

Need for Quality in Development of Regional Connectivity

July 8th, 2019
JICA India

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Cooperation on Metro Projects

JICA has financed metro projects in 6 major cities in India

Ahmedabad Metro

- Total Length: 38 km
- Project Cost: JPY 246 Billion (about Rs. 15,000 crore)
- Completion Year: 2020
- Under Construction

Delhi Metro

- Total Length: 351km
- Project Cost: JPY 1,274 Billion (about Rs. 80,000 crore: Phase 1-3)
- Completion Year: 2020 (Phase-3)
- Phase 4 plan is coming up



Mumbai Metro

- Total Length: 34 km
- Project Cost: JPY 621 Billion (about Rs. 39,000 crore)
- Completion Year: 2021
- Under Construction. New plan for Line 2 and 4 is coming up.

Kolkata Metro

- Total Length: 16 km
- Project Cost: JPY 140 Billion (about Rs. 9,000 crore)
- Completion Year: 2021
- Under construction



Bangalore Metro

- Total Length: 42 km
- Project Cost: JPY 307 Billion (about Rs. 19,000 crore)
- Completion Year: 2017
- Phase-2 is under construction

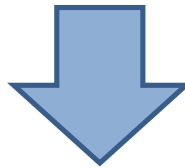
Chennai Metro

- Total Length: 53 km
- Project Cost: JPY 386 Billion (about Rs. 24,000 crore)
- Completion Year: 2020 (Phase-1)
- Phase-1 under construction



Safe, Timely, Comfortable Move for Better Life

- **Safe** operation
- **Timely & Stable** (with reliability, efficiency and comfort)
- Considerations for **environmental harmonization**, **operation and maintenance**, managerial/financial **sustainability**
- Coordination with various stakeholders for better operation /service



“Quality Infrastructure”

Sustainable Development Goals (SDGs) (draft)

Goal 9

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

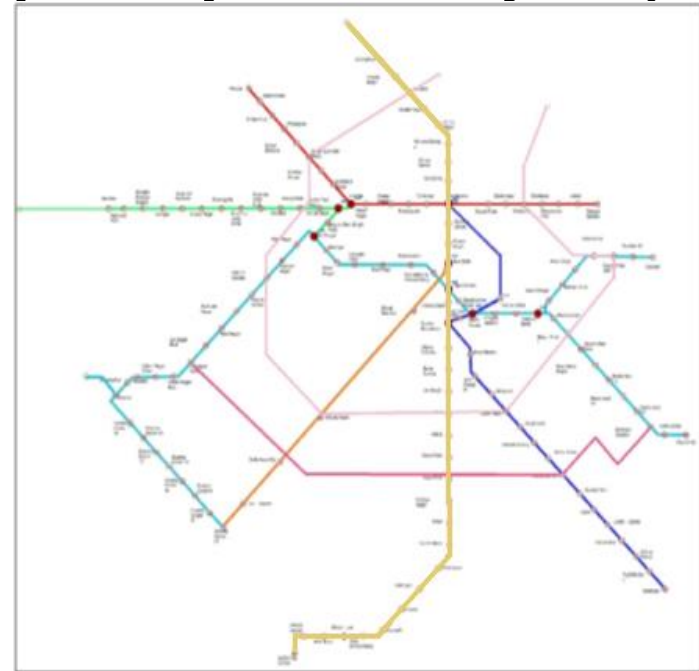
Target 9.1

Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

Key Elements of Quality Infrastructure Investment

1. Aligning to country/regional development strategy
2. Attach importance to Life-Cycle cost rather than adopting lower initial cost
3. Duly addressing potential social and environmental impacts in accordance with relevant international practices and standards
4. Safety and resilience
5. Benefits to society and people: Job creation and human resource development

1. Delhi Mass Rapid Transport System Project (India)



	Distance	Full operation	Project Cost
Phase 1	65km	2006	US\$2.3 bil (ODA Loan : US\$1.4bil)
Phase 2	125km	2011	US\$3.2 bil (ODA Loan : US\$1.8bil)
Phase 3	106km	Under construction	US\$6.0 bil (ODA Loan : US\$2.9bil)

