

# Yokogawa IR Day 2021

~ Contributing to Energy Transformation (EX)  
for a sustainable society ~

Vice President  
Energy & Sustainability Business Headquarters,  
Global Sales Headquarters

**Koji Nakaoka**

December 3, 2021

Securities Code: 6841  
Yokogawa Electric Corporation

# Self-introduction

Vice President, Energy & Sustainability Business Headquarters,  
Global Sales Headquarters

## Koji Nakaoka



June. 1990	Joined the Company
June. 2005	Head of Major Project Sales Department of Yokogawa Engineering Asia Pte. Ltd.
January. 2008	Chief Representative of Yokogawa United Kingdom Ltd.
November. 2010	General Manager of Market Development Department, International Business Headquarters
April. 2015	General Manager of Marine Upstream Department, Global Business Headquarters
April. 2017	Vice President, Head of Global Sales and Industrial Marketing Headquarters
April. 2021	Vice President, Head of Global Sales Headquarters, Head of Energy & Sustainability Business Headquarters (present)

# Agenda

## 1. Business outline

- Vision, Business Segments, Background, Issues and Future Direction  
Business domain
- Environmental Recognition ---3C analysis
- AG2023 Targets

## 2. Business strategy

- Overall policy
- Four key measures
- Initiatives in the Hydrogen business

# 1. Business outline





Three goals

## AG2023

### Energy & Sustainability

Support safe and optimal operations in a diverse range of energy sectors, spanning the entire value chain of production, supply, use, disposal, and recycling.

## Energy & Sustainability Business ( 2021 - 2030 )

**With the clean energy generated by our technology, we contribute to well-being and quality life of all.**

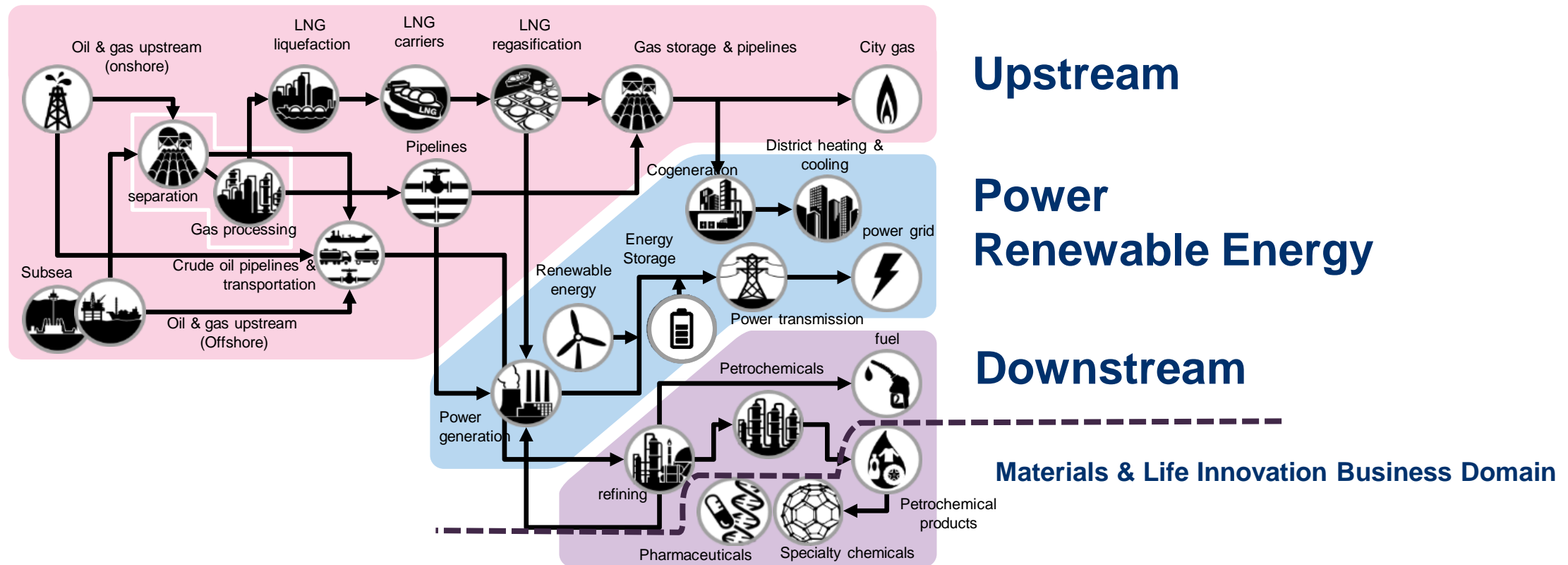
Over the years, we have established technologies in the fields of measurement, control, and information in the industrial sector. Based on this trust, we will work closely with our stakeholders to co-create and accelerate the transformation to clean energy sources.

