Environment and Transport Working Group (TWG) has held three plenary meetings and one workshop for tasks of this year. TWG has initiated the work in urban and inter-urban transport at the same time and has put forward Recommendations on Sustainable Development of West Transport and Recommendations on Improving Issues between China Highway Transport and Environment.

I. Three TWG Plenary Meetings

On Oct. 26-27, 1999, March 13-14, 2000 and May 19-20, 2000, three plenary meetings of TWG were held in Beijing and Chongqing. At the meetings, TWG members not only studied work plan and reviewed work progress but also discussed Recommendations on Sustainable development of Western Transport and Recommendations on Improving Issues on China Highway Transport and Environment.

II. Workshop

On May 16-18, 2000, Inter-urban Transport and Environment Workshop was held in Chongqing with support of Chongqing municipal government, Chongqing Municipal Transport Bureau and Chongqing Municipal Environmental Protection Bureau. Over 40 domestic and international experts made their attendance including domestic experts from departments of environmental protection, transportation, planning, railway, aviation, petrochemistry, mechanism, etc., and four international experts from Germany, Switzerland and Norway. Mr. Mao Yushi from Energy Working Group also attended the workshop.

At the workshop, ten domestic experts delivered speeches concerning current status, developing program of various transport modes (highway, railway, waterway and aviation, pipeline) and relations between transport development and national economy, relations between various transport modes and relations between transport and environmental protection. The three international experts made presentations on environmental impact assessment (EIA) of highway and strategic environmental assessment of transport sectors (SEA) as well as indirect economic cost, etc. During the workshop representatives also visited part of facilities of highway and expressway in Chongqing and discussed Recommendations On Sustainable Development of Western Transport and Recommendations on Improving Issues between Highway Transport and Environment.

III. Developing the work in two aspects

A. Urban transport and environment
1. Recommendation on Improving issues between China Urban Transport and Environment, which has been jointly issued by Urban Construction Department of Ministry of Construction and Pollution Control Department of State Environmental Protection Administration (SEPA) to the departments of construction and environment in 35 municipalities and planned single group of cities and some capital cities. The whole text of Recommendations was both published in Environmental Protection Journal (No. 4 Vol., 2000) sponsored by SEPA and in Urban Development Research (No. 3 Vol., 2000) sponsored by China urban science seminar, which further extended the influence and effect of the Recommendations.

2. In October 1999 and May 2000, TWG experts field visited four selected cities, Dalian, Kunming, Qingdao and Shenzhen, and further learned about their actual situation of urban environment and transport and transport facilities. Ideas on how to improve urban transport and environment were exchanged with local municipal leaders and experts concerned.

3. Identified Shenzhen, Dalian, Kunming, Qingdao as four pilot cities to implement TWG Recommendations on Improving Issues between Urban Transport and Environment. The municipal governments of the four cities have set up a work team and have submitted Proposals Implementation Program Report according to the 16 proposals in the Recommendations.

4. In June 2000, TWG organized representatives from four pilot cities Shenzhen, Dalian, Kunming and Qingdao to visit some European cities including Paris, Hanover, Karlsruhe and Munich, and Zurich studying the issues of urban transport and environment. The representatives were deeply impressed by the convenient public transportation and railway transportation systems of these cities.

5. On October 27-29, part of TWG members participated in the Urban Transport and Environment Seminar which was jointly held by China urban transport planning science association and transport working group of China urban science research association. Wang Yangzu and Rudolf Petersen, co-chairmen of TWG, made presentations at the seminar. Representatives of the four pilot cities of TWG were also invited to deliver speeches on their implementation experience.

6. TWG has compiled and printed Reports Collection which consist of proposal implementation reports of four pilot cities and other cities.

7. Progress has been made in the study and research of Urban Transport and Environment Statistic Index System.

B. Inter-urban transport and environment

1. The study of highway transport and environment was emphasized by TWG this year and field visit to Liaoning province, Jiangsu province and Chongqing municipality has been made with the output of several field visit reports which have been submitted to the workshop in Chongqing.
2. The study of railway, water way, aviation, pipeline and integrated transport system was made with the output of reports which were also submitted to the workshop in Chongqing.

3. On May 16-18, Inter-urban Transport and Environment Workshop was held in Chongqing.


5. Discussing Draft of Recommendation on Improving Issues between Highway Transport and Environment has been distributed to 30 provinces, autonomous regions and municipalities for comments. Till now, we have received feedback from transport bureaus of Yunnan, Ningxia, Shannxi, Xinjiang, Jilin, Guizhou, Guangxi and Zhejiang, as well as Highway Department of Ministry of Communications. According to the collected comments, some revisions have been made and final recommendations were formally submitted to the China Council.

