

Social Infrastructure Business Area Briefing



September 20, 2023

IHI Corporation

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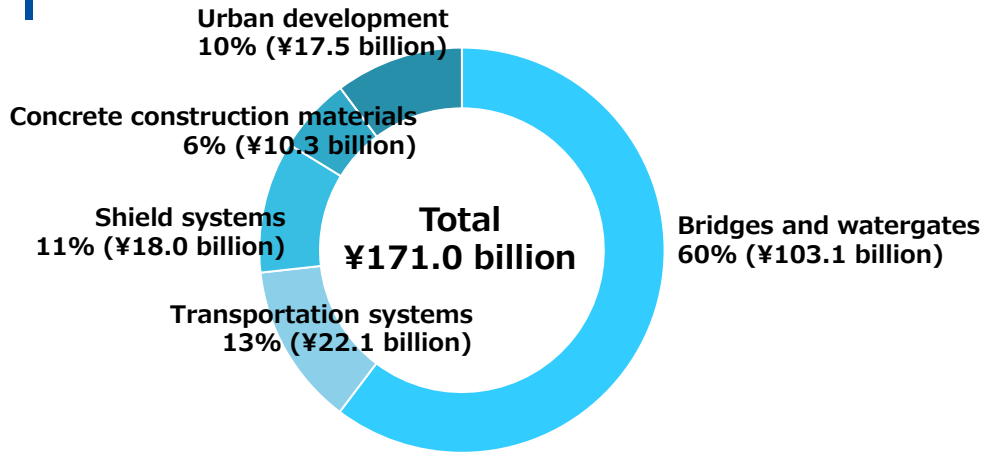
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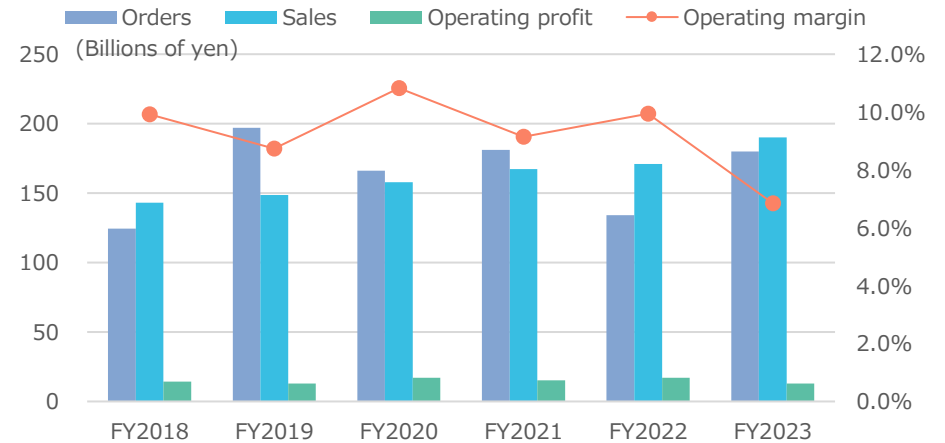
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1. Social Infrastructure & Offshore Facilities Business Area Outline

■ FY2022 segment revenue



■ Segment results for FY2018~FY2022



	Bridges	Watergates	Transportation systems	Shield systems	Concrete construction materials	Urban development
IHI offerings						
Competitive edge	<ul style="list-style-type: none"> Engineering capabilities for new construction and maintenance, steel bridges and pre-stressed concrete bridges Building information modeling management capabilities Contract negotiation clout Full turnkey support 	<ul style="list-style-type: none"> New installation and maintenance engineering capabilities and construction experience for large sluice gates Diverse capabilities in new construction, maintenance, control information, and other areas Can generate orders through inspection, repair, and new construction business cycle 	<ul style="list-style-type: none"> Dominant shares in such niche markets as maintenance vehicles, road snowplows, three-section train passenger cars, and new transportation systems and light rail vehicles Customer support profitability and nationwide agent network 	<ul style="list-style-type: none"> Sales network Supplying machinery + backup systems (customizable) Differentiated technology for cutter bits (obstacle excavation) 	<ul style="list-style-type: none"> Manufacturing capacity for multiple segments (large, medium, small diameter and reinforced concrete, steel, and composites) 	<ul style="list-style-type: none"> Redevelopment experience in Toyosu, Sunamachi, and other areas
Market share	Domestic new construction: 3 rd	Domestic new installations: 1 st or 2 nd Domestic inspections: 40% market share	Diesel passenger railcars: 1 st Maintenance vehicles: 1 st	Domestic market: 1 st (30% of market last year)	Reinforced concrete segment: Around 40% of market	

2. Business Environment Outlook and Assumptions

Near term (FY2023~FY2025)

Medium and long terms (From FY2026)

Domestic

- Labor shortages as skilled workers age, younger people leave profession, and birthrate declines
- Rising demand for infrastructure upgrades
- Ongoing national land resilience projects
- Start of trials to comprehensively manage maintenance of aging infrastructure

- Worsening labor shortages as skilled workers age, younger people leave profession, and birthrate declines
- Greater investments in disaster prevention and mitigation
- Renewable energy business expansion
- Private sector participation in maintenance and management through industry-government-academia collaboration and comprehensive maintenance management across wide areas

Overseas

- Robust infrastructure demand (based in Turkey, India, and elsewhere in South Asia)
- Large infrastructure projects remaining solid
- Infrastructure investments back on track after pandemic downturn

- Robust infrastructure demand (based in Turkey, India, and elsewhere in South Asia)
- More blocs emerging in global economy
- Growing need for regionalization

Common

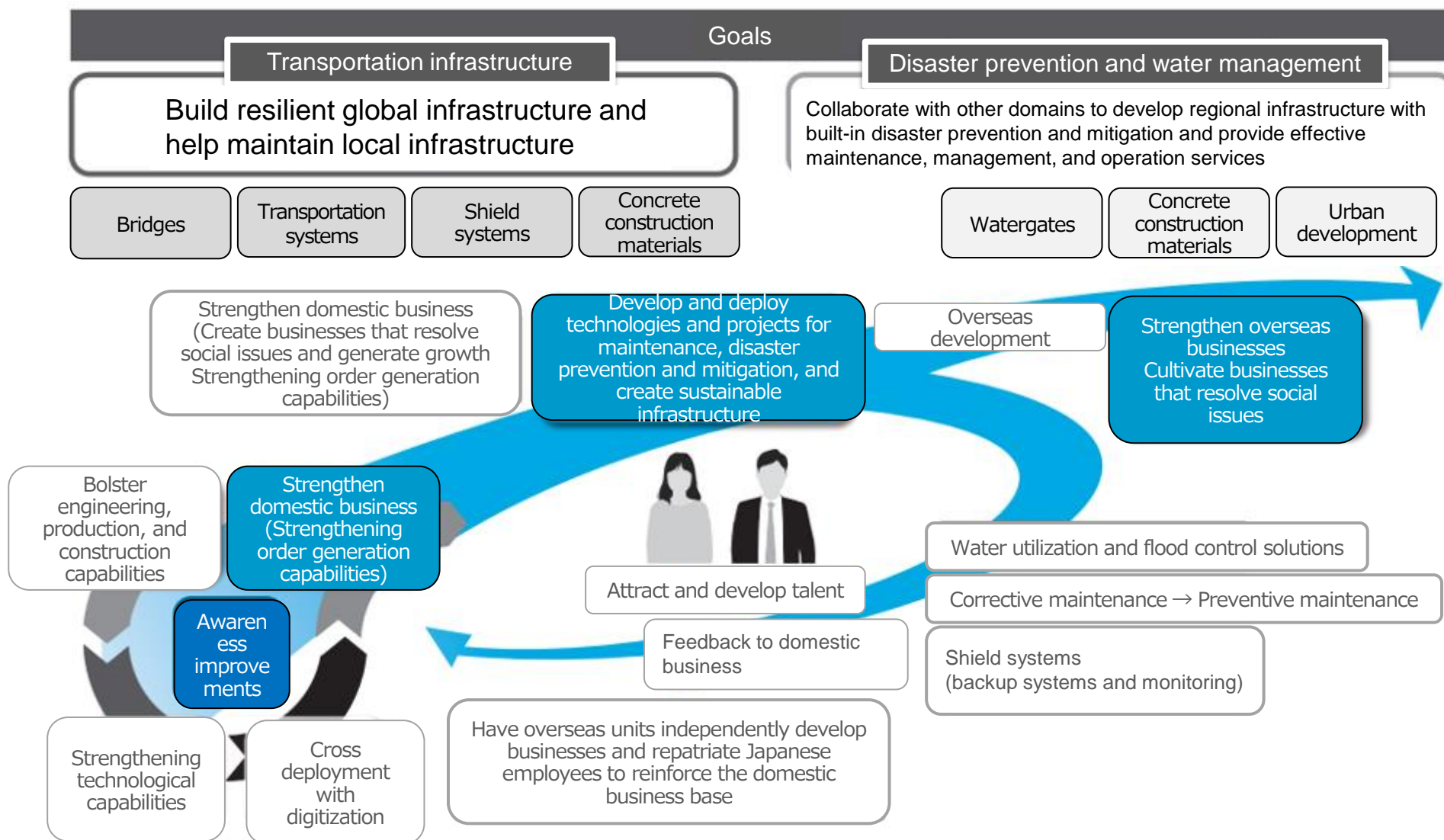
- Rising flood and drought damage in Asia and elsewhere as global warming accelerates
- Energy crisis and price hikes from Ukraine war
- Overseas procurement price hikes amid plunging yen