### Energy & Sustainability



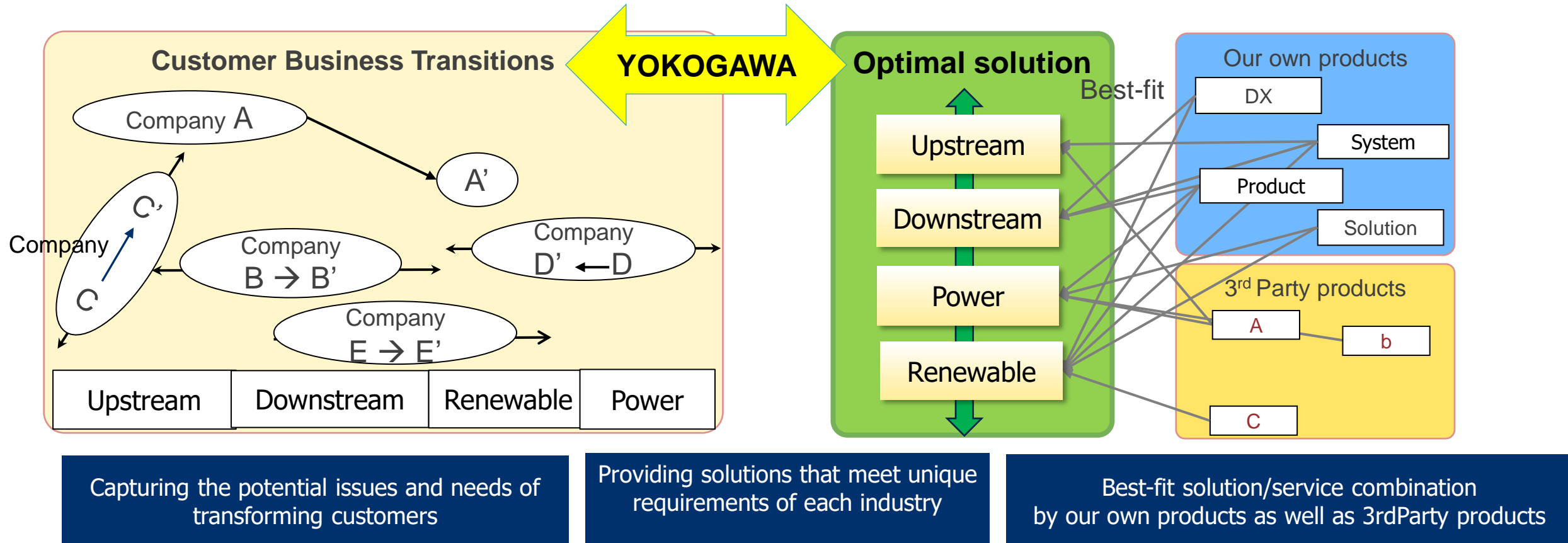
# Business domain

Our business domain encompasses the entire energy supply chain, from the “drilling” of oil and gas to the delivery of “city gas,” the generation of electricity and renewable energy, and the optimal control of power transmission and distribution networks.








# Providing additional value per customer/industry

We capture the changing needs and trends of customers and industries, and realize optimal solutions using our own products as well as 3<sup>rd</sup> Party products, and M&A.



# 3C analysis of focus industries

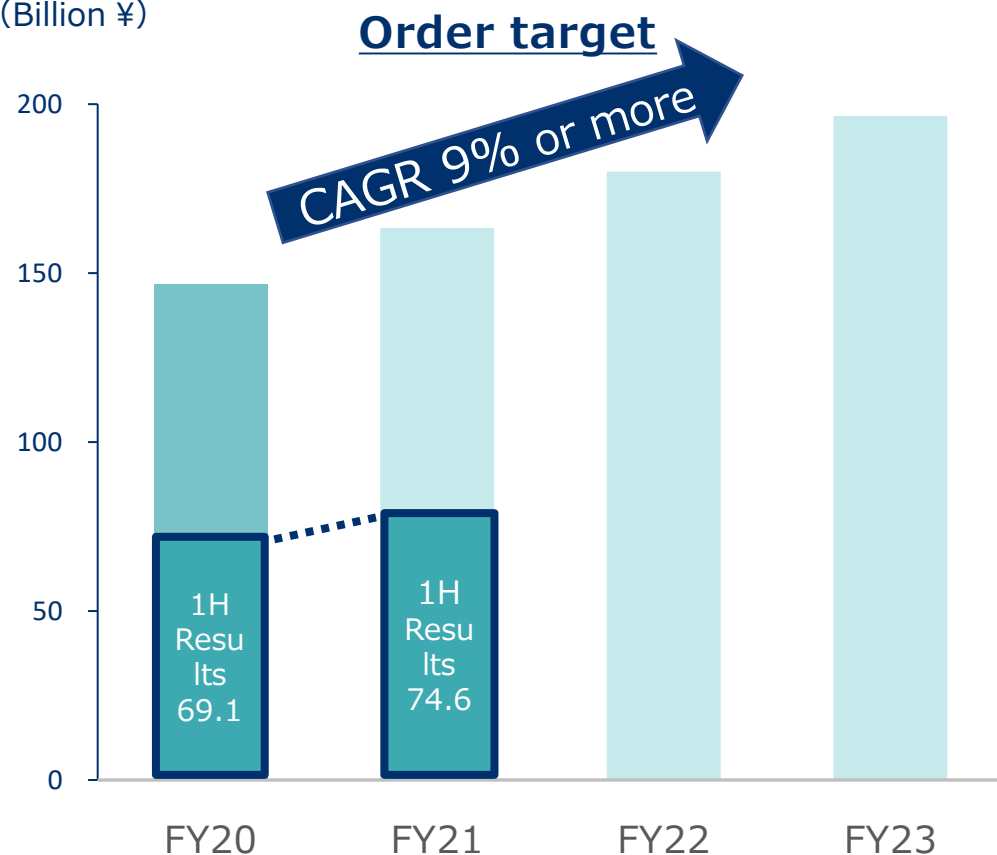
	Upstream / Downstream	Renewable Energy
<b>Customer</b>	<ul style="list-style-type: none"> <li>Increased acquisition and divestiture of businesses in conjunction with energy transitions.</li> <li>Consortia for Hydrogen, CCUS etc. Seeking a "profitable" model.</li> <li>Investment in DX for more efficient, unmanned, and remote operations.</li> </ul>  	<ul style="list-style-type: none"> <li>Diversification of renewable energy. Different focus applications in each region and customer.</li> <li>Many companies are entering the market with unstoppable technology innovation. Rapid decline of energy prices per kW.</li> </ul>   
<b>Yokogawa</b>	<ul style="list-style-type: none"> <li>◎ A rich installation and a life-long relationship with customers after the initial delivery. (Number of maintenance contracted sites: 5,254/FY20)</li> <li>◎ Simultaneous possession of operational improvement consulting capabilities and solutions to realize them.</li> <li>◎ Integration capability for large complex projects that include 3rdparty solutions.</li> <li>△ Efficiency through global standardization.</li> </ul>	<ul style="list-style-type: none"> <li>◎ Experienced in Geothermal, Waste to Energy, Biomass.</li> <li>◎ Proven track record of optimal energy management in Japan market.</li> <li>△ Lack of Power Transmission and Distribution capability.</li> </ul>
<b>Competitor</b>	<ul style="list-style-type: none"> <li>Fierce price competition, including local vendors.</li> <li>Enhance portfolio through aggressive M&amp;A.</li> </ul>	<ul style="list-style-type: none"> <li>Entering players from IT segment and Local integrators.</li> <li>Earlier entry to energy management systems (EMS).</li> </ul>
<b>Key strategies</b>	<ul style="list-style-type: none"> <li>Provide "Ready-to-use" solutions through PoC with customers.</li> <li>Establish steady revenue business model through large installed base.</li> <li>Strengthen solutions throughout the value chain through collaboration and alliances</li> <li>Strengthen initiatives for CCS, CCUS, and Hydrogen</li> <li>Expand the unique solution development capabilities in overseas offices and the global deployment of best practices.</li> </ul>	<ul style="list-style-type: none"> <li>Provide "Ready-to-use" solutions through PoC with customers.</li> <li>Strengthen proposal capabilities and expand customer coverage through M&amp;A, Collaboration and capital participation.</li> <li>Enhance energy transition business by entering the MGC/DERMS.</li> </ul>