6. Recommendations on Sustainable Development of West Transport
Preference of transport infrastructure construction is of high importance for local social and economic development.

Improvement of highway transport should be emphasized in western development while developing other transportation modes on the basis of different traffic demands.

To develop the transport in western areas, key cities and primary mine zones (mineral district) should be taken as developing center with radiating externally to form a traffic network linking inside area with outside and towns with cities.

The development of transport in western areas, the present traffic facilities should be fully used and the roads in rural areas should be improved and reconstructed step by step to achieve the target of “all weather” road soon. To build up new roads, traffic volume should be fully considered. It is inappropriate to build highways prematurely or over build.

To develop transport systems in western areas, the principle of “Give priority to prevention and give preference to protection” should be carefully carried out. Attention should be paid to land saving and soil conservation in road construction of the southwest. In northwest, attention should be attached to ecological protection and sand fixation and control.

7. Recommendations on Improving Issues between Highway Transport and Environment

TWG of CCICED has organized field trips for experts to study highway transport and environmental situation of 14 provinces, autonomous regions and municipalities including Liaoning, Jiangxi, Chongqing, Inner Mongolia, Shannxi, Shanxi, etc. TWG
also held an Inter-urban Transport and Environment Workshop. Recommendations on Improving Issues between Highway Transport and Environment was accomplished on the basis of above earnest analysis and studies.

1. Objectives

Highway transportation is of high importance as part of the intermodel transport system and is the infrastructure and fundamental industry serving social and economic development. Highway transport should be developed in accordance with intermodel transport system and supporting economic and social development; meeting people’s increasing travel demand; complying with national sustainable development strategy and in consistent with the environmental objectives, decreasing resources and energy consumption; playing great role in guaranteeing national security and national unity.

The objectives of highway development are: in the light of development plan of intermodel transport, total amount of highway remains steadily rising and the road net structure tends to be rational; to perfect transport system construction, to increase intermodel transport capability; to improve the unbalanced developing situation in different regions and to meet the increasing demand of passengers and freight transport and structure changes. To effectively control the negative environmental impacts caused by highway construction and operation, enhance ecological protection and land restoration, alleviate environmental pollution and further improve the environmental quality in key sections of highway and gradually coordinate the relation between highway construction and social economic development as well as environmental protection.

2. Problems

(1) The benefit of intermodel transport hasn’t been fully utilized. Since the present five transportation modes in China are respectively under the management of five departments, it is hard to make an overall network plan strengthening a rational coordination and linkage so that the establishment of perfect intermodel transport system is cumbered and delayed.

(2) Insufficient total amount of highway infrastructure. Over recent decade, though highway transport in China has been greatly developed, it is still unable to fully meet the social economic development. At present, the actual traffic of most highway sections in east and central regions has exceeded the planned access capability. While in remote regions, especially the west, highway infrastructure is inadequate for economic development. At the same time, maintenance is neglected in some constructed highway because of unreasonable management system and insufficient funds supply.

(3) Irrational highway network structure. The national highway framework hasn’t been formed and the development of trunk line is lagged, in particular the autobahns from north to south and through east to west have not been set up and a whole-scale benefit and net efficiency cannot be achieved. In addition, the technical grade of highway is
low. Seventy-two percent of the total national highway mileage is classified as grade III and IV. Bridges of low loading capacity still account for large proportion and there are more than 500 ferry places linking highways, which affects accessibility of the road net.

(4) Unbalanced regional development. The highway network in east China is relatively dense and accounts for high proportion in total mileage but in central and west regions the proportion is comparatively low. There are great difference of road grade between the east and west. The off-grade roads account for 12% in east and central regions, while it is up to 26% in the west, which is hard to satisfy the demand of national economic development strategy.

(5) Highway causes environmental impact to some degree. The land requisition, building dismantle and land occupation during highway construction impose various negative environmental impact on natural vegetation, cultural relic and historic site as well as ecological environment (including water resources, nature protection zone, nature sites, water and soil conservation, etc.) and produce pollution of “three wastes”, noise pollution, tail gas emission of automobiles, traffic noise and dust pollution, etc.

(6) Deficient coordination between related authorities. The environmental protection task of highway transport involves many departments including environment protection, land resources, agriculture, forestry, water resources and cultural relics, etc., so that overlapped responsibility, multiple policy-making departments and multiple management has been caused. Insufficient coordination between various departments increases the difficulties in establishing highway projects and the construction cost.

