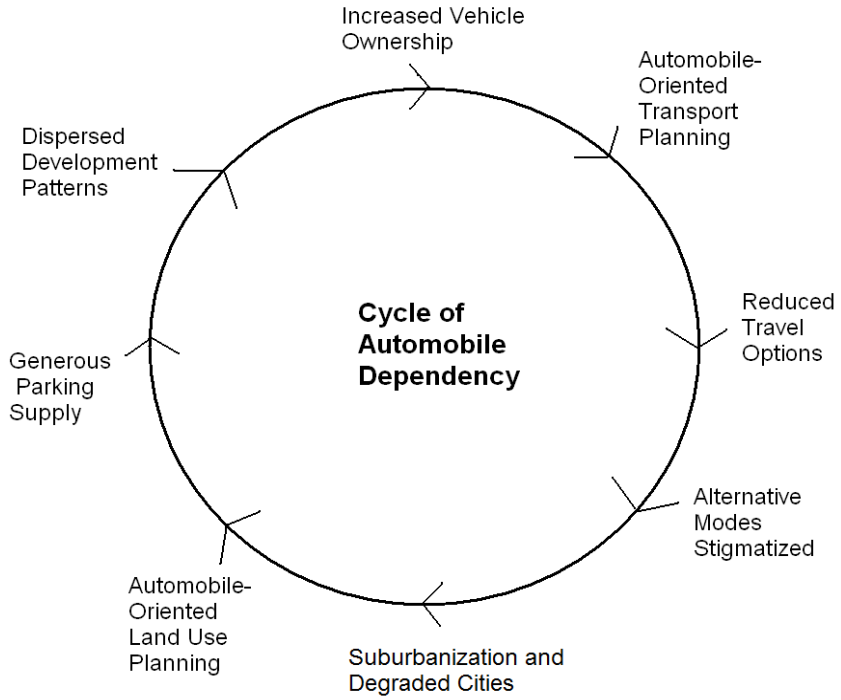
Sustainable transportation innovations are likely to follow a predictable growth pattern. Many strategies are currently in the "understanding" and "promotion" phases, and are starting into a "rapid adoption" phase. We should prepare to scale up to meet growing demands for smart solutions.

This requires leadership: people and organizations that will work to create a shared vision and create the resources needed to make that vision reality. Who will provide this leadership? We will! The public officials, practitioners, advocates and researchers who participate and support the EST Forums are key players in creating more sustainable transportation in Asia.

We face significant challenges. Many Asian countries continue policies and planning practices that reflect the old planning paradigm which favors automobile travel over more resource efficient modes, supports sprawl over more compact urban development, and fails to serve demands such as rural transport infrastructure needs. Examples include dedicated highway funding, roadways designed to maximize vehicle traffic speed, inadequate walking and cycling facilities, restrictions on urban infill densities, and minimum parking requirements in zoning codes that essentially subsidize automobile ownership and use. Such policies create a self-reinforcing cycle of automobile-dependency and sprawl (Figure 23). In addition, many countries lack programs to develop all-weather roads to serve rural communities.

Creating more sustainable transport systems will require changing the paradigm used to define transport problems and evaluate potential solutions, and more comprehensive and integrated planning. This means, for example, that we recognize the important roles that walking, cycling and public transit can play in an efficient and equitable transport system, and reform funding practices so these modes receive the support they deserve due to their many benefits.

Figure 23 **Cycle of Automobile Dependency and Sprawl**



This figure illustrates the self-reinforcing cycle of increased automobile dependency and sprawl.

Critical sustainable transportation strategies such as road tolls, parking fees and bus-lanes often face significant political opposition by people and groups who perceive their costs but ignore their numerous benefits. We must do a better job of communicating the many benefits that can result from a more diverse and efficient transportation system, including financial savings to households and governments, improved safety and health, improved livability, and increased economic productivity. Many sustainable transport policies also help achieve social equity objectives, for example, by ensuring that non-drivers receive a fair share of road space and transportation investments, and providing affordable basic mobility to physically, economically and socially disadvantaged people.

This study identified various obstacles that Asian countries face in implementing more sustainable transport policies, and identified specific actions that future EST Forums can take to help overcome these obstacles and facilitate positive change. As sustainable transport planning scales up, it will be important to educate and inspire a wider range of stakeholders, including the many public officials, planners, engineers, designers and law enforcement officials who make decisions that affect transport conditions and activities. There is a growing need for regional and local professional development programs, such workshops, webinars and training courses organized by professional organizations and universities.

Management experts often emphasize that what gets measured gets managed. Improving data collection is an important issue for policy makers and analysts. The EST Forums already collect

some data through country and city reports; it may be useful to expand this to include a standardized set of transportation-related data. The EST Forums can support targeted research and knowledge sharing in Asia similar to what the International Transport Forum and the Transportation Research Board offer in other regions.

One possible reform is to rename the *Environmentally Sustainable Transportation Forums* to *Economic, Equitable and Environmentally Sustainable Transportation (EEEST or E3ST) Forums*, in recognition that sustainability balances economic and social as well as environmental goals. This reflects our evolving understanding of the meaning of *sustainability*, and can help build partnerships with organizations that have priorities besides environmental protection.

The EST Forums in Asia demonstrate the value of leadership. Since the first EST Forum in 2005, these events have done much to create a shared vision and assemble the resources needed to create more efficient and equitable transport systems. But the work is certainly not done. Asian countries face severe challenges. Solving Asia's immense transportation problems will require many changes, including changes in the way we think about transport problems and evaluate solutions, changes in relationships between many organizations and groups, changes in the way governments plan and finance facilities and services, changes in transport prices and incentives, and ultimately, changes in the way we travel. Who will work to realize these changes? We will, the organizations and people of the EST Forums in Asia!

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Annex 1 - Bangkok Declaration for 2020

Sustainable Transport Goals for 2010-2020

We, the participants, who are representatives of Asian countries (Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, People's Republic of China , Indonesia, India, Japan, Republic of Korea, Lao PDR, Malaysia, Maldives, Mongolia, Myanmar, Nepal, the Philippines, Pakistan, Singapore, Sri Lanka, Thailand, and Viet Nam), international organizations, bilateral and multilateral agencies, nongovernmental organizations (NGOs), research organizations, and expert sustainable transport professionals, having met at the Fifth Regional Environmentally Sustainable Transport (EST) Forum in Asia, held in Bangkok, Kingdom of Thailand, from 23 to 25 August 2010, to draft and adopt a declaration, the *Bangkok 2020 Declaration,* in order to demonstrate our renewed interest in, and commitment to, realizing a promising decade (2010-2020) of sustainable actions and measures for achieving safe, secure, quick, reliable, affordable, efficient and people-centric and environment friendly transport in rapidly urbanizing Asia,

Noting the identification of transport as a theme under Agenda 21 on sustainable development and the outcome of the high-level meeting of the 9th session of the Commission on Sustainable Development (CSD-9) in 2001 which reached important decisions on transport sector issues concluding that improving transport systems to promote sustainable development, including improving accessibility, can foster economic and social development, help integrate developing countries into the world economy, and contribute to the eradication of poverty***,***

Reaffirming and building upon the *Aichi Statement* agreed upon by the participants at the First Regional EST Forum, held in Nagoya, Aichi Prefecture, Japan, on 1-2 August 2005, and its integrated approach to promoting environmentally sustainable transport will result not only in the improvement of human health through the reduction of urban air pollution, but also the reduction of greenhouse gas (GHG) emissions, deaths and injuries from road accidents, harmful noise levels, and traffic congestion,

Reaffirming and building upon the *Seoul Statement,* agreed upon by the participants at the Fourth Regional EST Forum, held in Seoul, Republic of Korea, from 24 to 26 February 2009, that urged the need to address transport issues within the context of the broader environmental aims of Green Growth to encompass the transport-energy-carbon emission nexus, to develop strategies for low-carbon transport that include a shift to energy-efficient and low carbon modes to enhance energy security, and mitigate the effects of transport on climate as well as of climate change on transport services and other socioeconomic sectors,

Noting the findings of the 18th Session of the Commission on Sustainable Development (CSD-18) held in May 2010, that basic transport infrastructure and services are still lacking or inadequate in many developing countries (both in urban and rural areas), making it difficult for the poor, including women, youth, and children, to access basic services, including those related to health and education, and for workers to have access to jobs, and that in the case of rural areas lack of adequate rural transport infrastructure perpetuates poverty, poses constraints on the marketing of agricultural produce and other income-generating opportunities, and thus hampers efforts to achieve the internationally agreed Millennium Development Goals (MDGs),

Noting that transport-related carbon dioxide emissions are projected by international bodies to increase approximately 57 per cent worldwide in the period 2005-2030, whereby the largest part of this increase would come from the increase in private motorized vehicles in Asia,

Noting the UN General Assembly Resolution (64/255) of 2March 2010 on improving global road safety, proclaimed 2011-2020 as a decade of action for road safety**,** and ***deeply concerned*** that about half of all road traffic fatalities and injuries occur in the Asian and Pacific region, most of which are related to vulnerable road users such as pedestrians, children, and cyclists, due to streets that lack the necessary safety infrastructure such as exclusive pedestrian and bicycle lanes, safe street crossings, kerb ramps for the disabled, and lack of post-accident care,

Recognizing the specific mobility needs of low-income groups, as well as women, children, the elderly, and persons with disabilities which must be addressed to achieve socially-equitable communities and a better quality of life for all,

Acknowledging the importance of an EST strategy based upon the concept of Avoiding unnecessary motorised transport - Shifting to more sustainable transport modes and – Improving transport practices and technologies**,**

