

**Report of
the Committee on Comprehensive Strategy
for the Development and Dissemination of
Low Emission Vehicles**

December 2001

**Strategic Committee on Comprehensive Strategy
for the Development and Dissemination of
Low Emission Vehicles**

1. Introduction

Air pollution is still a serious problem in Japan's major cities largely due to exhaust emissions from motor vehicles, especially diesel vehicles. As for global warming, motor vehicles generate about 90% of the transport sector's CO₂ emissions, so cuts here are essential.

To create an environment in which future generations can live in comfort, there is an urgent need to promote the development and use of low emission vehicles (LEV) that are environmentally friendly in terms of fuel efficiency and exhaust emission performance, and also to accelerate the development of next-generation LEVs with a vastly improved environmental performance.

Against this backdrop, the Ministry of Land, Infrastructure and Transport (MLIT) established the Committee on Comprehensive Strategy for the Development and Dissemination of Low Emission Vehicles to examine and formulate comprehensive strategies for developing and promoting LEVs and developing next-generation LEVs.

2. Examinations by working groups

To facilitate the formulation of these strategies, the Committee set up two working groups — the Low Emission Vehicle Working Group to examine the development and dissemination of LEVs up to 2010; and the Next Generation Low Emission Vehicle Working Group to examine the development of next-generation LEVs with vastly improved exhaust emission performance and fuel efficiency through anticipated technological breakthroughs after 2010.

In carrying out their examinations, the working groups sought to ensure conformity by keeping up to date with each other's progress through the Secretariat in areas requiring a common understanding, such as the characteristics of each type of LEV, the basic role of the national government in technological development, and views in setting targets for fuel efficiency and exhaust emissions.

3. Reports by the working groups

The working groups prepared reports on their extensive examinations, and recently submitted them to the Committee. The reports highlighted important strategies for developing and promoting LEVs and developing next-generation LEVs, and in this light, it was considered appropriate to adopt the working groups' reports as the Committee report.

4. Future measures by MLIT

(1) Measures based on the report

The report gives specific targets and identifies issues that need to be resolved in the development and promotion of LEVs, and it is crucial that this development and promotion is approached strategically in line with the report. In particular, as the government continues its preliminary work toward the conclusion of the Kyoto Protocol, MLIT should determine targets for cutting CO₂ emissions in consultation with the ministries and agencies concerned based on the fundamental principles contained in the Committee report.

The Ministry also needs to work to secure the necessary budget for promoting the greater use of CNG vehicles in major cities, and developing next-generation LEVs.

(2) Comprehensive environmental countermeasures

Developing and promoting LEVs is not the only means of countering air pollution caused by motor vehicles and global warming; eliminating bottlenecks to improve traffic flow and raising the efficiency of goods distribution are also important measures for addressing these issues. So as well as LEVs, MLIT must also adopt a comprehensive and progressive approach to these other more conventional measures.

Basic strategy for promoting the development of next-generation LEVs

— Outline of the Next Generation Low Emission Vehicle Working Group Report —

Only by truly solving the problem of air pollution caused by motor vehicle emissions, preserving the global environment, and securing the safety of energy supply can we hope to pass on an environment in which future generations can live in comfort, and in this respect, developing next generation LEVs has indeed become an urgent challenge.

Next-generation LEVs deliver a vast improvement in exhaust emission performance and fuel efficiency compared to conventional vehicles through anticipated far-reaching technological innovation from 2010.

This report examines strategies for promoting the development of next-generation LEVs.

1. Basic strategies for developing next-generation LEVs and corresponding vehicles types

- Basic strategies for passenger cars and small and medium vehicles

Most passenger cars and small and medium vehicles run on gasoline. Individually, they produce only relatively small amounts of nitrogen oxides, and their exhaust emission efficiency is outstanding.

However, there are huge numbers of these vehicles, and collectively, they are responsible for more than half of the CO₂ produced by the transport sector, so there is a need to proceed with development that gives **priority to improving fuel efficiency** as a measure to counter global warming.

Corresponding vehicles types include **fuel cell vehicles**, **hydrogen vehicles** and **next-generation hybrid vehicles** for passenger cars, and **next-generation natural gas vehicles** and **next-generation hybrid vehicles** for small and medium vehicles.