- Rising flood and drought damage in Asia and elsewhere as global warming accelerates
- Emergence of carbon-neutral economies
- Green infrastructure deployments

3. Social Infrastructure & Offshore Facilities Initiatives

(1) Segment Strategies Based on Group Management Strategies 2023

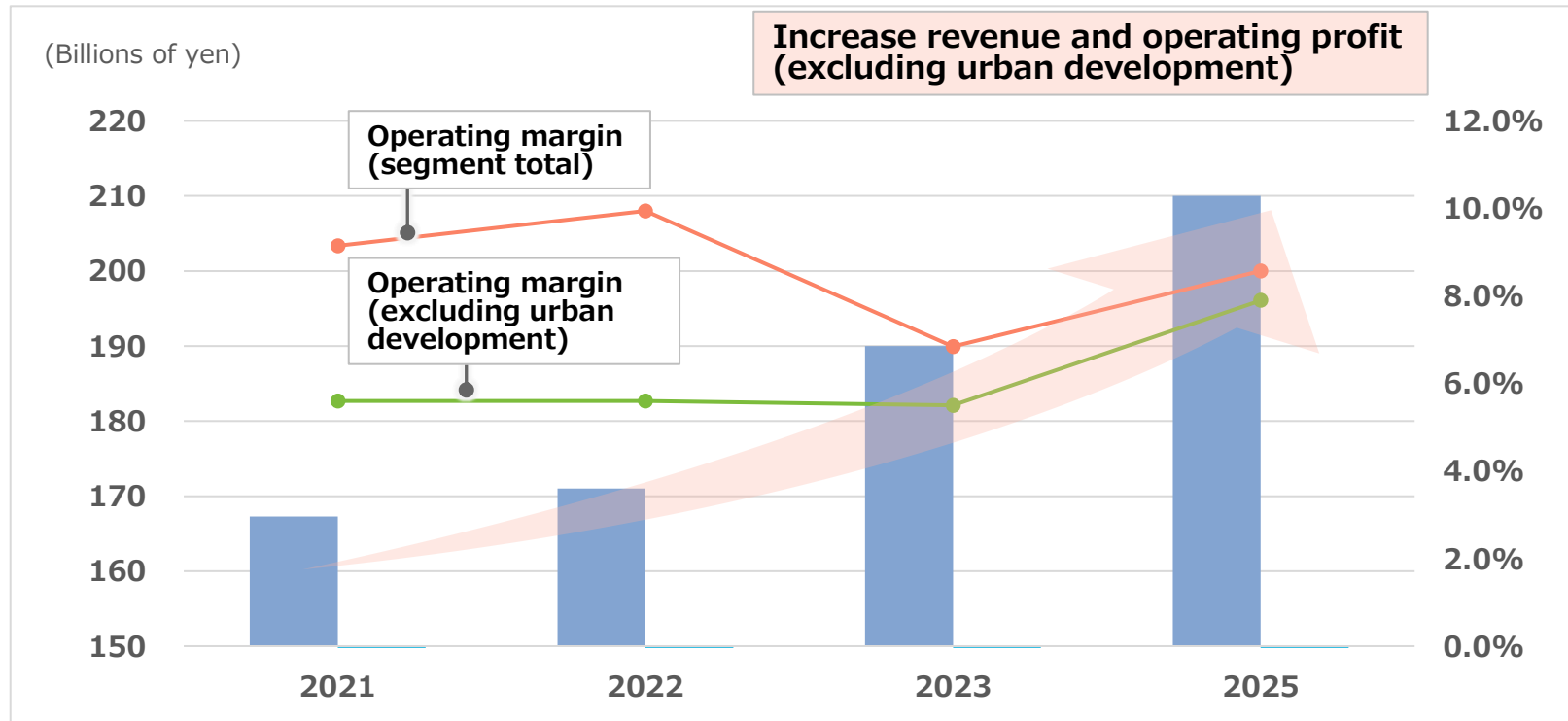
Leverage strong existing businesses to support safe and secure social infrastructure by providing transportation infrastructure, disaster prevention, and water management



3. Social Infrastructure & Offshore Facilities Initiatives

(1) Segment Strategies Based on Group Management Strategies 2023

■ Segment performance targets (FY2020~FY2025)



Revenue (Billions of yen)				Operating profit (operating margin %)			
FY2021	FY2022	FY2023	FY2025	FY2021	FY2022	FY2023	FY2025
167.3	171.0	190.0	210.0	15.3 (9.1%)	17.0 (9.9%)	13.0 (6.8%)	18.0 (8.6%)

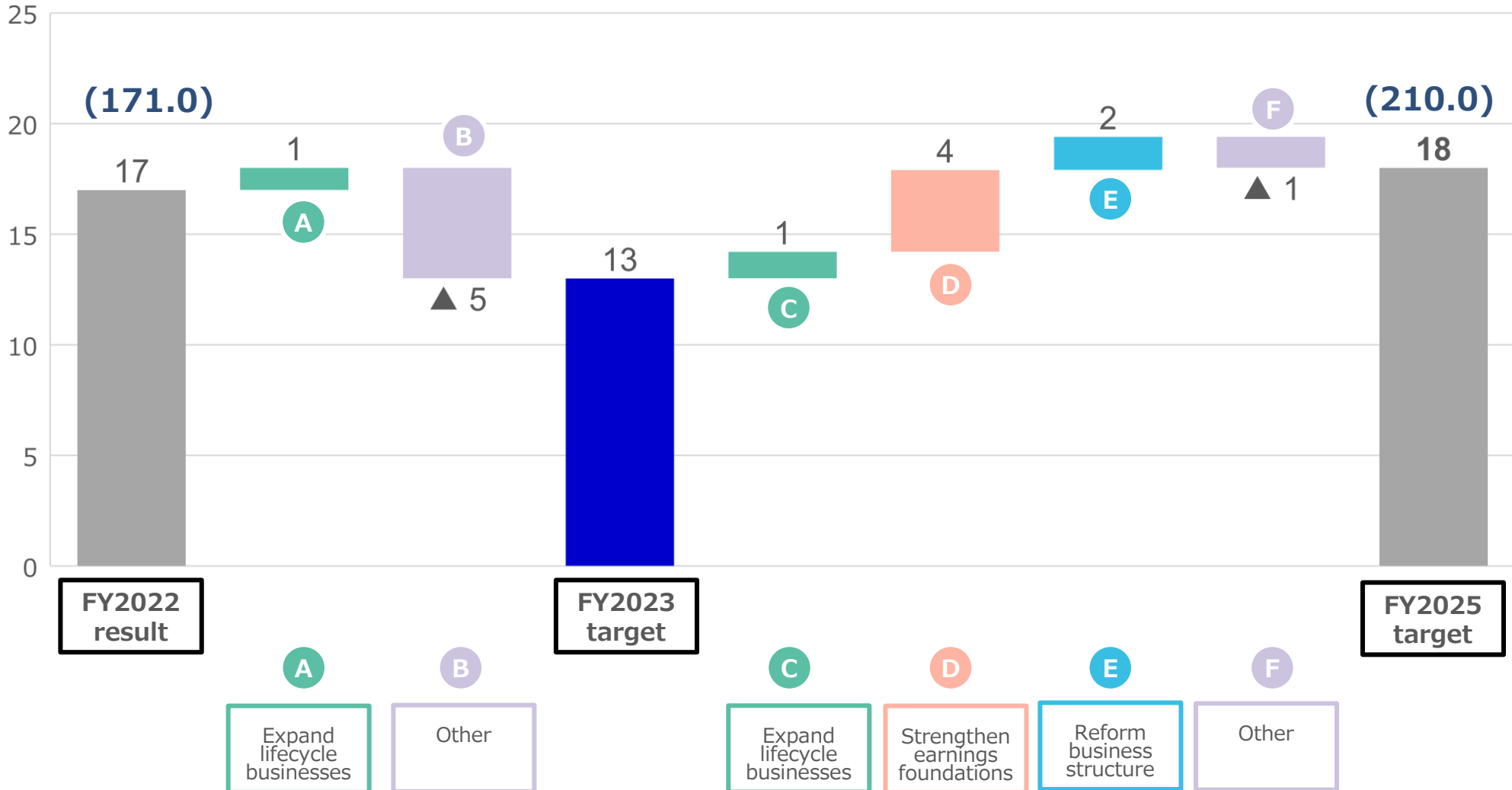
3. Social Infrastructure & Offshore Facilities Initiatives