3. Proposals

As a developing country, China has quite heavy tasks in developing an efficient intermodal transport system. These proposals focus on highway construction which is part of the efforts to modernize China’s transport sectors. It is very important for China to establish a highway network meeting the demand of modern and future development and to realize sustainable development of highway transport.

(1) Make appropriate distribution plan to develop intermodal transport network. Central government should instruct department concerned to study and stipulate the overall plan for the development of national intermodal transport network. On the basis of improving social economic and benefiting the environment, an efficient and environmentally favorable intermodal transport structure is to be established according to the technical and economic features and social cost of various transport modes. The plan is essential for national transport infrastructure construction. Governments of all levels and enterprises should orderly start planning and constructing various transport network under the orientation of the national plan.

(2) Highway development plan should also be coordinated with environmental plan and urban development plan. Highway development plan and proper centralization should be sufficiently considered in town planning, which will make it convenient for the transport authorities to optimize the selection of trunk line and rationally unitize the
land. The construction of buildings on both sides of highway should be strictly authorized by governments of all levels to avoid being a street like after its establishment.

(3) Improve highway management system. Many departments are involved in highway construction, operation, transport and management. In order to sufficiently develop the social benefit of highway transport and ensure a fine environment for highway construction and operation, governments should study and define the highway management system to coordinate relations between obligation, right and benefit, and improve the management and cooperation between various responsible units.

(4) Keep on strengthening highway infrastructure construction. Highway infrastructure is still insufficient at present and the state should lay it at the essential position with greater input and priority of development for a quite long time.

At the same time, with the construction of new highways, the maintenance of existing highway network should be properly prioritized required by the economic development and environmental protection. Attach attention to upgrade and renovate the present roads of low grade and upgrade present roads, increase their transport capability, reduce occupation of land resources. According to the requirement of highway network maintenance, the input of maintenance funds should be continually guaranteed.

(5) Sufficiently develop the essential role of highway transport in the intermodel transport system. On the basis of the plan, the finance for establishing national integrated passage is firstly centralized, especially express highway passage and highway trunk line. At the same time, the construction of trunk highway in key regions and transit highway in key cities should be expedited to form an inter-linked, well arranged national trunk line network soon.

(6) Quicken the construction of stations and linkages to improve efficiency of transport network. The construction of stations and linkages system which take the main highway linkage construction as a primary part and the establishment of information network of main linkages should be further quickened to form an inter-provinces, inter-urban express highway transport system and transport service network supported by trunk highway.

(7) Fully develop the role of science and technology in highway development. The progress of technology exerts impacts on the increase of transport capability and changes of traffic structure should be fully analyzed and made a perspective study while start constructing corresponding projects, such as ITS, etc. The practice of highway projects should be closely integrated and increase input of scientific research by multi-sources, study and popularize new environmentally favorable technology, new material and new techniques for highway transport, realized unitizing clean production in highway construction and create clean environment in highway operation.
(8) Enhance the establishment and enforcement of regulations and policies on environmental protection. Continually perfect the formulation (revision) of regulations, acts, standard and criteria on highway environmental protection and strengthen supervision and management of highway environmental protection. Establish and improve local environmental institutions at provincial (autonomous region and municipal) bureau level and local environmental monitoring station of transport sectors. Establish highway environmental control and supervision system.

Strictly enforce Regulations on Environmental Protection and Management of Projects Construction and Circular about Questions on Implementing Project Environmental Assessment System to establish a complete highway environmental impact assessment (EIA) system. Improve current highway EIA quality and its maneuverability. Strengthen the assessing depth in degree in ecological protection and water resources conservation. Start pilot project of highway strategic environmental assessment (SEA) from the perspective of integrated transport. Gradually develop after-EIA and highway safety and establish a whole series of EIA system.

(9) Make cost-benefit analysis of project and plan by adopting economic instruments in highway development and try to reduce cost of construction and operation. Implement fuel tax system as soon as possible.

Reduce waste of resources and pollution, encourage comprehensive utilization and improve ecological environment during highway construction. Central government organize related departments to stipulate unified policy on comprehensive utilization of industrial wastes such as coal ash, etc., and encourage the use of coal ash by financial compensation which is to be supported when no environmental hazards for groundwater pollution, etc.

Enhance ecological protection in highway construction, especially the protection of western soil erosion and the state should have a special economic policy to support it. Local governments are responsible for forest areas outside the occupied road sides of highway and active participation of local residents can also be expected following the principle of “those who control benefit”. Encourage highway construction departments to adopt various methods for land resources saving.

(10) Continually emphasizing and enhancing the education of highway environmental protection. By various public education sources such as television, broadcasting and other education activities on the Environmental day of June 5, increase environmental awareness of highway builders, drivers and other road users and the whole nation.

