Environmentally Sustainable and Healthy Urban Transport

A strategic focus for urbanization and health

ESHUT Primer

World Health Organization
Western Pacific Region
Environmentally Sustainable and Healthy Urban Transport

A strategic focus for urbanization and health

ESHUT Primer
This **ESHUT Primer** provides background information on the **Environmentally Sustainable and Healthy Urban Transport** initiative and offers examples of specific ESHUT projects as well as resources to help cities embark on their journey towards collaborative planning and development.

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Rapid and unplanned population growth in urban areas is a global reality, particularly in developing countries. And the Western Pacific Region is no exception. While urbanization has in some cases created better opportunities for employment, greater access to education and social services, improved housing and living conditions, and higher socioeconomic development, it has also brought a number of problems that directly impact health. In most instances, solutions to these problems must go beyond the traditional domain of the health sector and require the involvement of non-health sectors such as education, trade, industry, transport and urban planning, as well as participation at the community level.

In recognition of the profound impact of urbanization on our collective health and for all of us individually, the focus of this year’s celebration of World Health Day on 7 April, 2010 is Urbanization and Health. With the global campaign “1000 cities, 1000 lives”, cities will close streets, organize physical-activity events, promote local culture and safe food and conduct other events to raise awareness of the role of cities in promoting health.

In the Western Pacific Region, we are highlighting “Environmentally Sustainable and Healthy Urban Transport” (ESHUT) as one of the approaches to achieve healthy urbanization. The policy, design and operation of urban transport systems impact the health and safety of people through air and noise pollution, greenhouse gas emissions generated by motor vehicles, road traffic injuries, exposure to second-hand smoke in confined public transport systems, and the lack of accessibility for older people and those with disabilities. Our overall objective is to promote a win-win strategy for urban transport system to achieve good urban mobility that impacts positively on health.

This document highlights the basic steps, major strategies, key messages and knowledge sources on ESHUT. It also features the efforts of five Asian cities that have creatively addressed issues and challenges related to ESHUT, namely, Seoul and Changwon (Republic of Korea), Marikina (Philippines), Nagoya (Japan), and Phnom Penh (Cambodia). We hope that this document will serve as guide and encouragement for initiating policies and actions on environmentally sustainable and healthy urban transport within the Region and that more countries and cities will place the environment and health at the center of their development.
Section 1: About ESHUT

Environmentally Sustainable and Healthy Urban Transport: An Important Challenge of Urbanization and Health

We are moving towards an increasingly urbanized world. The year 2007 marked a historical event, as the world’s population living in cities surpassed 50 percent for the first time. By the year 2030, three out of five people across the world will be city dwellers, and by 2050, seven in ten. In the Asia Pacific region, more than 0.8 billion people live in cities. In the next 20 years, 60 percent of the increase in the global population is expected to be in this region.

In recognition of the profound impact urbanization can have on our health, both collectively and individually, the focus of World Health Day 2010 is on **Urbanization and Health**. As part of the global campaign, events are being organized worldwide to raise awareness about the dedicated theme – 1000 cities, 1000 lives. In the Western Pacific Region, the goal is to mobilize and activate at least 200 cities for the global campaign.

World Health Day may be a one-day event in some cities, but health issues and challenges related to urbanization will have to be addressed in the long term. To ensure continuity of focus throughout 2010 and beyond, the Western Pacific Region of WHO is highlighting **Environmentally Sustainable and Healthy Urban Transport** (ESHUT) as one of the main challenges of healthy urbanization.

**In the Western Pacific Region, cities are encouraged to initiate a process that will facilitate the more detailed planning and implementation of ESHUT and ultimately lead to a long-term ESHUT output.**

World Health Day 2010 is a launching pad for raising awareness about the selected theme **Urbanization and Health**. The **Environmentally Sustainable and Healthy Urban Transport** project seeks to ensure continuity and longevity of focus. Only then will we be able to implement environmentally sustainable and healthy urban transport within the Region.

We hope that cities throughout the Western Pacific Region will adapt a new paradigm for urban transport systems, which place the environment and health at the centre of attention.
Background

One of the consequences of rapid urbanization is the development of an urban infrastructure, driven by uncontrolled motorization for transporting the ever-increasing number of people and goods to, from and within urban areas. The result is neither conducive to the health of the urban population nor environmentally sustainable.

Urban transport systems have significant effects on the health and safety of people

The policy, design and practice of urban transport systems all have significant implications for the health and safety of people because of air and noise pollution and greenhouse gas (CO₂) emissions generated by motor vehicles, road traffic crashes, physical activity or inactivity, exposure to second-hand smoke in confined public transport systems, lack of accessibility or barrier-free transport system for persons with disabilities and older persons, and so on.