We, the participants of the Fifth Regional Environmentally Sustainable Transport (EST) Forum in Asia express our intent to voluntarily develop and realize integrated and sustainable transport policy options, programmes, and projects that will help realize the following EST goals and objectives by the year 2020 in the Asian region (EST 20):

I. Strategies to Avoid unnecessary travel and reduce trip distances

Goal 1: Formally integrate **land-use and transport planning** processes and related institutional arrangements at the local, regional, and national levels

Goal 2: Achieve **mixed-use development** and medium-to-high densities along key corridors within cities through appropriate land-use policies and provide people-oriented local access, and actively promote transit-oriented development (TOD) when introducing new public transport infrastructure

Goal 3**:** Institute policies, programmes, and projects supporting **Information and Communications Technologies** (ICT), such as internet access, teleconferencing, and telecommuting, as a means to reduce unneeded travel

II. Strategies to Shift towards more sustainable modes

Goal 4: Require **Non-Motorized Transport** (NMT) components in transport master plans in all major cities and prioritize transport infrastructure investments to NMT, including wide-scale improvements to pedestrian and bicycle facilities, development of facilities for intermodal connectivity, and adoption of complete street design standards, wherever feasible

Goal 5: Improve **public transport** services including high quality and affordable services on dedicated infrastructure along major arterial corridors in the city and connect with feeder services into residential communities

Goal 6: Reduce the urban transport mode share of private motorized vehicles through **Transportation Demand Management** (TDM) measures, including pricing measures that integrate congestion, safety, and pollution costs, aimed at gradually reducing price distortions that directly or indirectly encourage driving, motorization, and sprawl

Goal 7: Achieve significant shifts to more sustainable modes of **inter-city passenger and goods transport**, including priority for high-quality long distance bus, inland water transport, high-speed rail over car and air passenger travel, and priority for train and barge freight over truck and air freight by building supporting infrastructure such as dry inland ports

III. Strategies to Improve transport practices and technologies

Goal 8: Diversify towards more sustainable **transport fuels and technologies**, including greater market penetration of options such as vehicles operating on electricity generated from renewable sources, hybrid technology, and natural gas

Goal 9: Set progressive, appropriate, and affordable **standards** for fuel quality, fuel efficiency, and tailpipe emissions for all vehicle types, including new and in-use vehicles

Goal 10: Establish effective vehicle testing and compliance regimes, including formal vehicle registration systems and appropriate periodic vehicle **inspection and maintenance** (I/M) requirements, with particular emphasis on commercial vehicles, to enforce progressive emission and safety standards, resulting in older polluting commercial vehicles being gradually phased-out from the vehicle fleet, as well as testing and compliance regimes for vessels

Goal 11: Adopt **Intelligent Transportation Systems** (ITS), such as electronic fare and road user charging systems, transport control centres, and real-time user information, when applicable

Goal 12: Achieve improved **freight transport** efficiency, including road, rail, air, and water, through policies, programmes, and projects that modernize the freight vehicle technology, implement fleet control and management systems, and support better logistics and supply chain management

IV. Cross-cutting strategies

Goal 13: Adopt a zero-fatality policy with respect to road, rail, and waterway **safety** and implement appropriate speed control, traffic calming strategies, strict driver licensing, motor vehicle registration, insurance requirements, and better post-accident care oriented to significant reductions in accidents and injuries

Goal 14: Promote monitoring of the **health** impacts from transport emissions and noise, especially with regard to incidences of asthma, other pulmonary diseases, and heart disease in major cities, assess the economic impacts of air pollution and noise, and devise mitigation strategies, especially aiding sensitive populations near high traffic concentrations

Goal 15: Establish country-specific, progressive, health-based, cost-effective, and enforceable **air quality and noise** standards, also taking into account the WHO guidelines, and mandate monitoring and reporting in order to reduce the occurrence of days in which pollutant levels of particulate matter, nitrogen oxides, sulphur oxides, carbon monoxide, and ground-level ozone

exceed the national standards or zones where noise levels exceed the national standards, especially with regard to environments near high traffic concentrations

Goal 16: Implement sustainable low-carbon transport initiatives to mitigate the causes of **global climate change** and to fortify national **energy security**, and to report the inventory of all greenhouse gases emitted from the transport sector in the National Communication to the UNFCCC

Goal 17: Adopt **social equity** as a planning and design criteria in the development and implementation of transport initiatives, leading to improved quality, safety and security for all and especially for women, universal accessibility of streets and public transport systems for persons with disabilities and elderly, affordability of transport systems for low-income groups, and up-gradation, modernization and integration of intermediate public transport

Goal 18: Encourage innovative **financing** mechanisms for sustainable transport infrastructure and operations through measures, such as parking levies, fuel pricing, time-of-day automated road user charging, and public-private partnerships such as land value capture, including consideration of carbon markets, wherever feasible

Goal 19: Encourage widespread distribution of **information and awareness** on sustainable transport to all levels of government and to the public through outreach, promotional campaigns, timely reporting of monitored indicators, and participatory processes

Goal 20: Develop dedicated and funded **institutions** that address sustainable transport-land use policies and implementation, including research and development on environmentally-sustainable transport, and promote good **governance** through implementation of environmental impact assessments for major transport projects

Inviting countries to voluntarily report progress by utilizing the EST Forum -

Annex 2 - Measuring Progress Toward the Bangkok Declaration Goals

This annex outlines the type of performance indicators that countries may consider in achieving a successful EST strategy. The Bangkok Declaration for 2020 is a voluntary document, and thus countries may opt for developing a number of additional /alternative indicators and measures to monitor progress domestically.

The objective of such comprehensive list of indicators is to provide guidelines for objective measurement of the efficiency and effectiveness of the transport system to achieve the desired goals.

Strategy	Indicator
"Avoid" Strategies	**Meta Indicator:** Change in vehicle kilometres travel per person over time at the metropolitan and national levels
Integrated Land Use-Transport Planning	Number of cities in the country having formally developed integrated land use-transport plans
	Requirements for local compliance with regional integrated land use-transport plans
Mixed-Use Development	Reduction in average passenger trip length in the city
	Reduction in average freight trip distance regionally and nationally
	Number of units developed in purpose-built mixed-use projects
	Number of public transport projects achieving transit-oriented development (TOD) around stations
	Population and employment per square kilometre along major public transport corridors
	Number of public transport corridors achieving an increase in development and population density
	Amount of increase in property value along corridors of quality public transport projects
Information and Communications Technologies (ICT)	Number of policies developed encouraging ICT as a substitute for travel
	Average broadband speed of internet services
	Penetration of broadband among different income groups
	Penetration rate of mobile telephones in the country
	Increase in the amount of teleconferencing over business travel
	Number of policies and/or programs that promote telecommuting
	Estimated number of trips avoided through telecommuting

"Shift" Strategies	**Meta Measure:** Mode share of all major transport modes at the metropolitan and national levels, including passenger transport (walking, bicycles, car driver, car passenger, motorcycle driver, motorcycle passenger, motorized three-wheelers, non-motorized three-wheelers, buses, minibuses, and urban rail), inter-city transport (private motorized vehicles, bus, rail, and boat), and freight transport (truck, rail, barge, minivan, and non-motorized)
Non-Motorized Transport	Number of cities with NMT specifically highlighted in the city's integrated transport master plans
	Note the existence of national and local policies requiring drop curbs at interface between footpaths and intersections
	Note the existence of national and local policies mandating minimum footpath widths, and note the minimum width
	Note the existence of national and local policies mandating dedicated pedestrian signals at major intersections
	Promote the monitoring and measurement of the quality of pedestrian facilities and the number of cities surveyed or audited for a "walkability" score
	Number of cities with dedicated cycleways
	Number of kilometres of cycleways
	Number of secure bicycle parking spaces
	Number of cities with shared bicycle programmes and number of shared bikes per programme
	Number of cities with pedicabs (cycle rickshaw) improvement programmes
	Number of public transport systems with formal integration of pedicabs (cycle rickshaws)
	Number of cities participating in a Car-Free Day programme
Public Transport	Number of cities with trunk bus corridors operating on dedicated busway lanes in the median of the roadway (Bus Rapid Transit)
	Number of kilometres of dedicated, median busways (Bus Rapid Transit)
	Number of cities with bus systems using pre-board fare verification and stations designed for at-level fast boarding
	Number of cities utilizing electronic fare cards on their public transport system
	Number of cities with a fully integrated fare structure across public transport modes
	Number of cities with elevated or underground metro systems (MRT)
	Number of kilometres of MRT
	Number of cities or areas utilising congestion charging

Transportation Demand Management	Number of cities or areas utilizing road tolls
	Number of cities employing a formal parking levy system, in which a parking levy is defined as a set land tax charged to each non-residential parking space, and is assessed regardless of whether or not the parking space is utilized
	Number of cities with active parking management programmes
	Amount of any increase in fuel levies
	Number of cities or regions which have adopted measures to discourage ownership and/or operations of private vehicles
	Amount of vehicle duties or taxes
Inter-City Passenger and Goods Transport	Increase of mode share of high-quality inter-city bus services
	Increase of mode share of inter-city conventional rail services
	Increase of mode share of high-speed inter-city rail services
	Number of kilometres of high-speed inter-city rail
	Number of kilometres of freight rail lines
	Number of inland dry ports
"Improve" Strategies	**Meta Measure:** Fuel efficiency levels of passenger and freight fleets
Cleaner Fuels and Technologies	Market share of alternative fuels for road transport, including renewably-generated electricity, natural gas, and sustainably managed and cultivated biofuels that do not compete with food crops
	Market share of electric vehicles, hybrid vehicles, and fuel cell vehicles
Standards	Note current fuel quality standards and the time line for attainment of EURO IV (or equivalent) fuel quality standard
	Note current vehicle emission standards for each vehicle class
	Note current fuel economy standards for each vehicle class
Inspection and Maintenance	Note the nature of commercial vehicle testing requirements, including frequency of tests, emission levels required, safety features examined, and number of vehicles retired
	Number of cities that conduct roadway spot checks on vehicle emissions
	Note the type of vehicle insurance mandated by national and local laws
	Number of persons taking driver licensing testing and provision of the pass/fail rate
Intelligent Transportation Systems	Number of public transport vehicles per city with Automatic Vehicle Location tracking technology
	Number of public transport stations and vehicles using real-time information displays

