

Status of 2018 Medium-Term Business Plan (FY2018-FY2020)

May 9, 2019

Mitsubishi Heavy Industries, Ltd.

Seiji Izumisawa, President and CEO

As President and CEO, I am pleased to present our results achieved in fiscal 2018 and the initiatives we are undertaking in the current fiscal year 2019.

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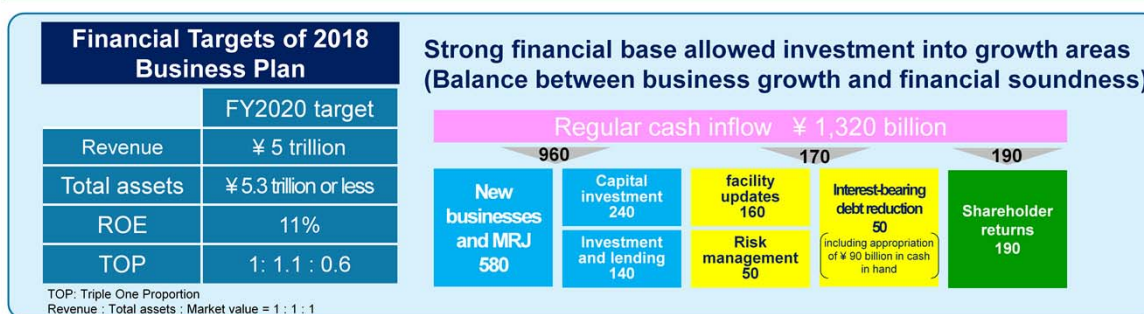
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First, I will present the progress status of our 2018 Medium-Term Business Plan. This will be followed by an explanation of the progress status of our core measures.

I. Business Plan Progress Status

I-1. Business Plan Progress Summary



BS: Balance sheet CF: Cash flow PL: Profit and loss FCF: Free cash flow ROE: Return on equity

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Under our 2018 Business Plan, for fiscal 2020 we have set targets of 5 trillion yen in revenue, 5.3 trillion yen or less in total assets, and 11% return on equity. We aim to generate a regular cash inflow of 1,320 billion yen, striving for well-balanced operations enabling investment into growth areas and enhanced financial soundness.

In fiscal 2018, free cash flow significantly exceeded our target.

In fiscal 2019, to prepare for possible deterioration in our market environment we will further improve our fixed assets performance and generate profit from business activities.

Concerning orders received, in fiscal 2018 medium-lot manufacturing was solid, but overall, orders declined from cancellation of a steam power plant project and shrinking of that market. In fiscal 2019, we will strive to secure new orders by strengthening our servicing business.

Regarding growth strategies, we are implementing both short-term as well as medium-and-long-term measures, as I will explain in detail later.

I-2. FY2018 Results



(Billion yen)

	FY2017 results 111.1yen/\$129.9yen/€	FY2018 initial forecast 110yen/\$130yen/€	FY2018 revised forecast (as of Feb.26) 110yen/\$130yen/€	FY2018 result 110.7yen/\$128.5yen/€	Major reasons for variances with initial targets
Orders received	3,868.7	4,100.0	3,800.0	3,853.4	Cancellation or delay of large-scale projects (steam power generation, chemical plants)
Revenue	4,085.6	4,200.0	4,200.0	4,078.3	Targets unachieved in Power Systems and Aircraft, Defense & Space segments
Profit from business activities (Profit rate)	58.1 (1.4%)	16.0 (3.8%)	190.0 (4.5%)	186.7 (4.6%)	Proceeded smoothly as planned ¥30 billion in profit from business activities and ¥20 billion in net income booked on sales of fixed assets
Profit attributable to owners of parent	-7.3	80.0	100.0	101.3	
ROE	-0.5%	6%		7.2%	
FCF	167.5	50.0	130.0	243.0	Surplus achieved on progress in reducing working capital
D/E ratio	0.48	0.4		0.38	
Equity ratio	26.6%	28%		27.8%	
Interest-bearing debt	813.1	770.0		665.1	
Total assets	5,248.7	5,100.0		5,142.7	
Dividend(yen/share)	120yen	130yen		130yen	

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In fiscal 2018, orders received failed to reach our initial target, mainly due to cancellation or delay of large-scale projects.

Profit from business activities proceeded in line with our target, thanks to progress in cash flow management and successful initiatives taken in all business units.

We also achieved a surplus in free cash flow. This we believe was attributable to the management reforms we have undertaken in recent years.

I-3. FY2019 Numerical Targets



(Billion yen)

	FY2018 results <small>110.7yen/\$ 128.5yen/€</small>	2018→2019 Core measures	FY2019 targets <small>110yen/\$ 125yen/€</small>	2019→2020 Core measures	FY2020 targets <small>110yen/\$ 130yen/€</small>
Orders received	3,853.4	➡ ① ➡	4,300.0	➡ ① ➡	5,000.0
Revenue	4,078.3	➡ ② ➡	4,300.0	➡ ② ➡	5,000.0
Profit from business activities (Profit rate)	186.7 (4.6%)	➡ ③ ➡	220.0 (5.1%)	➡ ③ ➡	340.0 (6.8%)
Profit attributable to owners of parent	101.3	① Orders assured for projects held over from previous year (Power Systems, I&I)	110.0	① Expand business scale, including non- organic growth (+¥ 400 bn)	170.0
ROE	7.2%		8%		11%
FCF	243.0	② Increase sales, especially in Power Systems and I&I	50.0	② Increase non-organic growth (+¥ 400 bn) and revenue (especially Power Systems)	* 50.0
D/E ratio	0.38		0.3		* 0.3
Equity ratio	27.8%	③ Improve profitability of build-to-order product operations (I&I)	29%	③ Increase profit, especially in Power Systems and I&I	* 30%
Interest-bearing debt	665.1		600.0		* 600.0
Total assets	5,142.7		5,200.0		* 5,500.0
Dividend(yen/share)	130yen		150yen		180yen

* FY2020 original targets have been revised to reflect achievement of surplus FCF and new IFRS lease accounting standards.
FCF 200.0→50.0 D/E ratio 0.4→0.3 Equity ratio 31%→30% Interest-bearing debt 760.0→600.0 Total assets 5,300.0→5,500.0

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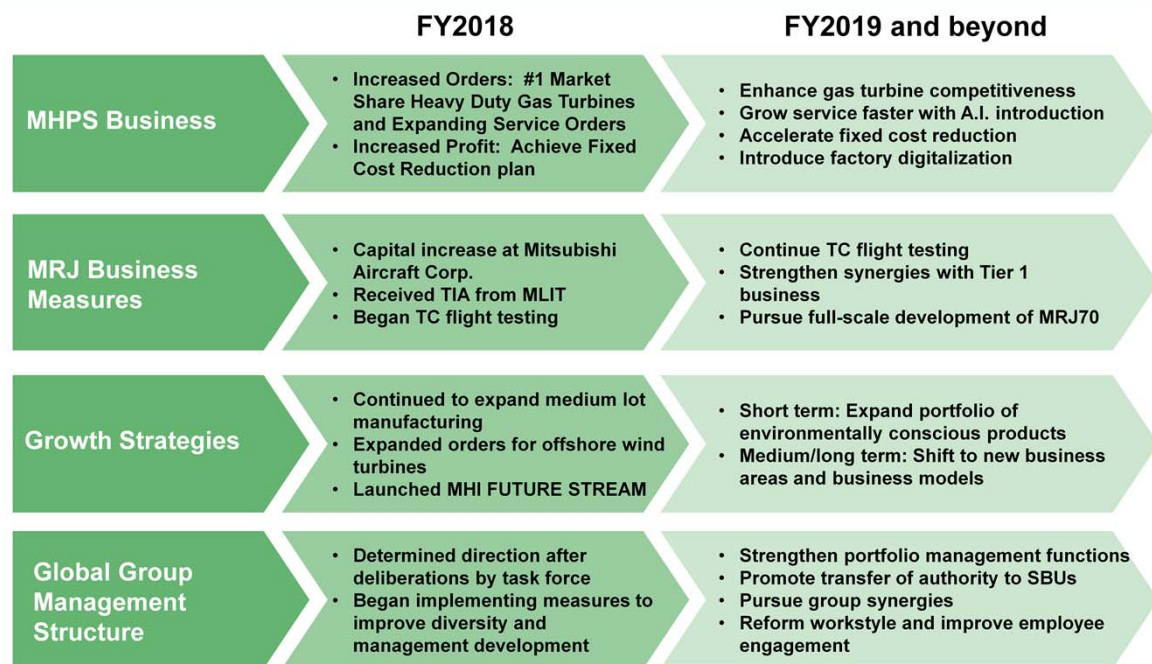
In fiscal 2019, we are aiming to secure the orders for projects held over from fiscal 2018. We are also striving to increase revenue particularly in the Power Systems and Industry & Infrastructure segments.