In 2009, in close cooperation with the United Nations Centre for Regional Development (UNCRD)¹ and the Alliance for Healthy Cities (AFHC), the WHO Western Pacific Regional Office launched the Environmentally Sustainable and Healthy Urban Transport (ESHUT) initiative. In line with the theme of World Health Day 2010, Urbanization and Health, this long-term project has the overall objective to promote a win-win strategy for urban transport systems, focusing on the environment and health, as shown in Figure 1.

THE MANY IMPACTS OF UNSUSTAINABLE TRANSPORT

AIR QUALITY: vehicle emissions harm human health and the natural environment

NOISE AND VIBRATION: noise affects productivity and health

ACCIDENTS: each year 1.2 million lives are lost due to vehicular accidents

GLOBAL CLIMATE CHANGE: vehicles are responsible for roughly 25 percent of fossil-based CO₂ emissions

WASTE DISPOSAL: the disposal of vehicles and vehicle parts contribute to landfill problems

CONGESTION: time lost in traffic congestion affects overall productivity

ENERGY SECURITY: dependence on petrol-based mobility affects national security

ECONOMIC EFFICIENCY: financial capital consumed by car expenditures reduces capital for other investments

SEVERANCE: roadways separate communities and inhibit social interactions

VISUAL INTRUSION: cars, roads and parking areas distract from a city’s natural environment

LOSS OF LIVING SPACE: roads and parking areas consume large amounts of urban space


¹More information about the United Nations Centre for Regional Development and their Environmentally Sustainable Transport (EST) Project can be found at URL: http://www.uncrd.or.jp/env/est/
Improvements in urban transport systems lead to improvements in the health of urban populations

Good urban transport systems impact positively on the health of urban populations. A new paradigm for urban mobility and access is needed, which must be based on an environmentally sustainable alternative, including, for example, easy access to barrier- and smoke-free public transport, non-motorized transport and road safety. Cities need an urban transport system that promotes health through the reduction of greenhouse gas emissions, increase of opportunities for physical activity and increase in health equity, by ensuring safe and equal access to environmentally sustainable and healthy urban transport.

The ESHUT project seeks to empower cities in Asia and the Pacific to build healthy urban transport systems that reduce greenhouse gas emissions, increase health equity and increase physical activity, thereby addressing climate change, health and urban transport in an integrated and strategic manner to achieve not only economic and environmental benefits, but also health and social benefits, i.e., co-benefits. Currently, five Asian cities are participating in the ESHUT initiative. They will serve as demonstration sites to inspire other cities in the Region to strive for environmentally sustainable and healthy urban transport systems.

On World Health Day 2010, the ESHUT demonstration sites showcased their work by giving a presentation on the implementation and impact of their city’s ESHUT initiative at a Cities Forum hosted by the WHO Regional Office in Manila. These initiatives are described in Section 4.

Figure 1. Win-win solutions to climate change and transport

Source: UNCRD (2009) Win-win solutions to Climate Change and Transport
Section 2: Implementing ESHUT Projects

Implementing ESHUT Initiatives in the Western Pacific Region

In the Western Pacific Region, the plan is to seek the agreement of at least 200 cities (mayors, heads of city health departments and other development sectors) joining the global “1000 cities, 1000 lives” campaign. The WHO Regional Office will continue to work closely with UNCRD and other partners to promote Environmentally Sustainable and Healthy Urban Transport (ESHUT). All cities in the Region are called upon and encouraged to engage in activities related to ESHUT.

Figure 2. Six key steps towards ESHUT

Identifying and engaging stakeholders are a crucial first step. Stakeholders include all those who affect and are affected by policies, decisions or actions within a particular system. They have an interest in an issue or have a potential to influence the success of addressing the issue. Stakeholders can be persons, groups or institutions and they can be at any level or position in society, from the global level, to the regional, national or local level.

Figure 3. Examples of internal and external stakeholders for ESHUT initiatives

Establishing an ESHUT Committee is also a crucial step in ensuring coordination between stakeholders and the pooling of resources. Below are a few of the possible responsibilities of an ESHUT Committee:

- Show political support for the ESHUT initiative and facilitate advocacy work for environmentally sustainable and healthy urban transport.
- Decide on priority work areas and agree on a plan of action.
- Make decisions on the operation of possible subcommittees (working groups).
- Obtain and identify financial and other resources for the ESHUT initiative (including public and private sources).

The composition of an ESHUT Committee will be decided by the stakeholders. Here are some suggestions:

- Mayor or Vice-Mayor (possible role: Chairperson of the Committee)
- City Council members related to health and social affairs (possible role: Vice Chairperson of the Committee)
- City Council members related to the transportation sector
• City Council members related to the environment sector
• City Council members related to the urban planning or urban development sector
• City Council members related to city management
• City Council members related to improvement of residential areas
• If available: health promotion fund
• If available: health promotion development or management centre
• Youth groups and organizations
• Private sector

All activities should be planned and implemented in partnership with interested nongovernmental organizations, community representatives, community groups (such as women, youth or city development committees) and, if applicable, universities and interested research institutes. This will help ensure that interventions are sustained throughout 2010 and beyond.

