



# Get to Know LEMA

## Japan Land Engine Manufacturers Association

LEMA is an industrial organization of Japanese manufactures of land engines and supporting businesses.

**For a better and comfortable life**



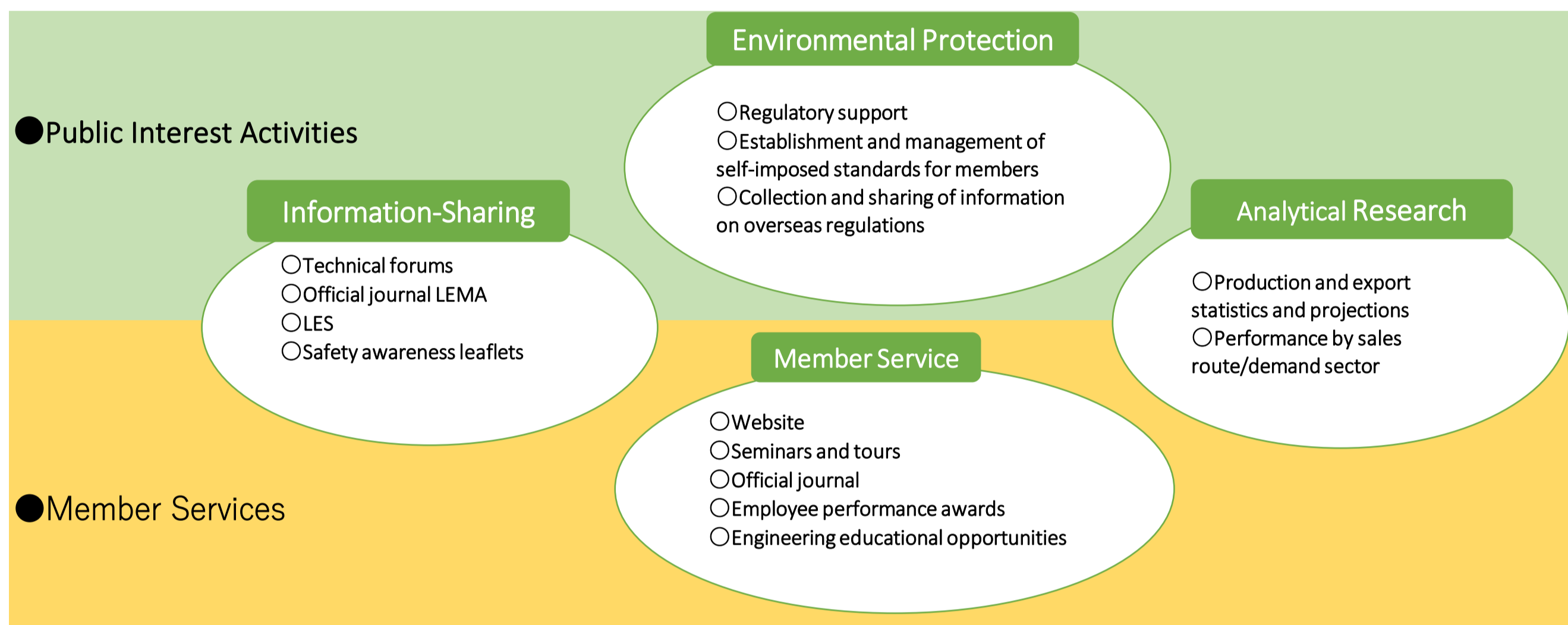
The Japan Land Engine Manufacturers Association is working on voluntary regulations to reduce harmful substances in the exhaust gas of small general-purpose engines. This label indicates that it complies with the voluntary regulations for small general-purpose engine exhaust gas established by our association.