Regarding profit from business activities, our aim is to improve the profitability of our build-to-order product operations in the Industry & Infrastructure segment. We are also aiming to drive up profit through improvements in productivity and asset efficiency.

For fiscal 2020, we are holding to the targets – orders received, revenue, and profit from business activities – we set on announcing our 2018 Business Plan.

II. Progress Status of Core Measures

II-1. Summary for Progress Status of Core Measures



MHPS: Mitsubishi Hitachi Power Systems GT: Gas turbine TIA : Type Inspection Authorization TC : Type Certificate MLIT: Ministry of Land, Infrastructure, Transport and Tourism

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In fiscal 2018, Mitsubishi Hitachi Power Systems expanded its market share on the back of launches of new competitive models amid shrinking of the gas turbine market. In fiscal 2019 and beyond, we expect the gas turbine market to recover, and as it recovers we hope to secure a high share of that market.

Reduction of our fixed costs is proceeding close to target. However, as the market for new coal-fired plants scales down, our aim is to accelerate reduction of our fixed costs and restructuring of our bases of operation, as well as to strengthen our servicing business.

Concerning the MRJ, in March 2019 flight testing got underway, toward acquiring type certification.

Regarding growth strategies, we are taking initiatives from both the short- and medium-to-long-term perspectives. We are also taking a new framework under consideration.

With respect to global Group management, going forward we will embed and drive forward the various measures implemented to date.

II-2. MHPS – Natural Gas Power Generation Growth



How did we increase orders in a competitive market?

MHPS moved from #3 to #1 global market share in the 100 MW+ Heavy Duty Gas Turbine market segment as customers embraced the J-series gas turbine

We project a flat natural gas power generation market in the near term, with growth in the longer term.

We will continue to grow revenues and profits through enhanced product competitiveness, and new service products.

Improve product competitiveness

① World's highest efficiency large gas turbine

J-Series Evolution

25 orders received or expected.

First delivery scheduled for Nov. 2019.

- Up to 3.2% higher efficiency than earlier models
- Contributes to CO₂ reduction

JAC
Today

64%
Efficiency



GT recipient of 2018 METI Minister's Award for excellence in energy conservation

2020-2030

65+%
(next-generation GT)

Beyond 2030

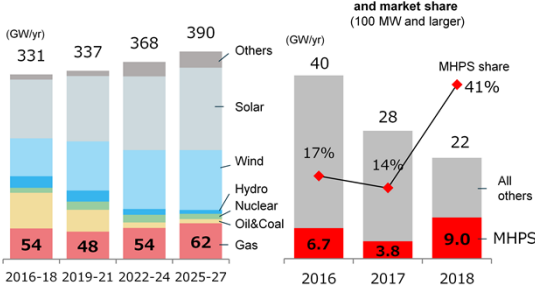
67+%
(next-generation GT)



Enhanced JAC installation underway at MHI demonstration power plant with 2020 commercial operation.

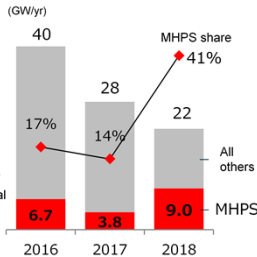
Natural gas & renewable growth

New capacity projections



Source: Bloomberg New Energy Finance (NEO 2018)

Gas turbine market size and market share (100 MW and larger)



Source: McCoy Power Reports 2018

② Small/medium scale GTs: for flexible operations and mechanical drive applications

- Orders increased significantly in FY2018

FY2017: 2 units → FY2018: 18 units

- H-100 product certification

Major oil companies: Shell, Total, ExxonMobil

(6 units for Mozambique)

Major engineering firm: Bechtel (U.S.)

- Back-up support to renewable energies



H-100 GT

H-25 GT

③ Development of new technologies

- Next-generation (67%+) and 100% hydrogen-fired GT, toward carbon-free society

- Autonomous operation

Next-generation power plants capable of power demand forecasting, maintenance detection, etc.

JAC: J-Series Air-Cooled



MHPS TOMORROW

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The gas turbine market is currently shrinking, but in the medium-to-long-range view the market is projected to grow steadily. We will take steps to increase our market share by boosting the competitiveness of our products.

We have already received, or expect to receive, orders for 25 units of our J-Series air-cooled heavy-duty gas turbines – turbines that have achieved the world's highest power generating efficiency, 64%, contributing to reduction of CO₂. Shipment of the first unit is now scheduled for November 2019.

Development is also going forward of even more efficient, next-generation gas turbines, to be launched within the next few years.

In the area of small and medium-scale gas turbines, demand can be anticipated for systems that offer load-following operation, distributed generation, and units to serve in mechanical drive applications. In fiscal 2018, orders increased significantly over the previous year. In addition, our small and medium-scale gas turbines acquired product certification as compressor drivers from the major oil companies, so going forward we will take steps to expand orders for these units further.

Concerning new technologies, we have already succeeded in developing mixed-

fuel gas turbines in which natural gas is mixed with a 30% hydrogen component, in a quest to achieve a carbon-free society. We are also developing gas turbines that are 100% hydrogen fired.

Meanwhile we are also working to develop autonomous operation of power generating facilities. Our goal is to contribute to reducing CO₂ emissions through efficient operation of power plants.

II-2. MHPS – Steam Power Generation Reduction



New build project backlog is strong through FY2020

From FY2021 we see a decline in new projects

Profitable service fleets will continue to operate.

We will accelerate ongoing fixed cost reduction and base restructuring plans for new build projects

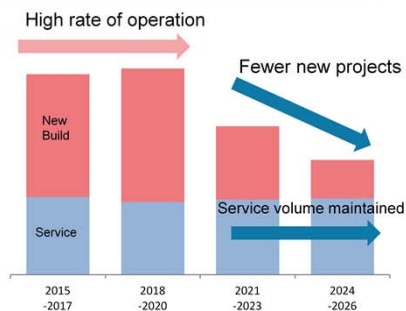
We will expand our profitable service business

Expanding service business

- Support optimized operation and create customer value
 - Utilize AI technologies (MHPS-TOMONI)
 - Remote monitoring services
- Expand application of Air Quality Control Systems (No.1 market share in global FGD market)
- Support improving availability of Steam Power assets.
 - Shorter inspection durations
 - Active use of drones / digital solutions
 - Support other-OEM Fleets



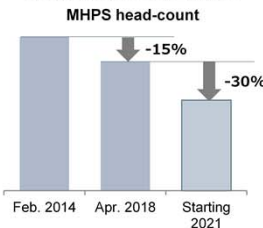
Steam power market



Fixed cost reduction acceleration

Fixed cost reductions and base restructuring are progressing on schedule.

→ To be accelerated further



From merger to Apr. 2019

- Domestic: Consolidation to 1 factory per product
Steam turbines → Hitachi Plant
Boilers → Nagasaki/Kure joint operation
- Overseas: Reduction of redundant resources and restructuring to match business scale (downsized in China, Americas, Europe, Australia.)

Starting from 2021

- Align headcount with business forecast
- Improve productivity through digitalized factories

RMC: Remote Monitoring Center

FGD: Flue gas desulfurization

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Steam power system operations will remain robust through fiscal 2020, thanks to a solid order backlog.

From fiscal 2021, however, sales from new-build projects will decline amid the current trend away from carbon.

As with gas turbines, in order to contribute to achieving low carbon in existing steam power plants, going forward we will strive to apply AI and IoT technologies to optimize their operation. We will also expand applications of flue-gas desulfurization systems that contribute to reducing environmental loads.

In addition, we will strengthen our servicing business by shortening inspections through use of drones, expanding support services to other-OEM fleets, and so on.

We are currently making progress, as planned, in reducing our fixed costs and restructuring our bases; and we will accelerate these efforts further.