(2) Analysis of Operating Profit Target Changes

Factors in FY2025 operating profit changes

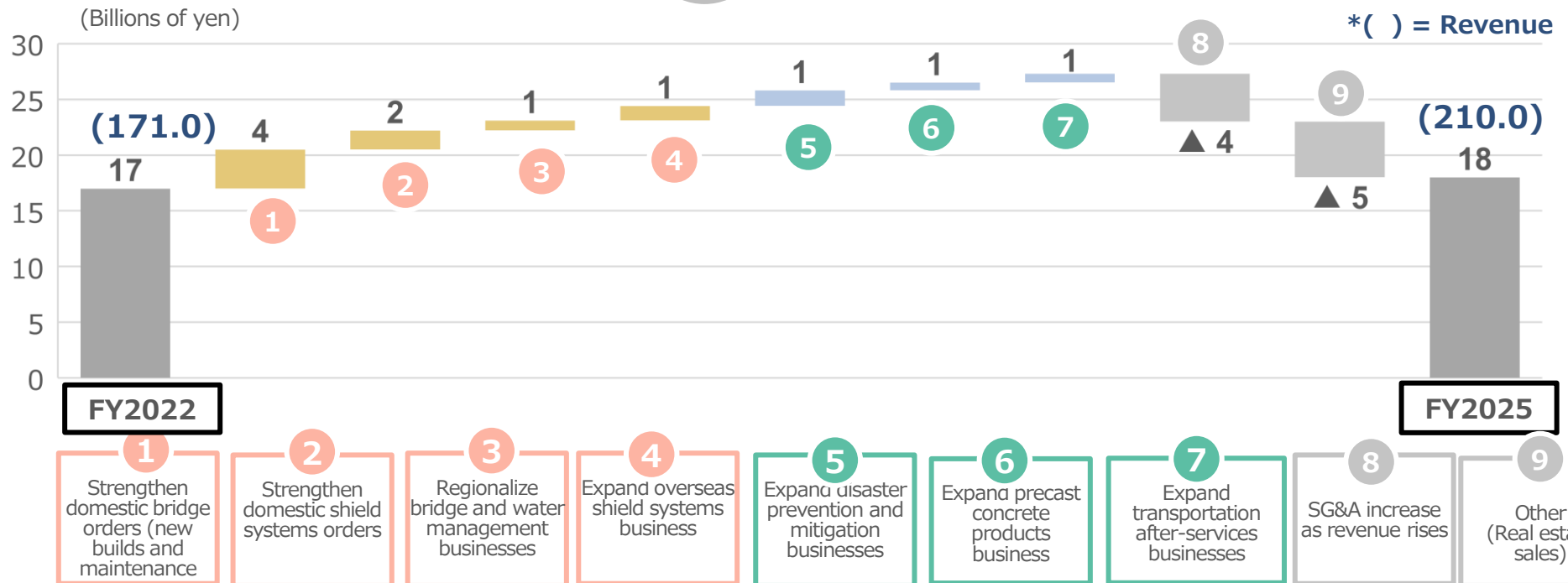
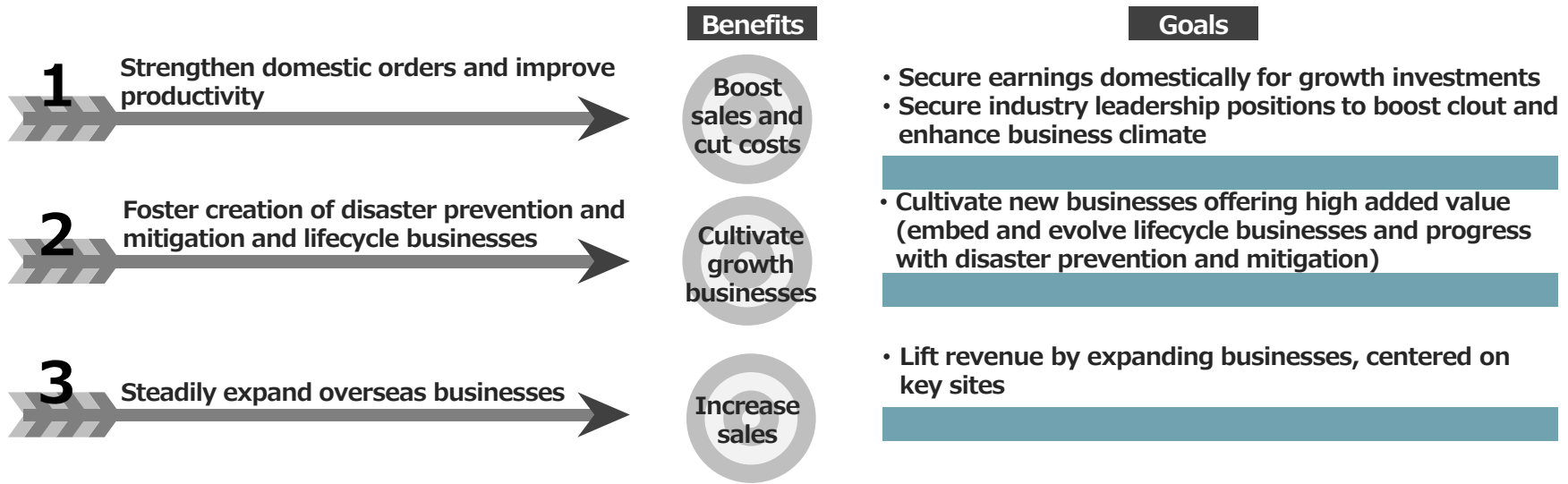
(Billions of yen)

* () = Revenue



3. Social Infrastructure & Offshore Facilities Initiatives

(3) Process for Reaching Operating Profit Targets

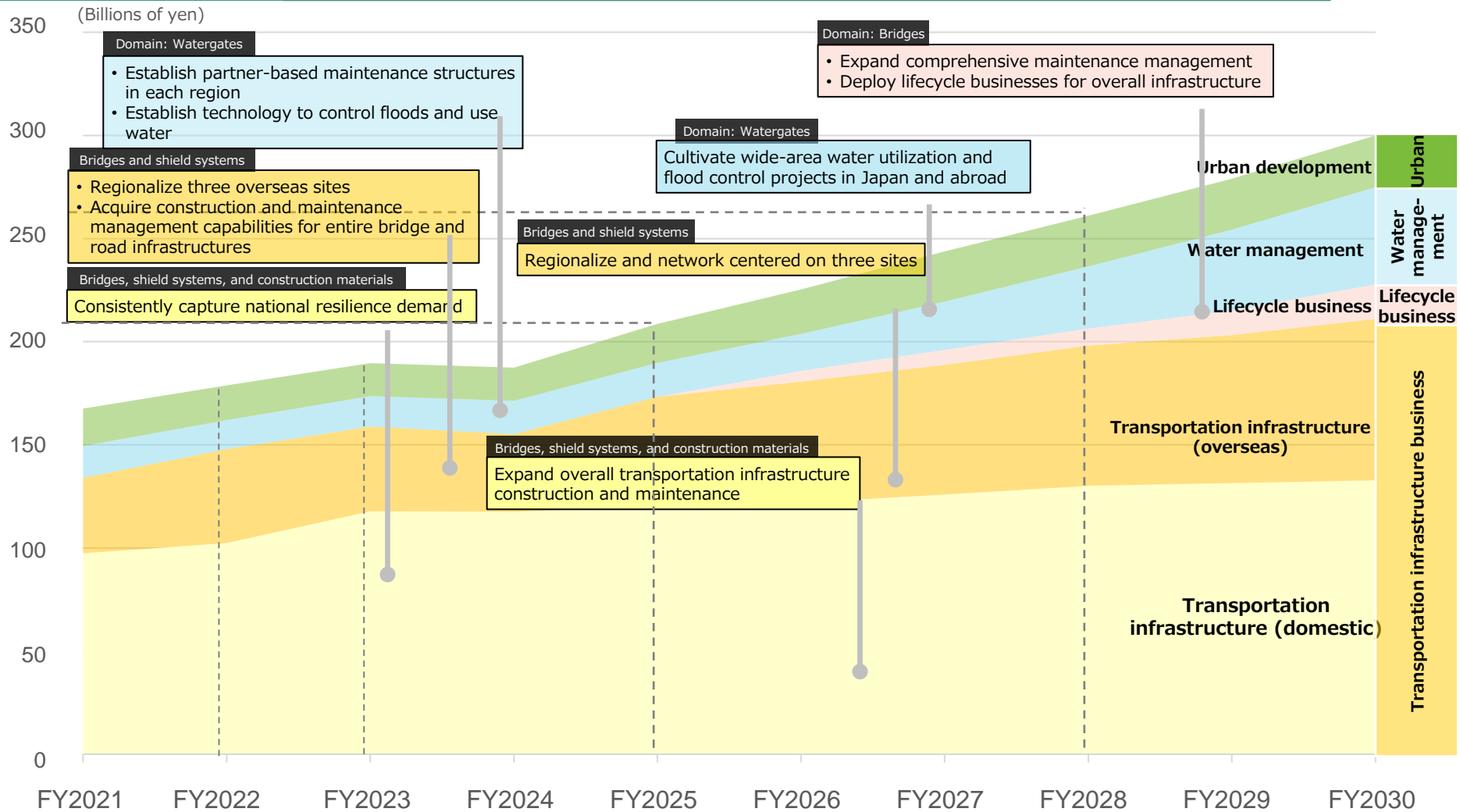


4. Long-Term Earnings Growth Story

Transportation infrastructure operators Build resilient infrastructure (bridges, tunnels, and roads) worldwide and help maintain and manage local infrastructure

