

# Social Infrastructure & Offshore Facilities Business Area Briefing

**IHI**

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## **IHI Corporation**

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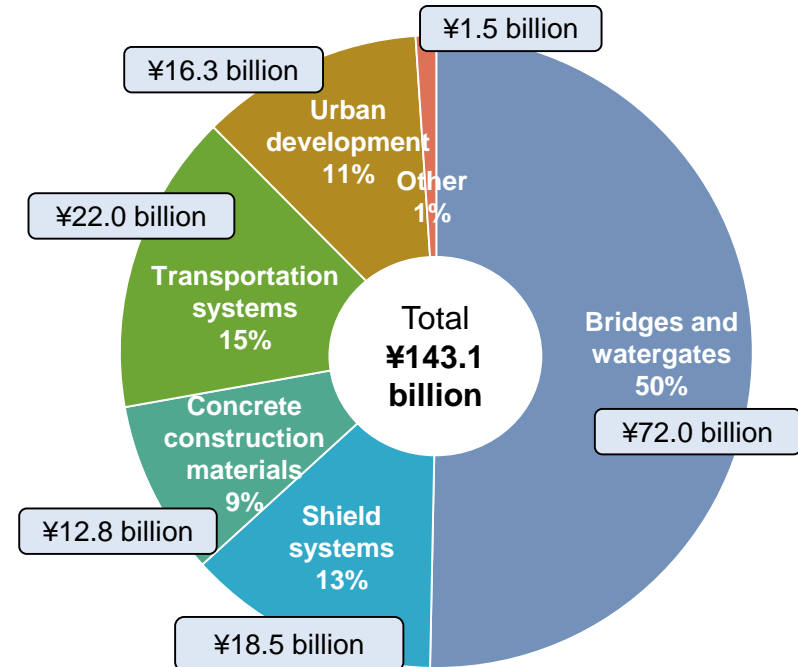
# **1. Social Infrastructure & Offshore Facilities Business Area Outline**



# 1. Social Infrastructure & Offshore Facilities Business Area Outline

Strategic Business Unit	Businesses and Products	Main Products
<b>Bridges and watergates</b>	<ul style="list-style-type: none"> <li>• Steel bridges</li> <li>• Prestressed concrete bridges</li> <li>• Watergates</li> </ul>	
<b>Shield systems</b>	<ul style="list-style-type: none"> <li>• Shield tunneling machines</li> </ul>	
<b>Concrete construction materials</b>	<ul style="list-style-type: none"> <li>• Segments</li> <li>• Engineering and construction-related businesses</li> </ul>	
<b>Transportation systems</b>	<ul style="list-style-type: none"> <li>• Railway systems</li> <li>• New transit systems</li> <li>• Snowplows</li> </ul>	
<b>Urban development</b>	<ul style="list-style-type: none"> <li>• Real estate sales and rental</li> <li>• Warehousing</li> </ul>	

## FY2018 Segment Sales



## **2. Social Infrastructure & Offshore Facilities Business Strategies Based on Group Management Strategies 2019**

- (1) Group Management Policies 2019: Social  
Infrastructure & Offshore Facilities Initiatives**
- (2) Focuses Over Three Years and Individual Business  
Strategies**

## 2. (1) Group Management Policies 2019:

### Social Infrastructure & Offshore Facilities Initiatives (1/2)

#### Direction

Contribute globally and across life cycles to materialize safe and secure social infrastructures, centered on bridges and tunnels

#### Reinforce lifecycle businesses

- Develop and expand life-cycle businesses encompassing everything from largely construction businesses to planning, operations, and maintenance, for long-term social infrastructure operations

#### Accelerate global business development

- Run businesses in line with local characteristics and provide social infrastructure that addresses local issues

#### Create social infrastructures to optimize urban environments

Seek to provide social infrastructure that helps materialize optimal urban environments for tomorrow

#### Addressing social issues

##### Build robust social infrastructure

- Develop infrastructure driving strong economic progress in emerging nations
- Tackle aging infrastructures in developed nations

##### Sustainable cities and comfortable lifestyles

- Build infrastructure systems that underpin orderly urban development
- Establish infrastructure systems to ensure clean and comfortable living for consumers using IT

- Develop infrastructure compatible with intensifying climate change and natural disasters
- Establish controlled infrastructure development, operations, maintenances, disposal, and redevelopment cycle

## 2. (1) Group Management Policies 2019:

### Social Infrastructure & Offshore Facilities Initiatives (2/2)

#### Focuses over three years

##### Strengthen business foundations

###### Enhance maintenance technology, including planning and diagnostics, and improve customer value in life cycles

- Pursue strengths in large and complex social infrastructure construction and capabilities in post-construction maintenance
- Leverage new concepts matching customer needs to shorten construction periods in more economical ways and drive inspection and diagnostics advances while comprehensively undertaking post-construction and preventive maintenance (diagnostics, maintenance prioritization, and construction), and taking other steps to expand lifecycle businesses
- Collaborate with local partners to globally provide products and services based on regional characteristics and lifecycles