II-3. MRJ Business Measures

- Proceeding TC flight tests toward first delivery in mid-2020
- Enhancing the business structure through synergy with Tier1 business



TIA: Type Inspection Authorization MLIT: Ministry of Land, Infrastructure, Transport and Tourism LOA: Letter of Authorization(permitting FAA pilots to fly on the MRJ for TC purposes)

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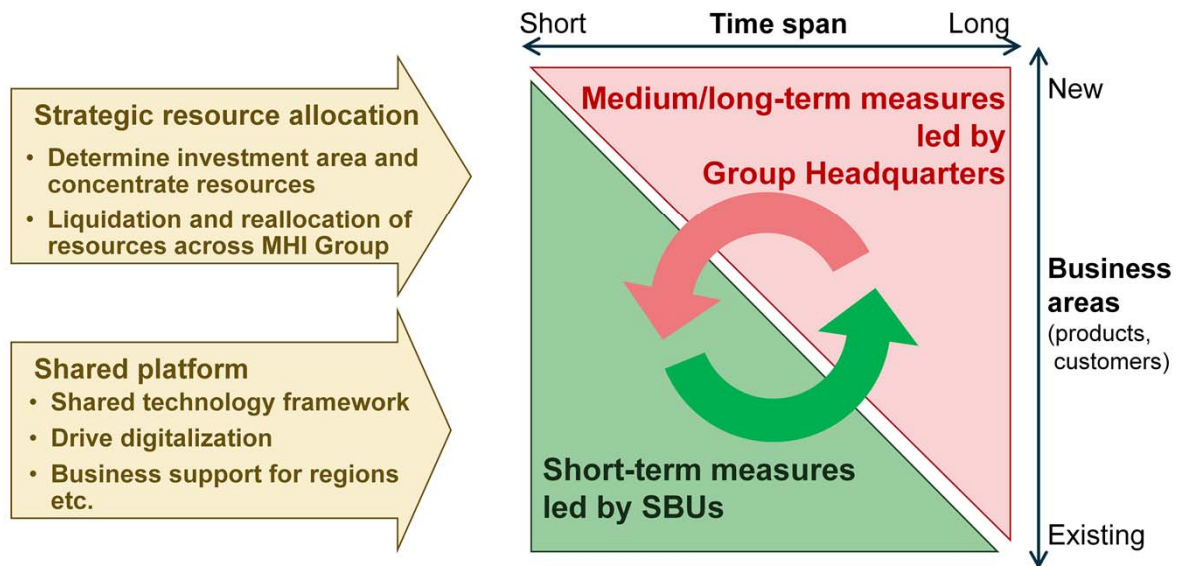
MRJ flight testing got underway on March 3rd, toward acquisition of type certification.

On March 14th we received a Letter of Authorization from the U.S. Federal Aviation Administration. Flight testing is now underway.

Work toward acquiring type certification is now in the final stages. Going forward, we will continue ahead, working closely with the relevant authorities.

II-4. Growth Strategies

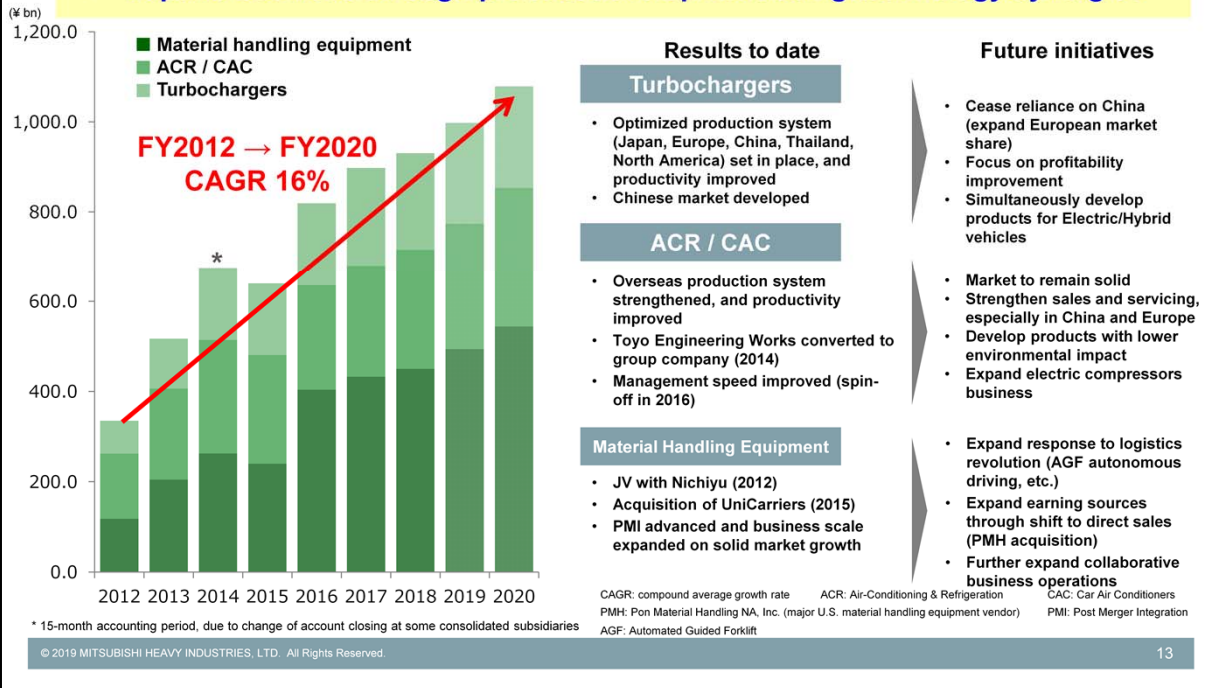
- Drive growth measures both in short and medium/long term
- Devote resources and utilize shared platform



Growth strategies are being carried out on two fronts: short-term measures led by SBUs, and medium- and long-term measures led by Group Headquarters.

In executing growth measures, there are two main strategies: strategic allocation of resources into growth areas, and making use of MHI Group's shared platform. In these ways, Group synergies are optimized.

- Focused growth investments, including M&A
- Expand business through product development using technology synergies



Among short-term initiatives, in the area of medium-lot manufacturing we have undertaken M&A's and strengthened our production system by concentrating our allocation of funds generated from our built-up financial foundation. We have also availed of our technology synergies and developed competitive products. As a result, business in this area has nearly tripled in scale from the level of fiscal 2012. We believe, however, that there is still room for further expansion in the years ahead.

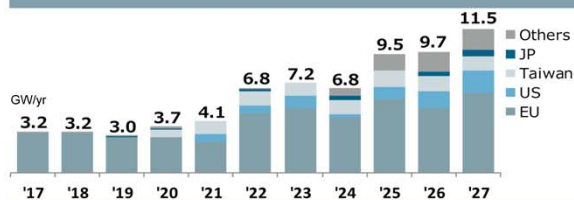
Going forward, we will strive for business growth by strengthening our sales and servicing capabilities and developing components, products and services that respond to trends moving toward electrification and automation.

We will also develop more competitive products by applying our technology synergies: for example, we will take the cutting-edge technologies we developed for gas turbines and other products and apply them to electrically operated car air-conditioners and autonomous operation of forklift trucks.

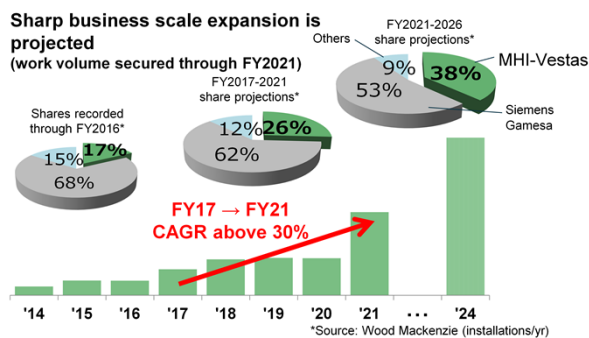
II-4. Growth Strategies Short-term (2) Offshore Wind Turbines

- Offshore wind turbine market is growing faster than anticipated
- MHI established JV with Vestas, world's leading supplier of onshore wind turbines

Scale of offshore wind turbine market (excluding China)*



Sales and market share*



- MHI established a 50:50 JV with Vestas, world's leading supplier of onshore wind turbines, in April 2014.