1. Delhi Mass Rapid Transport System Project (India)

(1) Inclusiveness

- Attention for the disabled, elderly, and women



Wheelchair users

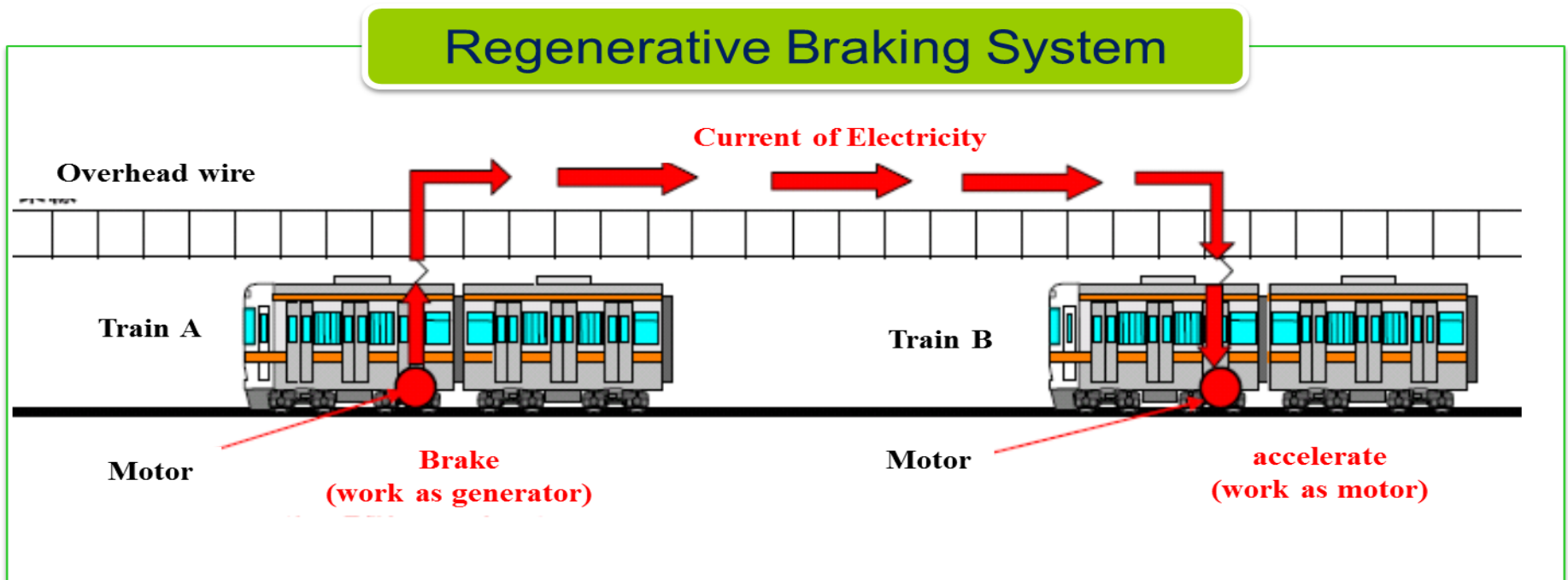


Women-only train car

1. Delhi Mass Rapid Transport System Project (India)

(2) Environmental Sustainability

- First railway project registered with the UN under the Clean Development Mechanism (CDM)
- **22 mil ton CO²** reduction (2002 ~ 2032) by regenerative braking system



1. Delhi Mass Rapid Transport System Project (India)

(3) Safety

Improvement of safety awareness at construction site

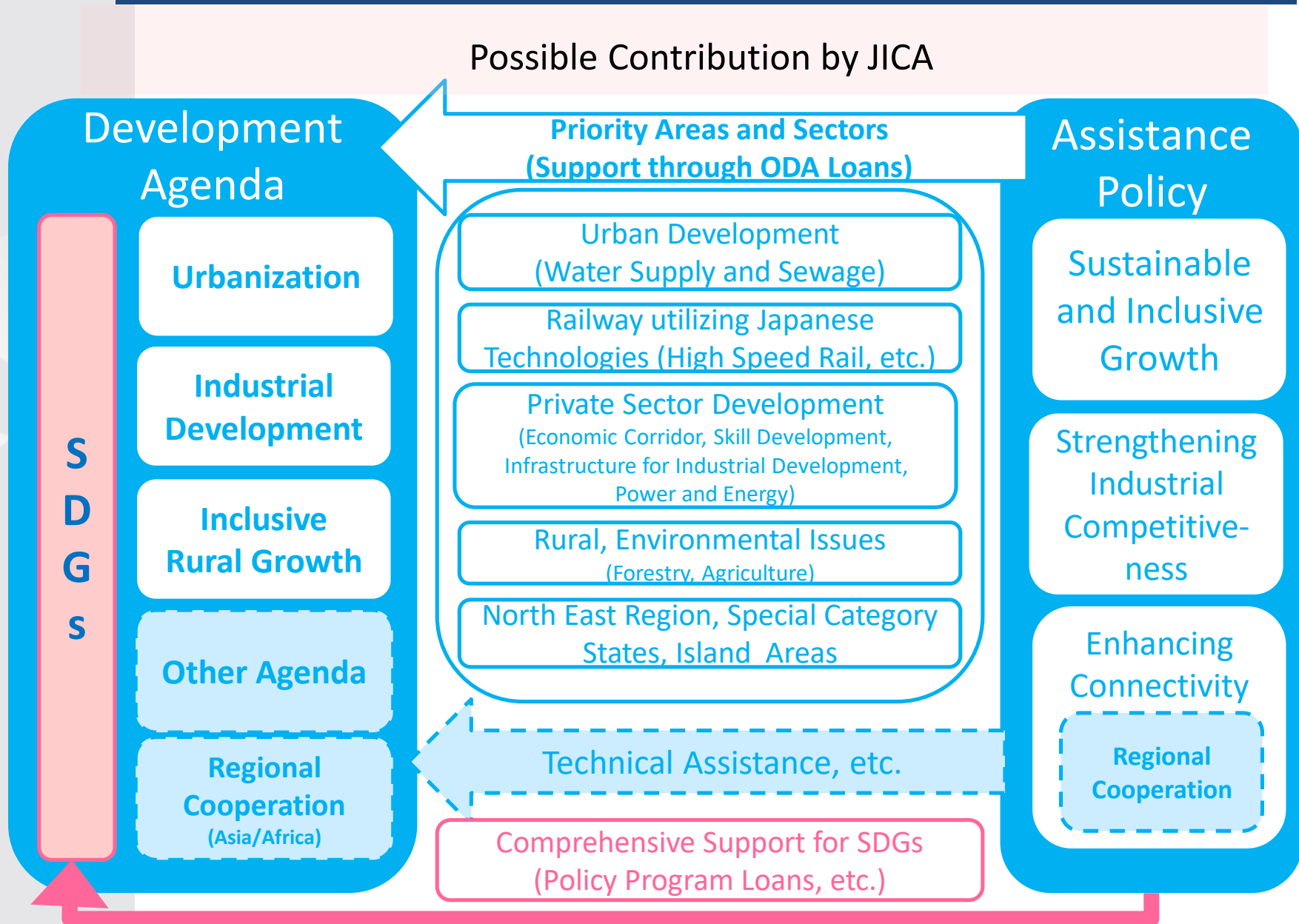
- Familiarization with helmet and protective shoes usage
- Introduction of “On site Visualization”(OSV) system, which shows risk of collapse of ground or structure