	Number of cities with a control centre to manage traffic incidents and manage public transport fleets
Freight Transport	Quantify improvements in freight vehicle fuel efficiency
	Quantify changes in freight vehicle types
	Quantify network efficiency gains
"Cross-Cutting" Strategies	
Safety	Reductions in number of traffic accidents
	Reductions in number of transport-related injuries and deaths
	Adoption of a zero-accident policy framework
Health	Incidence levels of disease and illnesses related to transport emissions including asthma, other pulmonary diseases, heart disease, stroke, and flu
	Reduction in number of days with restricted outdoor activity due to health concerns of air quality
	Number of cities with policies in place to prohibit smoking in public places, including public transport systems
Air Pollution and Noise	Number of cities with ambient air quality monitoring, including monitors for particulate matter (PM10 and PM2.5, nitrogen oxides (NOx), sulphur oxides (SOx), carbon monoxide (CO), and ground-level ozone, especially with monitors in high traffic areas and ports
	Air quality levels for particulate matter (PM10 and PM2.5), nitrogen oxides (NOx), sulphur oxides (SOx), carbon monoxide (CO), and ground-level ozone for each major city
	Number of days air quality is within local standards and WHO guidelines for all major pollutants in each major city
	Number of cities with formal noise monitoring programme
	Number of cities that spot check noise levels on vehicles
	Number of cities with time-of-day noise restrictions and noise reduction programmes
Climate Change and Energy Security	Note whether the transport sector is included as part of the Nationally Appropriate Mitigation Actions (NAMA), and note the specific transport sub-sectors in the NAMA
	Note the number of transport GEF projects approved for the country
	Amount of oil imported by the country
Social Equity	Amount and type of security measures provided on public transport systems
	Off-peak frequency of public transport systems
	Number of public transport vehicles and stations permitting full universal access for users in wheelchairs and parents with prams

	Number of public transport stations and kilometres of footpaths with tactile paving tiles for the sight impaired
	Number of kilometres of footpaths that have been upgraded to be fully accessible to persons in wheelchairs
	Relative affordability levels of public transport services for low-income groups
	Employment generated from EST projects and availability of related job training opportunities
Finance and Economics	Number of applications for greenhouse gas emission reduction credits
	Total amount of revenues generated from greenhouse gas emission reduction credits
	Total amount of revenues generated from congestion charging schemes
	Total amount of revenues generated from roadway tolls
	Total amount of revenues generated from parking levies
	Number of Public-Private Partnerships (PPPs) implemented
	Total amount of revenues generated from land value capture initiatives
	Number of Benefit-Cost analyses conducted on transport projects, considering, direct, indirect, and cumulative impacts
	Note the results of Benefit-Cost analyses conducted on transport projects
Information and Awareness	Number of EST-related publications
	Number of outreach and promotional efforts on EST
Institutions and Governance	Number of staff at Transport, Environment, and Health Ministries dedicated to EST
	Amount of financial resources of the national government dedicated to EST
	Human and financial resources devoted to EST at the regional and local levels
	Existence of unit at National Government level dedicated to non-motorized transport and number of cities with local government units dedicated to non-motorized transport to promote walking
	Structure and relationship of national, regional, and local actors involved in EST, including engagement with civic and business sectors
	Note environmental impact assessments (EIAs) for evaluating the impact of transport infrastructure initiatives prior to environmental clearance

Annex 3 - Bangkok Declaration Progress Review

This annex reviews and summarizes 74 Bangkok Declaration progress reports presented at the Sixth (2011) through the Ninth (2015) EST Forums in Asia. Each of twenty goals has a table that shows which countries indicated progress toward that goal. Because this summary is based on often limited information in the progress reports, the results may be incomplete; many countries are doing far more to achieve Bangkok Declaration goals than these tables indicate.

I. Strategies to Avoid unnecessary travel and reduce trip distances

1. Formally integrate land-use and transport planning

Country	Sixth, 2011, Delhi	Seventh, 2013, Bali	Eighth, 2014, Colombo	Ninth, 2015, Kathmandu
Afghanistan	New transportation plan for major cities		Not yet. Finalizing Strategic Urban Air Quality Management Framework, which makes "Moving towards establishing sustainable transport system" a key goal, and adopts the Bangkok 2020 declaration.	Some progress. Implementation of Kabul Urban Transport Efficiency Improvement Project (2014-2019).
Bangladesh	Transport Planning adopted through different activities	Integrate land-use and transport planning in three major cities namely, Dhaka, Chittagong and Khulna	Largely in Place. Strategic transport plans for various cities.	Some progress. National Integrated Multimodal Transport Policy (NIMTP) is in place
Bhutan	Mentions this goal	Most urban centers have land-use planning in place	Most urban centers now have integrated land use and transport planning process	Most urban centers now have integrated land use and transport planning process
Brunei Darussalam		Centre For Strategy and Policy Studies preparing a Land Transport Master Plan which will shape the country's future land transport policy	Brunei's Land Transport Master Plan (LTMP) launched on 2014.	
Cambodia				
India	Extensive policy reforms.	Jawaharlal Nehru National Urban Renewal Mission (JnNURM) extended from April 2012 to March 2014.	Smart City Mission- urban renewal and retrofitting program (Total budget: US$15 billion)	
Indonesia	Development of Transit system /TOD	Integrated plan (land use & transport), e.g., Jakarta	Integrated plan (land use & transport), e.g., Jakarta	The establishment of Master Plan of Jabodetabek. Tangerang and

				Batam have enacted local regulation concerning land-use planning of the cities.
Japan	Sustainable transport development as part of earthquake reconstruction	Policies and programs in place	Policies and programs in place. E.g., law on promotion to low-carbonization in urban areas	Largely in Place. "Low Carbon City Plan " in terms of promoting low-carbon urban development by intensifying urban function and the use of public transportation has been drawn up
Lao PDR	Environmentally and People Friendly Urban Transport Infrastructure Development Infrastructure Development	Implementing land use planning		
Malaysia		Largely in Place	Largely in Place	Largely in Place
Maldives	Provision of easy access to essential services closer to home for all citizens.	Integrated planning		
Mongolia	Mentions this goal	Some progress "Urban Redevelopment Law"	Some progress. New Master Plan of Ulaanbaatar city	
Myanmar		Some progress. With JICA assistance, the Ministry of Transport is conducting a feasible study for a National Transport Master Plan	Some progress	Some progress. Urban Transport Master Plan supported by JICA
Nepal			Kathmandu Valley 2014 Transport Master Plan aims to coordinate land use and transportation	Kathmandu Valley 2014 Transport Master Plan aims to coordinate land use and transportation
Pakistan		Largely in place. Strategic Environmental Assessment (SEA) for Spatial/Land Use Planning	Some progress	Some progress. Land use transport integration.
People Rep. of China		Some progress. Example is the Comprehensive transport development plan for the 12FYP		

Philippines	Urban transport program for highly urbanized cities			Some design. Preparation of Regional Transport Models and Urban Development Strategy for Regions outside Metro Manila
Rep. of Korea	Public transport focused urban development	Some progress. Strengthening of connectivity between Metropolitan transportation plan and Urban Master		Largely in place. Special Act on Metropolitan Regional Transport Management sets vision, strategy and implementation plan.
Russian Federation				
Singapore	Mentions this goal		Fully Completed	
Sri Lanka		Integrated land use planning in new cities		Land use planning, based on Bangkok Declaration
Thailand	Mentions this goal	Not yet	Not yet	Some urban planning
Timor Leste	Strategic Development Plan (2011-2030)			Not yet
Viet Nam	Mentions this goal.	Largely in Place. Green city transport project approved and expected to completed by 2020.	Largely in Place. Law on Land approved by the National Assembly in 2013	Largely in Place. Laws and degrees manage land development.
Counts	*15*	*18*	*14*	*15*

2. Achieve mixed-use development and medium-to-high densities along key corridors

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan			Not yet	Some progress. The Kabul City Master Plan has an important land-use planning component.
Bangladesh	Achieve mixed-use development and medium to high densities along key corridors within cities	RAJUK is approving plan of multistoried buildings with mixed purposes	Some progress RAJUK is approving plan of multistoried buildings	Some progress. Gradually converting some residential zone into mixed use zone in main transport corridors in Dhaka.
Bhutan		Some in place		Most urban centers now have integrated land use and transport planning process
Brunei Darussalam		Some development master plans.		
Cambodia				
India	Extensive policies	Urban Planning, TOD planning		