To enable sharing of experiences and support city-to-city learning, all activities implemented in relation to World Health Day 2010 should be documented.

Examples of ESHUT Initiatives

The following table provides examples of possible short-term activities and longer-term outputs. The main goal of the short-term activities should be to initiate a process (e.g., an advocacy or social mobilization process) that can facilitate the achievement of a long-term ESHUT output. Section 3 provides examples of indicators to document the ESHUT initiative.

<table>
<thead>
<tr>
<th>Focus</th>
<th>Possible short-term activities</th>
<th>Possible long-term outputs</th>
</tr>
</thead>
</table>
| Tobacco-free public transport (TFPP) | - identify and engage stakeholders  
- organization of free meetings, discussions or seminars at various levels on TFPP  
- display posters and banners describing health risks associated with smoking at stations, stops, ticket booths, public toilets | - ensure a tobacco-free public transportation system (including areas inside buses, railways and subways, within stations and waiting areas)  
- ensure enforcement is in place and functioning |
| Alcohol- and drug-free public transport (AFPP) | - identify and engage stakeholders  
- organization of free meetings, discussions or seminars at various levels on AFPP  
- display posters and banners describing health risks associated with alcohol and drug abuse at stations, stops, ticket booths, public toilets | - ensure an alcohol- and drug-free public transportation system (including areas inside buses, railways and subways, within stations and waiting areas)  
- ensure enforcement is in place and functioning |
<table>
<thead>
<tr>
<th>Focus</th>
<th>Possible short-term activities</th>
<th>Possible long-term outputs</th>
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</table>
| Public sanitary conveniences in urban transport systems (PSC) | - identify and engage stakeholders  
- organization of free meetings, discussions or seminars at various levels on PSC  
- display posters and banners describing health risks of unsanitary public facilities (e.g., transmission of disease)  
- provide hand sanitizers at stations | - ensure hygienic and clean public sanitary conveniences are in place in urban transport systems (subways, buses, railways, etc.) |
| Bicycle friendly city (BFC) | - identify and engage stakeholders  
- organization of free meetings, discussions or seminars at various levels on BFC  
- block off streets for car-free days and organize a bicycle rally  
- convert parking spaces in car parks to bicycle parking  
- organize bicycle training at schools for children and parents | - introduce bicycle lanes throughout the city  
- develop easy-to-access and safe/secure parking facilities for bicycles throughout the city  
- provide bicycle rentals throughout the city |
| Pedestrianization | - identify and engage stakeholders  
- organization of free meetings, discussions or seminars at various levels on pedestrianization  
- block off streets for car-free days and organize a “city hike”  
- introduce amenities along existing walkways (benches, green space, kiosks, etc.)  
- install waste disposal bins along walkways | - increase the number of permanently car-free zones  
- increase pedestrian footpaths that are conducive to health (traffic lights for safe crossing, overhead bridges, benches, kiosks, etc.)  
- ensure safe walkways, especially for women, children and older persons |
| Barrier-free and safe roads and walkways (BFS) | - identify and engage stakeholders  
- organization of free meetings, discussions or seminars at various levels on BFS  
- organize a walking event with families and with persons in wheelchairs and make visible all areas with difficult access | - ensure roads and walkways are accessible for everyone, including older persons, children, persons with disabilities and persons pushing prams or in wheelchairs  
- ensure roads and walkways are well lit and safe (e.g., for women at night)  
- ensure road safety measures are in place and being enforced |
| Bus stop redesign (BSR) | - identify and engage stakeholders  
- organization of free meetings, discussions or seminars at various levels on BSR  
- highlight current safety-related problems with bus stops  
- highlight difficulties of accessing bus stops | - make bus stops easy and safe to access (e.g., safe crossings to the bus stop, lighting at night) |
| Increased connectivity (IC) | - identify and engage stakeholders  
- organization of free meetings, discussions or seminars at various levels on IC  
- create awareness and raise public support for increased connectivity, by blocking off streets and organizing city walks | - roadway and pathway system changes  
- ensure safety of roads |
<table>
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<tr>
<th>Focus</th>
<th>Possible short-term activities</th>
<th>Possible long-term outputs</th>
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</thead>
</table>
| Increased access to (barrier-free and safe) public transport | - identify and engage stakeholders  
- organization of free meetings, discussions or seminars at various levels on IAPT  
- organize walking and biking events with families and make visible all areas with difficult access | - ensure public transport is accessible for everyone, including older persons, children, persons with disabilities and persons pushing prams or in wheelchairs  
- develop easy-to-access and safe parking facilities for cars and bicycles in close proximity to urban public transport  
- ensure public transport is safe, especially for women, children and older persons |
| Air quality (AQ) | - identify and engage stakeholders  
- organization of free meetings, discussions or seminars at various levels on AQ  
- assess whether or not a country or city has air quality standards and whether they are enforced | - ensure national air quality standards have effective enforcement measures in place |
Section 3: **Practical ESHUT Tools**

**ESHUT Key Messages**

Key messages are basic information upon which advocacy campaigns and promotional materials can be developed, such as websites, press releases and statements, and brochures. We encourage you to use the following key messages to promote Environmentally Sustainable and Healthy Urban Transport (ESHUT) initiatives in your city.