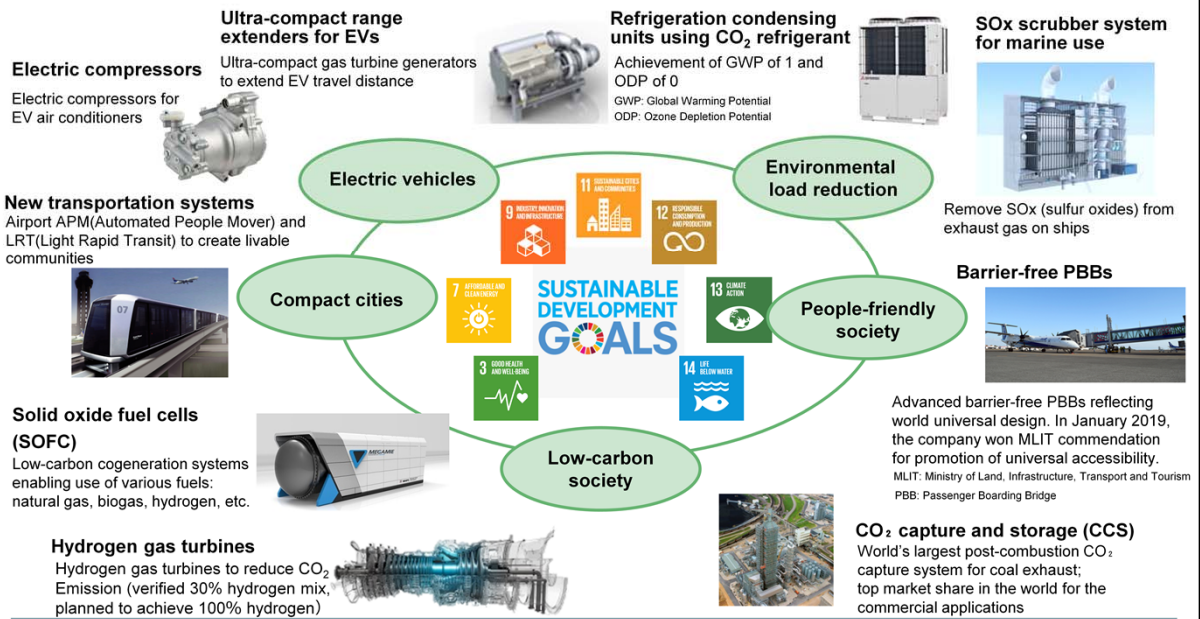
- Offshore wind turbine market is growing faster than anticipated.
- After the core European market, auction has begun in U.S. and Taiwan. In Japan, projects are taking shape amid development of legal framework to allow use in "general common sea areas."
- Developing local markets by establishing bases in Boston, Taiwan and Japan.
- Market share steadily increasing (order backlog and preferred supplier as of FY2018-end totaled 8.7 GW).
- Support provided by MHI:
 1. Production technology/control, Quality Management System, development support
→ Organizational adjustment in preparation for scale expansion
 2. Support of expansion in Asia

Another area in which we are undertaking short-term initiatives is offshore wind turbines. Today this market is expanding rapidly, and growth can be expected to continue in the future as well.

In April 2014 we established a joint venture with Vestas, the world's leading supplier of onshore wind turbines. The JV is known as MHI Vestas Offshore Wind.

MHI Vestas' market share is projected to steadily increase. Support provided by MHI will include production technology and control, quality management, and forging of other systems in preparation for rapid scale expansion, as well as support of expansion in North America and Asia.

- Contribute to SDGs through MHI's broad range of technologies and products
- Provide solutions through systemization of products and application of AI/IoT



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MHI has amassed a broad range of technologies and products, and many can contribute to realizing the SDGs in various fields – including a low-carbon society, environmental load reduction, and electric vehicles. In addition, through systemization of these products and application of AI and IoT, we believe it's possible to resolve complex societal challenges.

As an example, in Australia, urban development in Western Sydney is being planned with the aim of distributing urban functions, and MHI today is proposing a variety of solutions such as energy management. In this way, going forward we intend to propose solutions matched to the needs of particular regions.

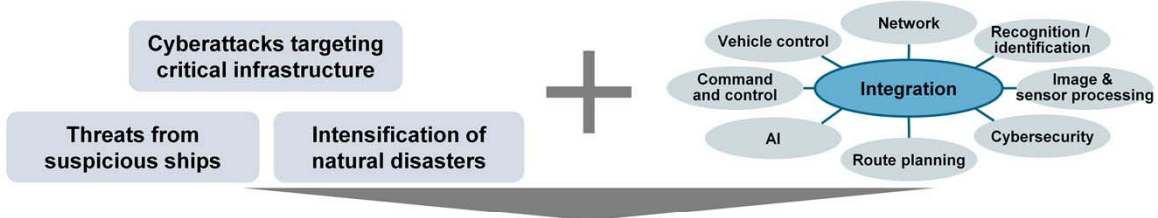
II-4. Growth Strategies Short-term (4) Safety and Security Initiatives



- Provide total solutions enabling safety and security
- Meet private sector demand for dual use cutting edge technologies developed in Defense & Space Systems business

Expanding needs for safety and security measures

MHI technologies cultivated in defense and space areas



Total solutions for safety and security

Cybersecurity	Situational awareness	Wide-area status observation
<p>InterSePT Protection of Control Systems</p>	<p>CoasTitan Monitoring by Unmanned Vehicles</p>	<p>BRAINS Analysis of Wide-Area Image Data</p>
<p>Real-time analysis of operation patterns in infrastructure control systems; early anomaly detection</p>	<p>Developed system matching customer needs, integrating UAVs, USVs and UUVs <small>UAV: Unmanned aerial vehicle UUV: Unmanned underwater vehicle</small> <small>USV: Unmanned surface vehicle</small></p>	<p>Satellite image data analyzed by AI, enabling swift grasp of damage, contributing to disaster relief</p>

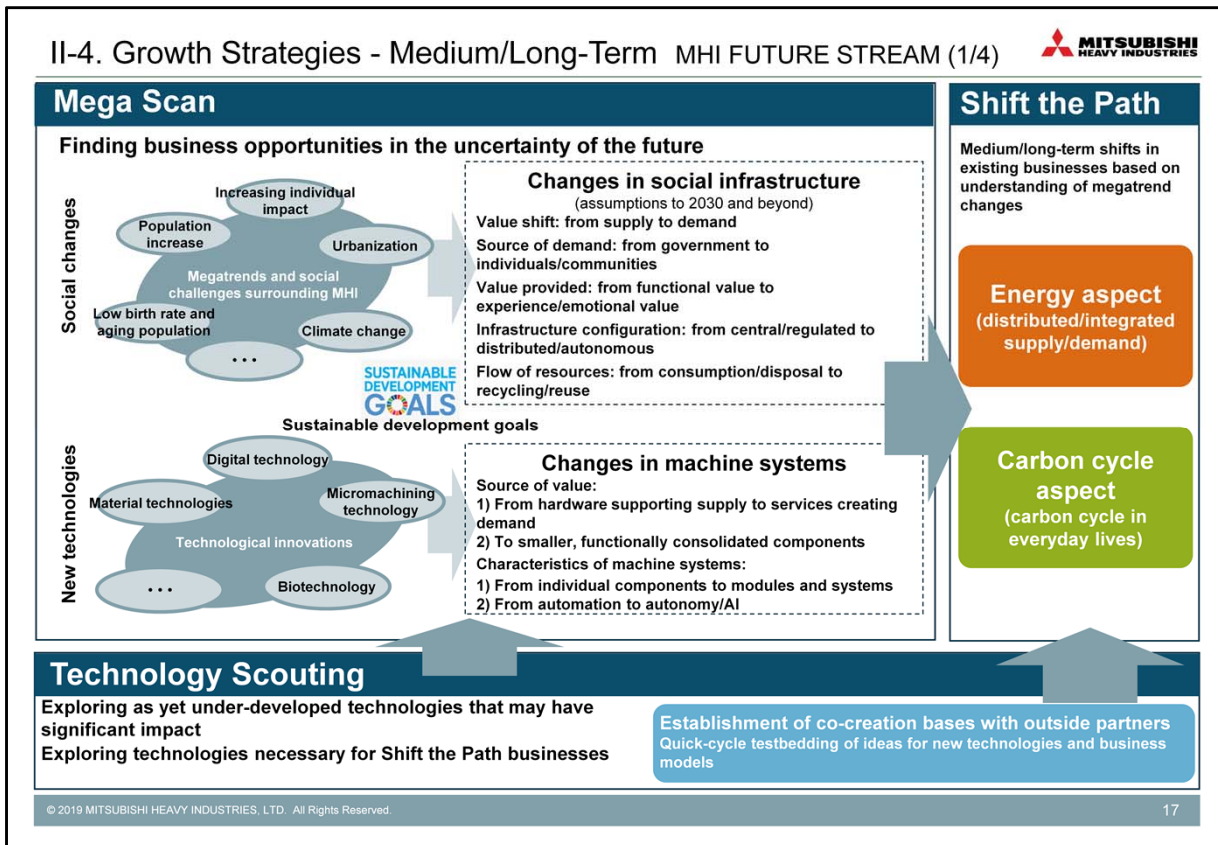
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We are also actively proposing total solutions geared toward safety and security.

Today, society's needs with respect to safety and security are expanding, in order to cope, for example, with cyberattacks and natural disasters.

Up to now we have cultivated a broad range of technologies centering on the defense and space areas. Going forward, we will propose solutions availing of technologies and systems adaptable to these needs: for example, in the areas of cybersecurity, situational awareness, and wide-area status observation.



