

# Environment & Energy Technology Assessment

Large Categories	Medium Categories	Small Categories	GHG Reductions (2030)		International Assessments		Economic Assessments (2030)		Assessments on Diffusion				Other Assessments
			Japan	World	International Competitiveness	Technological Versatility	Market Scale (Japan)	Market Scale (World)	Cost Compared to Substitute Technologies	Stage of Development	Public & Private Roles	Necessary Social System Reforms	
1 Energy Supply	Nuclear Power	Fast Breeder Reactor and Its Fuel Cycle Technology	△	△	◎	Worldwide	※4	※4	※7	Development/Demo – Basic Research	Both	Governmental Support	Energy Security
		Next Generation Light-Water Reactors (including advanced use)	◎	◎	◎	Worldwide	◎	◎	※7	Development/Demonstration	Both	Governmental Support	Energy Security
		Small & Medium Sized Reactors	※1	◎	◎	Worldwide	※1	○	※7	Development/Demonstration	Both	Governmental Support	Energy Security
	Thermal Power	High-Efficiency Natural Gas Fired Power Generation	△	◎	◎	Worldwide	○	◎	○	Development/Demonstration	Both	Entrust to Market	Energy Security
		High-Efficiency Coal Fired Power Generation	△	◎	◎	Worldwide <small>Mostly developing countries</small>	○	◎	○	Development/Demonstration	Both	Governmental Support	Energy Security
	Renewable Energy	Photovoltaic Power Generation	○	○	◎	Worldwide	◎	◎	○~□	Diffusion/Improvement – Basic Research	Private – Public	Gov't Sup. & Tech. Dev.	Energy Security
		Wind Power Generation (including offshore)	△	○	○	Worldwide	△	○	○	Diffusion/Improvement – Applied Research	Private – Public	Governmental Support	Energy Security
	Transmission	Superconducting Transmission	△	△	◎	Worldwide	○	○	△	Development/Demonstration	Mostly Public	Technology Development	Energy Security
	New Fuels (replacing fossil fuels)	Hydrogen Production	※2	※2	◎	Worldwide <small>Mostly advanced countries</small>	※2	※2	△	Applied Research	Mostly Public	Gov't Sup. & Tech. Dev.	Energy Security
		Utilization of Biomass Fuel (Alternative fuel of gasoline)	○	◎	○	Worldwide	◎/○	◎	○	Diffusion/Improvement – Basic Research	Both	Gov't Sup. & Tech. Dev.	Avoid Conflict with Food Supply
Utilization of Biomass Fuel (Alternative fuel of diesel fuel)		○	◎	○	Worldwide	◎/○	◎	○	Diffusion/Improvement – Basic Research	Both	Gov't Sup. & Tech. Dev.	Avoid Conflict with Food Supply	
2 Energy Demand	Transport	Hybrid Vehicle & Electric Vehicle	◎	◎	◎	Worldwide	◎	◎	○~△	Diffusion/Improvement – Development/Demonstration	Both	Governmental Support	—
		Fuel Cell Vehicle	◎	◎	◎	Worldwide	◎	◎	□	Development/Demonstration	Both	Governmental Support	—
		High-Efficiency Rolling Stock	※9	※9	◎/○	Worldwide	※9	※9	※9	Diffusion/Improvement – Development/Demonstration	Mostly Private	Entrust to Market	—
		Fuel Efficient Aircraft (Low Noise)	△	○	◎/○	Worldwide <small>Mostly advanced countries</small>	◎	◎	○~□	Development/Demonstration – Basic Research	Both – Public	Gov't Sup. & Tech. Dev.	—
		High-Efficiency Ship	※3	○	◎	Worldwide	◎	◎	◎	Diffusion/Improvement	Both	Entrust to Market	—
	Industry	Hydrogen Reduction Iron and Steel Making Process	※4	※4	※4	Worldwide	※4	※4	※7	Basic Research	Both	Entrust to Market	—
		Innovative Material, Production and Process Technology	△	△	◎	Worldwide	○	○	※5	Applied Research	Both	Entrust to Market	—
	Commercial / Residential	High-Efficiency Lighting	△	◎	○	Worldwide	○	○	○	Diffusion/Improvement	Mostly Private	Entrust to Market	—
		High-Efficiency Heat Pump	◎	◎	◎	Worldwide	◎	◎	○	Diffusion/Improvement	Mostly Private	Governmental Support	—
		Stationary Fuel Cell	○	※5	◎/○	Worldwide	○	○	○	Development/Demonstration	Both	Governmental Support	—
High-Efficiency Home Electronics and Information Device (Green IT)		◎/○	※5	◎/○	Worldwide	◎	◎	◎~○	Diffusion/Improvement – Applied Research	Private – Public	Market & Tech. Dev.	—	
Energy Efficient Housing (Insulation, Insulating Glass)		△	△	◎	Worldwide	○	○	○	Diffusion/Improvement	Mostly Private	Entrust to Market	—	
	Power Electronics	○	※5	◎	Worldwide	○	△	○~△	Development/Demonstration	Both	Governmental Support	—	
3 Social Systems	Social Systems	Intelligent Transport Systems (ITS)	※5	※5	◎	Worldwide <small>Mostly advanced countries</small>	○	△	※7	Diffusion/Improvement – Development/Demonstration	Both	Governmental Support	—
		Areal Use of Energy (HEMS/BEMS/Local Area EMS, etc.)	◎	※5	◎	Worldwide <small>Mostly advanced countries</small>	○	△	※7	Diffusion/Improvement	Both	Governmental Support	—
		Telework	△	※5	◎	Worldwide <small>Mostly advanced countries</small>	△	△	◎	Diffusion/Improvement – Basic Research	Both	Governmental Support	—
		Environmental Performance Assessment (CASBEE, etc.)	※5	※5	○	Worldwide	△	△	※7	Diffusion/Improvement	Both	Governmental Support	—
		High-Performance Power Storage	※2	※2	◎	Worldwide	○	○	○~△	Diffusion/Improvement	Both	Governmental Support	—
	Hydrogen Transport and Storage	※2	※2	◎	Worldwide	△	△	○	Development/Demonstration	Both	Technology Development	—	
4 Fixed CO2	Carbon Dioxide Capture and Storage (CCS)	○	◎	○	Worldwide	◎	◎	○	Development/Demonstration	Mostly Public	Governmental Support	—	
	Carbon Fixture with Vegetation (Super Tree)	◎	◎	◎	Worldwide	○	◎	○	Diffusion/Improvement	Mostly Private	Governmental Support	Conflict with Ecosystems	
5 Others	Ultra-Long-Term Housing (reduction of waste by increasing longevity)	○	※6	○	Worldwide	◎	※6	○	Development/Demonstration	Both	Governmental Support	—	
	Other Greenhouse Gas (Methane, etc.) Reduction Technology	○	△	◎	Worldwide	◎	◎	○	Diffusion/Improvement	Both	Governmental Support	—	
	Adaptation Technology to Global Warming	※8	※8	◎	Worldwide <small>Mostly developing countries</small>	◎	◎	○	Development/Demonstration	Mostly Public	Governmental Support	—	
	Earth Observation & Climate Change Projection	※8	※8	○	Worldwide	※8	※8	※8	Diffusion Improvement	Mostly Public	Governmental Support	—	