**There are six ESHUT key messages:**

- Urban transport systems have significant effects on the health and safety of people.
- Rapid and unplanned urbanization often results in the development of an urban infrastructure driven by uncontrolled motorization.
- Urban mobility can be achieved successfully through sustainable alternatives.
- Good urban transport systems impact positively on the health of urban populations.
- Environmentally Sustainable and Healthy Urban Transport (ESHUT) is a framework to guide multisectoral policy and action to promote a win-win strategy for urban transport systems.
- The ESHUT initiative will ensure continuity of focus beyond World Health Day 2010.

**Urban transport systems have significant effects on the health and safety of people**

The policy, design and practice of urban transport systems all have significant implications for the health and safety of people. For instance, road transportation has significant effects on the health of populations through road traffic crashes, air and noise pollution, greenhouse gas (CO2) emissions resulting in climate change, noise and physical inactivity, among others. Poorly designed urban transport systems do not take into account accessibility for persons with disabilities or the elderly and can expose people to second-hand smoke in confined public transport areas.

**Rapid and unplanned urbanization often results in the development of an urban infrastructure driven by uncontrolled motorization**

Rapid and unplanned urbanization means that an ever increasing number of people and goods require transportation to, from and within urban areas. Without appropriate planning, design, policies and regulations, rapid urbanization leads to uncontrolled motorized transport. The result is neither conducive to the health of the urban population nor environmentally sustainable.

**Urban mobility can be achieved successfully through sustainable alternatives**

A new way of thinking about urban mobility is needed. Easy and barrier-free access to public transport systems is essential for older people and persons with disabilities. Smoke-free public transport, stations and stops would protect health, considering more than 50 percent of youth aged 13–15 years are exposed to second-hand smoke in public places, including transport settings. Securing bicycle parking areas next to public bus and
train stations would encourage people to use bicycles and meet their need for seamless mobility in the city. The design of urban transport systems should consider these user-friendly alternatives, which enhance mobility and accessibility to public transport by anyone in the society.

**Good urban transport systems impact positively on the health of urban populations**

Cycling, walking and efficient public transport systems are environmentally sustainable and lead to improvements in the health of urban populations. If the situation does not improve, urban air pollution and road traffic crashes will cause more than 600 000 deaths every year. Non-motorized transport (e.g., cycling and walking) and efficient and well-coordinated public buses and trains will lead to reduction in use of private motor vehicles, and hence reduce deaths and illness associated with air pollution, noise and traffic crashes. In addition, such transport systems will reduce greenhouse gas emissions from motor vehicles and promote physical activity among urban dwellers. These transport alternatives provide a win-win strategy, and bring not only economic and environmental benefits, but also health and social benefits to the society (i.e., co-benefits).

**Environmentally Sustainable and Healthy Urban Transport (ESHUT) is a framework for multisectoral policy and action to promote a win-win strategy for urban transport systems**

Since 2009, the WHO Western Pacific Regional Office, the United Nations Centre for Regional Development (UNCRD) and the Alliance for Healthy Cities (AFHC) have been working together in developing a multisectoral (transport, environment and health) regional initiative to promote ESHUT in Asia. The overall objective of ESHUT is to promote a win-win strategy for urban transport systems, focusing on the environment and health. The specific objectives are to empower cities in Asia to build healthy urban transport systems and to address health, urban transport and climate change in an integrated and strategic manner to achieve co-benefits.

**The ESHUT initiative will ensure continuity of focus beyond World Health Day 2010**

World Health Day may be a one-day event in some cities, but health issues and challenges related to urbanization will have to be addressed in the long term. To ensure continuity of focus throughout 2010 and beyond, the Western Pacific Region of WHO is highlighting Environmentally Sustainable and Healthy Urban Transport (ESHUT) as one of the main approaches to achieving healthy urbanization for World Health Day 2010. In the Western Pacific Region, cities are encouraged to adopt ESHUT for World Health Day 2010 and beyond.
Global Key Messages for World Health Day 2010

These key messages, along with supporting messages and key facts, are found in Section Two of the World Health Day 2010 Toolkit for Event Organizers (http://www.who.int/world-health-day/2010/toolkit/en/index.html).

- Virtually all population growth over the next 30 years will be in urban areas.
- The urban poor suffer disproportionately from a wide range of diseases and health problems.
- The major drivers of health in urban settings are beyond the health sector.
- Actions and solutions exist to tackle the root cause of urban health challenges.
- Build partnerships with multiple sectors of society to make cities healthier.