##### Build a robust operational structure

###### Build lean and flexible structure to manage construction lead times and ensure that projects are as economical as possible

- Based on BIM/CIM(※), integrate data and other information on ideal construction periods and economical results, becoming a lean and flexible organization that accelerates business process reforms, notably in engineering, factories, and construction sites, shortens lead times, and enhances productivity

※BIM/CIM: Building Information Modeling/Construction Information Modeling

##### Accelerate preparations for tomorrow

###### Create social infrastructure to optimize urban environments

- Combine expertise in infrastructure life cycle businesses, centered on bridges, tunnels, and roads, and in urban development in the Toyosu district of Tokyo to build a framework for supplying social infrastructure that helps materialize optimal urban environments for the future

## 2. (2) Focuses Over Three Years and Individual Business Strategies (1/9)

### ■ Details: Strengthen business foundations and build a robust operational structure

	Bridges and watergates	Shield systems	Concrete construction materials	Transportation systems	Urban development
<b>Reinforce lifecycle businesses</b>	<ul style="list-style-type: none"> <li>✓ Develop differentiating technologies</li> <li>✓ Expand turnkey orders for corrective maintenance projects</li> <li>✓ Build preventive maintenance business model</li> </ul>	<ul style="list-style-type: none"> <li>✓ Shield machine operations</li> <li>✓ Reinforce after-sales services business</li> </ul>	<ul style="list-style-type: none"> <li>✓ Develop differentiation technologies</li> </ul>	<ul style="list-style-type: none"> <li>✓ Reinforce after-sales services business</li> <li>✓ Remote transportation maintenance</li> </ul>	<ul style="list-style-type: none"> <li>✓ Cultivate urban development business centered on Toyosu and Sunamachi area and amass development and operational expertise</li> </ul>
<b>Cultivate strengths</b>	<ul style="list-style-type: none"> <li>✓ Apply global management techniques to procurement, contracts, and risk management</li> <li>✓ Pursue BIM/CIM advances and rectify production processes</li> </ul>	<p style="text-align: center;"><b>Apply our technologies and knowhow to enhance earnings</b></p>			
		<p style="text-align: center;"><b>Roll out global best practices by more rigorously managing contracts and risks</b></p>			
		<p style="text-align: center;"><b>Pursue digital transformation</b></p>			
<b>Accelerate global development</b>	<ul style="list-style-type: none"> <li>✓ Identify partners and strengthen collaboration</li> <li>✓ Participate in concession and other businesses to drive orders and expand earnings</li> <li>✓ Bolster supply chain construction in key countries</li> </ul>	<ul style="list-style-type: none"> <li>✓ Generate synergies with Terratec to further expand businesses</li> </ul>	<p style="text-align: center;"><b>Foster collaborations in tunnel-related businesses</b></p>		
		<p style="text-align: center;"><b>Integrate management of road, tunnel, and bridge businesses</b></p>			
		<p style="text-align: center;"><b>Share and reinforce supply chain across SBUs</b></p>			



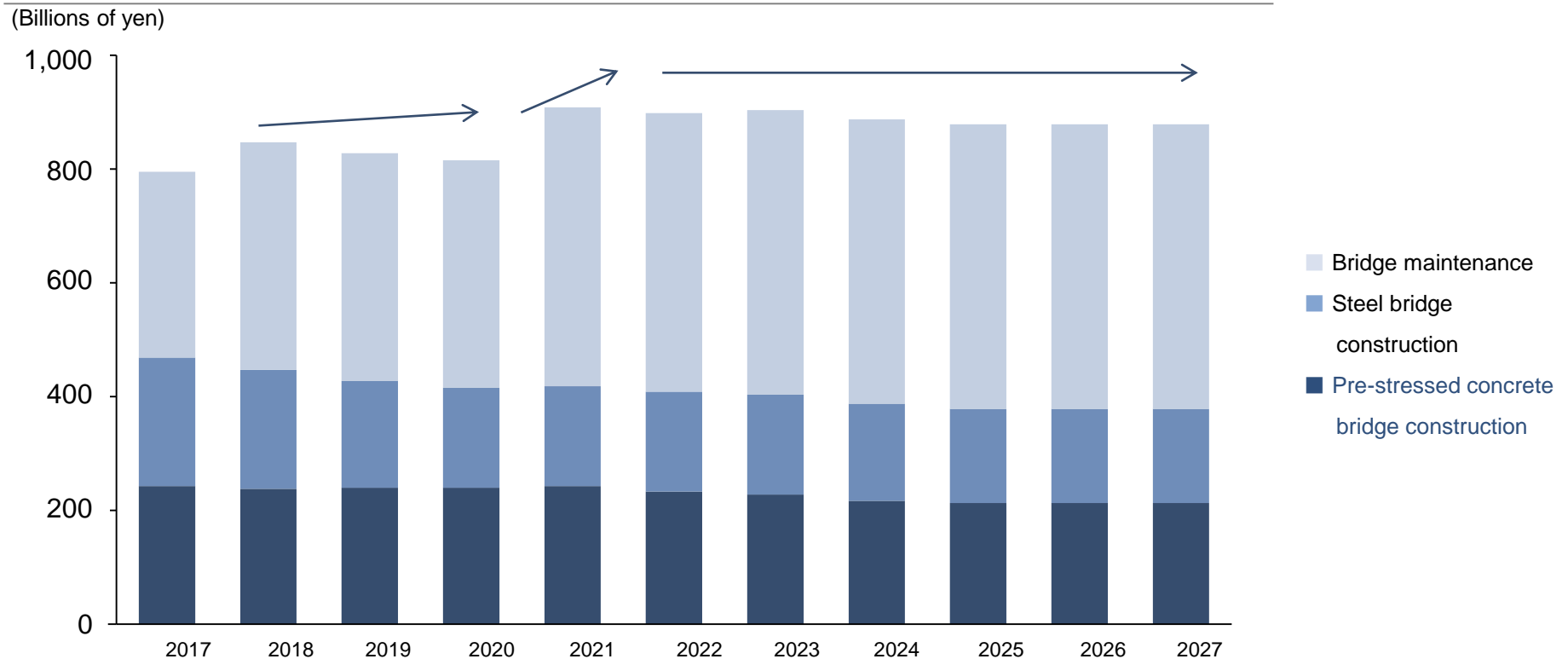
### ■ Lifecycle strategies: Bridge maintenance business