Indonesia	Development of Transit system /TOD	Development of Transit system /TOD	Development of Transit system /TOD	Tangerang and Batam have enacted local planning regulations that support transit-oriented development.
Japan	Sustainable development as part of earthquake reconstruction	Policies and programs in place		Largely in Place.
Lao PDR				
Malaysia		Largely in Place	Mixed-use development	Largely in Place. Final Transit Oriented Development (TOD) Policy Guidelines
Maldives				More accessibility and mobility through integrated Public Transport Network.
Mongolia		Some progress. Promotes public transport-based urban development	Some progress	
Myanmar		Some progress	Some progress	Some progress
Nepal			Kathmandu Valley 2014 Transport Master Plan aims to coordinate land use and transportation	
Pakistan		Largely in Place. Zoning to allow more compact and mixed urban development	Some progress	
People Rep. of China		Some progress		
Philippines	Urban transport program for highly urbanized cities			Some progress. Cebu Bus Rapid Transit (BRT) Detailed Design Stage
Rep. of Korea	Public transport forced urban development	Some progress. Introduce a corridor-type TOD(or TOC) considering urban-transportation integration plan as introducing light rail/tram		Largely in place.
Russian Federation				
Singapore	Mentions this goal		Fully Completed	

Sri Lanka	Mentions this goal			
Thailand		Not yet	Rail station area NMT improvements	Introduce TOD at Phahonyotin transport hub
Timor Leste				Not yet
Viet Nam		Some progress	Some progress. Ha Noi and Ho Chi Minh city Metro Rail projects	Some progress. Ha Noi and Ho Chi Minh city Metro Rail projects
Counts	*8*	*14*	*10*	*13*

3. Institute policies, programmes, and projects supporting Information and Communications Technologies (ICT) to reduce travel.

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan		Mentions this goal	Not yet	Largely in Place
Bangladesh		Electronic Ticketing System and other innovations	Some progress. Various electronic services	Largely in Place. Approval of National Information and Communication Technology (ICT) Policy-2015.
Bhutan		Most of the remote villages are now connected by mobile telephone.	Nationwide fiber-optic network and high mobile telephone and Internet penetration	This concept has been conceived but faces challenges. G2C Services use small scale telemedicine, health consultation through social media apps.
Brunei Darussalam			Introduction of National Broadband Policy (2014-2017)	
Cambodia				
India	Some programs	ITS for Traffic Management		
Indonesia		Optimization of traffic management (ATCS) and electronic payments systems	Optimization of traffic management (ATCS) and electronic payments systems	
Japan	Some programs	Fully completed		Largely in Place.
Lao PDR				
Malaysia		Largely in Place	Largely in Place	Largely in Place. Journey Planner and integrated ticketing system
Maldives				
Mongolia	GPS systems		Some progress	

Myanmar		Some progress. -Efforts to allow most residents access to mobile phones and Internet.	Some progress	Some progress. Intelligent Management System run by Myanma Railways
Nepal				
Pakistan		Not Yet	Largely in Place. High cell phone ownership rate.	
People Rep. of China		Some progress		
Philippines				Some design. Public Transport Information Management Center
Rep. of Korea		Fully Completed. Establish and operate Intelligent Transportation System(ITS) at national, metropolitan city and regional level		Largely in place. High Internet penetration rates
Russian Federation				
Singapore	Mentions this goal			
Sri Lanka		Focus is on the use of ICT to avoid travel whenever possible.		ICT development. Mobile based transactions (banking, other services). Free Wi-Fi zones in public spaces.
Thailand		Largely in Place	Largely in Place	
Timor Leste				Not yet
Viet Nam	Mentions this goal	Some progress. VOV Transport (broadcast)	Some progress	Some progress
Counts	*5*	*14*	*11*	*11*

II. Strategies to Shift towards more sustainable modes

4. Require Non-Motorized Transport (NMT) components in transport master plans

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan			Not yet	Some progress
Bangladesh	Includes Non-Motorized Transport components in transport master plan	Design standards with provision of NMT is in place	Some progress. Various NMT policies, plans and projects.	Some progress. Design standards with provision of NMT is in place.

Bhutan		Largely in place. "Pedestrian Day" observed every month		Non Motorised Transport slowly picking up
Brunei Darussalam		Providing footpath and bike lanes		
Cambodia	People and environmentally friendly transport infrastructure			
India	Pedestrian Guidelines	Developing a National Cycling Policy, street design practices, and other NMT programs	Plans to improve NMT infrastructure	Many Indian cities introducing dedicated NMT lanes and bike sharing systems.
Indonesia	Improvement pedestrian and cycling facilities. Jakarta started city's first dedicated bicycle lane (1.5 Km).	Improve and encourage use of non-motorized transport	Development of pedestrian and cycling facilities	Development of pedestrian and bicycle facilities in cities.
Japan		Fully completed	Fully completed	Largely in Place.
Lao PDR	Improving urban walking conditions	Non- Motorized Transport (NMT) in EST Strategy		
Malaysia		Some progress	Some progress	Largely in place. Putrajaya Green City 2025
Maldives		Since islands are small, 90% of transport is walking		Various pedestrian and cycling improvements, including pedestrian zones and bikeways
Mongolia		Some progress	Some progress. Ulaanbaatar bikes project	
Myanmar		Some progress	Some progress	Some progress. Construction of separate roads and bridges for pedestrians and cyclists in Yangon City, Mandalay City and Nay Pyi Taw City
Nepal	Historical Areas Pedestrianisation			Improving walkability. Provision of cycle lanes along major intra-urban roads
Pakistan	Adequate pedestrian facilities	Largely in Place	Some progress. All planned housing schemes have foot path network	
People Rep. of China		Largely in Place		

Philippines		Bikeways and Walkways Program	Bikeways and walkways, greenways, LRT bike accommodation	Some greenways completed. Promoting walkability and nonmotorized transportation and interconnectivity with MRT in Metro Manila
Rep. of Korea	Extensive programs to improve and encourage NMT	Largely in Place. Promotion of human-centered cities	Promote nation-wide bicycle networks and linear parks.	Many programs to promote walking and cycling
Russian Federation				
Singapore	Mentions this goal		Largely in Place	
Sri Lanka	Mentions this goal	Walkways and dedicated Cycle Lanes in main cities		Improving walkability by providing foot walks, planting trees along walk ways shade pedestrians, and bicycle lanes.
Thailand	Thailand planned for longest bike lane in Asia, 184-km crossing 5 provinces to be completed by 2017.	Some progress	Non-Motorized Transport Master plan	Promotion of "Bicycle use in daily life"
Timor Leste		3 ZEROs Vision		Not yet. Low current automobile ownership.
Viet Nam		Some progress. Pedestrianized streets	Some progress. Pilot project to promote public bicycle in 5 major cities	Some progress. Project to promote public bicycle in major cities.
Counts	*10*	*19*	*15*	*14*

5. Improve public transport services

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan			Some progress. Kabul Urban Transport Efficiency Improvement Project	Some progress
Bangladesh	Public transport service implementation through BRT	Bus Rapid Transit (BRT) Projects under development	Some progress. Various BRT and rail projects. Dhaka Metro started, scheduled for completion by 2019.	Some progress. Numerous mass transit projects planned and underway.
Bhutan	Focus on eco-friendly mode of mass transport system	All the twenty districts and some blocks are connected by	Plan for BRT drawn but remains unimplemented due to high	Additional buses for urban transport committed.

		public transport. Number and frequency of city transport is increasing steadily	cost of related infrastructure and buses	Feasibility study for light rail transit system. Pre-feasibility study of the mass-rapid transit started in 2016.
Brunei Darussalam		Develop new central Bus station and terminals. Improve connectivity of Public Bus routes New type of bus, more feeder services.		
Cambodia	Public transport		Re-introduction of public bus services along Monivong blvd	
India	Some investments and support programs	Many programs to improve urban transit services	Strengthening Metro and BRTS networks	
Indonesia	Development of mass public transport	Develop mass public transport infrastructure and various support strategies. US$1.7 billion Jakarta MRT started in 2013 and scheduled for operation by 2017.	Government further plan for urban railways development in 9 cities, and BRT development in 29 cities by 2019.	Operation of Jakarta's Transjakarta Busway. Train facility improvements. Plans to develop mass rapid transit in Surabaya, Surabaya City, Surakarta and Batam
Japan	Extensive programs and investments	Fully completed. A world leader.	Fully completed	Largely in Place.
Lao PDR	Urban Transport Master Plan with major public transit improvements	Many public transit improvement programs	Vientiane Sustainable Urban Transport Project (2014-2020)	E-Tuktuk Public Transport in Luangprabang pilot project
Malaysia	Raise the transit modal share to 13% in 2010 and to 25% by 2012	Largely in Place	Largely in Place	Largely in Place. Bus Rapid Transit, urban rail development plan and bus stop programme
Maldives	Establish an integrated public passenger transport service	Marine public transit improvements		Integrated Public Transport Network. Will help to start a bus network which connects the ferry terminals.
Mongolia	Major investments in public transit	Some progress Establishing competitive public transportation system	Some progress. Embarkation of BRT project	
Myanmar	emphasizing to improve public transport	Some progress	Some progress	Some progress. Various tram and rail improvements, and

	infrastructure such as quality of bus service bus transport infrastructure such as quality of bus service, bus transport network			support for bus services, including BRT.
Nepal	Planning for improved and less polluting transit, including bus lanes and rail transit		Integrated transit fare system	Various public transit improvements and incentives.
Pakistan	Mentions this goal	Largely in Place	Some progress. BRT in Lahore (In operation) and Metro Islamabad (under construction)	Some progress. Japan International Cooperation Agency and World Bank performed studies for implementation of mass transit facilities.
People Rep. of China		Promotion of BRT in China.	Urumqi Urban Transport Project II, Yichang bus rapid transit, Beijing's first exclusive Bus Rapid Transit (BRT).	
Philippines	Public transport network integration and improving mass transit systems and improving mass transit systems	Promote BRT and rail systems	Mega Manila Public Transport Plan. Urban rail in various cities.	Design and implementation. Cebu BRT, MRT Line-3 Capacity Expansion, LRT Line-1 South Extension, etc.
Rep. of Korea	Extensive programs to improve and encourage public transport	Largely in Place. Expanding dedicated districts for public transportation.		Largely in place. May programs to improve and encourage public transit.
Russian Federation			Some progress. Improving urban transit systems.	
Singapore	Mentions this goal		Largely in Place	
Sri Lanka	Mentions this goal	Better quality Bus and Train Services		Many public transit improvements.
Thailand	Major investments	Largely in Place	Largely in Place. Several projects underway.	Public transport improvements
Timor Leste		3 ZEROs Vision		Promotes private sector investment in urban transportation.