Resources

<table>
<thead>
<tr>
<th>Title</th>
<th>Link</th>
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</thead>
<tbody>
<tr>
<td>Sustainable Urban Transport Projects</td>
<td><a href="http://www.sutp.org/">http://www.sutp.org/</a></td>
</tr>
<tr>
<td>Clean Air Initiative for Asian Cities</td>
<td><a href="http://www.cleanairnet.org/caiasia/1412/channel.html">http://www.cleanairnet.org/caiasia/1412/channel.html</a></td>
</tr>
<tr>
<td>Physical activity through transport as part of daily activities</td>
<td><a href="http://www.euro.who.int/document/Tri8Booklet.pdf">http://www.euro.who.int/document/Tri8Booklet.pdf</a></td>
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</tbody>
</table>
Background Information about Possible ESHUT Initiatives

The following resources can be drawn upon to support the planning and initiation of an environmentally sustainable and healthy urban transport programme.

<table>
<thead>
<tr>
<th>ESHUT Initiative</th>
<th>Resources</th>
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</table>
Car-free days: http://www.cleanairnet.org/caiasia/1412/article-59629.html
| Increased access to (barrier-free and safe) public transport | Seoul: http://www.jrtr.net/jrtr25/pdf/jrtr25_kim.pdf                       |
List of Possible ESHUT Indicators to Assess the Baseline Situation

Considering the importance of documenting, evaluating and monitoring the implementation of initiatives and programmes to generate evidence on their effectiveness, the following table provides examples of indicators to document the above-mentioned activities. It is highly recommended to assess the baseline situation prior to the implementation of new initiatives and programmes.

<table>
<thead>
<tr>
<th>Focus</th>
<th>Possible indicators for the documentation of short-term activities</th>
<th>Possible indicators for the documentation of long-term activities</th>
</tr>
</thead>
</table>
| Tobacco-free public transport (TFPP) | - number of stakeholders engaged  
- number of free meetings, discussions or seminars held  
- number of posters and banners displayed and number of locations at which they were displayed | - number of smoke-free public transport areas or number of tobacco-free places  
- number of law enforcement activities  
- number of smokers |
| Alcohol and drug free public transport (AFPP) | - number of stakeholders engaged  
- number of free meetings, discussions or seminars held  
- number of posters and banners displayed and number of locations at which they were displayed | - number of alcohol- and drug-free public transport areas or number of alcohol- and drug-free places  
- number of law enforcement activities  
- number of alcohol- and drug-related incidents in public transport areas |
| Public sanitary conveniences in urban transport systems (PSC) | - number of stakeholders engaged  
- number of free meetings, discussion or seminars held  
- number of posters and banners displayed and number of locations at which they were displayed | - number of hygienic and clean public sanitary conveniences in place in urban transport systems (subways, buses, railways, etc.) |
| Bicycle friendly city (BFC) | - number of stakeholders engaged  
- number of free meetings, discussions or seminars held  
- number of streets blocked off and estimated number of participants  
- number of bicycle trainings organized at schools | - length (in km) of bicycle lanes introduced throughout the city  
- number of parking facilities established for bicycles  
- number of bicycle rentals available for rent  
- number of bicycles rented per day or per week  
- number of people using the bicycle parking facilities |
<table>
<thead>
<tr>
<th>Focus</th>
<th>Possible indicators for the documentation of short-term activities</th>
<th>Possible indicators for the documentation of long-term activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrianization</td>
<td>- number of stakeholders engaged</td>
<td>- number of permanently created car-free zones</td>
</tr>
<tr>
<td></td>
<td>- number of free meetings, discussions or seminars held</td>
<td>- number of traffic lights, overhead bridges, kiosks, etc.</td>
</tr>
<tr>
<td></td>
<td>- number of streets blocked off and estimated number of participants</td>
<td>- number of incidences (related to violence, accidents) along walkways</td>
</tr>
<tr>
<td></td>
<td>- number of amenities introduced along existing walkways</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- number of waste disposal bins installed along walkways</td>
<td></td>
</tr>
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<td></td>
<td>- number of free meetings, discussions or seminars held</td>
<td>- number of traffic lights, overhead bridges, kiosks, etc.</td>
</tr>
<tr>
<td></td>
<td>- number of walking events organized</td>
<td>- number of incidences (related to violence, accidents) along walkways</td>
</tr>
<tr>
<td>Barrier-free and safe roads and walkways (BFS)</td>
<td>- number of stakeholders engaged</td>
<td>- number of walkways installed to ensure easy street crossing</td>
</tr>
<tr>
<td></td>
<td>- number of free meetings, discussions or seminars held</td>
<td>- number of street lightings installed</td>
</tr>
<tr>
<td></td>
<td>- number of walking events organized</td>
<td>- number of security guards working in public places</td>
</tr>
<tr>
<td></td>
<td>- number of permanent car-free zones installed</td>
<td>- number of incidences (related to violence, accidents) in public places</td>
</tr>
<tr>
<td>Bus stop redesign (BSR)</td>
<td>- number of stakeholders engaged</td>
<td>- number of street lightings installed</td>
</tr>
<tr>
<td></td>
<td>- number of free meetings, discussions or seminars held</td>
<td>- number of security guards working in public places</td>
</tr>
<tr>
<td></td>
<td>- number of public events held to raise public awareness on current safety-related problems with bus stops and difficulties of accessing bus stops</td>
<td>- number of incidences (related to violence, accidents) in public places</td>
</tr>
<tr>
<td>Increased connectivity (IC)</td>
<td>- number of stakeholders engaged</td>
<td>- number of roadway and pathway system changes</td>
</tr>
<tr>
<td></td>
<td>- number of free meetings, discussions or seminars held</td>
<td>- number of traffic accidents</td>
</tr>
<tr>
<td>Increased access to (barrier-free and safe) public transport</td>
<td>- number of stakeholders engaged</td>
<td>- number of infrastructure changes to increase accessibility to public transport</td>
</tr>
<tr>
<td></td>
<td>- number of free meetings, discussions or seminars held</td>
<td>- number of established parking facilities for cars and bicycles in close proximity to urban public transport</td>
</tr>
<tr>
<td></td>
<td>- number of walking events and biking events organized</td>
<td>- number of incidences in public places</td>
</tr>
</tbody>
</table>
Changwon, Republic of Korea