Safety Meeting at construction site



Construction site of AIIMS station of Delhi, where OSV was installed.



India is JICA's Largest Development Partner in the World

Soft Loan

Accumulated Commitment by FY2017/18:

- JPY 5.3 trillion in total
(equivalent to over Rs. 3 lakh crore)

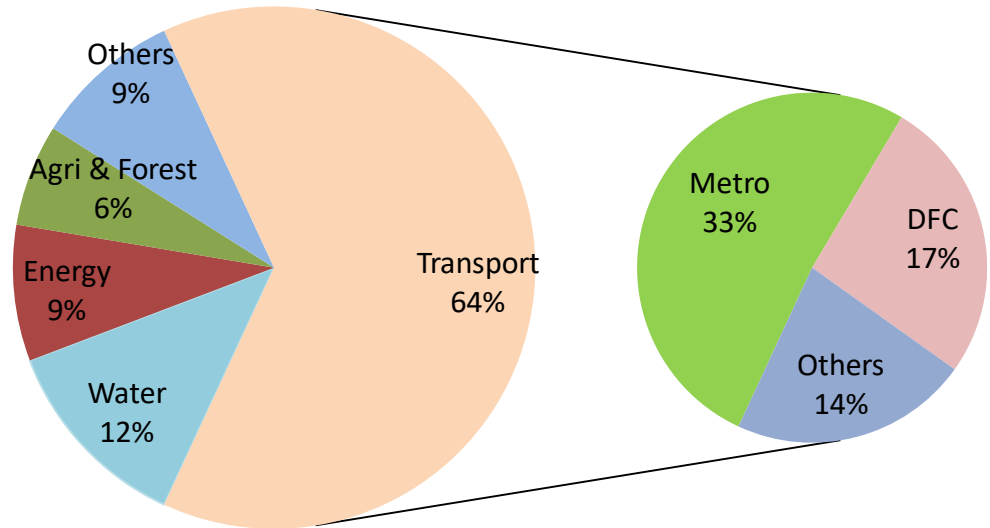
Operational Results in FY2017/18:

Commitment: JPY 398.4 billion
(equivalent to about Rs. 25,000 crore)
Disbursement: JPY 264.3 billion
(equivalent to over Rs. 16,000 crore)

Terms and conditions: (as of Jan. 2018)

- General terms: Interest rate 1.5%, repayment period 30 years (including 10 years grace period)
- STEP: Interest rate 0.1%, repayment period 40 years (including 12 years grace period)

Major Sector (FY2008/09-2017/18)



Grant Aid

Two on-going projects
in
Varanasi & Bengaluru

Technical Cooperation

▪ Results in FY 2016/17
JPY 16.0 billion (about Rs. 850 crore)