Viet Nam	Development of public passenger transport	Some progress. MRT, BRT in Ha Noi, Ho Chi Minh city	Some progress	Some progress. MRT, BRT in Ha Noi and Ho Chi Minh city
Counts	*19*	*19*	*19*	*17*

6. Reduce the urban transport mode share of private motorized vehicles through Transportation Demand Management (TDM)

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan	One working day in a week has been off to avoid commuting		Not yet. This is part of the strengthening of proposed Air Quality Strategy	Some progress
Bangladesh		Tolls introduced for selected roads and bridges, government flextime	Some progress. Road pricing, commuter services and flextime.	Some progress. Various strategies including parking fees.
Bhutan	Mentions this goal	Parking fees introduced to reduce congestion. Comprehensive fiscal measures proposed (higher tax, road toll, CoE etc)	"No vehicles day" in urban centers. Parking fees in some cities.	"No vehicles day" in urban centers. Parking fees in some cities.
Brunei Darussalam		Traffic Congestion Programme with bus priority		
Cambodia	Public transport and TDM			
India	Some programs, including parking management	Some TDM programs, including parking policy reforms and road pricing		Chennai is developing an IT-based parking management system.
Indonesia	Traffic management, carfree day, public transport day	Road pricing, parking pricing, and car travel disincentives	Road pricing, parking pricing, and car travel disincentives	Jabodetabek Transportation Management Agency (BPTJ).
Japan		Largely in Place	Fully completed. Financial support provided for approved TDM project plans	Largely in Place.
Lao PDR	Travel demand management, including parking management	Transportation Demand Management (TDM) in EST Strategy		
Malaysia	Mentions this goal	Some progress	Some progress	Largely in place. Greater Klang Valley Public Transport Masterplan

Maldives		No Vehicle Days		No vehicle days, and controlled usage of vehicles in some islands to encourage walking and cycling.
Mongolia	Encourage public transit in urban areas	Some progress Restrict private cars by their plate numbers, and encourage efficient modes	Some progress. Private cars restricted by license plate numbers digit in downtown. Government workers required to use public transport.	
Myanmar		Some progress. Yangon city has motorcycle-free zones. The system of imposing fine for causing road congestion has started	Some progress	Some progress.
Nepal	Strengthening Transport Management Strengthening Transport Management Activities			
Pakistan		Largely in Place	Some progress. Staggering of working hours particularly for schools.	
People Rep. of China		Some progress. Beijing (car plate lottery – cap-and-lottery); Shanghai (parking pricing, and vehicle plate auction system, - cap-and-trade)	Beijing TDM plan	Beijing TDM plan
Philippines		Toll roads	Carless day and car-pooling.	Some progress. Plans for parking levy.
Rep. of Korea	Traffic demand management policies	Largely in Place. Revision of Urban Traffic Improvement promotion Act including traffic charges.		Largely in Place. Many programs. Motto: “Make Drivers Uncomfortable, Passengers Comfortable”
Russian Federation			Some Progress. Parking pricing.	
Singapore			Largely in Place	

Sri Lanka	Transport planning & transportation demand management			
Thailand		Not yet		
Timor Leste				Not yet. Low current motor vehicle ownership rates.
Viet Nam		Some progress. Congestion pricing in rush hour for vehicle that enter Ha Noi, Ho Chi Minh city	Some progress. Ministry of Transport considering pricing measures	Some progress. Ministry of Transport considering pricing measures
Counts	*11*	*17*	*13*	*13*

7. Achieve significant shifts to more sustainable modes of inter-city passenger and goods transport

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan			Largely in place	Some progress
Bangladesh		Enhanced Intercity train and bus services	Some progress. Various intercity transport service improvements underway	Some progress. Freight movement using rail and inland waterway over road has been enhanced.
Bhutan	Mentions this goal	Inter-city passenger and goods transport available but not very energy-efficient. Public transport service increasing.	More comfortable and less polluting buses for inter-city travel	
Brunei Darussalam				
Cambodia				The rail link between Thailand and Cambodia expected to complete by the end of 2016.
India			Construction of more dedicated rail freight corridors	Introduction of rural road development programme (Pradhan Mantri Gram Sadak Yojana –PMGSY)
Indonesia		Implementation of modern logistic system package	Freight improvement program	

Japan		Largely in Place	Largely in Place	Largely in Place. Promotion of Low Carbonization of Freight Using Railways
Lao PDR		Transport logistics in EST Strategy		
Malaysia		Largely in Place	Largely in Place	Largely in place. ETS – Gemas - Padang, Buloh – Kajang lines
Maldives				
Mongolia		Some progress	Some progress	
Myanmar		Some progress	Some progress	Largely in Place. Studies of railroad lines and services.
Nepal				
Pakistan		Largely in Place	Some progress. Revival of railway	Programs to improve freight transport service and truck fuel efficiency.
People Rep. of China		Some progress		Will invest $438 billion in railway construction during 13th Five-Year Plan (2016-2020)
Philippines		Highway, rail and marine transport improvement plans	Integrated Luzon Railway Project	Some progress. New rail line and port facilities.
Rep. of Korea	Green logistics	Largely in Place. Grants and incentives to support freight shift from road to railway or coastal shipping		
Russian Federation			Some progress. Improving freight railway.	Moscow–Kazan and Moscow–Rostov High-Speed Rail Projects to be completed by 2018
Singapore			Some progress. Singapore has world-class international freight logistics	
Sri Lanka		Promotion of train cargo transport		
Thailand	Major rail investments	Some progress.	Freight road-to-rail strategies	
Timor Leste				Improving intercity highways.

Viet Nam	Railway Development Strategy for 2020 approved.	Some progress. Develop some port, railway infrastructure projects	Some progress.	Some progress Action plan to raise the capacity and efficiency of different transport modes
Counts	*4*	*15*	*16*	*12*

III. Strategies to Improve transport practices and technologies

8. Diversify towards more sustainable transport fuels and technologies

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan		Promote CNG and hybrid vehicles	Some progress	Some progress
Bangladesh	Global Fuel Economy Initiative (GFEI)	Encouraging CNG and reducing diesel sulfur levels	Some progress. CNG encouragement	Some progress. Strategies encourage biofuels, CNG and electric vehicles.
Bhutan	Mentions this goal	Some potential for bio-fuel, Encouraging electric/hybrid vehicles (tax exemption on electric/hybrid vehicles)	Bhutan electric vehicle (EVs) initiative for the promotion of low-carbon transport	Aspiring to achieve Zero Emission by promoting electric vehicles. Replace ICE Taxis with EV Taxis. Electric charging station network.
Brunei Darussalam		Encourage of the purchase of Hybrid Vehicle through lower import tax		
Cambodia	Mentions this goal			
India	Fuel quality improvement programs	Programs to encourage CNG	Upgrading fuel quality, encouraging CNG and biofuels	
Indonesia	Promote alternative fuels	Converter kit installed in taxis and public transportation that uses gasoline to reduce CO2 emissions	Promote use of green technologies and alternative fuels	Encouraging natural gas for taxis and public vehicles in Jakarta and Surabaya.
Japan		Largely in Place	Largely in Place	Largely in Place. Many programs
Lao PDR	Some electric vehicles	Clean fuels in EST Strategy		Investigating EV motorization

Malaysia	Hybrid and electric vehicle grants.	Some progress.	Some progress. Promotion of electric vehicles.	Some progress. Electric Vehicle Infrastructure Roadmap. Biofuels.
Maldives	By 2015 not less than 10% of transport fuel should consist of biofuels	Promote bio fuel. Projects to research and develop boats which use sustainable fuel		
Mongolia	Encourage biofuels and electric vehicles	Some progress Increase hydrogen and hybrid fuel use	Some progress	
Myanmar		Some progress	Some progress	Some progress. Using CNG and LPG cars, and electric-cycle
Nepal	Cleaner fuels and replace older vehicles		Promotes electrical or renewable energy based vehicles; 20 % stock by 2020; waives custom duty for EVs	Promote electrical or renewable energy
Pakistan	Mentions this goal	Not yet	Some progress. Use of CNG (highest in the world). Hybrid vehicles are penetrating into the market.	Technological tools, such radio frequency identification tags (RFID), global positioning systems (GPS) and vehicle routing software
People Rep. of China		Some progress. Promote new energy vehicles (e-vehicles, hybrid, fuel-cell)		
Russian Federation				
Philippines		Bio- and LPG development programs	Promotes LPG, LNG, electric and hybrid vehicles	Some progress. Jeepneys upgraded to Euro IV standards
Rep. of Korea		Some progress. Establish electric car charge stations		Some progress.
Singapore	Mentions this goal		Largely in Place	
Sri Lanka	Cleaner fuels	Promotion of alternate fuel types		Promotion of fuel switching. Phase out leaded fuel and two-stroke engines.
Thailand		Largely in Place. Biofuels	Largely implemented.	Promotes alternative fuels
Timor Leste				Not yet.
Viet Nam	Produce and encourage cleaner fuels	Some progress. Develop CNG, LPG bu	Some progress. Plans to implement biofuels	Some progress. Encouraging biofuels and CNG