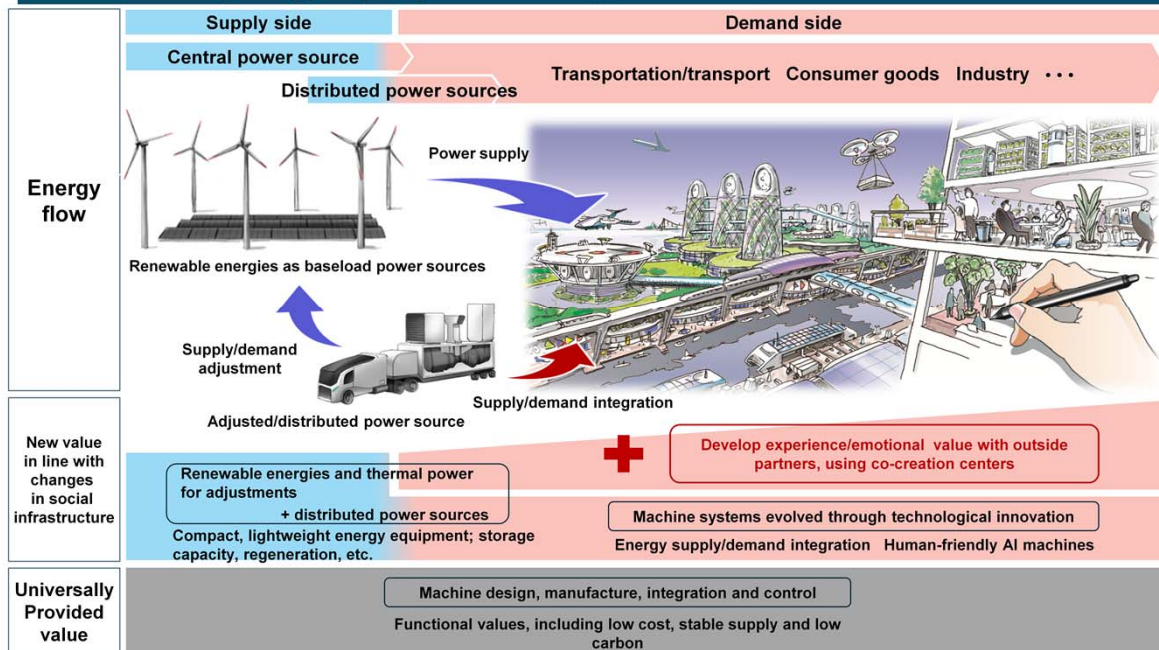
MHI FUTURE STREAM is our program encompassing medium- and long-term growth strategy initiatives. It incorporates three aspects: “Mega Scan,” which seeks out business opportunities in the image of society long into the future; “Shift the Path,” which probes directional changes in existing businesses from a medium- to long-range perspective; and “Technology Scouting,” which pursues the cutting-edge – and potentially game-changing – technologies necessary for the directional changes outlined in “Shift the Path.”

With respect to Mega Scan, in fiscal 2018 we perceived a shift in value from the supply side to the demand side caused by societal changes and technology innovations, as well as further advances in the artificial intelligence of machine systems.

We considered how MHI Group’s businesses should shift – Shift the Path – in response to changes such as these, from two aspects: energy and the carbon cycle.

In terms of Technology Scouting, going forward we will establish co-creation bases with outside partners capable of quick-cycle testbedding of ideas for new technologies and business models.

Shift the Path (energy aspect): in addition to supply infrastructure, shift to value creation on demand side



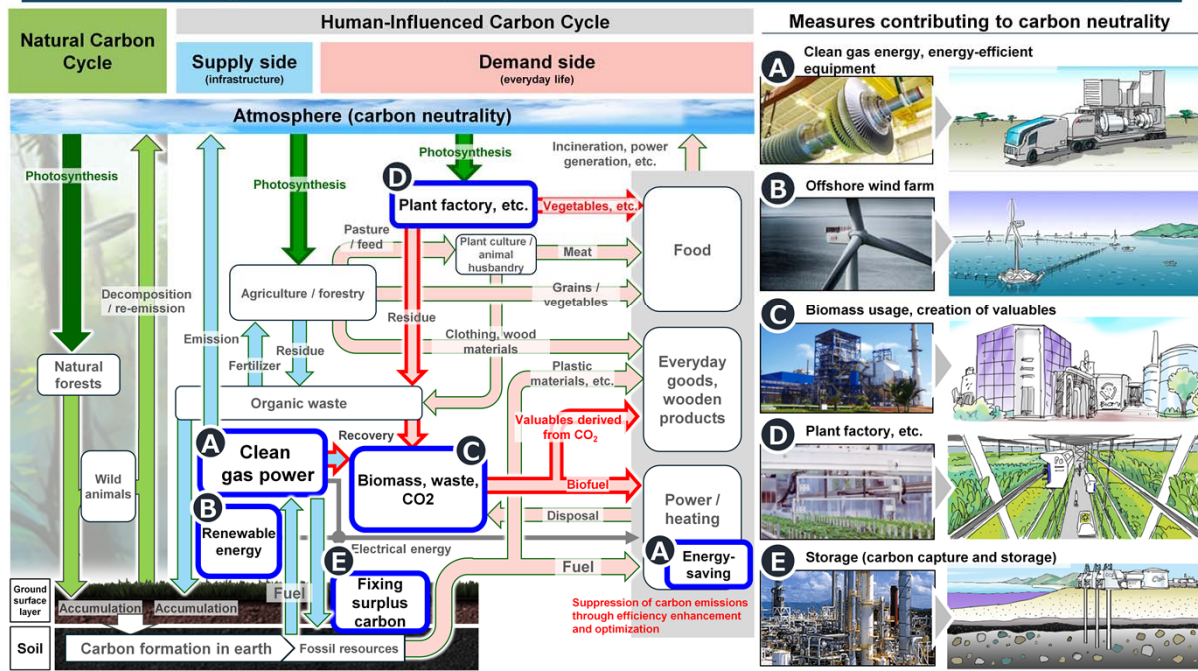
This is how we will “Shift the Path” from the energy aspect.

Up to now, value creation in the energy field consisted mainly of supplying infrastructure: central power sources and so on.

In the energy field, supplying energy stably and at low cost and initiatives toward achieving low carbon, etc. will remain important. At the same time, however, amid changes in the social infrastructure – for example, progress in shifting to distributed power sources – and technological innovations, today supplying value in line with trends on the demand side is becoming increasingly important.

Against this backdrop, going forward MHI Group will provide machine systems evolved through technological innovations such as AI.

Shift the Path (carbon cycle aspect): value creation on demand side and contribution to carbon neutrality



Here then is our approach to “Shift the Path” from the carbon cycle aspect.

From the standpoint of the global environment, society’s need for carbon neutrality is increasing more and more.

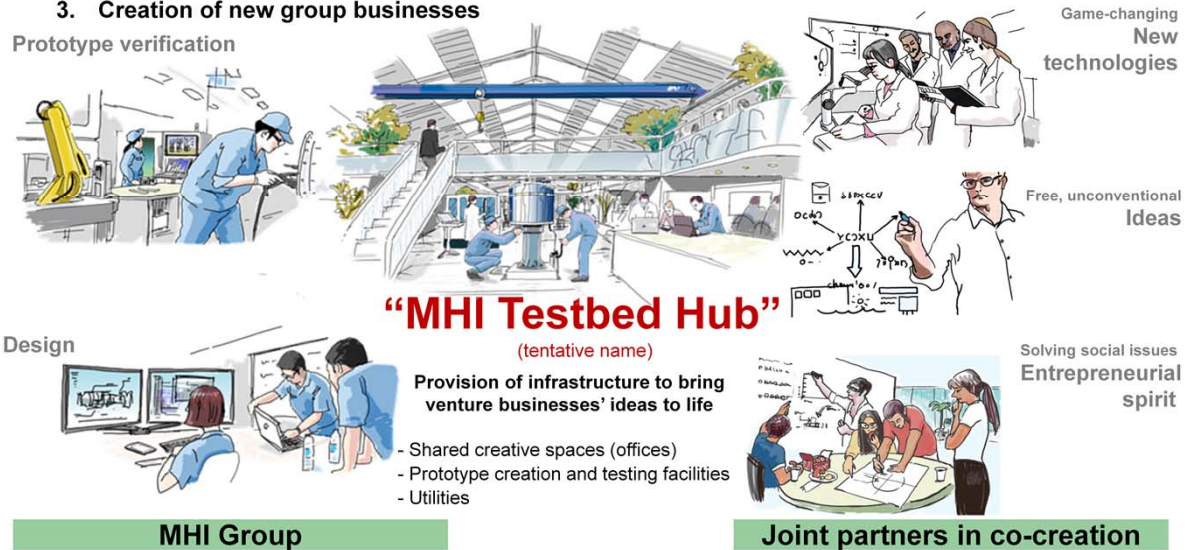
What this indicates is that, as society consumes increasing amounts of fossil resources, nature’s ability to deal with the carbon cycle has reached its limit.