#### Domestic bridge market

- ✓ New construction trending down over long term in domestic bridge market
- ✓ Market to generally remain flat, with maintenance work increasing

#### Domestic bridge market (new construction and maintenance)

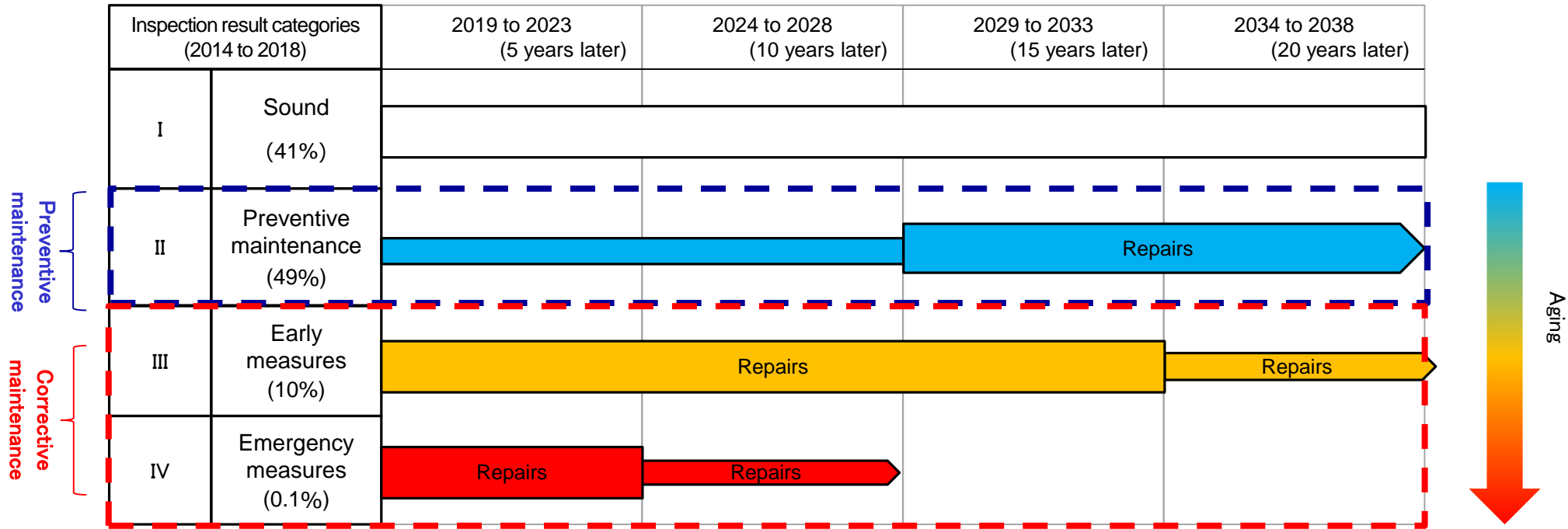
Investment forecasts for 2017 to 2027



## 2. (2) Focuses Over Three Years and Individual Business Strategies (3/9)

### ■ Lifecycle strategies: Bridge maintenance business

#### About bridge maintenance business



Note: Width of color-blocked areas show increases or decreases for bridges in each area  
 Figures in parentheses indicate the percentage of inspection number percentages

#### Basic policy for bridge lifecycle strategies

- Secure stable earnings from corrective maintenance business and expand profits from project earnings through comprehensive projects
- Construct and develop preventive maintenance business model