About 1100 Japanese experts to India
About 250 Trainee from India to Japan

Citizen Partnership / Public-Private Partnership

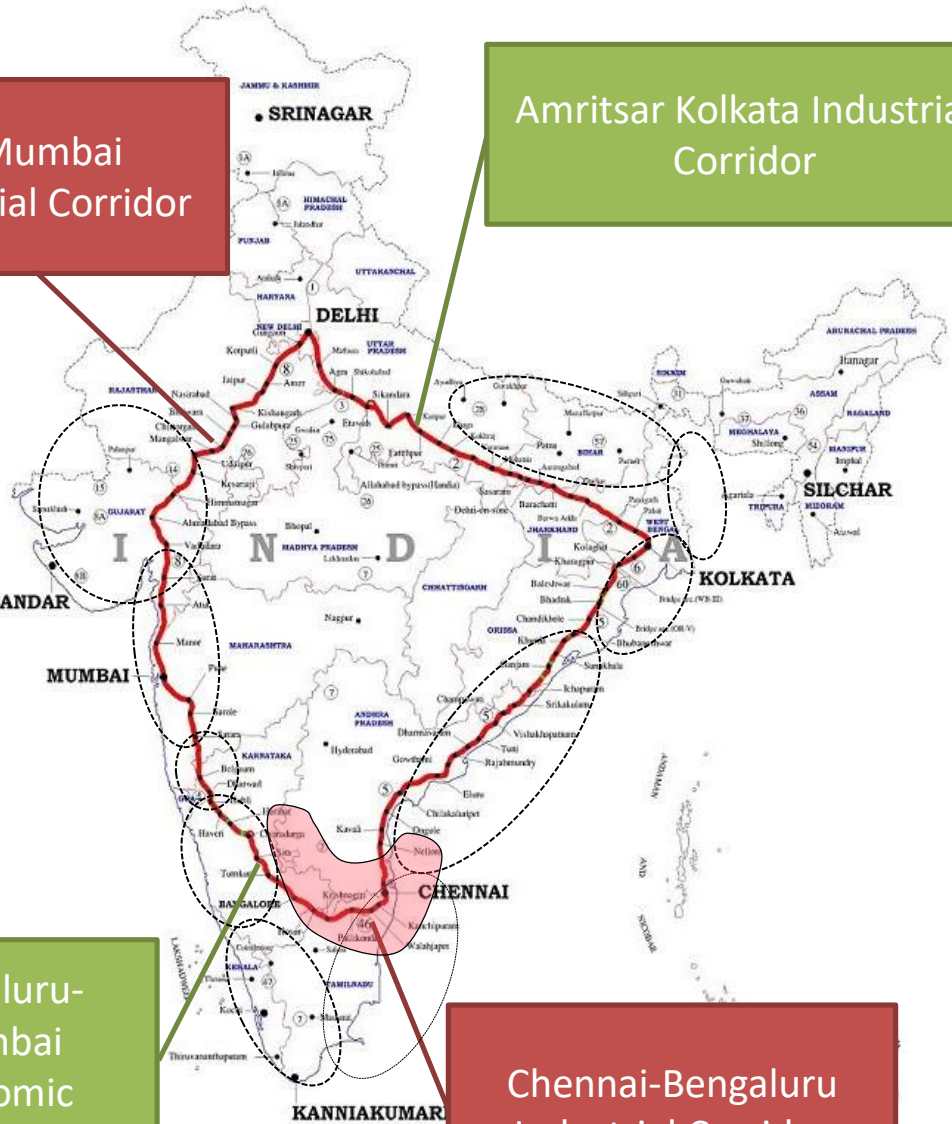
- Japanese Volunteers
- Japanese NGO activities
- Partnerships with Private-Sector Activities

Industrial Corridors under Development (DMIC & CBIC)

Delhi-Mumbai Industrial Corridor

Amritsar Kolkata Industrial Corridor

DMIC and CBIC are being supported by GoI and GoJ.



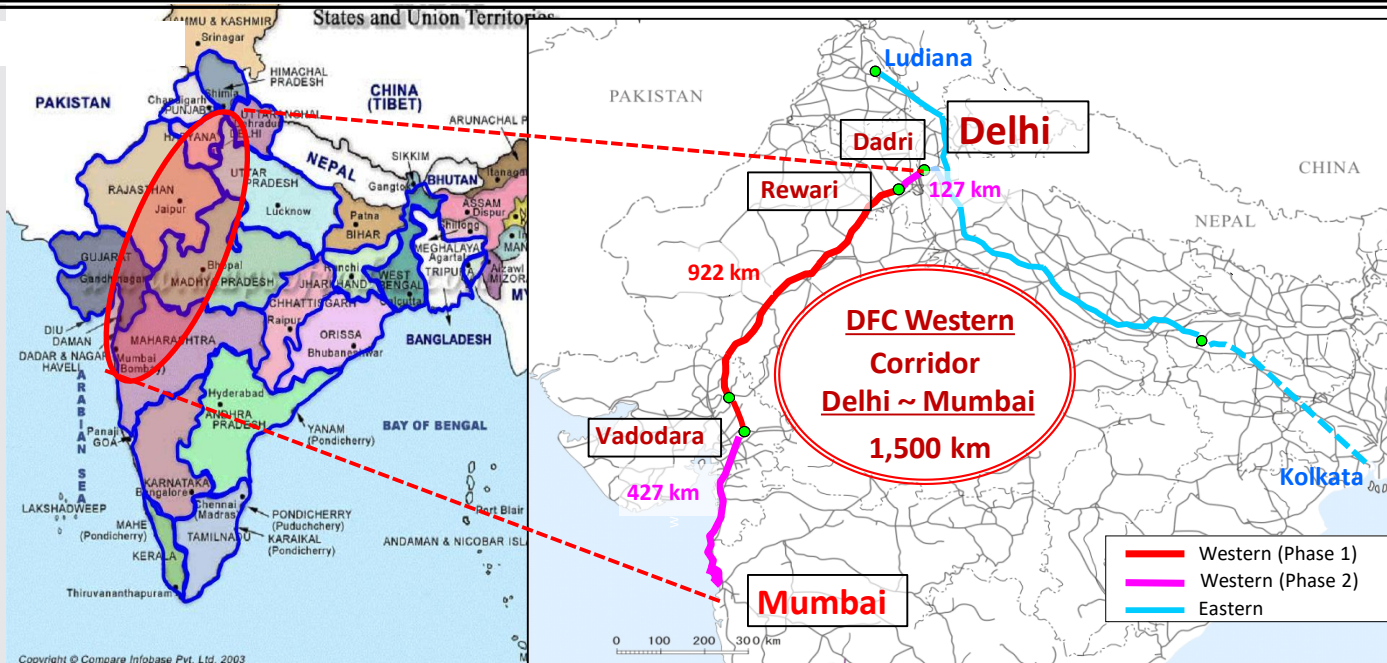
National Manufacturing Plan Targets

- ~15% y-o-y growth in manufacturing sector to achieve 25% contribution to GDP by 2022
- 100 million jobs by 2022
- Skill development for inclusive growth
- Improved *technology* orientation & *value addition*
- Global Competitiveness
- Environmental sustainability