The ESHUT project in Changwon aims to (1) increase physical activity and decrease sedentary living, (2) decrease use of private cars and enhance use of public transport, (3) redesign an eco-friendly city, and (4) develop and promote the use of alternative energy. In an effort to achieve some of these objectives, Changwon is transforming itself into a “Special Cycling City”.

As a cycling city, Changwon anticipates that bicycles will make up 20% of all forms of transport by 2020. Three main strategies are being executed to attain this goal. First is the establishment of a bicycle-friendly infrastructure through connectivity of bicycle lanes, provision of public bicycles and establishment of bicycle centres. Second is the setting up of policies for safe and convenient use of bicycles through improvement of relevant laws and regulations. Third is the creation of an environment conducive to spontaneous participation through public education and promotion of bicycle use.

The establishment of a bicycle-friendly infrastructure is anchored on the public bike rental system called “NUBJA”, an acronym for “Nearby Useful Bike, Interesting Joyful Attraction”. The system will be established within a period of five years (2008–2012) with expected resources of 300 bike terminals and 5000 bicycles. The system is the world’s first GPS-equipped automated bicycle rental system. As of January 2010, 119 bike terminals and 2030 bicycles are available 24/7 to residents who are at least 15 years old. Since its implementation, three out of four users have expressed being
satisfied or very satisfied with the system. Major effects of the NUBIJA system have included: (1) environmental effects – energy savings amounting to US$ 1.7 million and 2696 tonnes of CO₂ reduction; (2) personal effects – improved health through “active living” and savings in transportation costs; and (3) community effects – reinvigoration of bicycle-related industries, establishment of low-energy consuming transportation, relief of traffic congestion and increased face-to-face contact in the community.

To make the NUBIJA system efficient and sustainable, steps were taken to build support systems and infrastructure, including: construction and repair of bike lanes; securing connectivity of bike lanes; provision of sign boards for bicycle safety; and establishment of a Bike Culture Center to conduct biking classes, repair bikes, and promote biking. In addition, several bike-related policies were instituted, such as bike insurance for citizens, allowance for workers commuting on bikes, safety education for cycling, enforcement of bike registration, and rigid. Furthermore, active citizens’ participation was initiated through workshops, seminars, mass media campaigns, mobilization of cycling groups and nongovernmental organizations, and bike festivals and parades.

Future development plans for the ESHUT project in Changwon include: building advanced infrastructure and traffic signals for bikes, connecting bike lanes in the downtown area with surrounding rural areas, connecting bike networks along Nakdong River with the rest of the country, expanding the NUBIJA system, conducting annual bike parades and international bike festivals, and developing an integrated master plan for cycling.
In 2002, Marikina City received a World Bank-Global Environment Facility (WB-GEF) grant amounting to US$ 1.3 million to develop 66 kilometres of bicycle lanes within the city. The Bikeways Project paved the way for the creation of the Marikina Bikeways Office, which spearheaded the transformation of Marikina into a bicycle-friendly city from 2002 to 2007 and increased the share of bicycles in the city traffic from 4.25% in 1999 to 9.55% in 2006. With the dissolution of the Marikina Bikeways Office in 2007, the sustainability of the bikeways programme was in jeopardy, as indicated by the decline of bicycle use in 2007-2008.