Disaster prevention and water management companies (1) Provide construction, maintenance, management, and effective operational services for water management facilities, and (2) Collaborate with other domains in developing regional infrastructure with built-in disaster prevention and mitigation capabilities

- Bridges
- Transportation
- Shield systems
- Construction materials
- Watergates
- Domains
- Urban development



4. Long-Term Earnings Growth Story

		Near term (~2025)	Medium and long terms (~2040)
Transportation infrastructure business	Bridges	Bolster domestic orders by building technological and proposal edge to capture top expressway company market share	Lead industry as Japan's top bridge manufacturer and influential player
	Bridges	Regionalize ^{*1} through lifecycle businesses at each site by tapping overseas sites and fostering local talent	Stabilize earnings through regionalization ^{*1} and networking ^{*2}
	Shield systems		
	Bridges	Obtain construction and maintenance management clout for overall bridge and road infrastructure	Build resilient transportation infrastructure domestically and overseas to support regional infrastructure maintenance and management
	Shield systems		
	Construction materials	<ul style="list-style-type: none"> Set up and deploy pilot projects for comprehensive maintenance management Commercialize lifecycle cost optimization consulting business 	Deploy lifecycle business across transportation infrastructure lifecycle business
Transportation systems			
Disaster Prevention and water management business	Bridges	Establish dual-use water management technology for normal times and disasters to build business foundations for future	Expand B2B by deploying resilience services for private sector facilities
	All products		
	Urban	<ul style="list-style-type: none"> Tap digital transformation and take orders to build customer base and create structure through regional partners Expand maintenance and management business by using Disaster Prevention and Water Gate Technical Training Research Facility 	Expand water utilization and flood control business across wide area using remote monitoring and operation to capture customer demand
	Watergates		

***1 Regionalization:** Tapping local people and companies to run local sites and striving to expand efforts among overseas businesses while securing resources for domestic projects

***2 Networking:** Establishing structure to mobilize needed resources from optimal locations

5. Business Strategies to Reach Numerical Goals (Transportation Infrastructure Business: Domestic Business and Bridges)

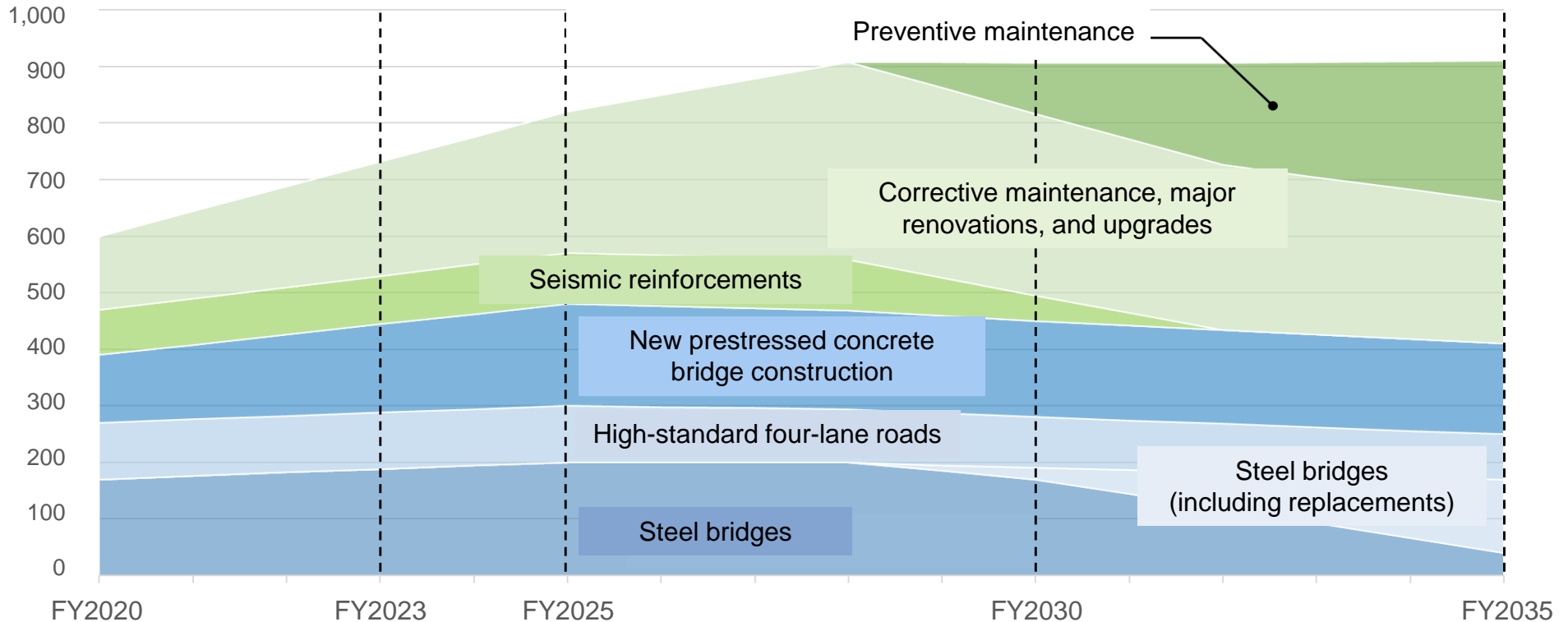
Steel bridge market

- (1) Maintain new construction at 200,000 metric tons for 250 billion yen
- (2) For corrective maintenance and large-scale repairs and upgrades, prime maintenance focus from 2030 is bridges designed under new road specifications
- (3) Bridge repairs and upgrades will run their course and gradually decrease
- (4) Seismic reinforcement work to converge after 2030
- (5) After 2030, a gradual shift from corrective to preventive maintenance, with market expected to grow

Pre-stressed concrete market

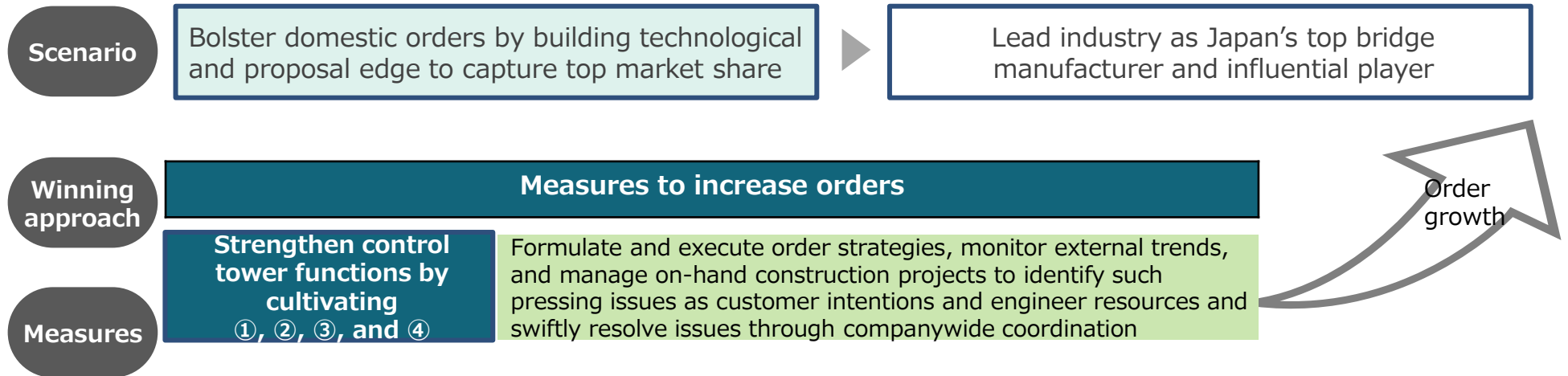
- (1) Despite fewer large projects, new construction market remaining at ¥180 billion on replacements of small and medium-sized bridges
- (2) Maintenance market should expand as more bridges age over 30 years and salt damage becomes more apparent
- (3) The key will be technology for reinforcing and extending lives of concrete slabs that does not affect hard-to-replace sections and substructures

(Billions of yen)



5. Business Strategies to Reach Numerical Goals

(Transportation Infrastructure Business: Domestic Business and Bridges)



- ① **Strive companywide to boost orders**
(Good balance of orders from Ministry of Land Infrastructure, Transport and Tourism (MLIT), municipalities, and road companies)
 - ①-1 **Road companies (baseload)**
Strengthen management, contract management, and profitability for highly challenging construction (in high elevations, narrow locations, integrated prestressed concrete and substructure construction, and short delivery times)
 - ①-2 **MLIT**
Specialize in technical proposal system (reflecting customer intentions)
(Strengthen internal departmental and job-level, contractor, and former IHI employee contact, and other information networks)
 - ①-3 **Municipalities**
Strengthen dealings with influential local governments (Tap IHI Group's local advantages and collaborate with local fabs)