## History

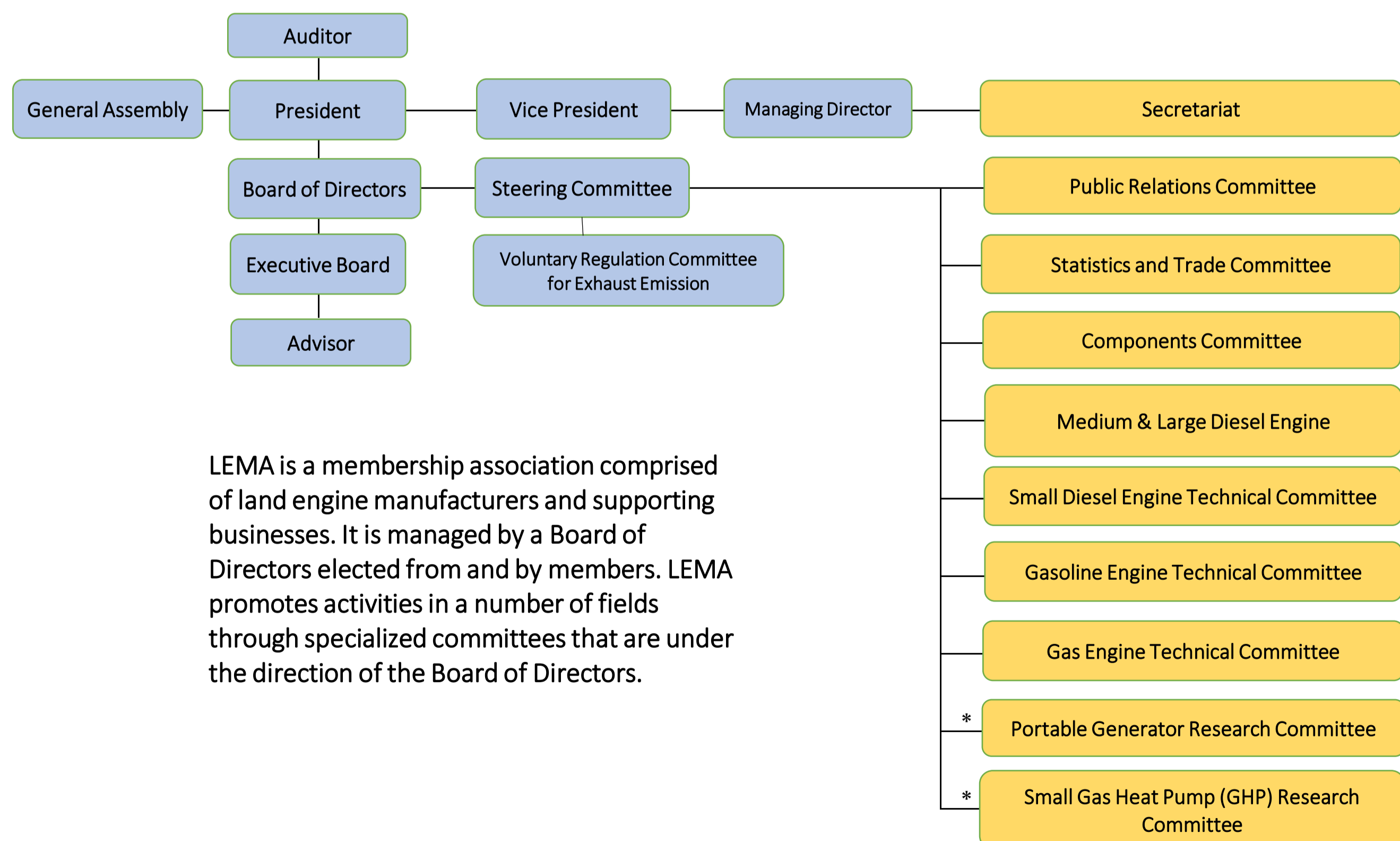
Land Engine Manufacturers Association (LEMA) has been established on May 1, 1948 by land engine and engine component manufactures to aim at promoting growth and technical development of the land engine industries in Japan while promoting development in the related industries as a whole. In November 1965, the results of the activities up to that point were recognized, and the company was approved as an incorporated association. Furthermore, we participate not only in Japan but also in international activities including the United States, Europe, and China as a representative manufacturer association of Japan. In February 1999, the name was changed from "Japan Land Internal Combustion Engine Association" to "Japan Land Internal Combustion Engine Association", and in April 2012, in accordance with the national new public interest corporation system, "General incorporated foundation" It has been reorganized as "Japan Land Internal Combustion Engine Association" and has reached the present day.

## Major Activities

LEMA is aiming prompted develop and improve the technology of land-based internal combustion engine industry and protect the environment, through the research and study of production, demand, trade, distribution, and technology related to land-based internal combustion engine. This activity is also contributing to economical development wealth of people life of this country and world.



## Organization



LEMA is a membership association comprised of land engine manufacturers and supporting businesses. It is managed by a Board of Directors elected from and by members. LEMA promotes activities in a number of fields through specialized committees that are under the direction of the Board of Directors.