Started in 2009, the ESHUT project entitled “Promoting Bicycle Use among Marikeños” is intended to increase the utilization of bicycles as an alternative mode of transport within the city. The focus of the project shifted from bikeway infrastructure development to behavioural change. Thus, most of the project activities are focused on increasing awareness and promotion of bicycle use. The major components of the project are: (1) conduct of traffic count study, (2) information and education campaign on bicycle use, (3) bicycle safety classes in schools, (4) bike loan programme in private corporations, (5) construction of bicycle parking stations, (6) rehabilitation of existing bikeways, (7) advocacy events on cycling, (8) consultative meeting with Bikers’ Association, and (9) strengthening enforcement of bikeways rules and regulations.

At the start of the project, a traffic count study was conducted to get baseline data on bicycle use. Two factors were considered to make bicycle use more appealing to the public: improving access from residential areas and safe engineering of the bikeways. As part of the “Bike to School” campaign, bike safety classes were conducted in schools to make students aware of the benefits of cycling, not just for personal health but also for environmental protection. To improve access and use of bicycles among private employees, the city government financially assisted a private company in providing bike loans to employees as part of the “Bike to Work” programme. Information and education materials on biking were also distributed.
To broaden participation in the advocacy campaign, a consultation meeting was held to re-orient the Bikers’ Association and other stakeholders on existing policies and common issues relevant to bicycle use in the city. The Marikina City Family Bike Festival was also conducted to create awareness among the general public on the benefit of cycling as an alternative mode of transport. To support the advocacy campaign, a bicycle parking station was constructed and existing bikeways and road signs were rehabilitated. Enforcement of bikeways rules and regulations was strengthened with the assignment of permanent staff from the City Transport Management and Development Office to the Bike Patrol Unit.

The following were identified as key areas in the promotion of bicycle use in Marikina: (1) enactment of ordinance to create a Bikeways Enforcement Unit under the City Transport Management and Development Office; (2) construction of more bicycle parking stations in strategic areas such as terminals of public transport, public facilities and schools; (3) conduct of regular bike festivals for advocacy among the general public; and (4) expansion of the bike rental and bike loan programmes to increase access and utilization of bicycles.
Nagoya, Japan

Nagoya is a modern city with a long history, well-developed public transport networks and well-maintained road networks. Rapid urbanization, however, has increased the use of private vehicles and has caused pollution problems. The transport sector alone accounts for 29% of total CO₂ emissions, which is much higher than the national average of 20%. In accordance with the concept of ESHUT, Nagoya started several initiatives to reduce the use of private vehicles and to improve public transport services to reduce CO₂ emissions. Examples of these initiatives are: (1) barrier-free design to enable all persons to travel safely, (2) smoking prohibition in public transport and stops, (3) advocacy for “eco-friendly driving” and (4) car-free days.

One current issue requiring attention in Nagoya is the concentration of automobile traffic in the city centre, where traffic is three times heavier than the average for the city. As a response to this concern, the city chose to run a pilot programme for a Community Bicycle-sharing System (CBSS) in the city centre as part of the ESHUT strategy. The typical CBSS project consists of the following features: (1) bicycles can be picked up and returned at any time at any of the locations, (2) high density of bicycle stations, (3) progressively higher rental charge to encourage short-time use, (4) unmanned rental management using advanced electronic systems, and (5) careful maintenance of bicycles. Initially, it was decided to make community bicycles available free of charge to all registered users to allow as many people as possible to learn from experience. Two features were unique in the Nagoya pilot programme. First is the use not only of public road spaces and parks but also privately owned land for bicycle stations. Second is the repair and use of illegally parked or abandoned bicycles as part of the fleet of community bicycles. The objective is to make the bicycle-sharing system truly a community project.
As a result, the popularity of the CBSS experiment rose sharply, with the number of registered users reaching 10,000 by the tenth day and 30,974 at the end of two months. This result shows success in achieving the first aim of letting as many people as possible learn about CBSS. With the rising popularity of the programme, the service frequency increased from around 1000 per day during the first week to 2500 per day towards the end of the pilot run; this means a single bicycle was rented out more than eight times a day on average. The average duration of use for a bicycle started at about one hour in the beginning but fell below 30 minutes by the end of the pilot duration, ensuring efficient sharing of bicycles for a short time to cover a short distance. People more often use CBSS for business and personal affairs, showing that the system was being used by citizens as part of their daily life. It was found that CBSS complements the existing public transport system, attracts more people to the downtown areas and has helped revitalize the local community.