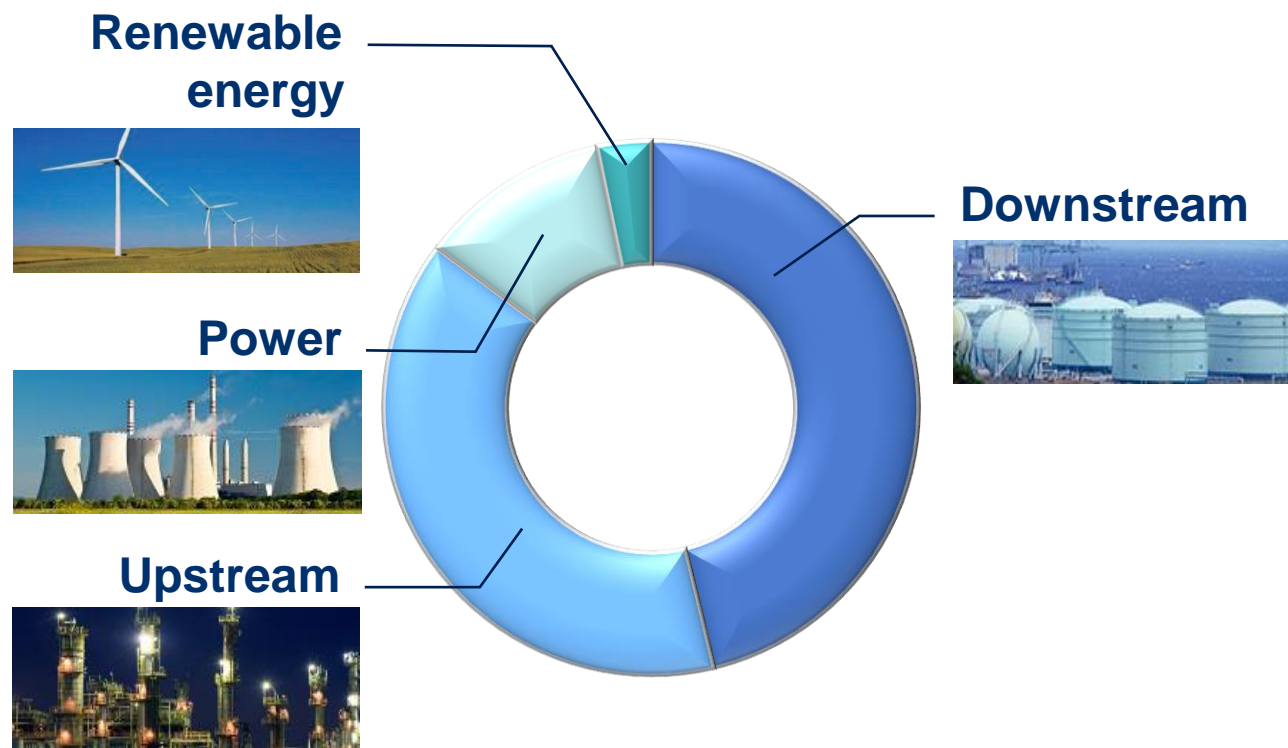
# Energy & Sustainability business targets (Orders)

Through “Co-creation” with our customers, we will respond to diversifying energy demands.  
Contribute to optimal operation of the entire value chain.