- ② **Leverage core technologies to sharpen competitive edge**
 - Ability to resolve customer issues, plan challenging construction, and execute on-site
 - Enhance superiority of technical proposals by developing core technologies and engaging in joint research with industry, government, and academia

- ③ **Strengthen cost competitiveness**
 - Undertake activities to cut construction periods and costs by harnessing digital technologies and mechanization in design, manufacturing, and on-site construction

- ④ **Secure resources** (chiefs and supervisory engineers and assign them optimally)
 - Train and share technical skills across countries and pass on technological expertise
 - Explore radical quality and quantity measures by reorganizing with other companies

5. Business Strategies to Reach Numerical Goals

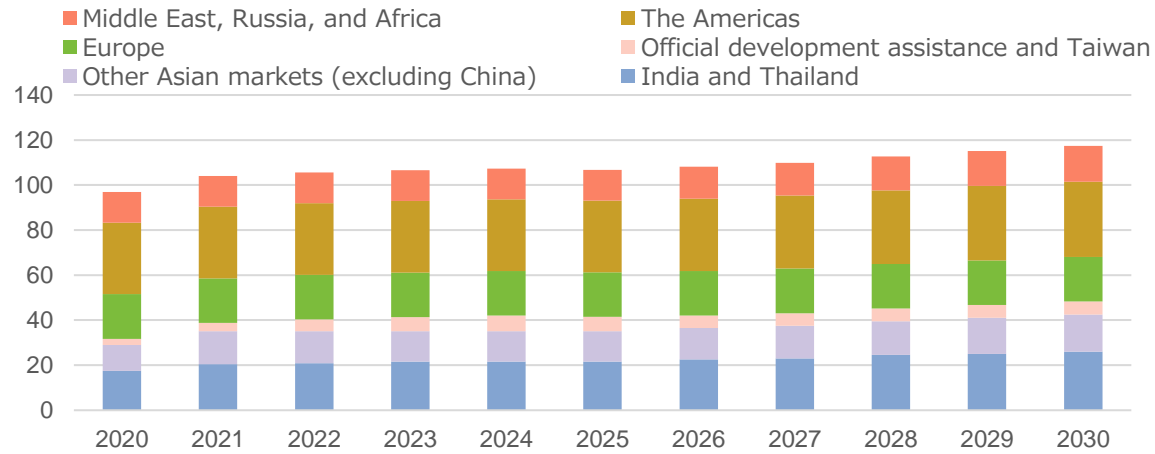
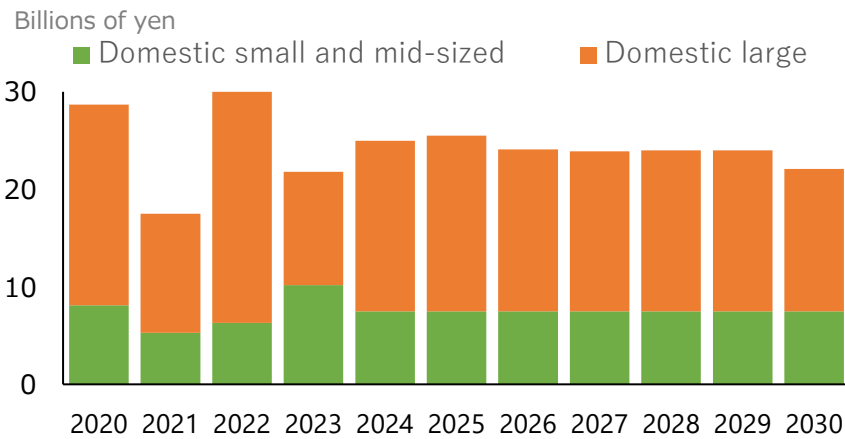
(Transportation Infrastructure Business: Domestic Business and Shield Systems)

Market trends

- Concerns about prospective delays on large-diameter orders owing to ground surface collapse near Tokyo outer ring road construction site and and delays in constructing linear rail line
- In small- and medium-diameter market, price competition intensifying as technology gaps among companies shrink
- Overseas, target Indian market is expanding

➤ Domestic shield market forecast

➤ Overseas shield market forecast



* Domestic small and mid-sized: Calculated from average over past six years
 * Excluding backup systems-related work

Reclaim leadership of domestic shield systems and endeavor to resolve social issues

- ① Build technological and cost edges and capture **70%** of large-diameter market
- ② Provide one-stop services related to large-diameter shield machines and backup systems (embed lifecycle businesses)
- ③ Provide services that prevent excavation halts through issue avoidance and preventive maintenance and capture **50%** of market for small and medium diameter shield machines (evolve lifecycle businesses)

Overseas, pursue leadership in Indian and Southeast Asian markets, primarily through overseas affiliates

- ① Capture high market shares by leveraging sales and local support capabilities of Indian and Thai affiliates
- ② Obtain orders for large-diameter machines in India through technological collaboration and cost-cutting within IHI Group
- ③ Consolidate official development assistance and Taiwanese operations at overseas affiliates to deliver integrated manufacturing through after-sales services

5. Business Strategies to Reach Numerical Goals

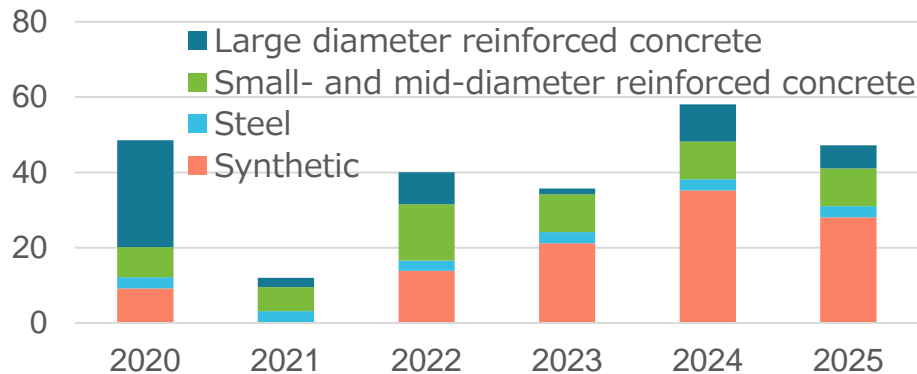
(Transportation Infrastructure Business: Domestic Business and Construction Materials

Market trends

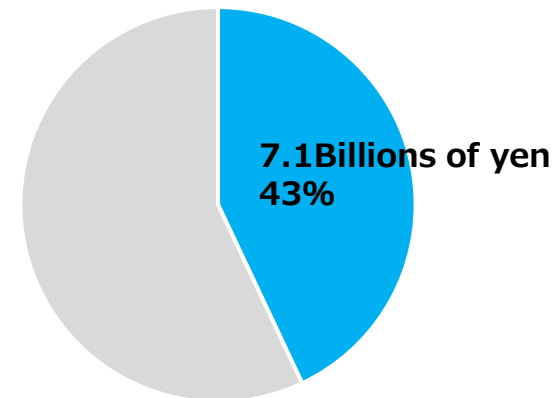
- Progressing in storm drainage pipe maintenance on strength of watershed flood control policy and expanding synthetic segment market, while small- and medium-diameter segments are performing well
- Order volumes declining in reinforced concrete segment despite demand remaining solid

➤ Domestic segment market forecast

Billions of yen



➤ FY2022 segment market share



Develop business by leveraging strengths Shift resources from existing to new businesses

- ① Swiftly launch new businesses that resolve social issues (Carbon neutrality, resilience enhancement, and decommissioning)
 - Develop business with CEMENON geopolymers concrete*
 - Tunnel repair business initiatives
 - *Could cut carbon dioxide emissions from IHI Group's development by up to 80%
- ② Engineering business selection and concentration
 - Expand waterproofing solutions business
 - Expand applications for SEC* (sand enveloped with cement) concrete method
 - *Concrete offering high durability and quality and construction ease
- ③ Pare precast concrete product line (select markets and narrow down range to highly competitive offerings)
 - Specialize in structural interiors of tunnels
- ④ Restructure segment business structures
 - Emphasize profitability and focus on synthetic and small- and mid-diameter offerings
 - Enhance productivity and capital efficiency