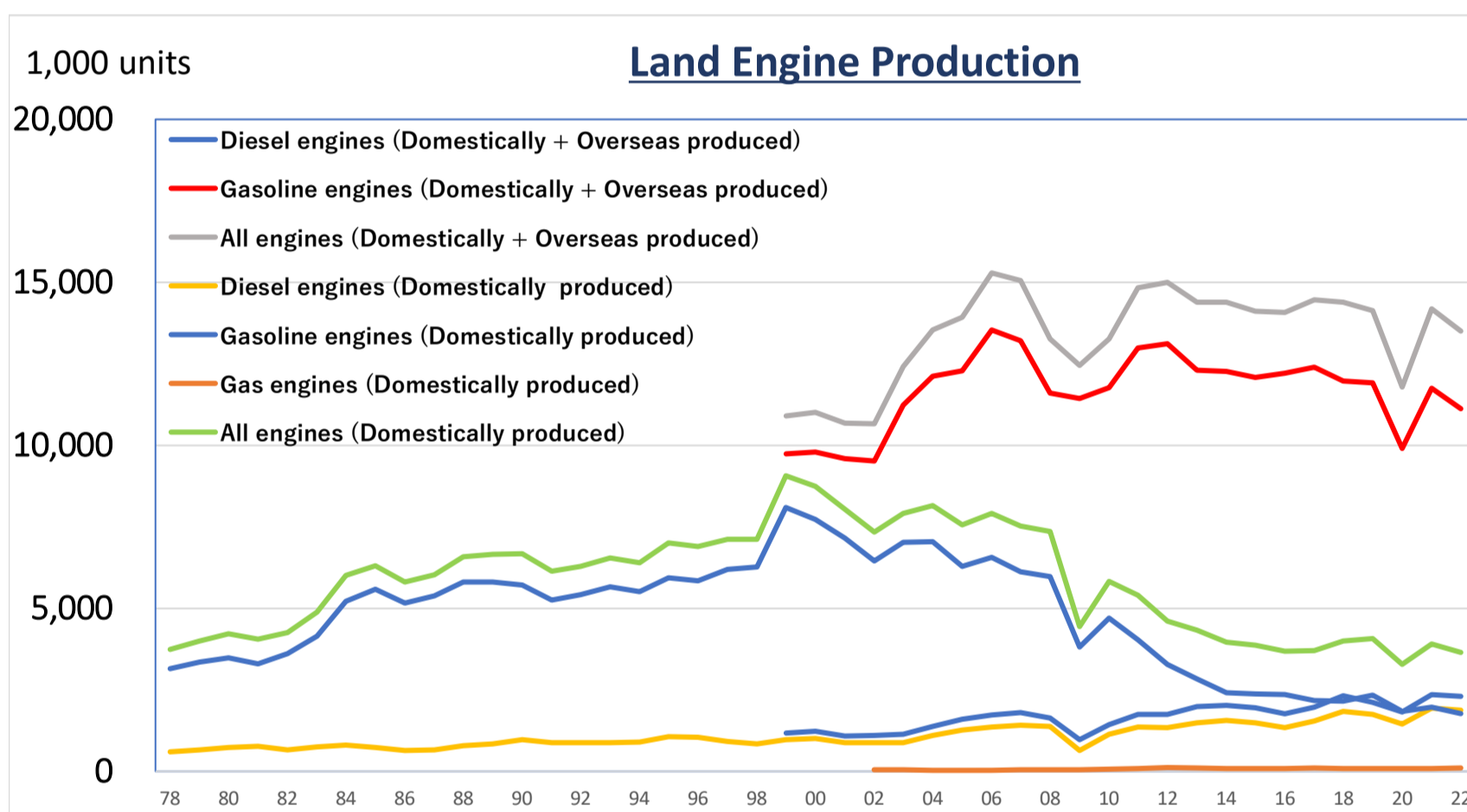
\* Ad hoc committees

## □ Important events in 2023

April	Production and export projections, initial Self-imposed regulation results, Official Journal LEMA	October	Technical Forum, Board of Directors Meeting, Production and export projections middle, Official Journal LEMA
May	Board of Directors Meeting General Members Meeting Employee Performance Awards	November	Extraordinary Members Meeting
June	Engineering Workshop	December	
July	Statistics by Sales Route/Demand Sector Official Journal LEMA	January	New Year's party, Official Journal LEMA
August		February	Seminar
September	Board of Directors	March	Board of Directors Meeting

## □ Trend of the industry

Under favor of technological advances and growing markets, member-companies have steadfastly expanded product ranges and sequentially increased production of land engines from 0.5 hp air-cooled gasoline engines to 10,000 hp water-cooled diesel engines. In 2006, they produced 15.29 million engines worldwide, including 7.95 million units that were made in Japan. Turnout after that momentarily decreased to 12.46 million units in 2009 because of the Financial Crisis that originated in the USA, but signs of recovery began to show as early as the ensuing year and, by 2012, made a full recovery to the 15 million units level. Since then, numbers have gone up and down slightly, but basically held around 14 million units. In 2020, due to the influence of COVID-19, the number dropped sharply to 11,63 million units, and recovered to the 14 million unit level in 2021, but reached 13.37 million units in 2022 due to the supply shortage of semiconductors and the convergence of demand for nesting. These engines are installed in agricultural and forestry machines, construction machines, cargo handling machines, generators, industrial machines, etc., and are used by many people in Japan and overseas and are highly evaluated.