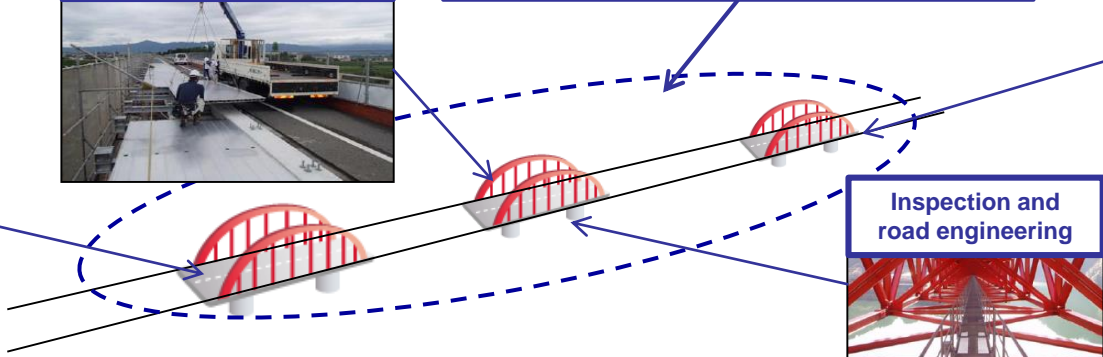
## 2. (2) Focuses Over Three Years and Individual Business Strategies (4/9)