Up to now, this problem has been addressed by achieving greater system efficiency on the supply side and saving energy; but going forward, in order to realize carbon neutrality, initiatives on the demand side are also becoming important.

MHI is developing a broad spectrum of products in this area: including more efficient clean gas energy systems, offshore wind farms, biomass usage, plant factories, and carbon capture and storage. By providing systems integrating these various products, we will contribute to the achievement of carbon neutrality.

Establishment of co-creation centers with partner organizations

1. Social contribution through venture business incubation and regional revitalization
2. Development of employee entrepreneurship
3. Creation of new group businesses



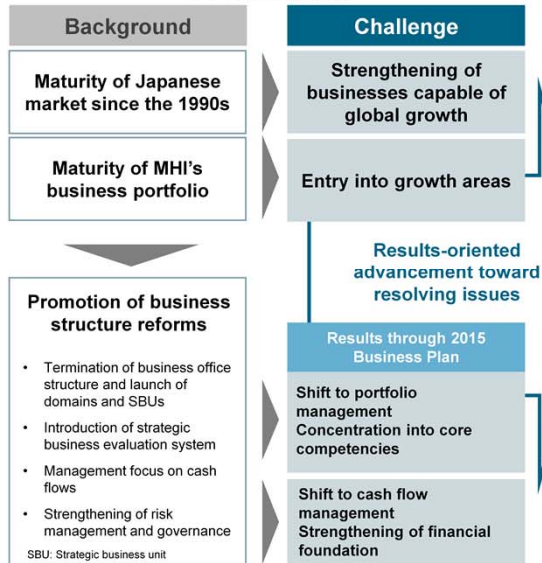
As part of Technology Scouting, today we are considering establishing co-creation centers with partner organizations.

In doing so, we have a number of objectives: to make social contributions through venture business incubation and the resulting regional revitalization; to develop employee entrepreneurship; and to create new Group businesses.

MHI Group will provide technical support for manufacturing technologies and the utilities needed for that purpose, and pursue co-creation with start-up businesses.

II-5. Global Group Management Structure (1/3)

Requirements and challenges of growth-oriented global / group management



Reorganization in 2010 Midterm Business Plan
→ embedding and driving forward the results

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Basic policies

Stability AND Growth

- Portfolio management enabling stable growth
- MHI FUTURE STREAM
- Strategic resource allocation (HR, technologies, capital)
- Promotion of growth strategies and incubation

Independent SBU Management AND Group Synergy

- Transfer of authority to business units
- Management structure optimized to each business unit's strategy
- Pursuit of group synergies

Flexible AND Quick

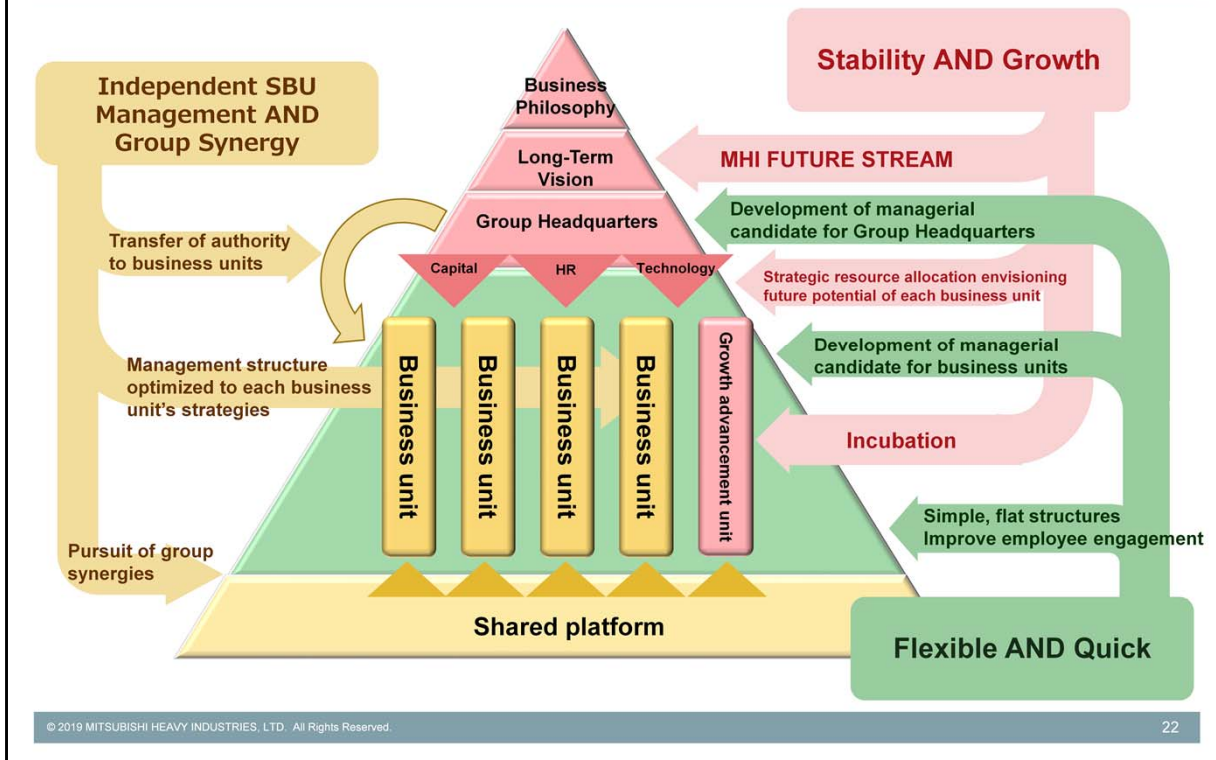
- Simple, flat structures and clarification of authority
- Development of managerial candidate for Group Headquarters and business units

MHI's main market – Japan – has matured since the 1990s, and our core businesses – for example, thermal power – have also matured. In order for us to grow in the future, we will need to strengthen businesses capable of global growth and enter into growth areas.

Ever since our 2010 Medium-Term Business Plan, we have taken steps to carry out various business structure reforms. Under our 2018 Business Plan, we will embed and drive forward the results achieved through our reforms to date.

In line with global Group management, today we are considering three basic policies: simultaneous achievement of stability AND growth; independent SBU management AND Group synergy; and flexible AND quick management.

II-5. Global Group Management Structure (2/3)



Concerning “stability AND growth,” we will target portfolio management that realizes stable growth. Through the activities of MHI FUTURE STREAM we will allocate resources after determining our medium- and long-term directions as MHI Group.

Initiatives will also be necessary in fields that transcend the framework of existing businesses. Toward that end, we will establish a growth advancement unit under the direct management of Group Headquarters. To this unit will be accorded a certain budget and authority, to form a mechanism enabling dynamic activities.

With respect to “independent SBU management AND Group synergy,” because market characteristics and MHI’s position differ for each business unit, the optimal management structure will be created in accordance with the directions of each business unit, authority will be transferred to each business unit, and a shared platform realizing Group synergy will be developed.

Regarding “flexible AND quick” management, we will aim for structures as simple and flat as possible. Meanwhile in terms of human resources – which are a company’s greatest asset – we will take steps to develop managerial candidates and to improve employee engagement.

Major initiatives : Underway : To be implemented

Stability AND Growth

- Strengthening of portfolio management functions of Group Headquarters
- MHI FUTURE STREAM
- Strengthening of resources (HR, technology, capital) reallocation functions
- Establishment of budgeted growth advancement unit, dynamic pursuit of business opportunities

Independent SBU Management AND Group Synergy

- Transfer of authority to business units
- Management structure optimized for business strategies, appropriate support by Group Headquarters
- Pursuit of synergies (exploration of projects in overseas regions, enhancement of corporate efficiency, etc.)
- Coordinated development of global policies
- Efficiency enhancement through consolidation of Japan-based support functions

Flexible AND Quick

- Simple, flat management structures and clarification of responsibilities and authority
- Greater diversity in management
- Planned development of management human resources
- Diverse, flexible working style and greater employee engagement

Here we see an overview of the measures to be implemented to achieve the three basic policies of our global Group management structure.

Some of these measures are already underway: for example, the previously explained MHI FUTURE STREAM and initiatives to explore projects in overseas regions through coordination between overseas regional headquarters and the business units.

Within the duration of the 2018 Medium-Term Business Plan, we will work out the specifics of all of these measures.

This concludes our presentation.