(Billion ¥)



**Industry split (FY20)**



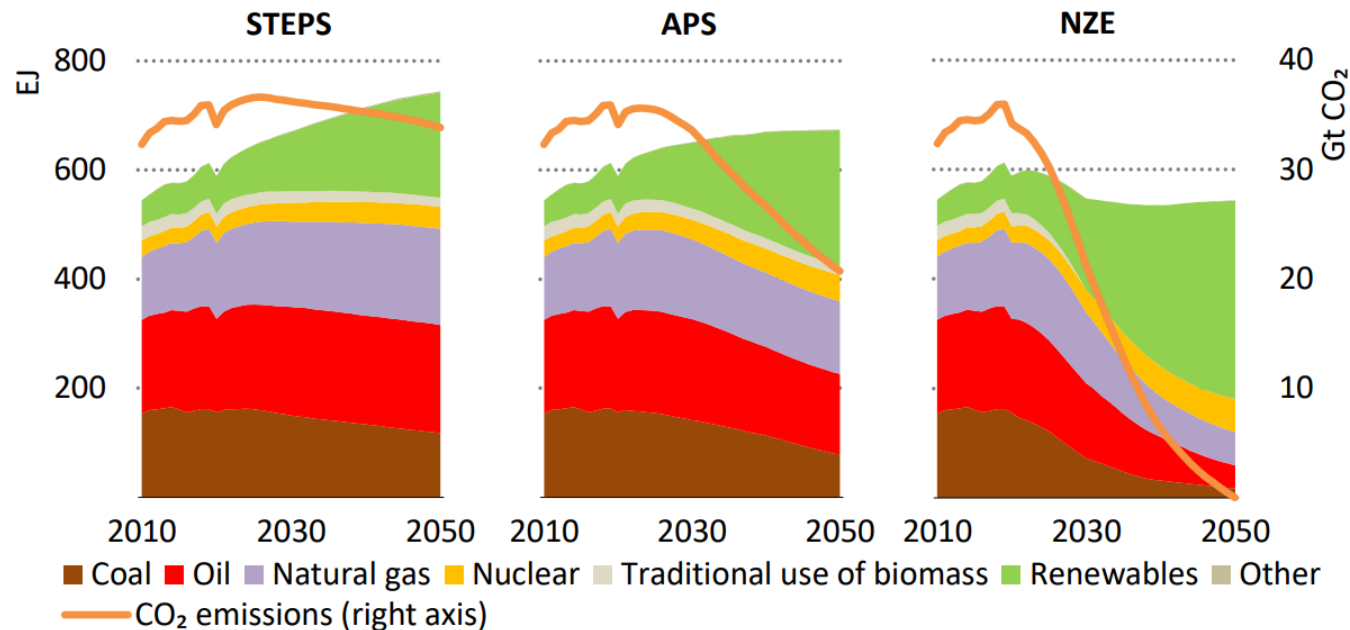
## 2. Business strategy

# Overall Policy : Realizing a sustainable society by contributing to EX\*.

\* EX= Energy Transformation

Oil & Gas customers are at a major turning point in the global trend toward decarbonization, a trend further accelerated by CV-19 outbreak, and are investing heavily in DX to maximize the use of existing assets and in environmentally friendly technologies such as hydrogen and CCUS. YOKOGAWA is committed to contributing to the transformation of your business by leveraging our deep domain knowledge of your industry.

**Figure 4.1** ▶ Total primary energy supply by fuel and scenario



IEA. All rights reserved.

STEPS: the Stated Policies Scenario  
APS: the Announced Pledges Scenario  
NZE: the Net Zero Emissions by 2050 Scenario

Source: World Energy Outlook 2021

# Overall Policy : Continue to focus on Oil & Gas in view of strong long-term demand

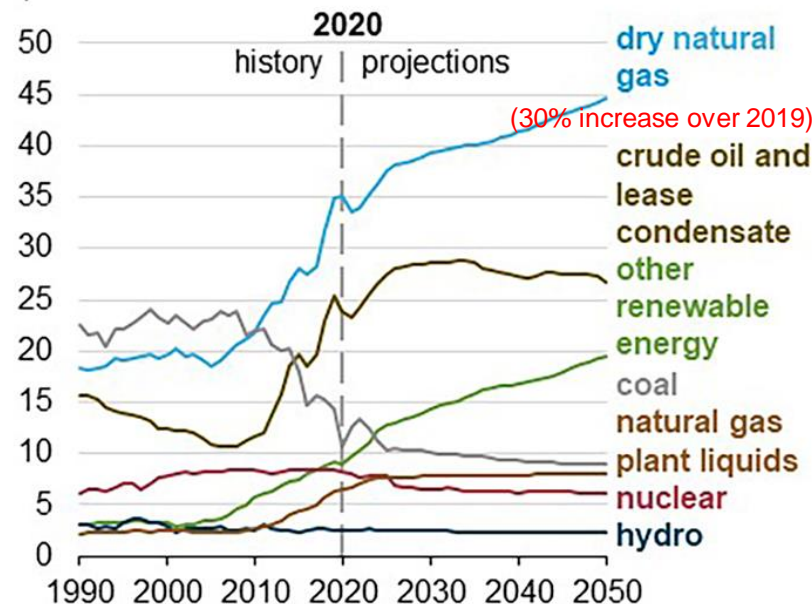
Coal will be significantly reduced towards 2050. Oil production and consumption will remain at the same or more as pre-Covid19, and Gas will continue to grow. Further, we expect more investment will be made for Carbon Neutral (Blue Hydrogen, Blue Ammonia, CCUS, etc.) and in improving plant efficiency.