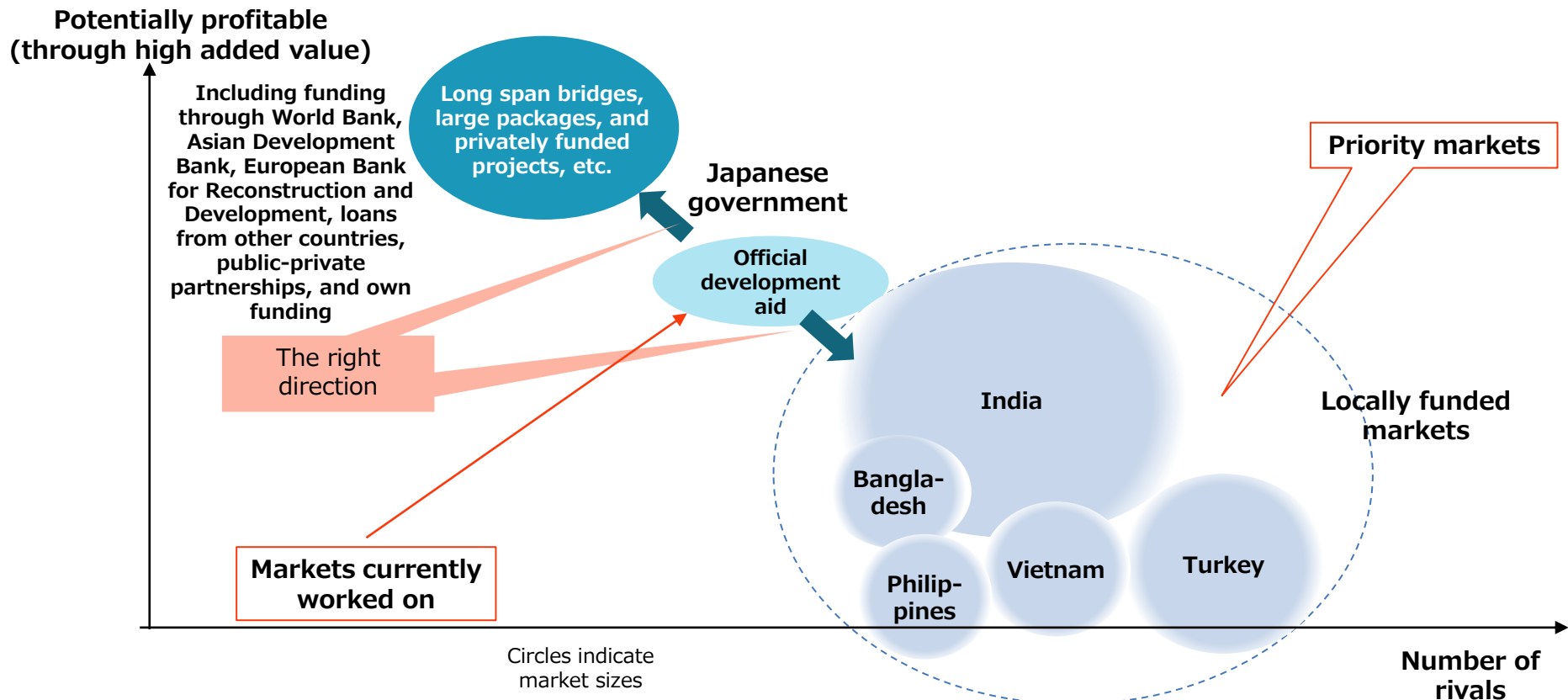
5. Business Strategies to Reach Numerical Goals

(Transportation Infrastructure Business: Overseas Business and Bridges)

- By 2030, look for sites to generate steady earnings in local funding markets, primarily in India, Vietnam, and Turkey, as well as through official development assistance, and increase profits from long-span bridges, large packages, and other funding projects (new installations and lifecycle businesses)
- Shift to business model generating multiple revenues in addition to engineering, procurement, and construction, pursuing further growth by engaging in entire lifecycles and advanced roads

In existing businesses, compete in (1) long-span bridges, large packages, and privately funded projects, (2) markets for locally funded projects, and (3) official development assistance, generating steady earnings in (2) and (3) and building profitability in (1)