Bengaluru-Mumbai Economic Corridor

Chennai-Bengaluru Industrial Corridor

- The **backbone of DMIC** (Delhi-Mumbai Industrial Corridor)
- WDFC (**Delhi-Mumbai: 1,500 km**) will focus on:
 - (1) construction of **new dedicated freight lines**
 - (2) installation of **automated signal & telecommunication**
 - (3) introduction of **electric locomotives** with high-speed & high-capacity transportation
- Construction is underway (Almost all tendering are completed)



Operation result

- **9.3GW** of generation capacity
(3% of Indian total Capacity)
- **1.0GW** of Renewable Energy
- **85 Projects**
- **JPY 1.3 Trillion (≒ Rs. 80,000 crore, US\$ 1.2 bil.)**
(roughly **25%** of JICA's total cooperation in India)

- ODA Loan

New Power Plant, Transmission & Distribution Lines, Energy Efficiency & Conservation, New and Renewable Energy, Grid Stabilization

- Technical Cooperation

Technical Assistance for Energy Efficiency & Conservation, New and Renewable Energy
Study for Updating Exhausted Coal Thermal Power Plant



Purulia Pumped Storage Project (I), (II), (III)

- 1995 – 2008, West Bengal
- 900MW : 12% of the peak demand of West Bengal

Umiam Hydro Power Station Renovation Project

- 2004 – 2012, Meghalaya
- Capacity was improved from 18MW to 20MW
- 530 hours unplanned non-operation time due to malfunction (2002 before the project) → 0 hour for three years after the project completion

- Recent ODA Loan Projects -

- Haryana Transmission System Project (FY2007)
- Haryana Distribution Upgradation Project (FY2013)

- Madhya Pradesh Transmission System Modernisation Project (FY2011)
- Madhya Pradesh Transmission System Strengthening Project (FY2015)

- Maharashtra Transmission System Project (FY2007)

- Bangalore Distribution Upgradation Project (FY2006)

- Tamil Nadu Transmission System Improvement Project (FY2012)

(More than two States)

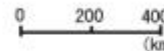
- Rural Electrification Project (FY2005)
- New and Renewable Energy Development Project (FY2011, FY2014)
- Micro, Small and Medium Enterprises Energy Saving Project (FY2008, FY2011, FY2014)

- Dhauliganga Hydroelectric Power Plant Construction Project (FY1996~FY2004) (Uttarakhand)

- (West Bengal)
- Bakreswar Thermal Power Station Project (FY2002)
 - Purulia Pumped Storage Project (FY1994, FY2004, FY2005)

- Odisha Transmission System Improvement Project (FY2015)

- Transmission System Modernization Project in Hyderabad (FY2006)
- AP Rural High Voltage Distribution System Project (2010)
- Simhadri Thermal Power Station Project (FY1997, FY2001, FY2002, FY2003)



Legend

- Generation
- Transmission and Distribution

Our Works

Non-revenue water (NRW) reduction

To reduce non-revenue water, renewal of water pipes and meters and installment of SCADA / GIS system are implemented. Capacity development is also addressed.

Projects throughout the country

In major cities, such as Agra, Varanasi, Bengaluru, Hyderabad, Jaipur and Delhi

Total number of beneficiaries :

Water Supply: approx. 30 million people

Sanitation : approx. 15 million people

Rejuvenation of rivers

Assistance for rejuvenation of the Ganga River and Yamna river over the last 20 years toward hygienic environment.

Goa's case of NRW Reduction

	Before (%)	After (%)
Curtorim	45.1	18.0
Khadpaband	58.7	34.4
Moira	53.0	36.1

Assistance Policies

① Improving water and sewerage infrastructure in major cities and industrial areas