## Energy Production and Consumption

### Energy production by source

AEO2021 Reference case

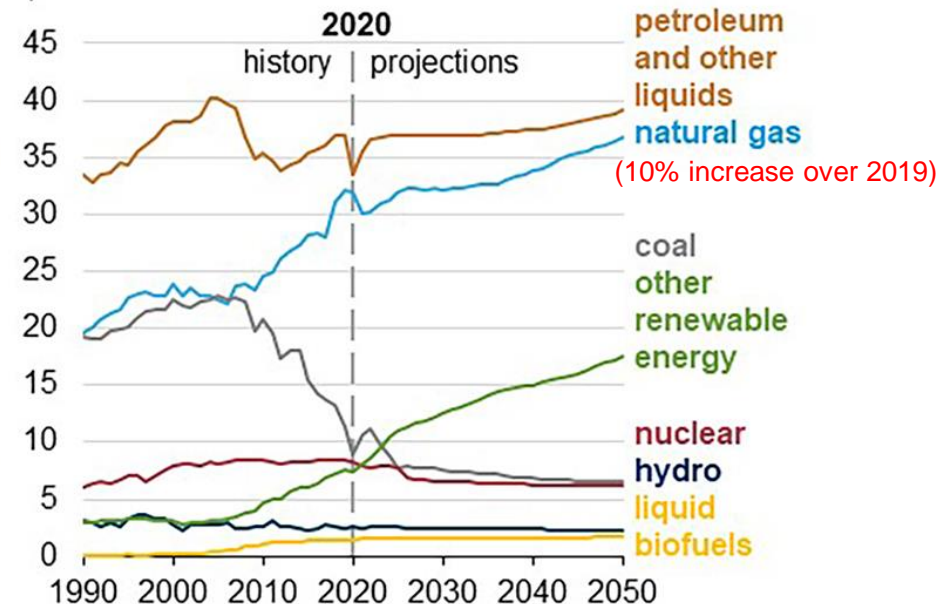
quadrillion British thermal units



### Energy consumption by fuel

AEO2021 Reference case

quadrillion British thermal units



Source: U.S. Energy Information Administration, Annual Energy Outlook 2021 (AEO2021)



# Energy & Sustainability : Four key initiatives

## 1) “Co-creation” with customers

- Provide solutions to improve profitability through "Co-creation" based on long-term relationships of trust, which is our strength.



## 2) Expand steady revenue business model

- Enhance value-added services to an extensive global installed base.
- By expanding the service scope, customers can more outsourcing to YOKOGAWA, enable fixed maintenance cost to turn into variable cost.



## 3) Strengthen proposal capabilities through collaboration and alliances

- Focus on Renewable energy business.
- Expand YOKOGAWA's solutions and customer coverage for energy transitions.



## 4) Regional and Account strategies

- Expand the unique solution development capabilities in overseas offices and the global deployment of best practices
- Re-confirm focus industries in each region with responsible overseas offices.



# 1) “Co-creation” with customers - From PoC \*to order

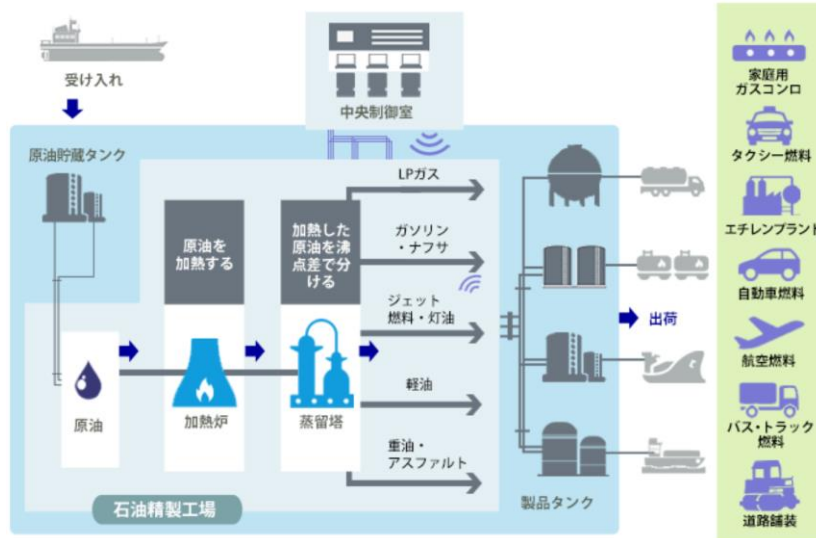
- Approximately 260 IA2IA/Smart Manufacturing Orders in FY21-1<sup>st</sup> Half.
- We are developing many PoC with customers in various regions and industries.

## RIOS Rigorous Integrated Optimization System



- Digital Twin is realized by the total solution of YOKOGAWA and KBC. Simulation of the IN-OUT process from procurement to shipping
- **Maximize profitability** by optimizing the entire production process, including the refining **supply chain**, in response to changes in demand and crude oil market prices

- Crude oil market price
- Procurement plan
- Operation Plan



- Market Conditions (Demand)

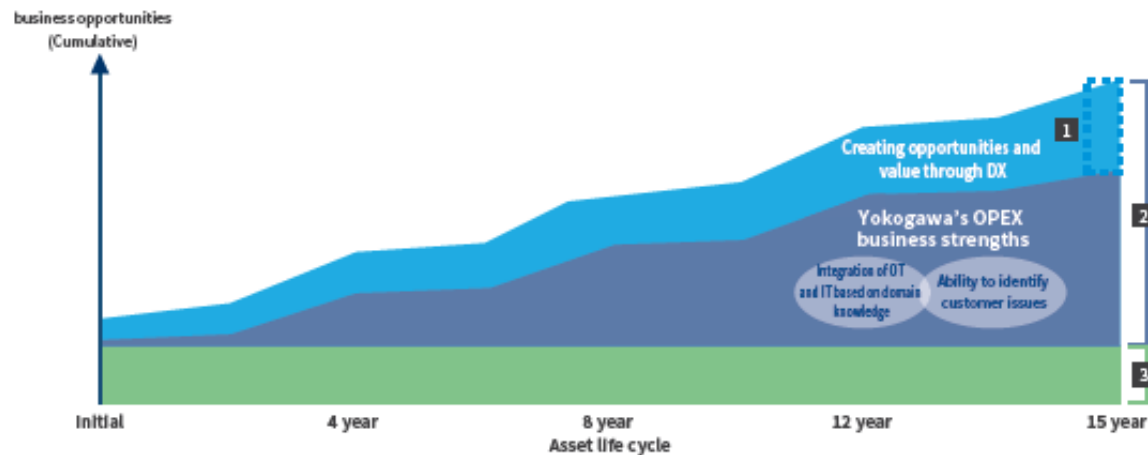
## Other PoC activities

- Unmanned Operations
- Digital twin
- DX
- OPA
- Robotics
- Sushi-Sensor
- CCUS

\*PoC : Proof of Concept

## 2) Expand steady revenue business model

Increase the number of LCA \* contracted plants by leveraging the strength of the existing installed base (FY20 contract results: 5,254 plants → FY23 target: 6,000 plants).  
Continue to achieve over 5%CAGR in the maintenance contract by value-added proposals.