\* KD data is excluded from domestically produced turnout in all data in and after 1999 when statistics were first collected for overseas produced engines.

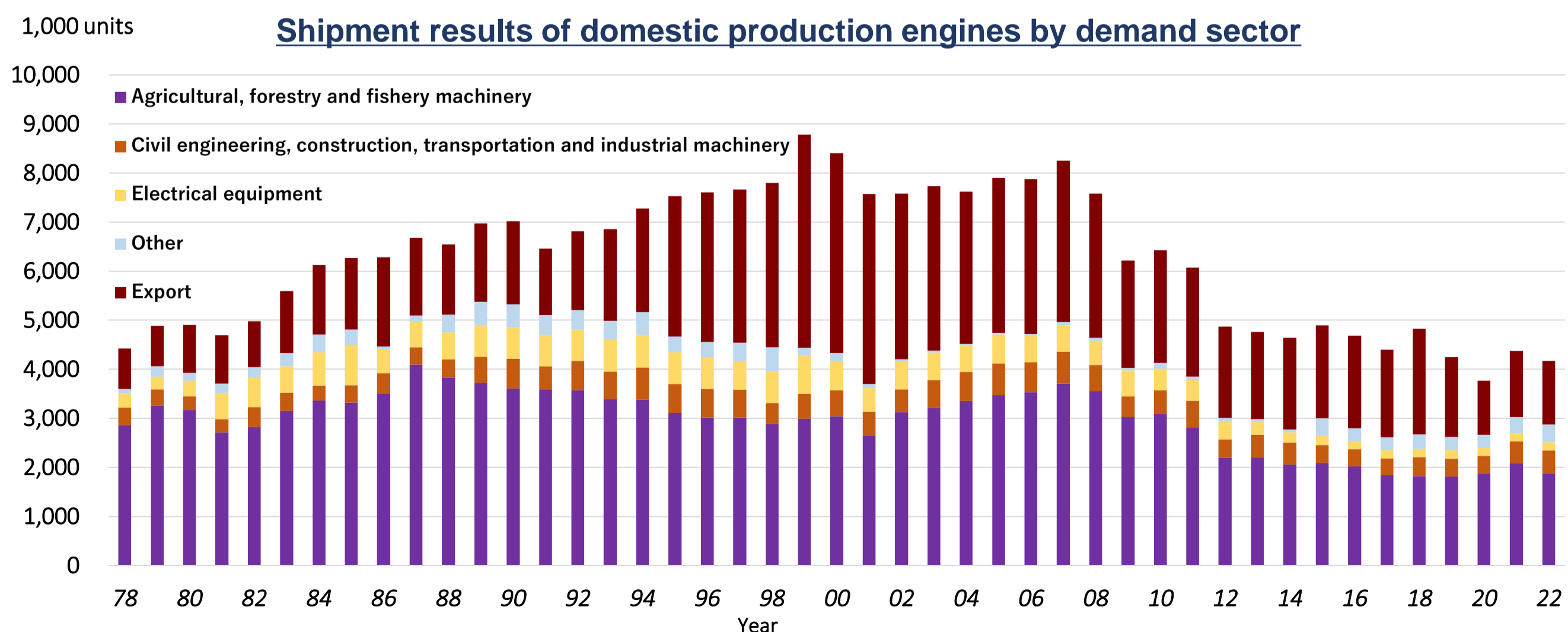
Since the start of the survey, except in 1975, which was right after the 1st Oil Shock, it continued to follow long-term growth trends until 1990.

In the 1990s, the domestic market matured, entering an export-oriented overseas demand development phase, and overseas production of gasoline engines has increased since 2000, while domestic production has decreased. Since 2009, total overseas production has exceeded domestic production. In 2022, the overseas production ratio became 73%, and 84 % of gasoline engines were produced in overseas.

The number of production units, including the number of overseas production units, has been displayed in the graph since 2003.