- Basic strategies for large vehicles

Most large vehicles are diesel-powered, and while they provide excellent fuel efficiency, exhaust emissions including nitrogen oxides and particulate matter are a problem.

Development should therefore give **priority to reducing exhaust emissions** as a means of solving the air pollution problem, while maintaining or even improving the present outstanding fuel efficiency.

Corresponding vehicles types include **next-generation hybrid vehicles**, **dimethyl ether (DME) vehicles** and **super-hybrid vehicles** for trucks, and for buses, the above vehicles and also **fuel cell vehicles**.

2. Exhaust emission and fuel efficiency targets for next-generation LEVs

Japan should aim at the highest level targets below the control values planned by other countries.

(1) Exhaust emissions and fuel efficiency targets

- Passenger cars and small and medium vehicles

Development should be aimed at **about half the current level of CO₂ emissions**.

Japan should then maintain exhaust emission values in new long-term controls, which are set at virtually zero, ultimately aiming at achieving zero exhaust emission.

- Large vehicles

Development should aim at maintaining and improving the current outstanding levels of fuel efficiency, while seeking drastic improvements in exhaust emission performance.

- Japan should aim at **cutting nitrogen oxides to less than one tenth the level in new long-term controls planned for introduction from 2005** so that emission levels are close to zero.
- Japan should aim at levels of **particulate matter emission that are zero or close to zero**.

(2) Improvement of fuel quality

Maintaining and improving fuel quality is essential for promoting the technological development of next-generation LEVs.

(3) Others

Countermeasures for ultra fine particulate matter and unregulated substances should also be examined.

In addition to further lowering vehicle noise and improving recyclability, development must also aim at reducing the environmental load from vehicle manufacture and use to final disposal.

3. Government role in development and dissemination of next-generation LEVs

There is a need to clarify the roles of the industrial, government and academic sectors, and systematically create an environment that can facilitate their efforts in their respective areas of technological development and promotion.

For its part, the government through close cooperation among the relevant ministries and agencies should adopt the following measures to promote the early development of next-generation LEVs and create an environment that will facilitate their widespread acceptance and use.

- Financial support

The government should extend financial support for the development of large next-generation trucks, which has been held back by high development costs and the limited size of the market, and for establishing fuel supply facilities.

- Institutional support

The government should provide support for standardization to reduce parts and vehicle costs, for implementing field trials of prototype vehicles, and for drawing up guidelines and technological standards covering safety and environmental preservation.

4. International initiatives to promote the development of next-generation LEVs

- International conferences

One effective measure is to actively promote the exchange of information on next-generation LEV technologies and policies.

- Standardization

National standards for next-generation LEVs should be uniform so that resources can be efficiently channeled into technological development.

- Technical cooperation for developing countries

There is a need to extend technical cooperation and support relating to LEV technology, checks, maintenance and management technology, and their use.

Strategy for the Development and Dissemination of Low Emission Vehicles

— Outline of the Low Emission Vehicle Working Group report —

The development and dissemination of operational low emission vehicles is essential to cut CO₂ emissions in the transport sector and reduce air pollution in the major cities. This should be done based on the strategy summarized below.

1. CO₂ reduction targets through the development and dissemination of LEVs

There is a need to promote countermeasures that take into account the serious level of increased CO₂ emissions from private passenger cars. The government should introduce measures to prevent congestion and improve traffic flow, and also promote the following measures without relying on regulatory means wherever possible to avoid affecting the national life and economic activities.

- (1) Bring forward the 10 million LEV target from 2010 as much as possible, then set CO₂ reduction targets on this basis.
- (2) Encourage the early achievement of 2010 fuel efficiency standards, and promote the development and dissemination of vehicles that provide even better fuel efficiency.
- (3) If items (1) and (2) are not sufficient when formulating guidelines, examine measures to further encourage the use of small (light) vehicles and fuel-efficient vehicles.
- (4) Implement monitoring in the future. If reductions in motor vehicle CO₂ emissions are not achieved, there will be a need to introduce further incentives to use small (light) vehicles and fuel-efficient vehicles, and review vehicle fuel efficiency controls.

2. Proposals for concrete measures for the development and dissemination of LEVs

(1) Development

- Clarification of government long-term policy
- Use of the green tax system.
- Balanced improvement of exhaust emission performance and fuel efficiency (fuel efficiency in gasoline-powered vehicles is critical for simultaneously promoting exhaust emission countermeasures and reducing CO₂ emissions).
- Improvement of fuel quality, on which the compatibility of exhaust emission performance and fuel efficiency is premised.