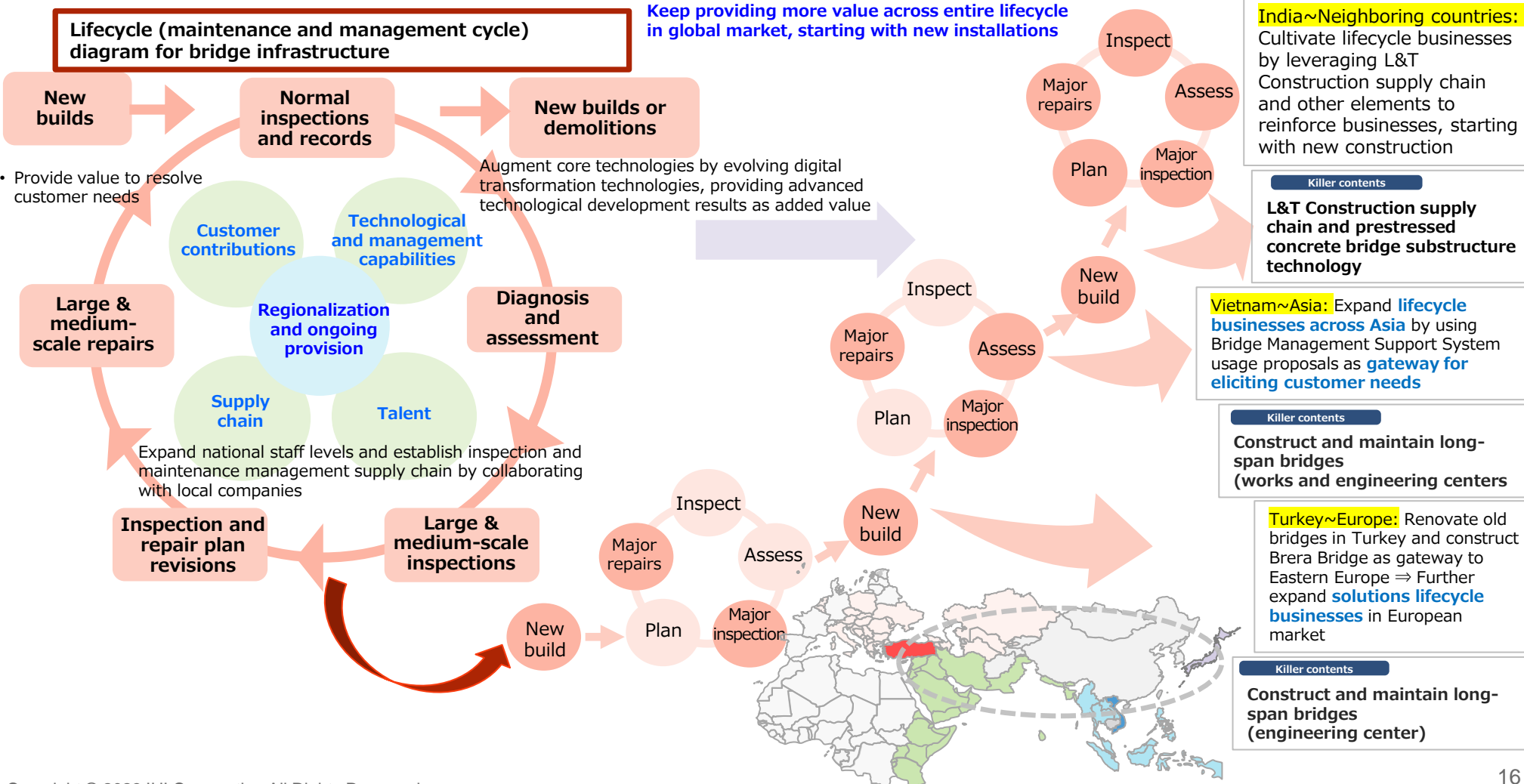
Market segments



5. Business Strategies to Reach Numerical Goals

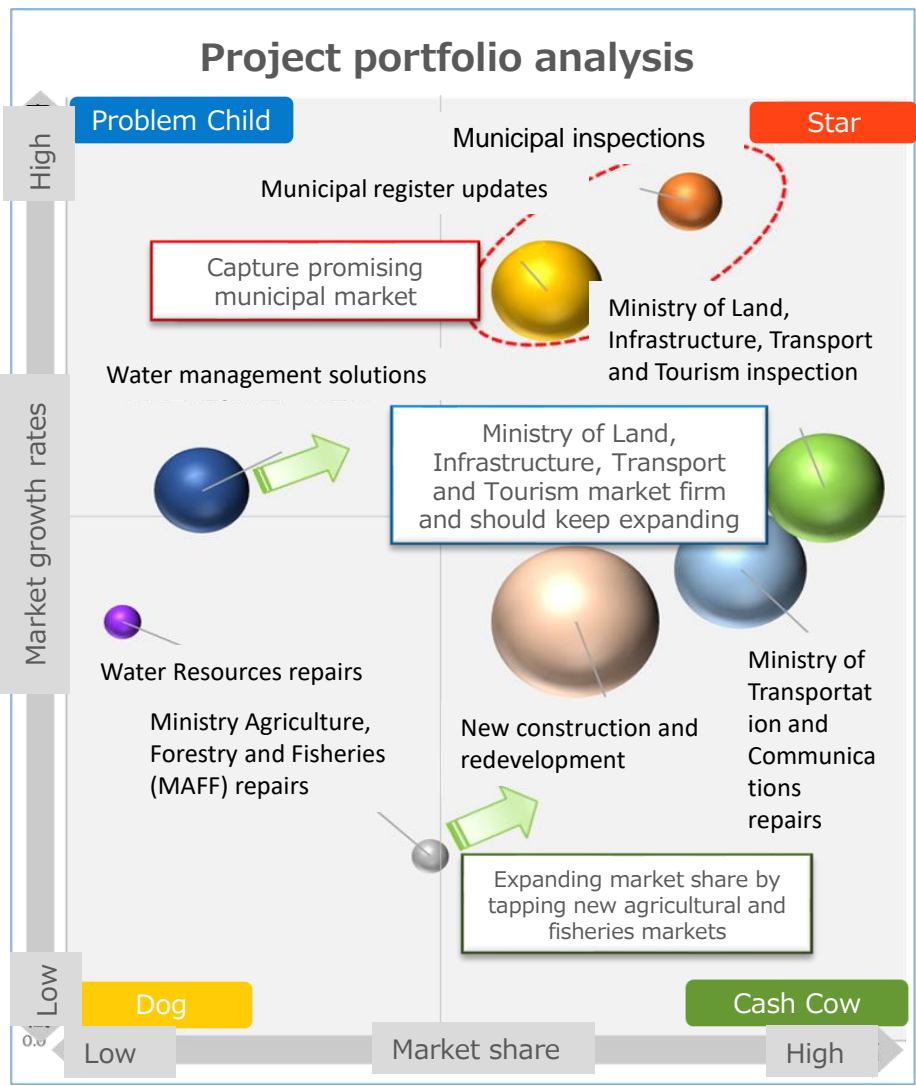
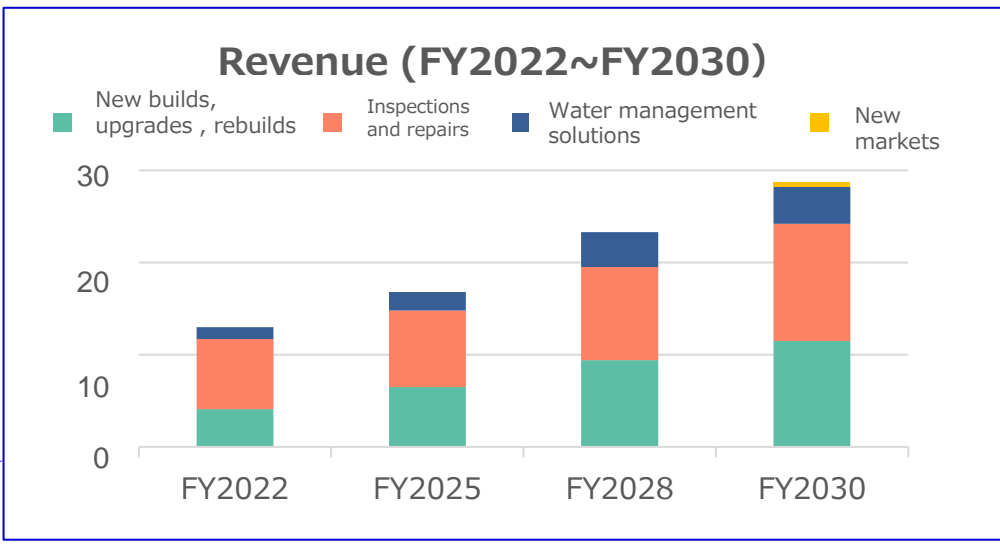
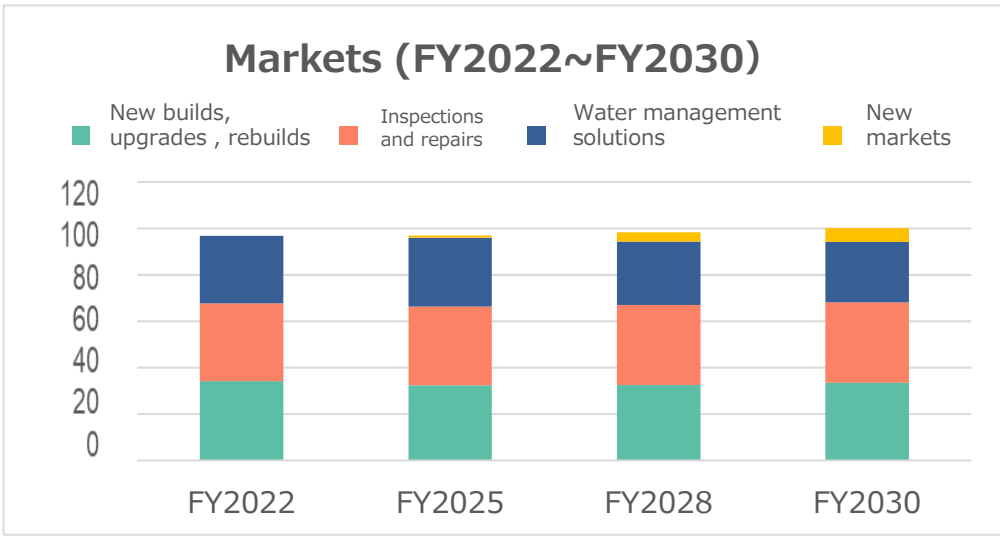
(Transportation Infrastructure Business: Overseas Business and Bridges)

- Change to business structure that can generate multiple revenues at all stages of transportation infrastructure lifecycle
 - Start with new construction in India and with cycles beginning with maintenance and management in Turkey, conduct business on continuous bases
 - In maintenance and management businesses, resolve customer issues and increase earnings opportunities for IHI Group by offering labor-saving technologies and high value-added* solutions
- *Including to predict traffic congestion by sensing and identifying overloaded vehicles



5. Business Strategies to Reach Numerical Goals

(Disaster Prevention and Water Management Businesses: Partnering customers in moving from water utilization to contributing to watershed flood control)



Strengthen existing businesses by integrating new builds, upgrades, inspections, and repairs

- Propose optimal plans that reflect entire lifecycles
- Achieve virtuous cycle of expanding orders
New constructions and upgrades ⇒ Inspection and repair work ⇒ Accumulate and analyze inspection results ⇒ Propose upgrade plans
- Reduce back office headcount by streamlining management operations

5. Business Strategies to Reach Numerical Goals (Disaster Prevention and Water Management Businesses)

Enter dam control market

Develop and fit emergency operation support functions that only gate manufacturers can create and which serve as a catalyst for entering dam control market



(MAFF, MLIT, and local governments)

Water management solutions

Enter remote monitoring market

Develop centralized monitoring system for MAFF and municipal facilities (with Public Works Research Institute) and deploy



Flow control watergates
(MLIT and local governments)

Expand earnings with advanced water management

Add operational support functions to identify required water volumes and optimize gate operations, thus offering new value to market and boosting water management systems orders



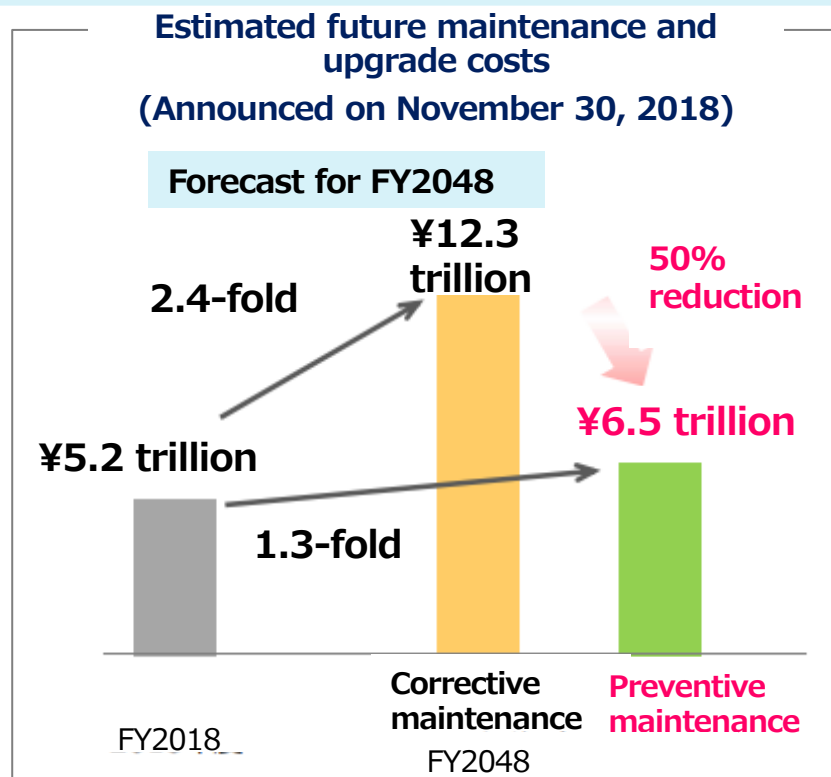
Water usage equipment for agricultural irrigation and water drainage
(MAFF and local governments)

Expand from facilities to areas by linking upstreams and downstreams in-house

Infrastructure maintenance and management direction and market trends

Based on MLIT estimates that the annual infrastructure maintenance and upgrade costs by FY2048 of 12.3 trillion yen could be reduced to 6.5 trillion yen by using preventive maintenance. We will pursue full-scale measures for transition over next 10 years