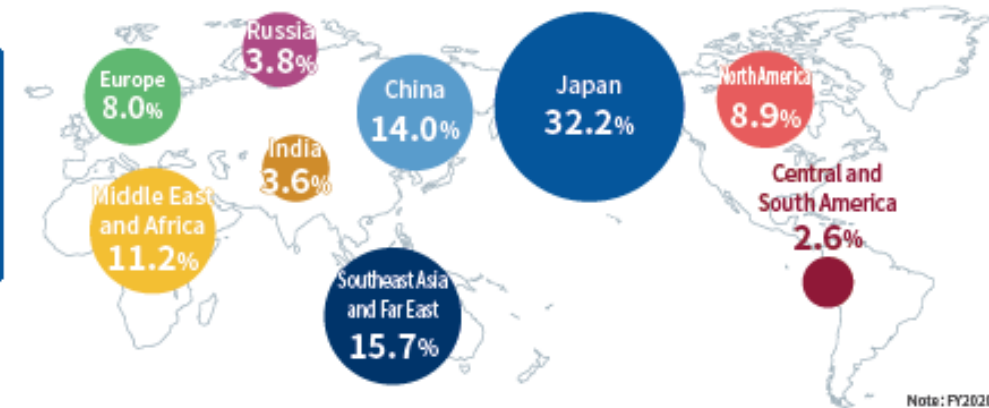


- 1 Creating opportunities and adding value through DX
- DX consulting
    - ▶ Clarification of DX maturity
    - ▶ Pursuit of DX journey
  - IA2IA/smart manufacturing solutions
    - ▶ Asset management optimization
    - ▶ Remote operation
    - ▶ Energy management optimization
    - ▶ Enhanced OT-IT Integrated security
  - SoS solutions
    - ▶ Supply chain optimization
    - ▶ Quality chain optimization
    - ▶ Energy chain optimization
    - ▶ CO<sub>2</sub> emission chain optimization
- Cloud
- IIoT
- Data Analytics
- AI/ML
- Robotics
- AR/VR

- 2 OPEX
- Consulting
  - Remote monitoring and operation
  - Instrumentation replacement
  - Lifecycle services
  - Value-added solutions
  - System upgrade
  - OT security
  - Annual maintenance contract, etc.
- 3 CAPEX
- Consulting
  - FEED, design, engineering, etc.