MOVE THE WORLD FORWARD

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INDUSTRIES
GROUP**

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Reference 1: Numerical Targets by Domain

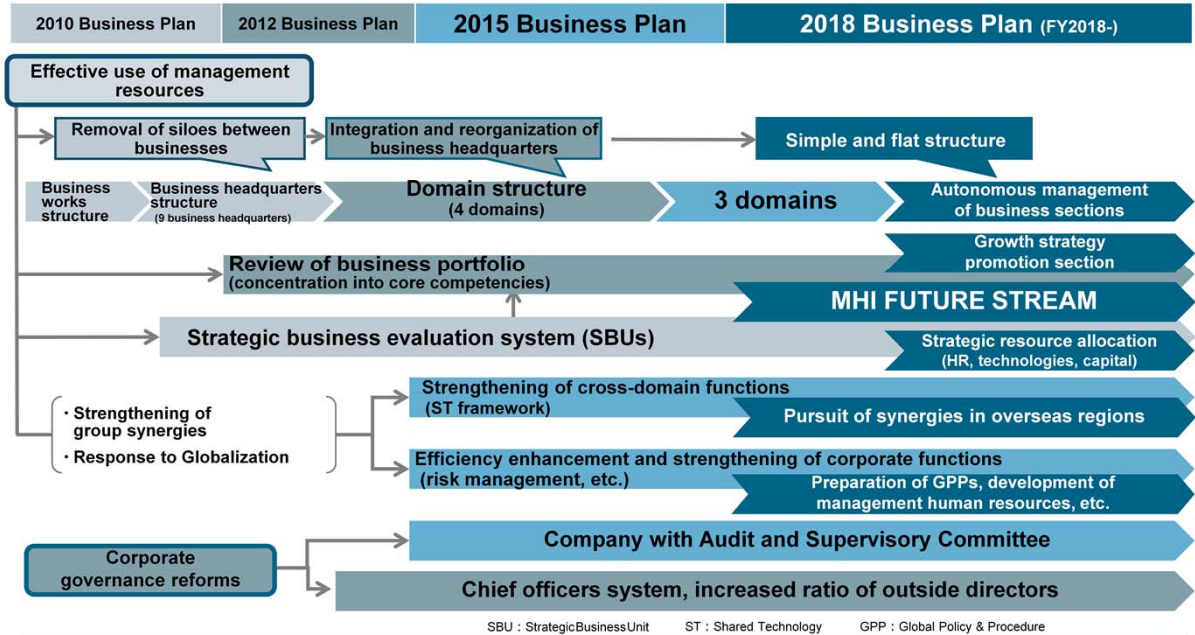


(Billion yen)

Domain	Orders Received			Revenue			Profit from business activities		
	FY2018 Actual	FY2019 Forecast	FY2020 Target	FY2018 Actual	FY2019 Forecast	FY2020 Target	FY2018 Actual	FY2019 Forecast	FY2020 Target
Power Systems	1,426.5	1,600.0	1,800.0	1,525.1	1,650.0	1,900.0	132.8	140.0	190.0
Industry & Infrastructure	1,852.0	2,000.0	2,100.0	1,907.8	1,950.0	2,000.0	70.1	110.0	160.0
Aircraft, Defense & Space	610.6	700.0	700.0	677.5	700.0	720.0	-37.4	-20.0	0.0
Other (Including non-organic)	73.3	100.0	500.0	71.6	70.0	500.0	35.9	5.0	15.0
Eliminations or Corporate	-109.1	-100.0	-100.0	-103.8	-70.0	-120.0	-14.8	-15.0	-25.0
Total	3,853.4	4,300.0	5,000.0	4,078.3	4,300.0	5,000.0	186.7	220.0	340.0

Reference 2: From Structure Reforms to Global Group Management

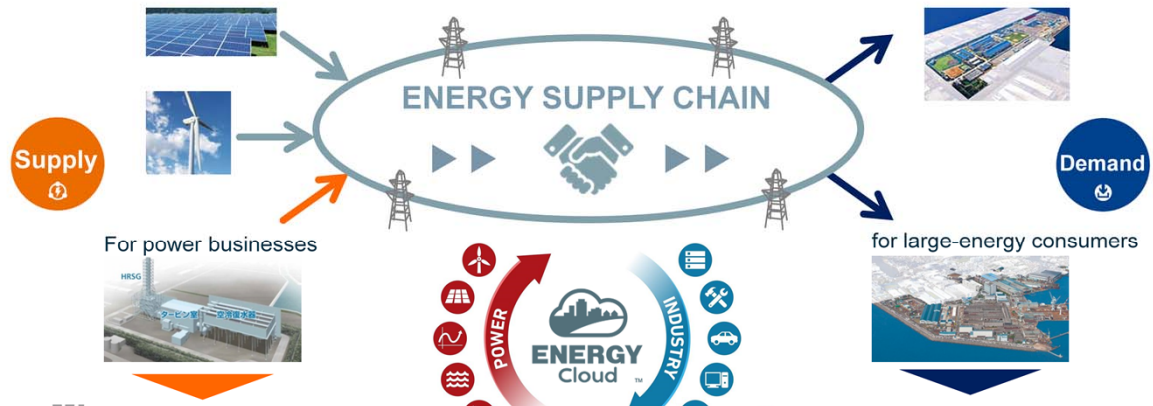
Entrench and evolve the achievements of business structure reforms implemented in 2015 Medium-Term Business Plan and before, and aim to build structure to realize global growth



Reference 3: ENERGY CLOUD™ and MHPS-TOMONI™



- **ENERGY CLOUD™** : Energy solutions for large energy consumers
- **MHPS-TOMONI™** : Energy solutions for power businesses including equipment supply and services



MITSUBISHI HITACHI POWER SYSTEMS
MHPS-TOMONI™

- Operational improvement
- Performance improvement
- O&M optimization

MITSUBISHI HEAVY INDUSTRIES
ENERGY CLOUD™

- Support for energy infrastructure and O&M
- EMS / total optimization system
- predictive diagnosis, preventive maintenance

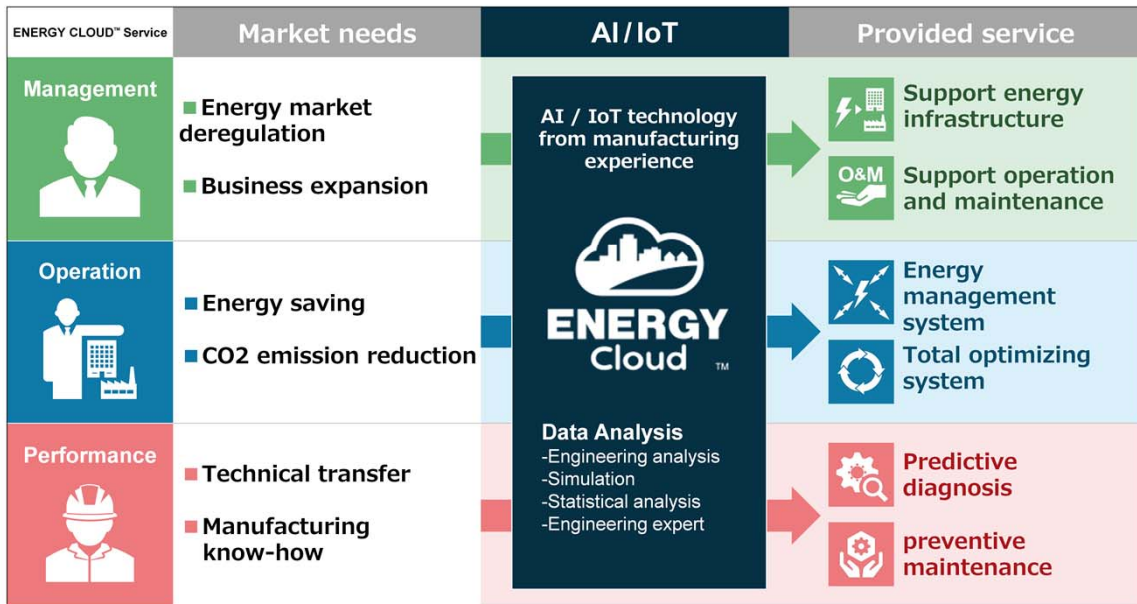
*MHPS-TOMONI™ and related logomarks are registered trademarks of Mitsubishi Hitachi Power Systems Ltd.