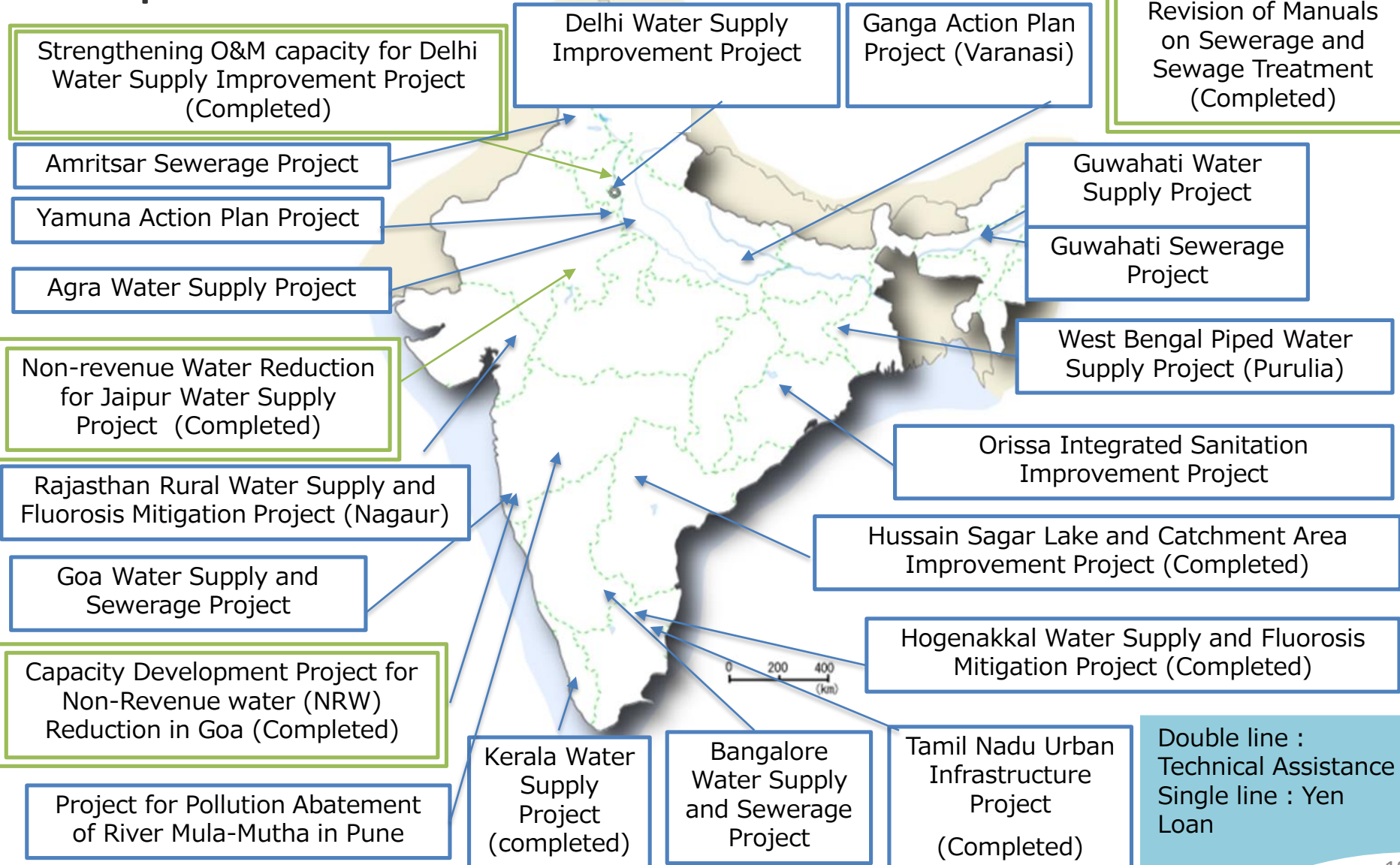
② Utilizing Japanese knowledge, experience, and advanced technology

- Introduction of SCADA • GIS system
- Advanced wastewater treatment
- Cooperation with municipalities of Japan, with Tokyo City in Delhi and with Yokohama City in Jaipur

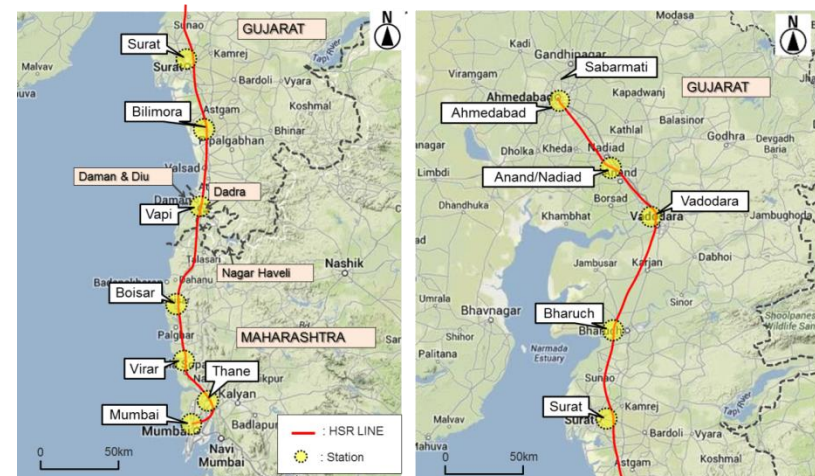
③ Enhancing Sustainability

- Enhancing O/M capacity
- Securing financial stability by ensuring the collection of water tariff
- Enhancing of public awareness for safety water and sanitation

Improving water and sewerage infrastructure mainly in metropolitan areas and industrial areas



- **Joint Feasibility Study (F/S)** conducted by JICA and Ministry of Railway from Dec. 2013 to July. 2015.
- Both sides confirmed the use of **Japanese high speed rail technologies (i.e. the SHINKANSEN system)** and experiences, in line with the result of the joint F/S at the Japan-India Summit Meeting (December 2015).
- **Follow-Up Study** conducted by JICA from Mar. 2016 to Feb.2018
- In the latest Japan-India Summit Meeting (September 2017), the two Prime Minister welcomed:
 - (1) Steady progress, including the **project commencement at the Sabarmati Station**, witnessing the **construction commencement of training institute in Vadodara**
 - (2) Provision for a soft **ODA loan amounting to JPY 100 billion**
 - (3) Business matching efforts to establish Japan-India cooperation for advancing “**Make in India**” and **technology transfer** HSR projects
- JICA has been providing with utmost **technical support** (for CD);
 - ✓ Formulation of **technical standards**,
 - ✓ **Safety certification** measures,
 - ✓ Strengthening the **institutional capacity of NHSRCL**
 - ✓ Urban development planning of stations and surrounding areas for **enhancement of the connectivity** and **non-fare revenue**, etc.