Additional Statement by Rudolf Petersen, International co-chairman of TWG

1. Work plan of the TWG

The main topics of our work on transport and the environment since the beginning in 1998, and the plan until end of 2001 are as follows:
1. Define the concept of Sustainable Transport, reach agreement within the group about basic aspects, draft work plan - finalized summer 1998 (report to the Council in Oct. 1998)

2. Study urban transport, organize workshop in Beijing, make study tour in Europe (Germany, the Netherlands, Switzerland, Czech Republic), implement cooperation with cities and with national institutions, draft recommendations and communicate about these with cities - finalized summer 1999 (report to the Council in Oct. 1999)

3. Study inter-urban transport with focus on highway transportation, discuss strategic instrument SEA additional to EIA to improve planning, organize workshop in Chongqing, draft recommendations - finalized autumn 2000 (report to the Council in Nov. 2000)

4. Study other transport modes (esp. rail, inland, navigation, air traffic) and aspects of integrated transport planning, study cooperation between the various transport modes and intermodal transport chains, draw conclusions with respect to planning and institutional set-up, draft recommendations - to be finalized until the Council meeting in Sept. 2001

Additional to this linear work plan, the work on urban transport and on inter-urban highway transport is to be continued in parallel; there are several follow-up activities concerning the implementation of our proposals. One example: cooperation with pilot areas has begun and needs support. International members of the group assist several cities in developing sustainable urban transport, defining projects and implementing the respective recommendations.

Before going deeper into some of the professional results of our efforts, the links between the various working groups should be mentioned. From the beginning of our work on, TWG has established cooperation with other groups - especially with the WG on Environmental Economics by having a joint member (Hansen), and with the WG on Energy by participating in their sessions and having Mao Yushi participating in our working group activities.

There is a joint paper in preparation about use of economic instruments in transport and energy, Prof. Mao Yushi and Mr. Hansen are the “bridges” to the Working Group on Energy and on Environmental Economics, respectively. Topics are a.o. pricing in urban road traffic, and cost-related tariffs in the rail sector. In a broader context, price of natural resources (especially transport fuels) and of road use should be dealt with. We also would like to intensify discussions about instruments to promote clean energy and cleaner vehicles in short-term and in long-term perspective. Concerning the demand increase especially in motorized road transport, the price of transport in general and the prices of using the various transport modes should reflect the true cost - including the cost of constructing and operating the infrastructures, as well as the environmental cost.

2. Work Results and Perspectives in Urban Transport

Urban transport was a major topic of our report to the Council in 1999. The policy and planning recommendations had been drafted in close cooperation between international
and Chinese experts. After delivering the recommendations the Chinese institutions on national and municipality level, the cities of Dalian, Kunming, Qingdao and Shenzhen and were especially contacted to act as pilot cities and they agreed. The city governments intend to use the recommendations as guidance for the implementation of improvements towards more sustainable urban (transport) structures.

Some highlights of the group’s findings were:

- Cooperation between the various municipality administrations - urban planning, public transport (p.t.). traffic management by the policy and environmental planning - has to be improved, we proposed to establish joint planning groups;
- Public transport should have priority in planning and management, access and parking of automobiles should carefully be regulated - the least efficient urban transport mode is the low-occupied passenger car;
- To support safe and reliable public transport but also for the sake of safety and convenience for the people, facilities for pedestrians have to be improved;
- The still high share of cycling in Chinese cities should be maintained - cycling is even more environmentally friendly than p.t., intermodality between cycling and p.t. for longer trips should be enhanced;
- Public awareness of the traffic participants but also of the members of the responsible institutions should be raised.

During the discussions between international and Chinese experts, different planning philosophies could be experienced. The Chinese side used to argue with statistical data about road length and area, number of buses, etc. while on the other side used to raise the issue of performance: How does the system function, and where are functional deficiencies? While the Chinese side argued in favor of building additional urban highways supported by data from transnational comparisons - where Chinese cities typically show less per-capita road space than countries with higher motorization rates - the other side insisted that analysis of functional deficiencies - Where are the congested spots and what are the reasons for road blocks? - provide better guidance for a more efficient use of both financial and natural resources.

Another example may illustrate this further: in public transportation, the Chinese statistics give figure on number of buses and passengers but often fail to include performance indicators like modal share, average speed, trips lengths, seat occupancy rate, fuel consumption per vehicle-km and passenger-km, and economic figures like cost coverage by fares. With respect to the latter aspect of the economic basis of public transport, short-term as well as long-term perspectives need to be developed, including clarifying the roles of private entrepreneurs and of the public sector.