- Market expanding as shift from corrective maintenance to comprehensive regional preventive maintenance is in full swing
- Swift entry into comprehensive maintenance management (preventive maintenance) business is prime issue for evolving lifecycle business



Strategies to deepen and evolve capabilities

Enter comprehensive infrastructure maintenance and management business (bridges to other infrastructure and regions)

- Develop comprehensive management support system, enter comprehensive business areas by forming business schemes with consultants and other parties, centering on conservation technology, and expand into regional disaster prevention

Leverage Bridge Management Support System to build infrastructure management techniques

- Establish industry, government, and academia infrastructure maintenance and management study group to develop management techniques and expand market by making Bridge Management Support System the standard

Establish information and communication technology consulting business rationalize maintenance and management

- Cultivate consulting business for extending infrastructure service lives and disaster prevention measures, drawing on public data (including xROAD and hazard maps) and municipal data

6. Lifecycle Business Outlook and Strategies

- Establish comprehensive bridge infrastructure maintenance and management platform to broaden target infrastructure beyond bridges to include tunnels, roads, and gate facilities
- Create collaborative scheme with consultants and other parties for bridges and watergates, the core technologies (roles) being inspection, diagnosis, and repair technologies, entering comprehensive maintenance and management business and establishing implementation system and expansion strategy
- Form Team IHI with partner companies and build community-based implementation structure
- Employ next-generation water management systems to centrally manage area facilities, provide value during floods and normal times, and enter facilities management and operational support fields

Comprehensive maintenance management platform

Wide-area maintenance and data management



Support disaster prevention and mitigation measures



Support facilities longevity planning



Comprehensive infrastructure maintenance management

Collaborate with consultants, financial institutions, and other parties



Rationalize and advance inspection and diagnosis work

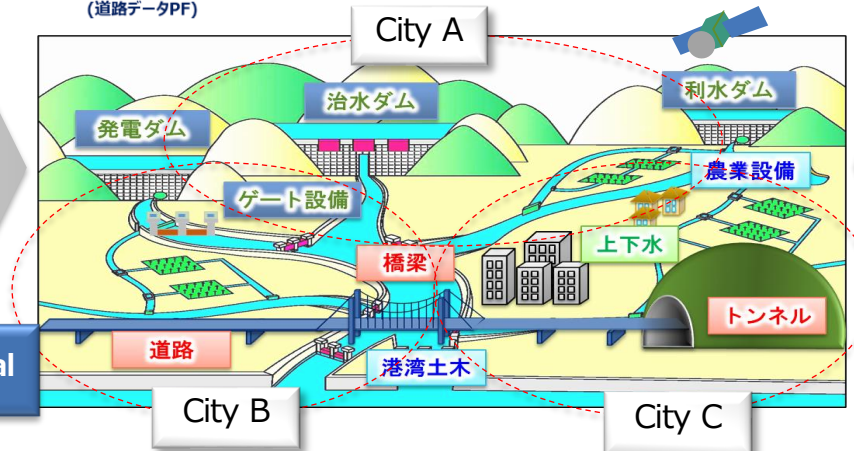


Streamline maintenance and management

Enhance efficiency and remoteness of maintenance and inspection



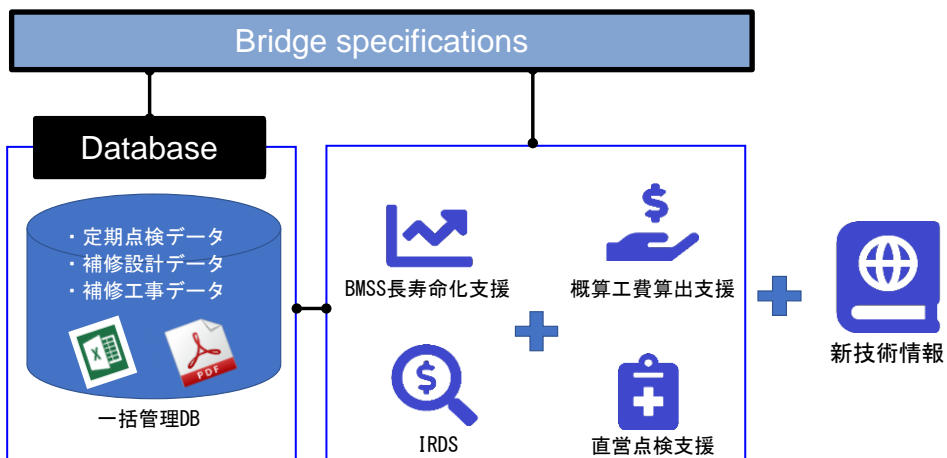
Collaborate with local companies and other parties



Bridge Management Support System (BMSS)

Extensive repair work support

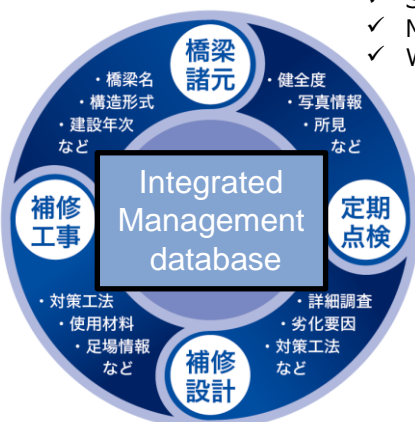
The BMSS encompasses comprehensive periodic bridge inspections and repair engineering and work by linking these tasks and employing highly functional systems (through direct inspection support, IHI Repair Diagnosis Support (IRDS), support for calculating estimated construction costs, and BMSS lifespan support)



Integrated management database (bridge maintenance management database)

- Instantly retrieve deliverables in integrated management database
- ⇒ IHI estimates savings of 100 hours of work per person annually

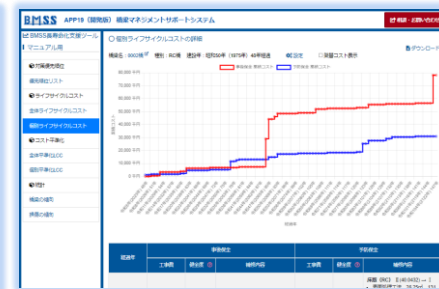
- Store and manage repair engineering and work data
- Mapping function a standard inclusion
- Work timeline display



BMSS lifespan support tool

- BMSS makes it possible to prioritize countermeasures and lifecycle cost calculations based on the soundness (I-IV) of each component
- Easy confirmation of results calculation basis
- Assists with formulating long-life repair plans, including priority lists

優先順位	橋名	種別	点検年度	健全度	劣化種別	劣化	劣化	劣化	劣化
1	0001橋	RC橋	58.3	45	43.0	直	評価済		
2→3	0004橋	RC橋	80.0	10	10.0	直	評価済		
3→2	0005橋	RC橋	96.7	45	20.0	直	評価済		
4	0002橋	RC橋	93.3	5	6.0	直	評価済		
5	0003橋	RC橋	100.0	40	10.0	直	評価済		



IHI Repair Diagnosis Support tool

- Technical consultation service resolves various problems
- Useful for steel and concrete members and common deformations
- Extensive materials available on detailed tests and countermeasures



Support tool for calculating estimated construction costs

- Easy scaffolding selection with illustrations
- Helps to assess rough budgets



Direct inspection support tool

- Includes explanations about key inspection points
- Reports can be output in MLIT formats



New technology information

- Includes inspection support performance catalog and New Technology Information System technology
- Detailed classification display and free text searching

The screenshot shows the 'New Technology Information System' interface, which provides a detailed classification of inspection support technologies and allows for free text searching.

GBRAIN[®] Highly Efficient Watergate Inspection Support System IHI

Electronic construction blackboard

Performance management with blackboard and automatic performance photo editing

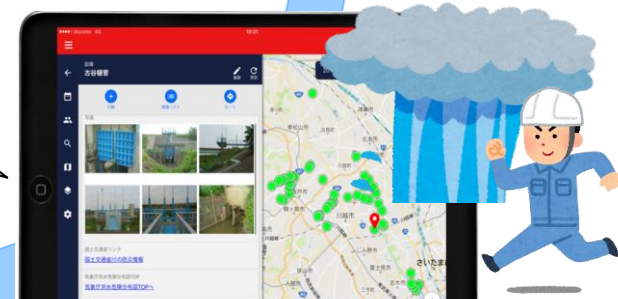


Inspection report preparation support tool

One-tap searches of past documents when preparing watergate inspection reports



Field operations support tools



- Tap once on Web map for watergate facility locations in event of disaster
- Tap once for detailed emergency support information

Remote work support tools



- Remote guidance with wearable camera during emergency responses
- Wearable camera + 360-degree camera for customers' remote on-site product inspections

ICT technology for remote operations

→ Enables real-time remote monitoring and inspections



Remote 360° video + remote robot operation

Features

- Remote robot control with GBRAIN
- Remote viewing of 360° camera images on GBRAIN
- Portable rail for easy installation
- Rotates in three directions (XYZ)



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.