■ The impact of HSR on development of India

Safe, comfortable and punctual HSR



- Boost economic development
- Stimulate regional development
 - ✓ mitigate excessive concentration on large cities
 - ✓ lead to balanced economy
- Promote “social innovation” by introducing Japan’s;
 - ✓ Technology
 - ✓ Discipline
 - ✓ Perfection
 - ✓ Teamwork Concept

Mumbai – Ahmedabad High Speed Railway Project (MAHSP)

Package		FIDIC Conditions	Package		FIDIC Conditions
C-1	Mumbai St.	Design-Build	P-4	Paticular Bridges (fabrication)	Works
C-2	Undersea Tunnel	Works	T-1	Track Works	Design-Build
C-3	Mid Section 1	Design-Build	T-2	Track Works	Design-Build
C-4	Mid Section 2	Design-Build	T-3	Track Works	Design-Build
C-5	Vadodara St.	Works	E-1	Electrical Works	Design-Build
C-6	Mid Section 3	Design-Build	D-1	Thane Depot	Design-Build
C-7	Ahmedabad St.	Works	D-2	Sabarmati Depot	Design-Build
C-8	Sabarmati Depot (Civil)	Design-Build	R-1	Rolling Stock	Design-Build
P-1	(A)Paticular Bridges	Works	IM-1	Inspection /Maintenance Car	Design-Build
	(B) Paticular Bridges	Works	TI-1	Training Institute	Design-Build
	(C) Paticular Bridges	Works	TI-2	Training Institute	Design-Build
P-2	Paticular Bridges (No.10)	Works	TI-3	Training Institute	Local Competitive Bidding
P-3	Paticular Bridges (No.11)	Works			

JICA's guidelines share the same basic principles as FIDIC, and procurement for MAHSR is in line with JICA's guidelines and project specific requirements

Key Basic Principles for Procurement similar to FIDIC such as the following:

- Fair risk allocation between contractor and employer
- Clear understanding of Employer's obligation and contractor's responsibility
- No unilateral or one-sided contract conditions

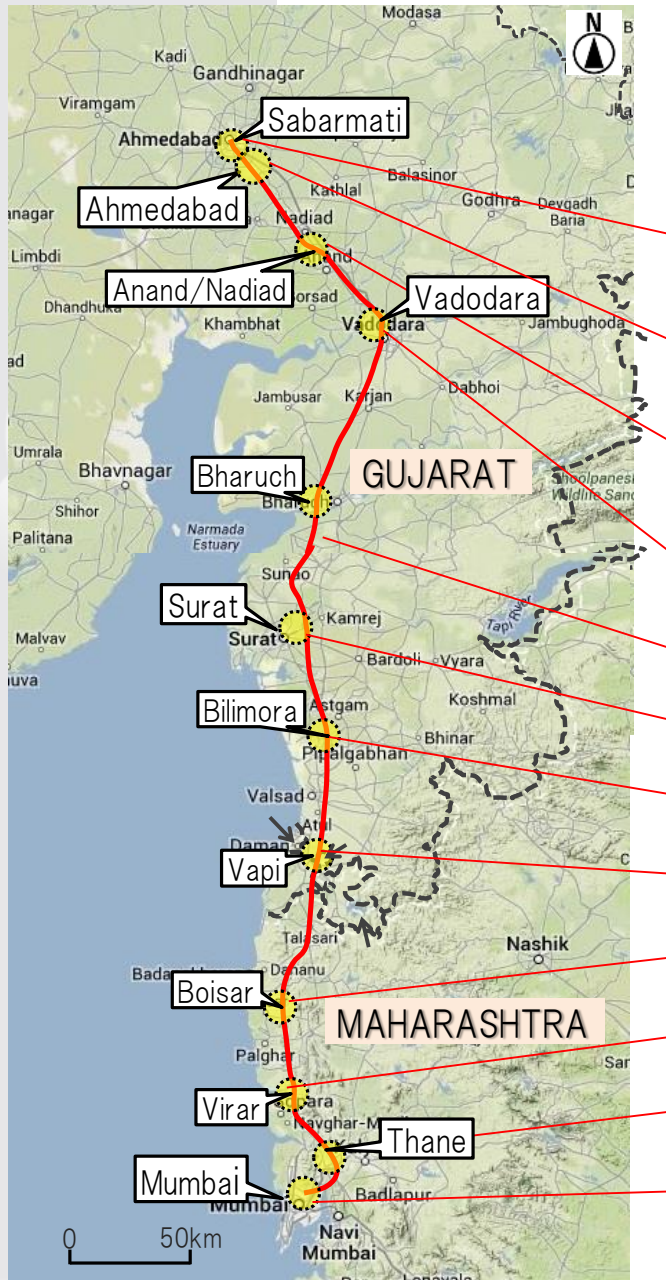
JICA's Standard Bidding Documents (SBDs) on Design Build and Works contracts are by and large in line with FIDIC Yellow and Pink Book - FIDIC conditions have been incorporated in JICA's SBDs wherever considered appropriate

Bidding Documents for MAHSR are based on JICA's SBDs.