### ■ Lifecycle strategies: Bridge maintenance business

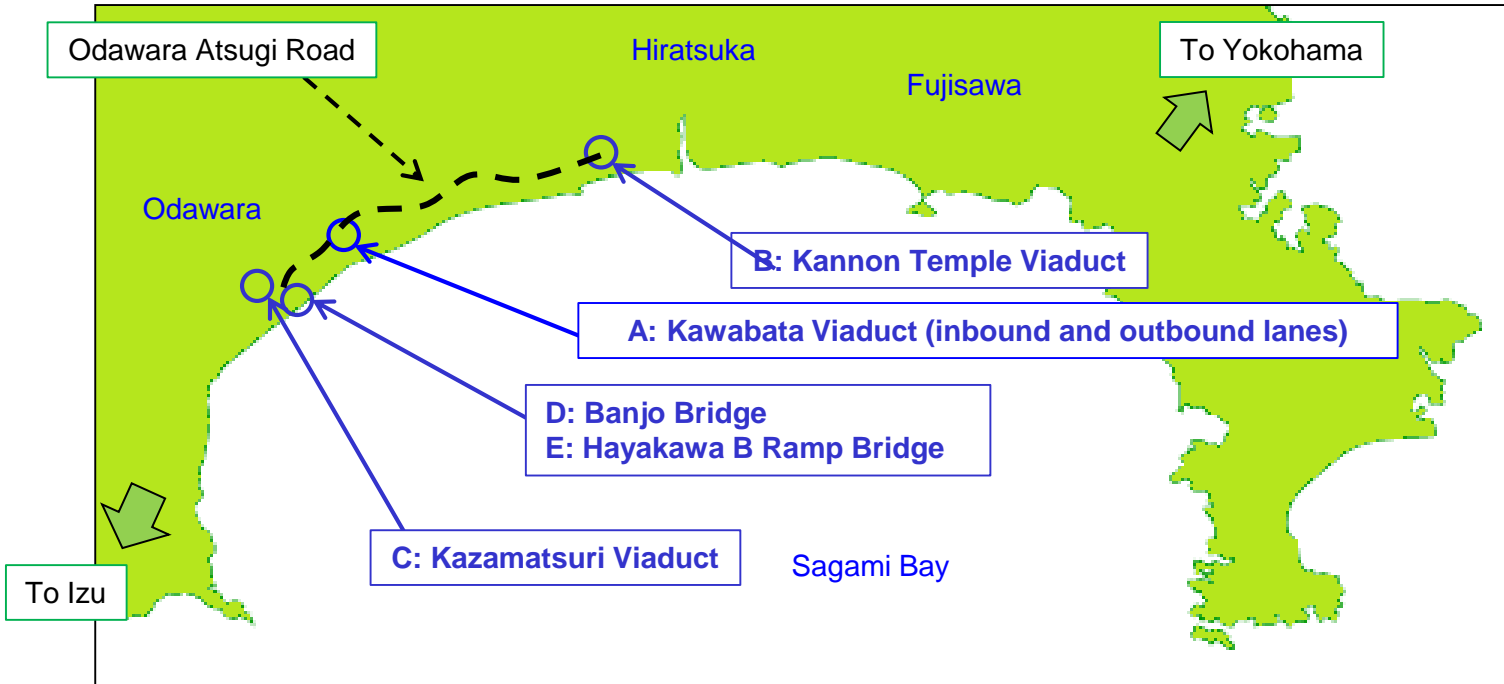
#### Corrective maintenance approach



- Covering series of bridges in area
- Projects packaging multiple tasks



#### Comprehensive post-construction maintenance order for bridges (under construction)

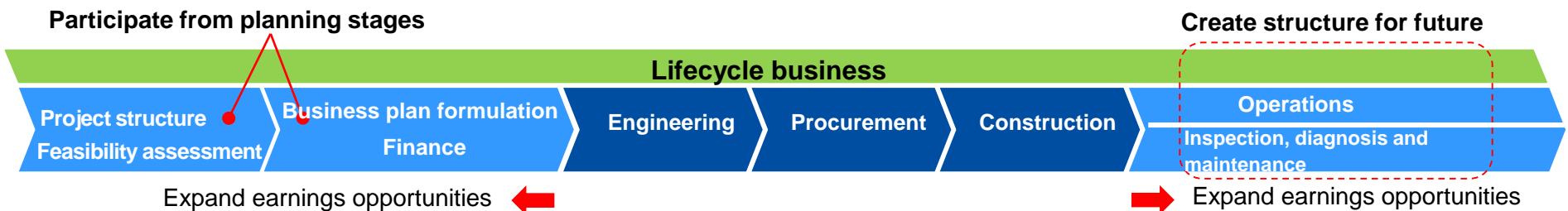
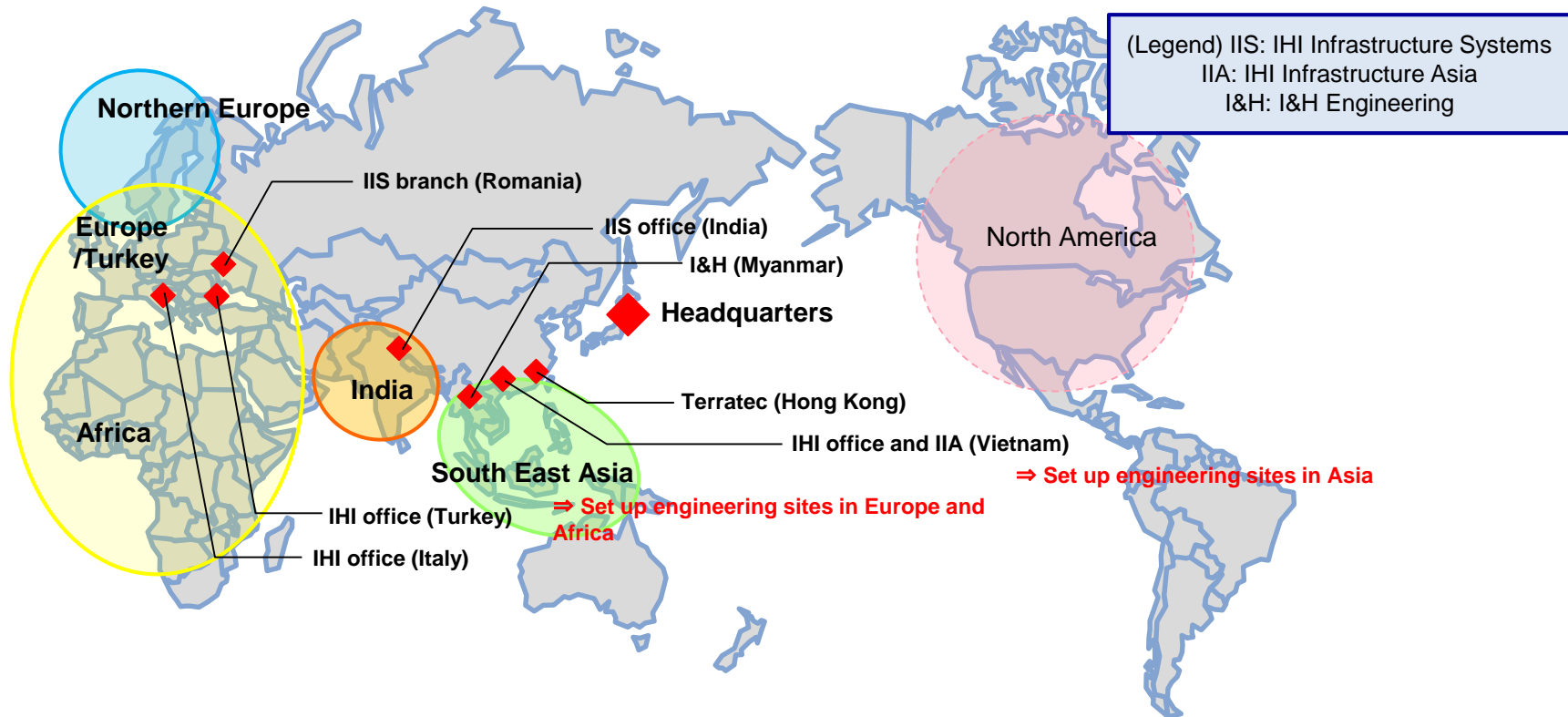