## — How Japanese Land Engines Are Used —

A few examples of how land engines are used in various fields of industry are presented in the below information. These engines run on gasoline, kerosene, light oil, gas, LPG and other fuels.



Note) The number of imported engines shipped from 2015 is included.



## —Types of Engine by Sector/Machinery—

Field	Machinery/Equipment	Types of engine			
		Gasoline engine		Diesel engine	Gas engine
		2 stroke	4 stroke		
Agriculture, forestry and fishery machinery	Brush cutters • Chainsaws • Knapsack power sprayers	○	○		
	Rice planting machines		○		
	Walking tractors • Cultivators • Power sprayers	○	○	○	○
	Binders • Combines		○	○	
	Riding tractor		○	○	
Civil engineering, construction, transportation and industrial machinery	Rammers	○	○	○	
	Compactors • Vibration rollers				
	Concrete cutters	○	○	○	
	Compressors				
	Bulldozers • (Hydraulic) Backhoes (Excavators)		○	○	
	Asphalt finishers • Carriers				
	Water pumps	○	○	○	
	Snow blowers	○	○	○	
	Forklifts		○	○	○
Snowplows • Rail track maintenance cars					
Electrical equipment	Portable generators • Engine driven welder machines	○	○	○	○
	Mobile generators		○	○	○
	Stationary generators • Cogeneration systems			○	○
Other	Lawnmowers • Golf carts • Go carts	○	○		
	Amusement park rides				
	Snowmobile	○	○		
	GHP (Gas heat pumps)				○

Note) The application and working machine name of a general machine equipped with land engines are listed, but the working machine is different from the statistical classification (METI's classification or our association's classification). Please note that there is."

### Members (alphabetical order)

#### 45 Full Members

AISIN CORPORATION	KOUKENSHA CO.,LTD.	TENNECO AUTOMOTIVE JAPAN LTD.
BOSCH CORPORATION	KUBOTA CORPORATION	TOHATSU CORPORATION
CATERPILLAR JAPAN LLC	MANN+HUMMEL JAPAN LTD.	TOKYO ROKI CO.,LTD.
DAIDO METAL CO.,LTD.	MARUYAMA MFG. CO.,LTD.	TOYOTA INDUSTRIES CORPORATION
DAIHATSU DIESEL MFG.CO.,LTD	MITSUBISHI HEAVYINDUSTRIES ENGINE & TURBOCHARGER,LTD.	TPR CO.,LTD.
DENSO CORPORATION	N.E. CHEMCAT CORPORATION	T.RAD CO.,LTD
HONDA MOTOR CO.,LTD	NGK INSULATORS,LTD.	UMICORE SHOKUBAI JAPAN
HORIBA,LTD.	NGK SPARK PLUG CO.,LTD.	USUI KOKUSAI SANGYO KAISHA,LTD.
HUSQVARNA ZENOAH CO.,LTD.	NIPPON PISTON RING CO.,LTD.	WOODWARD JAPAN, LTD.
IHI POWER SYSTEMS CO.,LTD.	ONO SOKKI CO.,LTD.	YAMABIKO CORPORATION
IIDA DENKI KOGYO CO.,LTD	PANASONIC CORPORATION	YAMAHA MOTOR POWERED PRODUCTS CO.,LTD.
ISEKI & CO.,LTD.	PERSOL CROSS TECHNOLOGY CO., LTD.	YANMAR HOLDINGS CO., LTD.
ISUZU MOTORS LIMITED	RIKEN CORPORATION	YGK CO.,LTD.
JFE ENGINEERING CORPORATION	SAWAFUJI ELECTRIC CO.,LTD.	
KAWASAKI MOTORS, LTD.	STARTING INDUSTRIAL CO.,LTD.	
KOMATSU LTD.	STIHL CO.,LTD.	

#### 17 Associate Members

COSMOS CORPORATION	HOKUETSU INDUSTRIES CO., LTD
CUMMINS JAPAN LTD.	JAPAN (NIPPON) ENGINE GENERATOR ASSOCIATION
DAISHIN INDUSTRIES LTD.	NIPPON CATERPILLAR LLC.
DENYO CO.,LTD	SAKURA KOGYO CO.,LTD.
FAURECIA JAPAN K.K.	SCANIA JAPAN,LTD.
FUJI OOZX INC.	UNION MACHINERY CO.,LTD.
GENERAL INCORPORATED FOUNDATION ADVANCED COGERATION AND ENERGY UTILIZATION CENTER JAPAN GION.,CO.LTD	UD TRUCKS CORPORATION
HASHIMOTOYA CO.,LTD	WOODS CORPORATION

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