Counts	*14*	*19*	*15*	*16*

9. Set progressive, appropriate, and affordable standards for fuel quality, fuel efficiency, and emissions

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan		Introduced EURO III equivalent fuel quality standards	Some progress. Fuel quality standards as per EURO III already made mandatory	Some progress
Bangladesh		Introducing vehicle emission standards	Largely in Place. Some old vehicles banned, and standards applied to new vehicles.	Some progress. Standard for vehicular exhaust gases according to 1997 Bangladesh Environmental Conservation Rules
Bhutan		Vehicle Emission Standard in Place. Banned import of Second hand vehicles. In-use vehicles are subjected to periodical emission testing.	In 2014, "Auto Fuel Vision & Policy 2025" Expert Committee presented recommended standards and other emission control strategies	Vehicle Emission Standards being reviewed
Brunei Darussalam				
Cambodia	Mentions this goal			
India	Programs to improve fuel quality	Fuel standards		
Indonesia		Implementation of the application of CO2 emission standards	Implementing emission standards. Eco-driving campaigns	Euro 4 fuel preparation (especially Sulfur Content of 50 ppm) – Campaign "Use of Low Sulfur Fuel"
Japan	Established emission reduction regulations, including off-road vehicles and electric vehicle support	Largely in Place	Largely in Place	Largely in Place. Review of the Automobile Fuel Efficiency Targets
Lao PDR	Vehicle emission control	Vehicle emission control in EST Strategy		
Malaysia	New vehicle standards	Some progress	Some progress	Some progress
Maldives				
Mongolia		Some progress Emission standards	Some progress	

Myanmar	Cleaner Fuel Initiatives	Some progress	Some progress	Some. Inspect the emissions of automobiles
Nepal	Regular vehicle testing			
Pakistan		Some (designing-piloting)	Largely in Place	Fuel economy standards
People Rep. of China		Some progress		
Philippines	Promote LNG and electric vehicles	Adoption of Euro regulations	Euro2/II standards, including motorcycles and tricycles	Design of Euro 4 emission standards.
Rep. of Korea		Largely in Place		Largely in Place
Russian Federation				
Singapore	Mentions this goal		Largely in Place	
Sri Lanka	Cleaner fuels			
Thailand		Fully Completed. Implementing EURO IV standards	Largely in Place.	Largely in Place. Vehicle/fuel standards.
Timor Leste		3 ZEROs Vision		Not yet.
Viet Nam	Encourage cleaner fuels	Some progress	Some progress	Some progress. National regulations on automobile and motorcycle emissions.
Counts	*11*	*17*	*13*	*13*

10. Establish effective vehicle testing and compliance regimes

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan			Not yet	Some progress
Bangladesh		Routine and periodic inspection of vehicles in place	Some progress. Routine and periodic inspection of vehicles is in place.	Largely in Place. Routine and periodic inspection of vehicles is in place.
Bhutan		Largely in place. Testing is mandatory and is conducted once annually for noncommercial vehicles and every six months for commercial vehicles	Fuel quality is monitored regularly. Emission testing is mandatory for all vehicles	Fuel quality is being monitored regularly. Eight air quality monitoring stations established.
Brunei Darussalam		Periodic Vehicle Inspection		
Cambodia				
India	Roadside air quality monitoring		Developing stringent inspection and maintenance program	

Indonesia		Implementation of Motor Vehicle Inspection (CLA) for city / district.		Proposal for emissions testing prior to vehicle registration renewal
Japan		Largely in Place	Largely in Place	Largely in Place. Planning to introduce the Worldwide Motorcycle Testing Cycle and Worldwide Heavy-Duty emission Certification
Lao PDR	Ambient Air Quality and Noise Monitoring and Management	Inspection & maintenance (I/M) in EST Strategy		
Malaysia		Fully Completed	Fully Completed	Largely in place. Mandatory inspection for commercial and used car. Other programs.
Maldives		Regulations for vehicular emissions and roadworthyness		
Mongolia	Prohibit older vehicles	Some progress. Vehicle diagnostic inspection centers enforce emissions and road safety requirements	Some progress	
Myanmar	Emission control programs	Some progress	Some progress	Largely in place. Vehicles are inspected in accordance with Motor Vehicle Law
Nepal	Improving air quality monitoring		Vehicle fitness centre constructed, to be operated by Department of Transport	Vehicle fitness centres
Pakistan	Mentions this goal	Largely in Place	Some progress	
People Rep. of China		Some progress		
Philippines	Development of motor vehicle inspection and maintenance program	Motor vehicle inspection system program	Motor vehicle inspection system program	Fully completed Emission testing centers.
Rep. of Korea		Largely in Place		Largely in Place
Russian Federation				
Singapore	Mentions this goal		Largely in Place	

Sri Lanka	Vehicle emission control, standards & inspection and maintenance (I/M)	Mandating vehicle emission testing		Total active fleet undergoing annual emission tests since 2008
Thailand		Some progress		
Timor Leste				Not yet.
Viet Nam	Mentions this goal	Largely in Place. Building some inspection stations	Some progress. Developing legal documents to apply emission standard for motorbike	Some progress. Developing motorbike emission standard enforcement in urban areas.
Counts	*10*	*17*	*13*	*13*

11. Adopt Intelligent Transportation Systems (ITS)

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan			Not yet	Not yet
Bangladesh		Electronic ticketing system on some bus routes	Largely in Place. Various electronic information and payment services.	Some progress. Electronic fare system (Electronic Ticketing System) on the selected bus and rail routes
Bhutan		Initiated speed detectors in Thimphu		ITS being piloted in the capital city (Installation of CCTVs, integrated bus sheds)
Brunei Darussalam			Introduction of National Broadband Policy (2014-2017).	
Cambodia				Introduced the National ICT Policy
India	Introducing ITS programs	Various ITS programs, including electronic pricing		
Indonesia	Traffic optimization and Electronic Toll Collection	ITS development	ITS program	Adopt Intelligent Transportation Systems (ITS) including ERP (Electronic Road Pricing) in Jakarta.
Japan		Largely in Place	Largely in Place	Largely in Place. utilizing information gathered through ITS spots to avoid traffic jams and safety support services

Lao PDR		Preliminary Survey on Intelligent Transport System		
Malaysia		Some progress	Some progress	Some progress
Maldives	Mobile phone based information/ reservation system	Electronic information system, to reduce unwanted travel and make trips more useful		
Mongolia		Some progress	Some progress	
Myanmar	Some CCTVs	Not yet	Not yet	Some progress. Eager to use ICT including electronic payment, CCTV, etc
Nepal			Implementing embossed number plate with digital information, and smart card for driving license	Smart card driving license like will be implemented
Pakistan		Largely in Place. ITS-Based traffic management model for Karachi and national highways	Some progress. Lahore metro electronic fare collection, and has real time user information.	Technologies such radio frequency identification tags (RFID), global positioning systems (GPS) and vehicle routing software
People Rep. of China		Some progress		
Philippines		Automated Fare Collection System	Automated Fare Collection System	Fully completed. Inter-operable among three Metro Rail Transit lines and buses. Public Transport Information Management Center
Rep. of Korea	New technologies	Largely in Place		Largely in Place
Russian Federation				
Singapore	Mentions this goal		Fully Completed	
Sri Lanka		Focus is on the use of ICT to the maximum to avoid travel whenever possible		ICT development and integration with transport system
Thailand		Some progress. Policy for common ticketing project	Largely implemented	
Timor Leste				Not yet.
Viet Nam	Mentions this goal	Some progress. Develop smart card in bus in Ha Noi	Some progress. Apply ITS in some new highways	Some progress. Apply ITS in some new highways

Counts	*7*	*16*	*14*	*14*

12. Achieve improved freight transport efficiency

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan			Not yet	Not yet
Bangladesh	Improve freight infrastructure	Improving inland waterways and logistics services	Some progress. Various freight transport improvements.	Some progress. Emergence of private sector logistics companies
Bhutan		Policy in place. Mostly by local transporters using small trucks		Not yet. Freight industry remains largely unregulated
Brunei Darussalam		Improvement of existing road for more efficient freight transport within the Brunei		
Cambodia				
India	Fright improvement programs			
Indonesia		Development of logistic system	Freight improvement program	
Japan		Largely in Place	Largely in Place	Largely in Place
Lao PDR	CO2 Reduction in Freight Transport			
Malaysia		Largely in Place	Largely in Place	Largely in Place. Electrified Double Tracking Project
Maldives				
Mongolia		Some progress	Some progress	
Myanmar		Some progress	Some progress	Some progress. Plan 6 inland ports with modernized facilities
Nepal			Integrated Check Post (ICP). Preparing ICD structure for Nepal – China Border	Intercity highway and rail line improvements.
Pakistan	Mentions this goal	Largely in Place	Some progress. Rail is being promoted for long haul	Some progress. Rail is promoted for long haul
People Rep. of China		Some progress	More than 23,000 km railway track will be made over the next five years	

