

Request 1. Further development of infrastructure for electricity and use of hydrogen

1. Common requests for electricity and hydrogen

- (1) Development of charging and refueling technologies based on characteristics of construction equipment (CE), as well as support for facility improvement
- Development of technologies required for large-capacity charging and hydrogen refueling, security of safety, as well as prompt facility improvement
 - Technological development and support for dissemination of means of supply that are mobile to construction and/or civil engineering work sites
- (2) Standards and standardization, as well as review of regulations
- Rapid establishment of standards and regulations on supply voltages, plugs, and hydrogen supply etc. in infrastructure development, as well as international harmonization
 - Support for development and dissemination of an off-site (including public roads) quick charging system for cases of depletion of electricity or hydrogen gas
- (3) Government-led roadmap creation
- Creation of roadmaps regarding technological and infrastructure development, as well as facility improvement, based on global trends
 - The technological scope of the roadmap shall include alternative fuels (such as HVO, biofuels, GTL, e-fuels), in addition to electricity and hydrogen technology.

2. Requests specifically for electric-powered CE

- (1) Development of power supply technologies that enable large-capacity and quick charging and portability, establishment of regulations, as well as environmental improvements
- Technological development for mobile charging equipment with large-capacity (50KW/DC450V or higher) and review of regulations
 - Dissemination (simplified application process for installment at worksites) of electrical supply in 3 phase and large-capacity (AC400V/63A)
 - Raising of lower output limit for quick charging equipment (from 20 to 50KW)
 - Response to the need for simultaneous charging at large-scale construction sites, as well as consideration regarding nighttime electricity rates
 - Environmental improvements for dissemination (information disclosure regarding the status of improvement of high-KW charging equipment, as well as security of parking space for large CE at public charging facilities)
- (2) Establishment of standards and regulations, as well as harmonization
- Harmonization of domestic/foreign standards on electrical plugs (including standardization with agricultural equipment)

Request 1. Further development of infrastructure for electricity and use of hydrogen

3. Requests specifically for CE that uses hydrogen

- (1) Realization of the off-site type hydrogen refueling (improvement of legislation and deregulation (mobile hydrogen refueling vehicles))
- (2) Development of programs, deregulation, technological development, and support for installment regarding transport, storage, and use of hydrogen
 - Raise of the upper pressure limit of hydrogen tanks in transportation to the automobile level (from 45MPa to 70Mpa)
 - Hydrogen refueling into CE at existing hydrogen stations (Currently applicable only to automobiles under the Regulation on Safety of General High Pressure Gas)
 - Scale-up of hydrogen stations and making them applicable to CE. Support for development of liquified hydrogen refueling equipment.

4. Requests specifically for alternative fuels and related technology

- Support for early commercialization and dissemination of alternative fuels:
 - ① security of low-cost, stable supply (subsidies for the difference with light diesel oil),
 - ② quality assurance,
 - ③ consistency with international rules and standards (such as evaluation methods for CO2 reduction effect),
 - ④ consistency with the automobile industry (as many companies rely on the auto industry for engines)

Request 2. Support for manufacture and use of CE (vehicle) and parts

1. Common requests for electricity and hydrogen

- (1) Government-led establishment of standards on electricity and use of hydrogen
 - Review of current systems on the premise of diesel engines (regarding emissions, noise, vibration, safety, certification, and recycling)
 - Stipulation in the Act on Regulations for Emissions from Non-Road Vehicles that the use of alternative fuels is allowed
 - Emphasis on global competition standpoints, harmonization with relevant overseas standards and regulations (regarding safety, density and durability of batteries and hydrogen)
- (2) Support for technological development/implementation to accelerate introduction, as well as promotion of joint efforts by industry, the bureaucracy and academia
 - Government-led continuation and extension of R&D (easing of burden in the use of public testing/research laboratories, and simplification of certification process)
 - Support for individual companies in their R&D activities and implementation (charge-free access to public testing/research laboratories, and support for machine transportation costs to such laboratories)
 - Realization of simpler and swifter processes for certification/designation of innovative CE

Request 2. Support for manufacture and use of CE (vehicle) and parts

2. Requests specifically for electric-powered CE

(1) Standardization and deregulation

○Standardization of battery capacity, size and parts

○Establishment of national regulations and standards regarding charging methods, connecting plugs, and conditions for battery deterioration; international harmonization; compliance to EMC standards; and storage methods for on-board batteries

(2)Support for technological development/implementation to accelerate introduction

○Support for individual companies in their R&D activities and implementation (support for purchases of equipment required for R&D activities)

(3) Support to component manufacturers and material manufacturers

○Support for enhancement of international competitiveness and stable parts supply (establishment of common standards for basic battery cell, government-led strategic procurement of raw materials including rare metals)

3. Requests specifically for CE that uses hydrogen

(1) Standardization and deregulation

○Creation of standards for, as well as standardization of, fuel cells and hydraulic engines. Standardization of hydrogen refueling facilities and connecting plugs

(2) Support for technological development/implementation to accelerate introduction

○Preparation of large testing facilities (testing facilities for high-power fuel cells (over 100KW) and hydrogen engines)

(3) Support to component manufacturers and material manufacturers

○Standardization of high-pressure hydrogen fuel tanks, piping, and joint components, as well as international harmonization

4. Requests specifically for alternative fuels and related technology

○Refer to Request 1 – 4.