## 2. (2) Focuses Over Three Years and Individual Business Strategies (5/9)

### Global strategies

#### Global strategies basic policies

- **Build and reinforce supply chain** (including through business climate surveys and collaboration with local partners)
- **Engage in lifecycle businesses** (including concession businesses)



## 2. (2) Focuses Over Three Years and Individual Business Strategies (6/9)

### ■ Global Strategies: Bridge business

Bridge localization strategies (50 years of operations in Turkey) : Leveraging local resources and supply chains

Old Golden Horn Bridge (1974)



2nd Bosphorus Bridge (1988)



New Golden Horn Bridge (1996)



Izmit Bay Crossing Bridge (2016)



1st Bosphorus Bridge Rehabilitation Project (2019)



2nd Bosphorus Bridge Rehabilitation Project (2017)



Turkish seismic reinforcement project (2010)



## 2. (2) Focuses Over Three Years and Individual Business Strategies (7/9)

### Global strategies: Shield systems business

#### Shield systems market climate

**Japan:** Demand for large tunnel boring machines currently solid owing to such special factors as road tunnel construction in metropolitan Tokyo and construction for Chuo Shinkansen maglev line; demand expected to shrink over medium and long terms medium and long terms

**Overseas:** Market of around ¥400 billion (more than 10 times larger than Japan's), with expansion anticipated mainly in China, India, ASEAN, and Middle East

#### Shield System SBU global strategies

##### Terratec Ltd.

- Operates globally
- Can supply total systems, including shield machines and backup systems equipment
- Can handle machine operations and after-sales service
- Procures globally
- Cannot handle large and complex shield machines



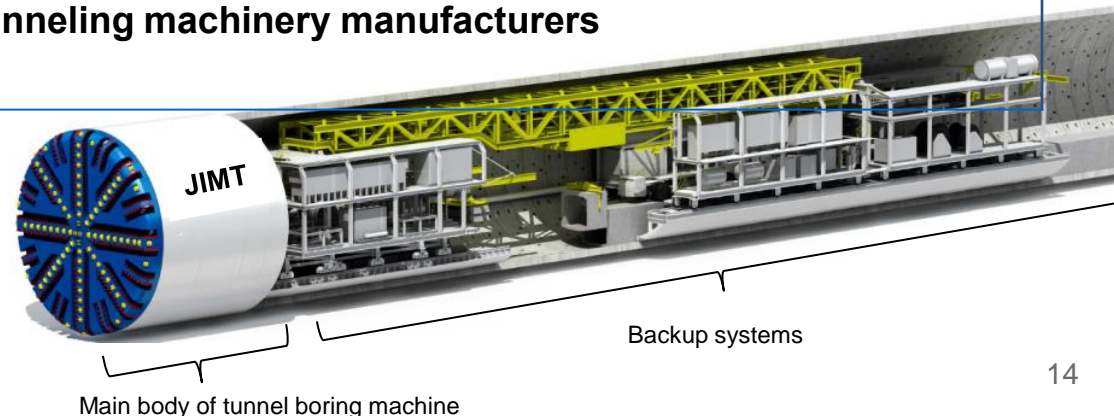
Win-Win

##### JIM Technology Corporation

- Advanced engineering capabilities with large shield machines and strong track record
- Powerful brand
- Lags in terms of total systems supply capabilities essential for overseas development (no backup systems support)
- Lagging in terms of overseas marketing and after-sales service capabilities

#### Shield systems global strategies

- Engage in large projects overseas, centered on India, Southeast Asia, and Turkey, and become among the world's top comprehensive tunneling machinery manufacturers



## 2. (2) Focuses Over Three Years and Individual Business Strategies (8/9)

### ■ Focus details: Strengthen business foundations and build a robust operational structure

#### ● Sophisticate production processes

- Develop differentiation technologies for lifecycle business and long-span bridges
- Streamline plant facilities layouts
- Rectify processes by sorting materials

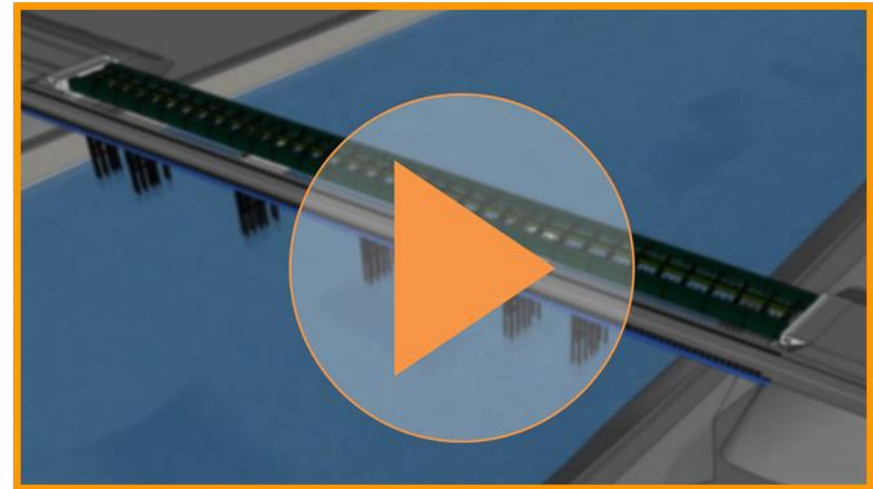


#### ● Pursue BIM/CIM advances

- Design process usage example



- Erection planning process usage example



Reduce overall lead times from orders to deliveries  
Increase profitability from new and maintenance work by enhancing productivity at works and sites