Philippines				Some progress Davao Sasa Port Modernization Project
Rep. of Korea	Sustainable Transport and Sustainable Transport and Logistics Development Act	Largely in Place. Integrated system for port logistics		Largely in Place. Integrated logistics programs.
Russian Federation				
Singapore			Not yet	
Sri Lanka	Mentions this goal	Promotion of train and inland waterway cargo transport		Expansion of private logistics services
Thailand		Some progress	Some programs	Multi-modal logistics. Shift from truck to vessel or railway.
Timor Leste				Improving intercity highways and port facilities.
Viet Nam		Some progress. Green freight transport project	Some progress. Continue to implement the route map to apply ITS	Some progress. Development of logistics services.
Counts	*6*	*13*	*13*	*14*

IV. Cross-cutting strategies

13. Adopt a zero-fatality policy

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan			Some progress. Work on speed control, strict drivers license procedures, vehicle registration, and insurance system is being implemented.	Not yet
Bangladesh	For pedestrian safe mobility different initiatives taken	National Road Safety Action Plan in place, and various support programs	Largely in Place. Traffic safety policies and programs.	Largely in Place. National Road Safety Council is in place
Bhutan	Decade of action for road safety	Mostly in place so far as road transport is concerned. Target to reduce deaths below 5 per 100,000 (against 17 currently)		Not yet. Vehicle crash still a major public health concern

Brunei Darussalam		Many programs including traffic calming, improved education and enforcement.	Government set a national target of 35% reduction in fatality rate by 2020.	
Cambodia	Various safety programs			
India	Some safety programs	Road safety programs and audits		
Indonesia				Adopt a zero-fatality policy and "road map"
Japan		Fully Completed	Largely in Place	Largely in Place. Many measures to prevent accidents.
Lao PDR		Road traffic safety in EST Strategy		
Malaysia	Safety inspections	Largely in Place	Largely in Place	Largely in Place. Road Safety Plan and Department. Automatic enforcement
Maldives	Halve road transport deaths by 2015			
Mongolia		Some progress	Some progress	
Myanmar		Some progress	Some progress	Largely in Place. Establish National Road Safety Council and Road Safety Action Plan
Nepal			Introduce speed control, drunk driving enforcement, road Safety Council formed by 2015	Nepal Road Safety Strategy and Action Plan (2013-2020)
Pakistan	Mentions this goal	Largely in Place	Some progress	
People Rep. of China		Not yet		
Philippines		Developing an integrated road accident data base system	Road Transport Patrol	Liability insurance requirements and breathalyzer acquisition largely in place.
Rep. of Korea		Largely in Place. Target to annually reduce traffic casualties by 10%.		Largely in Place.
Russian Federation				
Singapore	Mentions this goal		Fully Completed	

Sri Lanka	Road safety	National Road Safety Policy and Road Safety council. Regulations		Road safety committees with wider participation assisting local police stations
Thailand	Mentions this goal	Largely in Place. Road Safety Action Plan	Largely in Place. Road Safety Action Plan	Largely in Place. Decade of road safety
Timor Leste		3 ZEROs Vision		Not yet. Establishing basic road safety activities.
Viet Nam	Ensure safe traffic	Largely in Place. 3E project (Engineering, Education, Emergency)	Some progress	Some progress. Decree requiring route monitoring devices in some vehicles.
Counts	*11*	*17*	*13*	*14*

14. Promote monitoring of transport health impacts

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan		Introducing safety programs and burden of disease study	Not yet	Some progress
Bangladesh		Clean Air and Sustainable Environment (CASE) project to conduct a health impact study on air pollution	Some progress. Various air quality programs.	Largely in Place
Bhutan	Decade of action for road safety	Vehicle Emission Standard in place		
Brunei Darussalam		Monitoring device to measure emissions installed at major road		
Cambodia	Mentions this goal			
India	Mentions this goal	Emission reduction, traffic safety, and active transport programs		
Indonesia				Promote monitoring of transport health impacts.
Japan		Largely in Place		
Lao PDR				
Malaysia		Some progress		
Maldives				
Mongolia		Some progress	Some progress	

Myanmar		Not yet	Some progress	
Nepal			Air pollution health impacts study is ongoing .	
Pakistan		Largely in Place	Not yet	
People Rep. of China		Not yet		
Philippines			Replacement of 2-stroke tricycles	Some. Special Vehicle Pollution Control Fund and vehicle modernization
Rep. of Korea	Encourages NMT	Some progress. Promotion of green transportation		
Russian Federation				
Singapore			Some progress	
Sri Lanka	Safety and health	Strict control on public place smoking		
Thailand		Not yet	Health impact assessments	
Timor Leste				Not yet.
Viet Nam		Some progress	Some progress	Some progress. Noise mapping around airport
Counts	*5*	*15*	*10*	*7*

15. Establish country-specific air quality and noise standards

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan	Air Pollution Control and Mitigation Regulation	Introduced National Ambient Air Quality Standard	Not yet. National Ambient Air Quality standard for Afghanistan	Some progress
Bangladesh		Published air quality standards for PM, O3, SO2, NOx and CO	Some progress. Air and noise standards	Largely in Place. Emission standards and continuous air monitoring stations established.
Bhutan	Mentions this goal	Air pollution standard in place and VES in but not in case of Noise. Air quality Monitoring Station in Four locations		Vehicle Emission Standards being reviewed
Brunei Darussalam		Regulate emission and noise test through computerized vehicle inspection center		

Cambodia	Mentions this goal			
India	Established standards and monitoring stations	National Ambient Air Quality Standards for 12 Pollutants		
Indonesia	Urban air quality monitoring	Application of emission standards		Establish air quality and noise standards. Preparing Euro 4 standards regulation
Japan		Largely in Place	Largely in Place	Largely in Place. Constant monitoring of air and noise pollution
Lao PDR		Vehicle emission standards in EST Strategy		
Malaysia		Some progress	Some progress	Some progress. Ambient air and noise monitoring. Regulations for Vehicle Type Approval.
Maldives		Vehicular emission standards		
Mongolia		Some progress Emission control standards	Some progress. National Committee on Air Pollution Reduction established	
Myanmar		Some progress	Some progress	
Nepal				
Pakistan	Set emission standards	Some (Piloting-Design)	Largely in Place. CLEAN (Central Laboratories for environmental Analysis and Network)	
People Rep. of China		Not yet		
Philippines		Adoption of Euro regulations		Some. Shifting to low emission vehicles.
Rep. of Korea		Largely in Place.		Largely in Place.
Russian Federation				
Singapore	Mentions this goal		Largely in Place	
Sri Lanka				Air quality standards monitored
Thailand	Mentions this goal	Fully Completed	Fully Completed	
Timor Leste				Not yet.

Viet Nam		Not yet	Some progress. National Technical Regulation on Ambient Air Quality	Some progress. Report on national air quality.
Counts	*8*	*19*	*11*	*11*

16. Implement sustainable low-carbon transport initiatives to mitigate global climate change

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan		Became party to Kyoto Protocol	Some progress. In 2013 Afghanistan became party to Kyoto Protocol	Some progress
Bangladesh		Bangladesh Climate Change Strategy and Action Plan and NAPA in place	Some progress. Bangladesh Climate Change Strategy and Action Plan in place	Largely in Place
Bhutan	Mentions this goal	Submitted Second National Communication and GHG Inventory (2011) – Transport sector accounts for highest energy related GHG emissions (44%) in Bhutan		Aspiring to achieve Zero Emission in the road transport sector
Brunei Darussalam		Not yet		
Cambodia				
India	Mentions this goal	National Action Plan on Climate Change		
Indonesia		Indonesia will reduce emission GHG 26%	Indonesia Climate Change Sectoral Roadmap (ICCSR)	Implement sustainable low-carbon transport initiatives
Japan		Largely in Place	Largely in Place	Largely in Place
Lao PDR				Low Carbon Transport Study in Lao PDR
Malaysia		Some progress	Some progress	Largely in place.
Maldives	Carbon neutral transport system	Carbon neutral goals for 2020		
Mongolia		Some progress. National Action Program on Climate Change	Some progress.	
Myanmar		Some progress	Some progress	
Nepal				

Pakistan		Largely in Place	Some progress	Pakistan Sustainable Transport (PAKSTRAN) project aims to reduce greenhouse gas (GHG) emissions
People Rep. of China		Some progress		
Philippines		National EST Strategy	National EST strategy is consistent with the Bangkok Declaration 2020	Some. Green airport and vehicle modernization.
Rep. of Korea	Carbon emission reduction targets and plans	Largely in Place. Comprehensive green transportation action plans		Largely in Place.
Russian Federation				
Singapore			Largely in Place	
Sri Lanka				
Thailand	Mentions this goal	Some progress. Master Plan of Sustainable Transport Development and Climate Change Mitigation	Largely in Place	Plan for GHG reduction in Transportation Sector
Timor Leste				Ratified the Kyoto Protocol and other emission reduction agreements.
Viet Nam	Encourage emission reductions	Some progress	Some progress	Some progress. Developing urban public transport systems.
Counts	*6*	*17*	*12*	*13*

17. Adopt social equity as a transport planning and design criteria

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan			Some progress	Some progress
Bangladesh		National Integrated Multimodal Transport Policy (NIMTP) addresses the issues of improved quality, safety and security for all, especially for women, physically challenged and senior citizens	Largely in Place. Priority seats reserved in public transport. Transport services have been ensured for low-income groups. Special bus services for women and students have been introduced.	Largely in Place