O&M: Operation and Maintenance EMS: Energy Management System

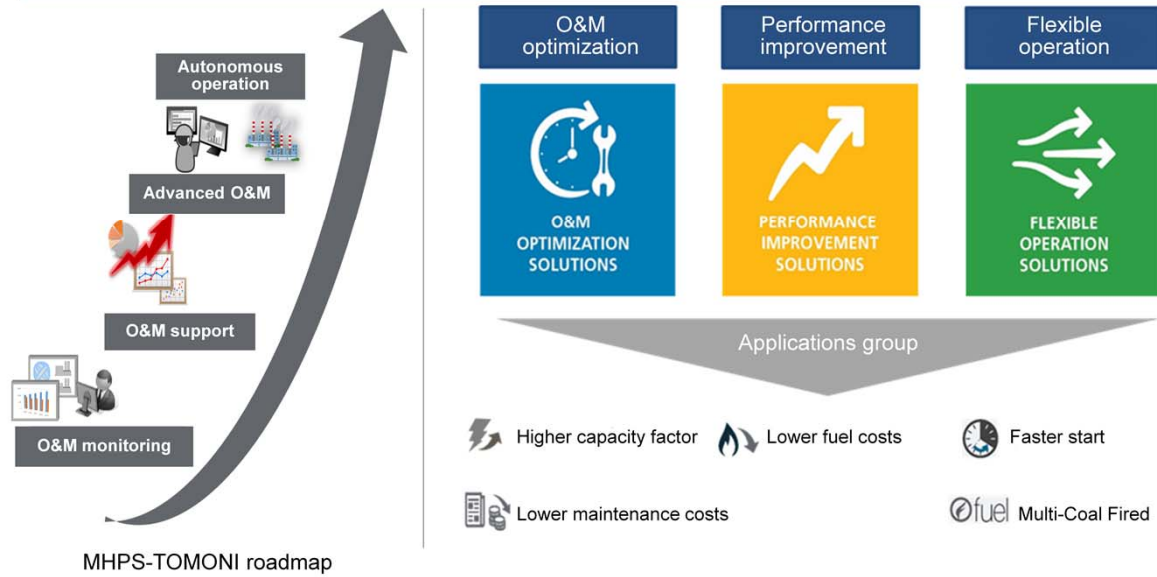
Reference 4: Map of Provided Service about ENERGY CLOUD™



- Take advantage of AI/IoT technology from manufacturing experience
- Provide solutions for energy consumers' issues in production and energy




- Apply latest ICT and AI Technology to Expand MHPS-TOMONI capabilities
- Create customer value through: efficiency improvement, CO2 reduction, flexibility to partner with intermittent renewable generation



Social changes Demands to reduce CO₂ emissions

- ✓ Supply side: make renewables a core power source
- ✓ Demand side: increasing demand for electrification, accompanied by rising power demand

1) Electricity market (kWh)

- ✓ **Steam power:**
development of services menu contributing to emissions reduction
- ✓ **GTCC:**
market share increase through efficiency enhancement, operability improvement, hydrogen-powered systems, etc.
- ✓ **Thermal digitalization services**
- Operability/performance enhance
- Strengthen O&M business etc. 
- ✓ **Nuclear:**
contribution to low-carbon society and supply stability through continuous efforts to improve safety
- ✓ **Renewable:**
Strengthening of offshore wind power, etc.



2) Regulated market (ΔkW)

- ✓ **Quick-start gas turbines**
- ✓ **Large-scale energy storage systems**
(storage batteries, hydrogen systems)

3) Carbon cycle

- ✓ **Analysis of economic viability, promotion of CCS & CCU business**
CCS: Carbon dioxide Capture and Storage CCU: Carbon dioxide Capture and Utilization

4) Demand market

- ✓ **Electrification: strengthen key components**
- ✓ **AI, digitalization: strengthen solutions toward maximizing customers' asset values through energy management, etc.**



- Pursue projects outside conventional business framework, with focus on overseas regions
- Making use of broad business areas, raise level of large-scale project discussions from the early stage, taking a comprehensive approach
- Proactively undertake business investments, O&M, etc.

Example 1: Western Sydney urban development

- To distribute urban functions, the Government of New South Wales is planning to create multiple Central Business Districts in the Greater Sydney Area.
- On October 15, 2018 an MOU with the New South Wales Government focused on MHI Group providing its high-quality infrastructure solutions.



- Exploratory work is underway to attract similar development projects throughout the Indo-Pacific region.

AP: Asia Pacific MOU: Memorandum of Understanding

Example 2: U.S. renewable energy business development venture

- MHPS launched the Oriden venture to develop renewable energy business in Pittsburgh, PA (U.S.).
- Oriden will undertake business development of renewable energy distributed power source projects mainly using solar power and storage systems.

Example 3: Expansion of servicing operations in the AP region

- In April 2019 a Service Strategy Group was established at MHI-AP to support servicing operations in all SBUs in the AP region.
- Unification of local information, IT promotion, sharing of resources and best practices, etc. are underway.

Promotion of ESG management with focus on environment, social and governance aspects

Selected for inclusion in the DJSI Asia-Pacific Index and four ESG investment indices adopting GPIF



2018 Constituent
MSCI Japan Empowering
Women Index (WIN)



2018 Constituent
MSCI Japan ESG
Select Leaders Index



FTSE Blossom
Japan



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Examples of recent ESG initiatives

Environment (E)	Social (S)	Governance (G)
<p>■ Contributions through products</p> <ul style="list-style-type: none"> - Refrigeration condensing units using CO₂, a natural refrigerant - Enhanced fuel efficiency and reduced CO₂ emissions through development of energy efficient hull form - World's first application of rectangular shaped SOx scrubber tower on ship for maximum space utilization <p>Products selected to receive Best Innovation 2018 "Best Environmental Product Awards"</p> <p>■ Environmental load reduced through business process reform</p> <ul style="list-style-type: none"> - Established MHI Group Long-Term Environmental Target (2030) and Fourth MHI Group Environmental Targets (2020) - Reduced environmental load through introduction of one of ASEAN region's largest solar power generation facilities <p>■ Biodiversity protection activities</p> <ul style="list-style-type: none"> - Tanegashima Loggerhead Sea Turtle Survey 	<p>■ Social contribution activities</p> <ul style="list-style-type: none"> - Tanegashima Aerospace Classroom[®]; science classes nationwide - Sports classes by Urawa Reds, Sagamihara DynaBoars, etc. - Support of recovery from Great East Japan Earthquake <p>■ Promotion of women's empowerment</p> <ul style="list-style-type: none"> - Expanded work/life balance support systems (child rearing / family care) - Maintained high level of workers taking child-rearing leave returning to their jobs - Operation of in-house nursery schools (Nagasaki/Yokohama) - Raised percentage of females in management positions - Appointment of female executive officers <p>■ Working style reforms / corporate culture reforms</p> <ul style="list-style-type: none"> - Conducted employee awareness survey - Initiatives to improve productivity (teleworking, etc.) <p>■ Securing / developing global human resources</p> <ul style="list-style-type: none"> - Developed national staff overseas - System for assigning young employees abroad <p>■ Carrying on "monozukuri" skills</p> <ul style="list-style-type: none"> - Passing on skills ensured through educational programs 	<p>■ Corporate governance</p> <p>2015</p> <ul style="list-style-type: none"> - Transition to company with an Audit and Supervisory Committee <p>2016</p> <ul style="list-style-type: none"> - Increased ratio of outside directors (up to 45%) - Established officers' Nomination and Remuneration Meetings - Evaluated effectiveness of Board of Directors meetings <p>■ Business risk management</p> <ul style="list-style-type: none"> - Establishment, implementation and observance of Business Risk Management Charter - Conducting CEO-headed Business Risk Management Committee <p>■ Compliance</p> <ul style="list-style-type: none"> - Establishment of MHI Group Global Code of Conduct, and implementation of penetration measures - Establishment of Compliance Promotion Global Policy

Reference 9: Actions for SDGs through Business Activities

SUSTAINABLE DEVELOPMENT GOALS



- High-efficiency gas engine power plants
- Hydrogen gas turbines
- Aero-derivative gas turbines
- Nuclear power plants
- Solid oxide fuel cells



- Centrifugal chiller
- Heat pump
- Residential & commercial use air-conditioners
- Refrigeration condensing units using CO₂ refrigerant
- Commercial aircraft
- New transportation systems

- Offshore wind turbines
- Organic Rankine cycle
- Geothermal power systems
- Waste to energy plants
- Flue gas desulfurization and denitrification systems
- "Dokodemo Door®" railway platform system accommodating multiple door configurations
- Intelligent transport system
- Turbochargers for gas engines
- Electric compressors
- Ultra-compact range extenders for EVs
- Barrier-free passenger boarding bridges
- Paper converting machinery (Box making machines)



- Fertilizer plants
- Refrigeration units for trucks and trailers
- Agricultural machinery
- Food and packaging machinery



- Seawater desalination plants
- Sludge treatment systems
- Electrochlorination system



- Gear grinding machine
- Electric forklift trucks
- Automated guided forklift trucks
- Launch services



- CO₂ capture plants/Enhanced oil recovery (CCS/EOR)
- ENERGY CLOUD™
- MHPS TOMONI™



- SOx scrubber system for marine use
- Oil recovery ships
- Ocean research vessels
- Manned deep submergence research vehicle



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