By starting up CBSS in the city centre and ensuring good connectivity with the existing public transport system, the bicycle-sharing programme improved the overall convenience of the public transport system and promoted the shift from private cars to public transport. The next steps for the programme consist of automating the rental procedures and introducing rental charges to reduce the running cost. Also included is the need to improve the biking environment by setting up bicycle lanes and teaching people about cycling rules.
Phnom Penh, Cambodia

The new era of development in Cambodia in the past several years has brought increasing concerns about environmental issues and traffic problems, particularly in the city of Phnom Penh. The causes have been attributed to two key factors: loss of semi-natural vegetation and the ever-increasing number of motor vehicles in Phnom Penh. Motor vehicles not only cause frequent traffic jams during peak hours, but also emit a considerable amount of carbon dioxide and other pollutants. The rapid urbanization of the city also means loss of semi-natural ecosystems such as agricultural lands. In response to these concerns, the government of Phnom Penh Municipality has taken initiatives to: (1) expand green spaces through construction or renovation of more gardens and parks within the city, (2) promote tree planting alongside major roads, and (3) conduct an awareness programme on the benefits of biking.

The green space project is part of the development agenda for the city. The rationale behind this project is to reduce urban heat build-up, improve air quality, reduce sound pollution and protect water quality. Priority was given to the construction of parks and gardens along the Tonle Sap River parallel to Preah Sisovath Boulevard. The design of gardens and parks allowed for multi-purpose use by visitors ranging from physical activities (such as exercising, walking and jogging) to passive pursuits (such as picnicking, social activity and nature viewing). To date, the green space project has converted around 57 hectares of the city into parks and gardens.

Also as part of the green agenda, tree planting along major roads in the city was given priority. The major objectives of the project are to beautify the city landscape, reduce noise from motor vehicles, and absorb carbon dioxide and other pollutants. As residents understand more about the benefits of planting trees, it has become common to see city residents voluntarily planting trees alongside the roads fronting their houses. To date, most major roads in Phnom Penh have trees planted on the roadside.
The 2008 census revealed that motor vehicle users outnumbered bikers by more than three to one. More motor vehicles not only make traffic worse but also cause pollution that leads to harmful health effects. To reverse the trend, an initiative to promote biking was launched to encourage citizens to ride bicycles, particularly for short distance travel. The initiative aims to increase fitness and weight loss and reduce stress among the citizens. As a start, a meeting to promote ESHUT was organized at the Chamcamorn Referral Hospital on 20 March 2010 to raise awareness on the benefits of biking. At the end of the meeting, participants were invited to watch a biking demonstration. As the initiative to promote biking is still in its infancy stage, it is too early to assess its impact.

The next steps for Phnom Penh Municipality are the following: building and renovating more gardens and parks, promoting more tree-planting activities along major roads, and promoting more use of bicycles as a means of transportation within the city.
Seoul, Republic of Korea

Population growth, economic growth in the 1990s, and the resultant increase in family incomes have led to a recent surge in the number of automobiles on the streets of Seoul. The heavy increase in vehicular traffic coupled with limitations in providing roads have brought an exacerbation of traffic congestion and emissions of air pollutants in Seoul. Resolution of this key issue is critical to enhance the city’s competitiveness and to create a sustainable and healthy city.

A paradigm change in the policy framework would require shifts (1) from a fossil-fuel-dependent transport system to a low-carbon-based one, (2) from a vehicle-oriented transport environment to a human-oriented one; and (3) from supply-oriented transport management to high-quality services. The goals and objectives of the new policy framework are (1) to provide decent public transport service thereby reducing demand for private cars, and (2) to create an eco-friendly and pedestrian-centred transport environment thereby establishing a sustainable transport system.

The first component of the project was to convert privately operated buses into semi-public ones based on a joint management of income from bus fares and bidding for bus routes. This enabled buses to go to areas lacking public transportation, thus making the bus route system citizen-friendly. To support this scheme, the route system was reformed to link the subway and bus system with no break in the public transport system, thereby streamlining long-distance, overlapping and unnecessary routes. The colour and number systems by bus route type were also changed. An integrated distance-based fare system and a new transportation card enabled passengers to transfer from bus to bus, bus to subway, or subway to subway much easier. The transportation reform was further enhanced by an integrated bus management and bus information system and the introduction of the median bus lane and high-quality buses. The improved speed and convenience of the new system led to an increase in bus passengers, higher revenues, higher citizen’s satisfaction and lower incidents of accidents.
The second component of the project dealt with upgrading the mass transit services. This consisted of expanding the railroad network, improving subway stations and platforms, expanding the fare system in the entire metropolitan area, improving bus stop shelters and banning smoking in bus stops.

The third component of the project consisted of building an eco-friendly and human-centred transportation system by encouraging less use of cars and making better use of public transit. In addition, the city government implemented a weekly no-driving day and overhauled the road system to be pleasant walking networks, thereby cutting down transportation demand. Restoration of walkways and parks was initiated to provide more space for the public. Old buses and taxis were also replaced in phases with “green” transportation such as electric, electronic and hybrid vehicles.

Future plans by the city government consist of expanding citizens’ participation in the planning, implementation and operation of the transport process and forming a citizens’ committee for bus reform, walkways and park restoration. The city government also plans to expand the concept by exporting public transport administration services and sharing the lessons learnt with other cities.
References