Achievements  
TOTAL  
40,000  
projects or more

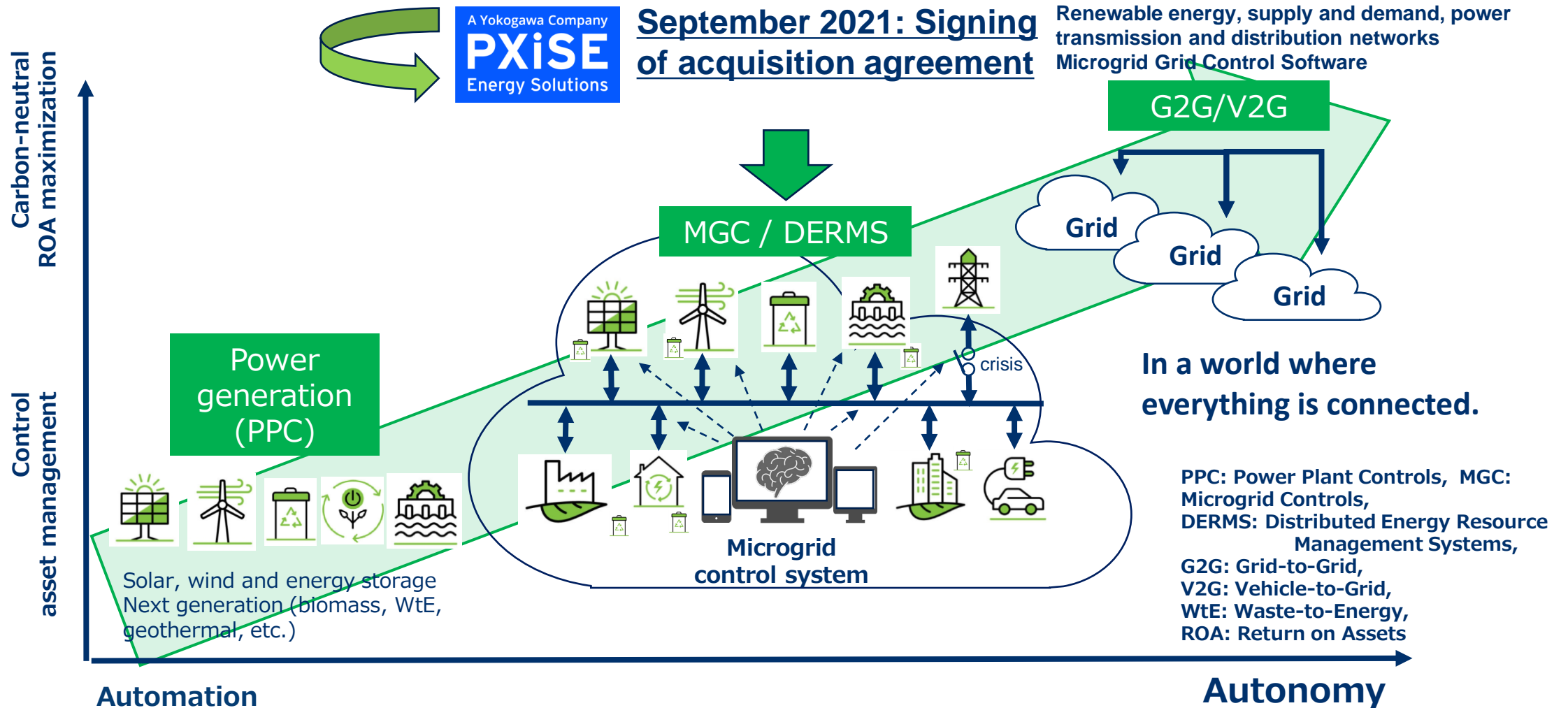
Sales ratio by region



\*LCA: Life Cycle Agreement

### 3) Strengthen proposal capabilities through collaboration and alliances

## Accelerating energy transition - Full-scale entry into MGC/DERMS



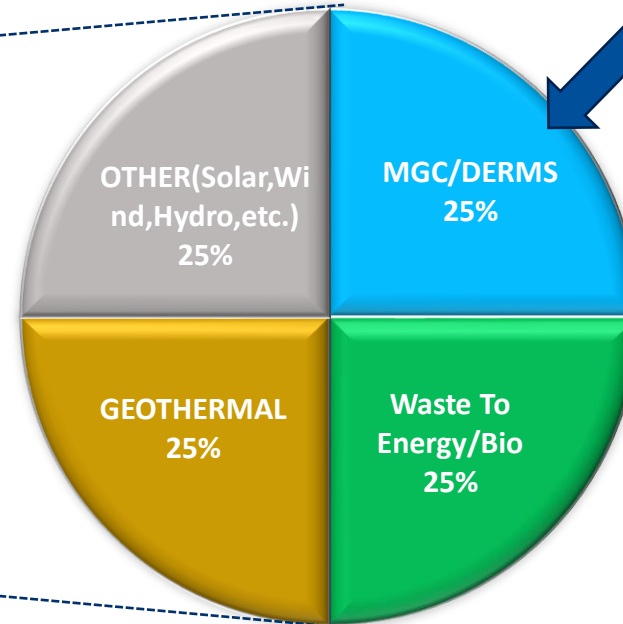
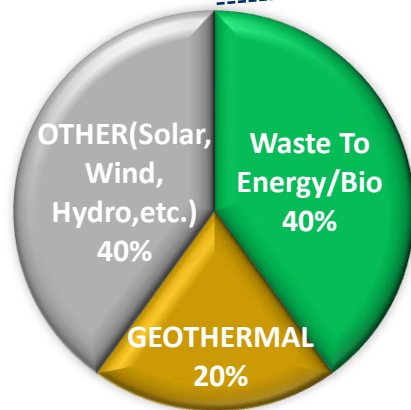


### 3) Renewable energy business growth scenario

Expanding the Renewable energy business while actively Implementing M&A and Alliances.

A Yokogawa Company  
**PXiSE**  
Energy Solutions

Order structure

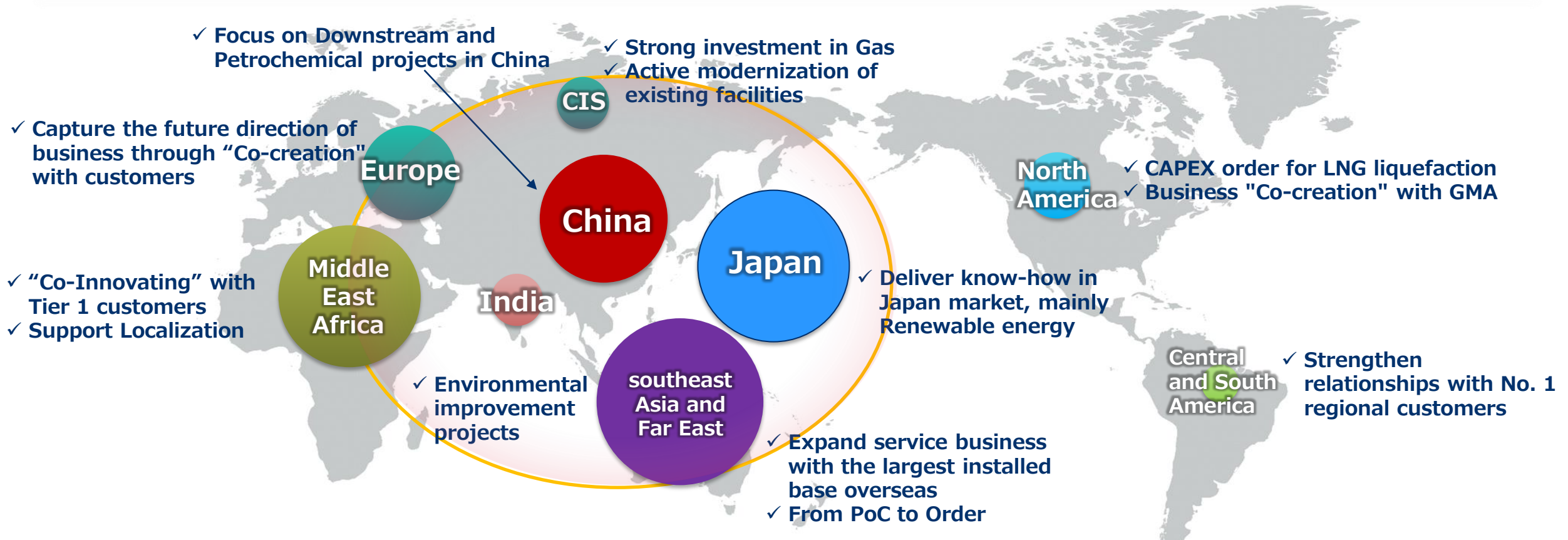


**FY20 Results: ¥3.9 billion**

**FY23 Target: To a scale of ¥10 billion**

## 4) Regional and customer strategies

Through “Co-creation”, we can respond to unique business models from region to region and customer to customer.  
Contribute to optimal operation of the entire value chain.