While the general development of traffic demand, the organization of the sector, and support for more sustainable transport modes is a policy topic for a longer time period, reducing urban air pollution from motor vehicles should be a short-term priority for actions. The instruments to clean up urban air are well-known and should be applied, supply of high-quality gasoline and diesel fuels enforced by
standards and control measures, inspection and maintenance programs with special focus on high-use vehicle fleets (taxis, buses), identification of strategies to upgrade environmental performance of high-use vehicles by retrofitting catalysts. Again, market incentives for clean fuels and clean vehicles are necessary to support these measure. TWG is aware of a number of ongoing activities in China, and intends to support and to speed-up implementation.

3. Some Remarks on Integrated Planning in Inter-Urban Transport and on Highway Development

The Transport Working Group has not yet reached those achievements on the aspect of integrated planning in inter-urban transport has been expected one year ago. When work on that topic, we wanted to tackle both highway transportation in itself and the integration of highway transport into the comprehensive transport sector. The idea was to show how cooperation between the various transport modes should already be looked at in the phase of infrastructure planning. The working group intended to analyze planning documents of road and rail projects with respect to the question how the underlying assumptions about demand increase were, and what the role of the various transport modes were to meet the demand. The Chinese partners provided some infrastructure construction project documents but this analysis could not yet been made because just these topics were not covered in the studies. These were strictly focusing on sub-sectoral issues and did not include the broader perspective.

But we reached in our discussion a consensus that it is necessary to evaluate basic aspects behind transport decisions, and in related policy areas. In the next phase of the work we will continue to evaluate the underlying planning philosophy in transport and discuss the concept of integrated planning with the responsible institutions. As part of this, the links between the modes will be looked at, and the chances to minimize social cost by supporting intermodality, i.e. by using more than one transport mode in a transport chain. This concept would be supported if the political responsibilities also would be integrated, i.e. if all modes would be under the responsibility of one transport ministry rather than under different responsibilities. We intend to dedicate part of our recommendations in the final phase to these kind of institutional aspects.

In a broader sense, integrated planning not only aims at integrating the various transport modes, but integrating all those aspects that are of importance for development of transport and the environment subject. These are a/o spatial planning, environment planning, fiscal regulations influencing the price of transport, excise duties, and others. The integration of environmental requirements and of consequences of decisions and trends from other policy sectors into transport policy making as well as planning - and vice versa, integration of transport aspects into other policy fields - is effective only if policy measures are combined in a consistent manner. A new instrument lately introduced in some countries; the SEA (Strategic Environment Assessment) is suitable to organize the necessary information process for that task.

SEA is different to the project-related Environmental Impact Assessment (EIA) which is done routinely for major transport infrastructure projects in China - although quality of
the EIA studies needs enhancement. SEA has been developed because EIA has severe limitations. EIA is linked to the last step of the decision making process - project authorization - at which point it is often too late to consider more strategic alternatives such as modal choices. The effect of EIA is therefore limited to adding certain technical mitigation measures like noise barriers or minor adjustments in alignment. It fails to account for cumulative effects of transport development both within a corridor, and for the total region.

With respect to transport, SEA is particularly useful in assisting decisions on a multi-modal approach. It helps to structure and focus environmental analysis on the key environmental benefits and costs of each transport mode, by comparing alternative planning and management options and providing decision-makers with relevant information to make the most sustainable decisions. It is obvious that this demands transparency about the real cost.

During our discussions it became clear that Chinese transport policy is lacking that kind of integrated approach, and that China would benefit from SEA in transport (and related spatial) decisions on national, regional and local level, ensuring that environmental considerations are incorporated into policies, programs and plans (ppp). Realization of this would demand that step by step current ppp are evaluated and, if necessary, revised. The group did not go further into details of the procedures to come but is fully aware of the fact that this could lead to significant changes of current priorities.

In the discussions between Chinese and international experts on inter-urban highway transport, similar differences in planning philosophy and use of statistical data have been experienced as has been illustrated in the urban transport context. While the Chinese experts argue with data from interregional and international comparisons about per-capita and per-square-kilometer highway lengths, the international side raised the topic of functional differentiation and asked for performance indicators: How are the demand prognoses, what kind of demand is behind the vehicle flows, what are the travel speeds, how are the links between the various modes, what are the cost of transport and do the tax and toll revenues cover the real cost? An observation that some provinces have less road lengths per square kilometer than others does not already justify additional construction projects; these should be based upon analysis of demand and functional deficiencies. The group found it useful to focus investments on upgrading the secondary road network. This priority would lead to better socio-economic results than building freeways (super highways) in areas with low population density and a backward economic status.