5. Support for carbon neutrality in production/manufacturing of CE

(1) Enhanced support in CO2 emissions reduction in manufacturing processes

○Support for production capacity building for Perovskite solar cells etc.

(2) Introduction of support measures for installing existing solar power generators and review of regulations

○Introduction of subsidies for building reinforcement work with the purpose of installing solar panels. Extension of the period of time from tendering to deadline for instalment regarding solar power generation subsidies

Request 3 Support to CE Users

1. Substantial policy support including subsidy, taxation and low-interest financing

(1) Support for initial cost

- Support through bold subsidies as well as tax incentives for CE (vehicle)
(The prices of e-powered CE are nearly triple compared to traditional CE)
- Support for instalment of a large-capacity power source
- Security of compatibility with international schemes

(2) Support for running cost

- Incentives based on the amount of CO₂ reduced through the introduction of innovative CE, and/or financial support for the gap with diesel fuel charges
- Support for finished vehicles as well as repair parts
- Enhanced support for recycling of batteries (CE is generally longer lived compared to automobiles and for this reason requires a new battery from time to time. Guidelines for quality assurance upon recycling of batteries)

(3) Support in taxation

- Extension and enhancement of small- and medium-sized enterprise taxation (business enhancement taxation and investment promoting taxation)
- Shortening or standardization of depreciation periods, and establishment of an immediate depreciation system (including support for CE rental companies)
- Easing of administrative procedures in developing a Management Innovation Plan
- Tax incentives for an installed power source (property tax breaks and shortened depreciation periods)

2. Development of systems for mechanics and maintenance shops that provide after-sales services and support for personnel development

- The system should be designed and personnel development promoted in such a way that enables cooperation between EV car mechanics and CE mechanics and leads to efficient maintenance (Clarification of required qualifications and subsidies for acquisition of the qualification. Expansion of the scope of voltage that can be handled, international views, and introduction of CE mechanic qualification)

Request 4. Creation of demand in and outside Japan and general discussion (Some items reappear)

[Items apply mainly to the domestic market]

1. Implementation of an official certification process of innovative CE and simpler and swifter certification

- Early implementation of a certification process (shall be aligned with subsidy programs, and shall include hydrogen and/or mixed fuel-powered CE in the scope.)
- Introduction of guidelines and evaluation systems regarding energy efficiency achievement criteria
- Harmonization with relevant overseas standards and regulations

2. Preferential treatment in bids for public works projects

- Review of unit prices in the projects, and grant of incentives such as evaluation points according to the amount of CO2 reduced. Execution of model projects in which the use of eco-friendly CE is mandatory. Making the use of innovative CE a contractual requirement upon order placement.

3. Creation of concrete roadmaps regarding civil engineering and infrastructure areas (Some items reappear)

- Clarification of the government's technological targets and timeline. Energy policies and linkage with global trends.
- Establishment of CO2 reduction targets at construction sites, and setting of timelines on CN product usage rates

4. Promotion and realization of CN through enhanced association with other technologies

- Promotion of i-Construction and use of telematics technologies

5. Increase of private financing and investment

- Implementation of measures to promote private investment and/or private financing on top of utilization of government funds

6. Support for CO2 reduction efforts in the electric power and steel sectors

- CE manufacturing requires large amounts of steel and electricity. As such, the government's continuous support should be provided for the industry efforts on CO2 emissions reduction.

[Items apply mainly to overseas/international markets]

7. Response to international regulations, certification and standards

- International harmonization on regulations and standards regarding manufacture and transport of electric CE and hydrogen (This item has appeared earlier.)
- Cooperation with overseas bodies in relation to subsidies and other incentives to be granted to enterprises
- Conducting government negotiations regarding regulations set by foreign governments etc. to prevent any disadvantageous treatment against the Japanese CE industry

8. Support in overseas expansion

- Support for overseas infrastructure development such as hydrogen stations through ODA and/or public financing (NEXI and JBIC etc.) and provision of innovative CE
- Addition of CE and civil engineering areas into the part of contributions to CN in the "Infrastructure System Overseas Promotion Strategy"