## 2. (2) Focuses Over Three Years and Individual Business Strategies (9/9)

### Focus details: Accelerate preparations for the future



**IHI Infrastructure Systems vibration control equipment**



**Urban development and city planning**

**New inter-terminal transportation systems**  
Bridge construction  
: IHI Infrastructure Systems  
Rolling stock: Niigata Transys  
O&M: IHI

**Airports (Construction and O&M)**  
IHI and partners



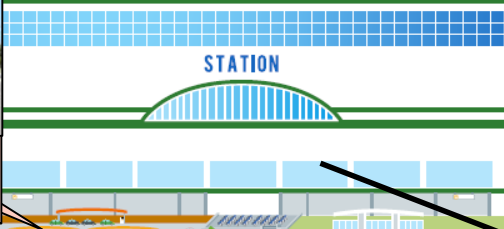
**Niigata Transys advanced transportation systems**



**IHI Infrastructure Systems watergates**



**Niigata Transys light rail transit systems**



**Stations and subways (Construction and O&M)**  
IHI Infrastructure Systems and partners

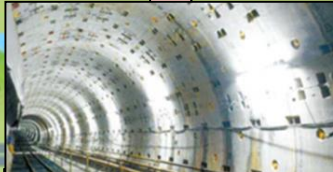


**JIM Technology tunnel boring machines and backup systems**



**IHI Infrastructure Systems bridges**

**Roads and bridges (Construction and O&M)**  
IHI Infrastructure Systems and partners



**IHI Construction Materials segments**

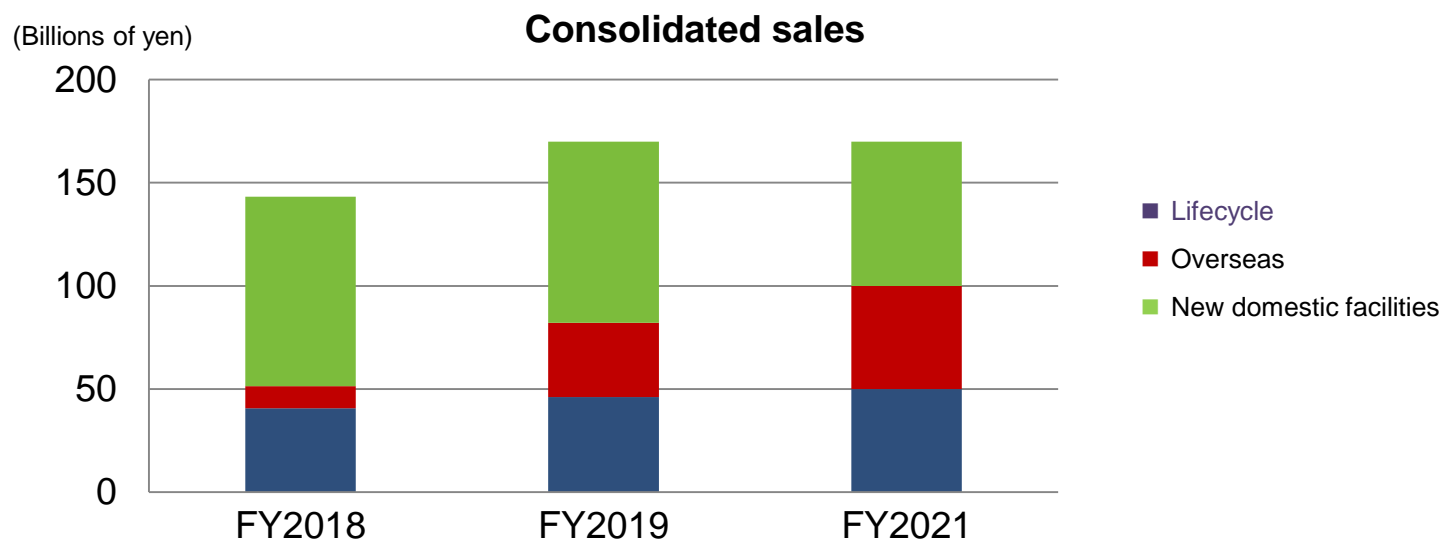


# 3. Numerical Targets



### 3. Numerical Targets (Over Three Years)

- Consolidated sales and operating income targets