# Single pushbutton to autopilot entire facility

## Fully Automated Unmanned Operation (Upstream project in the Middle East)

<https://www.adipec.com/awards/awards-2021-finalists/>

### Objective

- Automate manual processes to avoid human errors and reduce risks
- Improve and enhance overall efficiency
- Data visibility across the entire enterprise for improved decision making
- Reduction in operating cost (OPEX)

### Achievement / Benefit

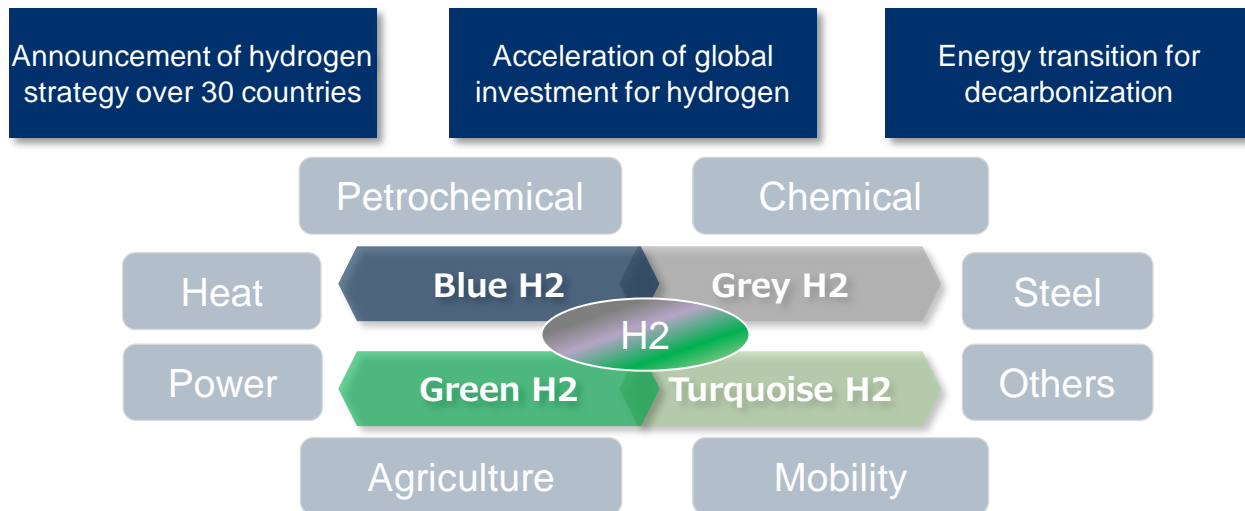
- Safe operation
- Real-time adjustment for sustained production
- Digitalization ready towards future autonomous operation (e.g. robots / drones etc.)
- Cost saving due to less down time and de-manning



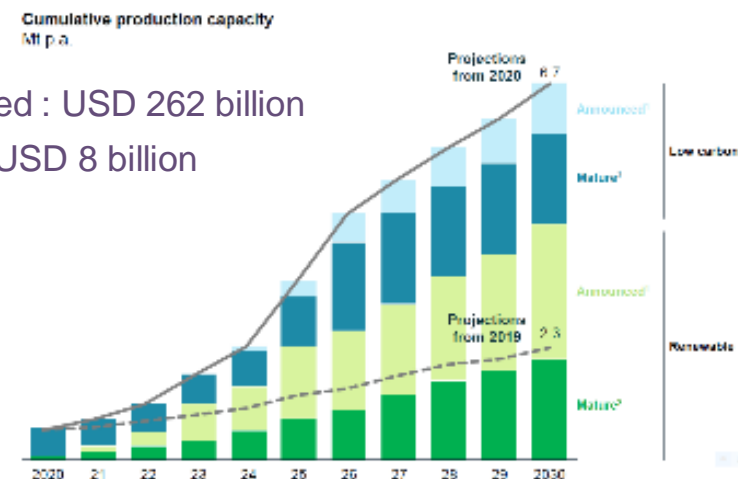
**Business potential to other Facilities / Operators / Industries**

# Reference: Initiatives for coming of “hydrogen-based society”

Looking ahead to the future “hydrogen” connects wide variety of primary energy and consumption demand.



Announced : USD 262 billion  
Mature : USD 8 billion



(Source: Hydrogen Council, Hydrogen Insight February 2021)

New effort

## Participation in demonstration project.

Experimentation of electrolyzer for largescale development (ISPT, the Netherlands)  
Demonstration of EMS toward regional energy optimization with hydrogen (NEDO, UK)

Acceleration by dedicated team

## Expansion of YOKOGAWA's hydrogen business.

Under the preparation of basic policy for the development of Yokogawa hydrogen strategy toward the future business

Existing technology

## Existing technology for ongoing hydrogen opportunity.

Promotion of current solution (system, field equipment, analyzer etc.) for hydrogen project  
Hydrogen project reference arrangement and sharing among Yokogawa

**Discovery of YOKOGAWA's value proposition for the coming “hydrogen-based society”.**



The information pertaining to our business plans and forecasts that has been provided in this presentation and at analyst meetings contains forward-looking statements that are based on our management's current knowledge and require the making of assumptions about future events.

As such, it cannot be guaranteed that these statements will not differ materially from actual results.

Yokogawa undertakes no obligation to publicly update or revise any forward-looking statements after the issue of this document except as provided for in laws and ordinances.

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The information has not been restated to reflect the revision of the initially allocated acquired costs that was decided upon finalization of the tentative accounting treatment and application of the "Partial Amendments to Accounting Standard for Tax Effect Accounting."

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# Co-innovating tomorrow™