Bhutan		Some plans to provide special facilities to women, elderly and disadvantaged group of people using public transport services.	Introduced reserved seats for people with special needs in all city buses	Reserved seats for people with special needs in all city buses
Brunei Darussalam		Provide disabilities facilities for the public at the commercial area		For the promotion of the public transport services, the Government announced the fares waived for seniors citizen above 70 and children below 7 on 2015.
Cambodia	Gender perspective			
India	Social equity goals			
Indonesia		Social equity and gender perspectives in EST Strategy		Special train wagons for women.
Japan	Barrier free planning		Some progress	Largely in place. Promotion of "barrier free" facilities and society
Lao PDR	Gender and transport			
Malaysia		Largely in Place	Some progress	Largely in place. New terminal, buses and rail with Universal Access features.
Maldives	Equitable distribution of wealth			
Mongolia		Not yet	Not yet	
Myanmar		Not yet	Some progress	Some progress.
Nepal				
Pakistan			Some progress. Exclusive Transport for woman in Punjab & KPK. Societies for female university student.	
People Rep. of China		Not yet		
Philippines				Fully completed: discounts for senior citizens and Persons With Disability. Coaches designated for women, senior citizens and PWDs

Rep. of Korea		Some progress. Traffic policy to improve the right to use for vulnerable social group		Some progress.
Russian Federation				
Singapore				
Sri Lanka	Mentions this goal		Largely in Place	
Thailand	Social equity & gender perspectives			Pedestrian ways with support to the visually handicapped
Timor Leste		Some progress. Policy for persons with disabilities and elderly	Some progress	
Viet Nam		3 ZEROs Vision		Not yet.
Timor Leste		Some progress. Reduce fare for disabilities and elderly	Some progress	Some progress. Policies for people with disabilities to use different transport modes.
Counts	*7*	*12*	*11*	*13*

18. Encourage innovative financing mechanisms for sustainable transport

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan			Not yet	Not yet
Bangladesh		PPP cell has been created in the Roads and Highways Department.	Some progress. PPP and road user charges in place for selected highways and bridges.	Largely in Place
Bhutan	PPP transit operation	Parking fees in urban areas, tax on fuel already in place.		System of collecting parking fee in some bigger towns
Brunei Darussalam		Some progress		
Cambodia				
India	PPP programs	PPP in urban transport Systems- construction, operation and maintenance		
Indonesia				
Japan		Largely in Place		
Lao PDR				
Malaysia		Largely in Place	Largely in Place	Largely in place. Green Technology Financing Scheme

				Sustainable Mobility Fund for Public Transport
Maldives				
Mongolia		Not yet	Not yet	
Myanmar		Not yet	Some progress	Not yet.
Nepal	Dedicated funds			
Pakistan	Mentions this goal	Largely in Place	Largely in Place	
People Rep. of China		Some progress		
Philippines		Road User's Tax Law – Special fund for air pollution control	7.5% of Motor Vehicle User's Charge is allotted to the Special Vehicle Pollution Control Fund.	Largely in place. Various PPP Projects with varying financing mechanisms.
Rep. of Korea		Some progress		
Russian Federation				
Singapore			Not yet	
Sri Lanka				More parking meters
Thailand		Some progress. PPPs used in some transport projects.		
Timor Leste				Not yet. Uses World Bank loans.
Viet Nam	Mentions this goal	Some progress. BOCM from Metro project	Some progress	Some progress. Many BOT (Built-Operation-Transfer) transport projects
Counts	*5*	*14*	*9*	*9*

19. Encourage widespread distribution of information and awareness on sustainable transport

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan			Some progress	Not yet
Bangladesh		National Integrated Multimodal Transport Policy (NIMTP) proposed for integration of different modes	Largely in Place. Awareness programs through training, campaigns, radio and TV promotional, etc. are in place.	Largely in Place
Bhutan		Mobilizing and coordination of LCES. Action Plan for Clean		

		Air and Sustainable Mobility: Thimphu (pilot to start)		
Brunei Darussalam		EIA will be included in all new Road projects		
Cambodia				
India	Some programs	Education programs		
Indonesia	Education and encouragement programs	Smart driving training for 50,000 people / year		
Japan		Largely in Place	Largely in Place	Largely in Place. Many programs.
Lao PDR	Information and Public Awareness Information and Public Awareness			
Malaysia		Largely in Place	Largely in Place	Largely in Place.
Maldives				Works to promote environment friendly vehicles/vessels
Mongolia		Not yet	Not yet	
Myanmar		Some progress	Some progress	
Nepal				
Pakistan			Some progress	
People Rep. of China				
Philippines		National EST Strategy. National Communications on Climate Change	Road Transport Patrol	Some progress. Continuing release of messages on environmentally sustainable projects for public communications.
Rep. of Korea	Many promotion programs	Some progress. Open-platform for private sector transport information		Largely in Place
Russian Federation				
Singapore	Many campaigns		Largely in Place	
Sri Lanka				
Thailand		Not yet	Awareness campaigns	Awareness campaigns
Timor Leste				Not yet.

Viet Nam	Propagandize, disseminate information, develop human resources and capacity	Largely in Place. Building transport sector sustainable strategy action plan.	Some progress	Some progress. Ministry of Transport developing plans for sustainable development, green growth and climate change emission reductions.
Counts	*6*	*13*	*11*	*10*

20. Develop dedicated and funded institutions that address sustainable transport-land use policies

Country	2011, Delhi, Sixth	2013, Bali, Seventh	2014, Colombo, Eighth	2015, Kathmandu, Ninth
Afghanistan		Establishment of Environment Fund is under discussion	Largely in Place. Capacity enhancement activities on strengthening the ESIA procedures initiated.	Some progress
Bangladesh			Some progress. Several research and training institutions	Largely in Place
Bhutan				
Brunei Darussalam		Some progress		
Cambodia				
India				
Indonesia				
Japan		Largely in Place	Largely in Place	Largely in Place. National Institute for Land and Infrastructure Management
Lao PDR				DRAFT EST officially submitted to the Government of Lao
Malaysia		Largely in Place	Largely in Place	
Maldives				
Mongolia		Some progress. Clean Air Fund	Some progress. MOTI (Mongolian Transport Institute)	
Myanmar		Some progress	Some progress	
Nepal				

Pakistan			Some progress. JICA funded Karachi Circular Railways initiative	
People Rep. of China		Some progress		
Philippines				Largely in place. Environmentally Sustainable Transportation Initiatives Unit
Rep. of Korea	Green transport programs	Some progress		Largely in Place.
Russian Federation				
Singapore			Largely in Place	
Sri Lanka				
Thailand		Not yet	Not yet	
Timor Leste				Not yet.
Viet Nam		Largely in Place. Law on Environment Protection, Green Growth strategy	Some progress. Law on Environment Protection approved in 2014.	Some progress. Environment Protection law approved in 2014.
Counts	*1*	*9*	*9*	*8*

Bangkok Declaration Progress Review Conclusions

This analysis evaluated the Bangkok Declaration progress reports submitted at the four most recent EST in Asia Forums. In total, 74 documents were reviewed and their responses interpreted to indicate each country's progress toward 20 specific goals. The results are summarized in the tables above. These indicate whether a goal was mentioned, and when possible, rated as "Not Yet," "Some progress," "Largely in Place" or "Fully Completed." In many cases, notes or examples are provided. The tables include counts of the number of times that goal was mentioned in a particular year's reports.

This review faced several challenges. Not all member countries provided progress reports, not all reports were posted on the Forum websites, and not all reports provided information on each goal. More than half of the posted documents are slideshows which provided varying types of information; summarizing those documents in the tables often required considerable judgement. Less than a quarter of countries submitted Bangkok Declaration Progress Reports that followed the prescribed form, and many of these are incomplete, unclear, or inconsistent from one year to another. For example, in some cases a goal rated "Fully Completed" or "Largely in Place" was subsequently given a lower rating of "Some progress or even "Not Yet," but a careful reading of the documents suggests that such downgrading in rankings probably indicate differences in the way that different respondents interpreted the questions rather than actual reversal of progress. As a result, there are probably many "false negatives" in which this analysis fails to reflect countries actual progress toward these goals, and the contributions that EST Forums had on this progress.

Despite these problems, this review provides useful information. Many countries demonstrated progress toward these goals, with a progression from "Not yet" or "Some (Design – Pilot)" to "Largely In Place" or "Fully Completed," supported by examples of recently implemented policies and programs. In particular, during the last decade many EST Forum countries have established integrated transport and land use planning programs, alternative fuel and emission reduction policies, and new non-motorized transport and public transit development programs. In several cases, the Bangkok Declaration was referenced as a reason for implementing a particular policy or project, or the EST Forums were cited as a source of support for implementation. Even countries that so far have made little progress toward certain goals have EST Forum guidance and resources that may be useful in the future. It is impossible to determine whether these policies and programs would have been implemented anyway, this review suggests that the EST Forums made a substantial difference; by helping countries set goals and targets, and exposing public officials and practitioners to new ideas and methods, the Forums expanded and accelerated policy changes and program developments that will help create more sustainable transportation systems in Asian countries.

References

Bangkok Declaration progress reports were obtained from the following Forum websites.

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Ninth Regional Environmentally Sustainable Transport (EST) Forum in Asia, 17-20 Nov 2015, Kathmandu, Nepal (www.uncrd.or.jp/index.php?page=view&type=13&nr=956&menu=232)
Afghanistan, Bangladesh, Bhutan, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Maldives, Myanmar, Nepal, Pakistan, Republic of Korea, Sri Lanka, Thailand, Philippines, Timor Leste, Viet Nam (18)