(Note) The assessments of this chart are based on calculations from the different prerequisites and scenarios of each technology. Due to the inability to compensate for multiple counts of the technologies, totalization on reductions are not possible.

Japan GHG Reductions	◎:30 mil. tons + ○:10 mil. + △:under 10 mil. tons
World GHG Reductions	◎:1 bil. tons + ○:300 mil. tons + △:under 3 mil. tons
International Competitiveness	◎:World Leader ○:Comparable to other countries
Japan Market Scale	◎:1 trillion yen + ○:100 bil. yen + △:under 100 bil. yen
World Market Scale	◎:3 trillion yen + ○:300 bil. yen + △:under 300 bil. yen
Cost Compared to Substitute Technologies	◎:Same ○:Somewhat lower △:10x lower □:over 10x lower or in the research stage

- ※1 Cannot be assessed due to no domestic development plans.
- ※2 Cannot be assessed since this is a crossover technology and cannot independently demonstrate results.
- ※3 No shared concept for country-by-country emissions. When reductions of highly efficient ships made in Japan are counted as Japanese reductions, the amount will be ◎.
- ※4 Cannot be assessed as the technology will not be implemented in 2030.
- ※5 Cannot be assessed due to difficulties in setting prerequisites for calculating results.
- ※6 Cannot be assessed due to no plans for overseas expansion.
- ※7 Cannot be assessed due to no comparative substitute.
- ※8 Cannot be assessed since it does not directly reduce greenhouse gases.
- ※9 Cannot be assessed since R & D is done in the private sector, and no governmental technology roadmap exists.