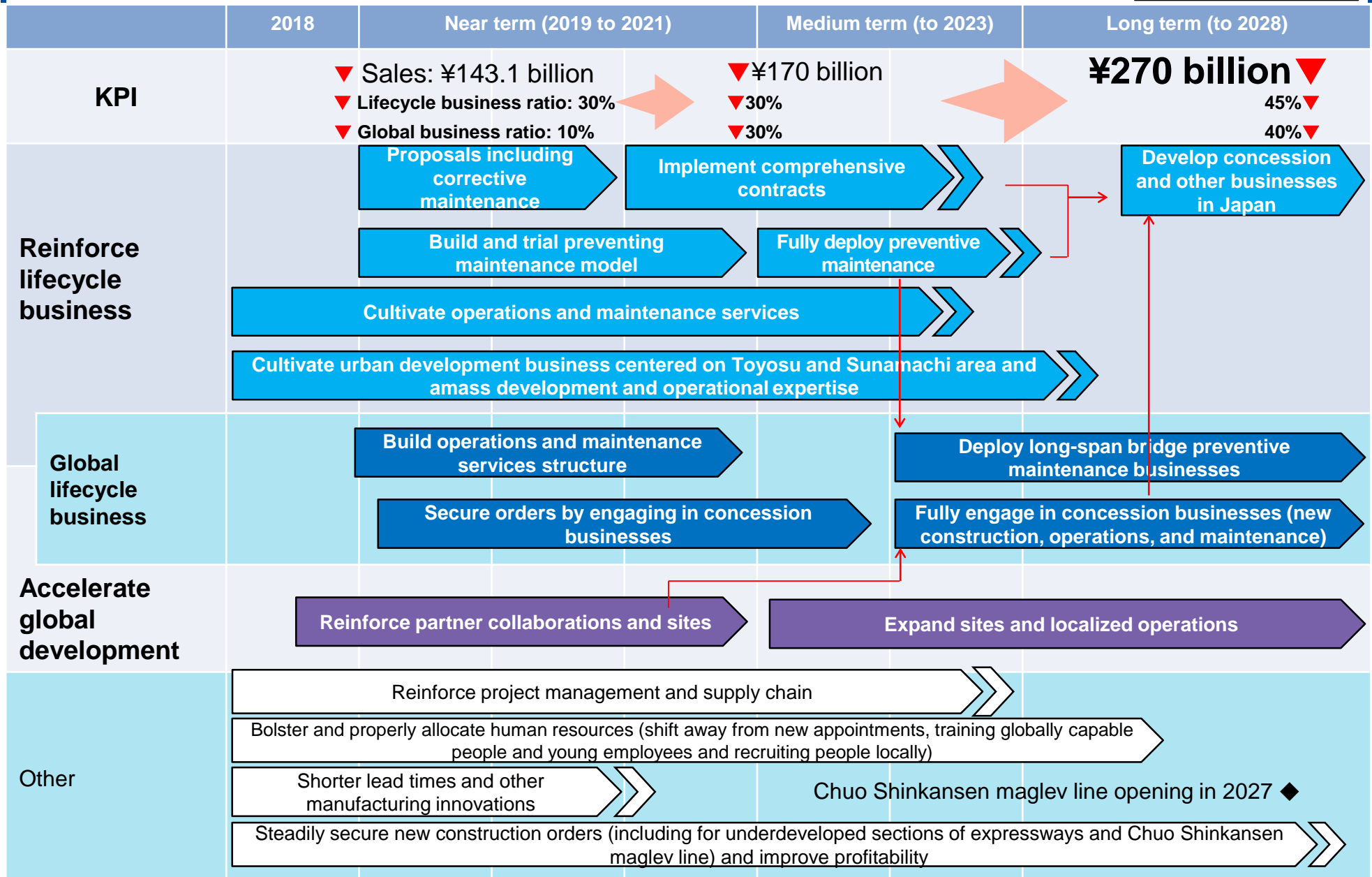


Earnings structure	Consolidated sales (billions of yen)		
	2018	2019	2021
Lifecycle business (maintenance, etc.)	40.7	46.0	50.0
Overseas business	10.6	36.0	50.0
New domestic facilities business	91.8	88.0	70.0
<b>Total*</b>	<b>143.1</b>	<b>170.0</b>	<b>170.0</b>
<b>Operating margin</b>	<b>9.9%</b>	<b>8.8%</b>	<b>10.6%</b>

# 3. Numerical Targets (10 Years Hence)

## ■ Medium- and long-term roadmap

Legend Continue and Reinforce





Forward-looking figures shown in this material with respect to IHI's performance outlooks and other matters are based on management's assumptions and beliefs in light of the information currently available to it, and therefore contain risks and uncertainties. Consequently, you should not place undue reliance on these performance outlooks in making judgments. IHI cautions you that actual results could differ materially from those discussed in these performance outlooks due to a number of important factors. These important factors include political environments in areas in which IHI operates, general economic conditions, and the yen exchange rate including its rate against the US dollar.