- Promotion of “zero sulfur” in gasoline and diesel fuel.
- Examination into making the use of high-quality fuel obligatory from a safety and environmental perspective.
- Introduction of life-cycle assessment.

(2) Dissemination

- Use of support measures such as budgetary measures, and the green tax system.
- Systematic promotion of green purchases by the private and public sectors.
- Detailed promotion measures (measures directed at users, reducing cost to users).
- Reduction of CNG vehicle prices (mass production effect resulting from greater use, easing compressed gas regulations, reduction of price gap with Europe and other countries).
- Establishment of CNG stands (establishment in major cities and along trunk routes, and easing regulations, including rationalizing operations).

3. Miscellaneous — Comprehensive approach to promoting vehicle-related environmental measures

- Grant LPG vehicles with the same level of environmental performance as LEVs equivalent benefits under the green tax and green purchases systems.
- Use of controls and introduction of new technologies (speed limiters on large vehicles, “idling stop” devices, etc.)
- Promotion of “green management” in the motor vehicle transport industry.
- Promotion of voluntary measures by drivers (“eco-drive” etc.).
- Measures to improve traffic flow (elimination of bottlenecks, optimum synchronization of traffic signals, removal of illegally parked vehicles).
- Government initiatives and cooperation by goods consignors for promoting a modal shift.

Items examined by the Committee on Comprehensive Strategy for the Development and Dissemination of Low Emission Vehicles

1. Committee on Comprehensive Strategy for the Development and Dissemination of Low Emission Vehicles

- | | | |
|---------|-------------|--|
| May 9 | 1st meeting | <ul style="list-style-type: none"> • Committee and its functions • Current state of motor vehicle exhaust emission countermeasures and CO₂ reduction measures • Items to be examined by working groups |
| July 4 | 2nd meeting | <ul style="list-style-type: none"> • State of examinations by working groups • Recent trends in LEVs * Urgent proposals |
| Dec. 19 | 3rd meeting | <ul style="list-style-type: none"> • Report by the Committee |

2. Next Generation Low Emission Vehicle Working Group

- | | | |
|----------|-------------|---|
| June 8 | 1st meeting | <ul style="list-style-type: none"> • Details to be examined by the working group and examination methods. • Interviews/discussions with manufacturers |
| June 28 | 2nd meeting | <ul style="list-style-type: none"> • Interviews/discussions with related organizations |
| Sept. 14 | 3rd meeting | <ul style="list-style-type: none"> • Fiscal 2002 budget requests for LEV development and dissemination • Results of interviews/discussions with manufacturers • Framework of the Next Generation Low Emission Vehicle Working Group Report (draft) |
| Nov. 1 | 4th meeting | <ul style="list-style-type: none"> • Next Generation Low Emission Vehicle Working Group Report (rough draft) |
| Nov. 29 | 5th meeting | <ul style="list-style-type: none"> • Next Generation Low Emission Vehicle Working Group Report (draft) |

3. Low Emission Vehicle Working Group

June 7	1st meeting	<ul style="list-style-type: none">• Low Emission Vehicle Working Group examination schedule• LEV development and dissemination strategy (draft)
Sept. 17	2nd meeting	<ul style="list-style-type: none">• “LEV development and dissemination action plan”• Review of the 2010 CO₂ reduction amount in the transport sector• Progress of LEV development and dissemination due to the “greening” of motor vehicle taxation.• Fiscal 2002 budget requests for LEV development and dissemination (MLIT-related)• Specific measures related to LEV development and dissemination• Diesel vehicle exhaust emission countermeasures• Low Emission Vehicle Working Group schedule
Oct. 17	3rd meeting	<ul style="list-style-type: none">• Results of interviews/discussions with related industry organizations• Reduction of CO₂ emissions in the transport sector• Draft report framework• Future schedule of the working group
Nov. 21	4th meeting	<ul style="list-style-type: none">• Trends toward a conclusion of the Kyoto Protocol based on results of the COP7• Low Emission Vehicle Working Group Report (draft)
Dec. 10	5th meeting	<ul style="list-style-type: none">• Low Emission Vehicle Working Group Report (draft)