Key conditions in line with FIDIC:

- **Employers' liability vis-à-vis contractors' liability**
- **Neutrality of Dispute Adjudication Board (DAB) and Arbitration process**
- **Appropriateness of milestone conditions**
- **Payment terms and conditions (Mobilisation advance, retention money , recovery of mobilisation advance etc)**
- **Documentation requirements (JV agreements, financial eligibility determination etc)**

Location of HSR stations

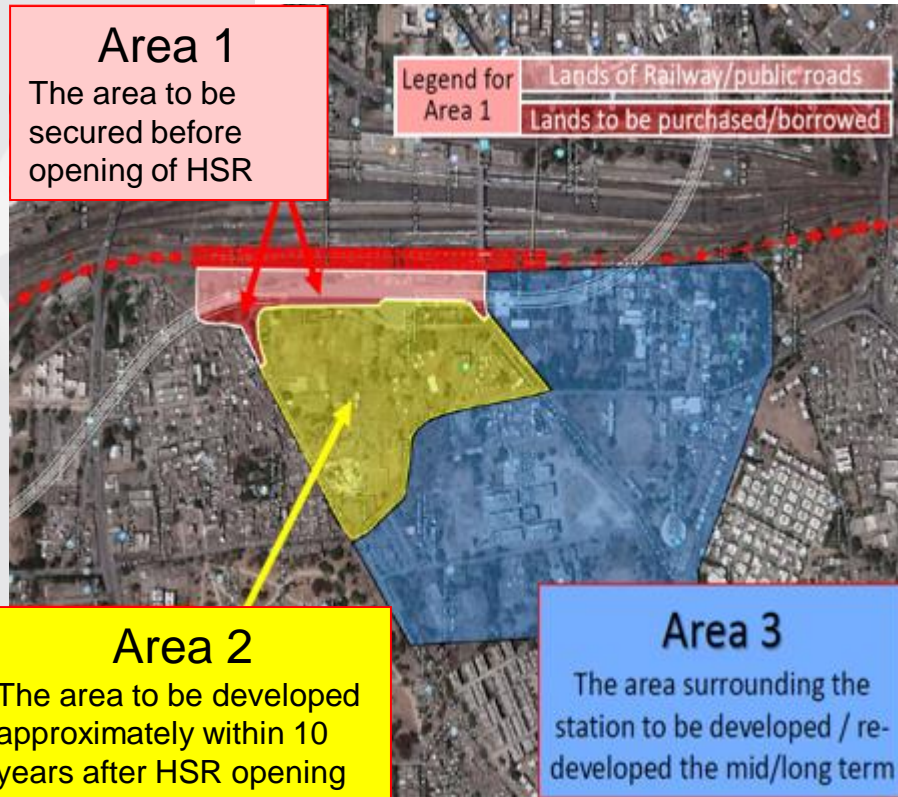


No.	Station Name	Population (million)	Location of Station
12	Sabarmati	6.30	Brown field, Adjacent
11	Ahmedabad		Brown field, Adjacent
10	Anand/Nadiad	0.85	Green field, New
9	Vadodara	2.00	Brown field, Adjacent
8	Bharuch	0.22	Green field, New
7	Surat	4.50	Green field, New
6	Bilimora	0.05	Green field, New
5	Vapi	0.10	Green field, New
4	Boisar	0.15	Green field, New
3	Virar	1.20	Green field, New
2	Thane	1.20	Green field, New
1	Mumbai	12.00	Semi-brown field, New

Station Area Development for HSR Project

Phased development is considered for station area of HSR

【Image of Area Classification】



【Sequence】

[Area 1] Areas to be developed before opening of MAHSR

- ✓ Develop access road, pedestrian walkway and station plaza necessary for station operation



[Area 2] To be developed within 10 years after HSR opening

- ✓ Expansion of station plaza ,and development of bus terminal and streets
- ✓ Commercial and/or housing development by private sector



[Area 3] To be developed in the mid-term

- ✓ Infrastructure development and private sectors' property development



JICA Invitation Program for Station Area Development

JICA invited Indian officials, MOR, MOHUA, NHRCL, Gujarat and Maharashtra state governments to Japan from Jan 27 to Feb 5, 2019.

Tokyo Station



Toyama Station



Kanazawa Station



Basement of Tokyo Station



Osaka Station



India - Japan Relations

- Both established **Special Strategic and Global Partnership**.
- For India, Japan is the **largest bilateral development partner**.
- For Japan, India is the **oldest** recipient of ODA.

- Apr. 1952 Established official diplomatic relations
- 1958 Japan's first ODA Loan in the world extended to India.
- Aug. 2000 "**Japan-India Global Partnership in the 21st Century**"
- Apr. 2005 Japanese PM Koizumi visited India. Annual based PMs



- Dec. 2006 "**Joint Statement Towards Japan-India Strategic and Global Partnership**"
- Sept. 2014 Indian PM Modi visited Japan. "**Tokyo Declaration for Japan-India Special**

Strategic and Global Partnership"

- a) *Doubling Japan's foreign direct investment in India within five years.*
- b) *Doubling the number of Japanese companies in India within five years.*
- c) *JPY 3.5 trillion (Rs. 2 trillion) of public and private investment and financing to India from Japan, including ODA, within five years.*
- Sept. 2017 Japanese PM Abe visited India (Commencement ceremony of HSR in Ahmedabad)
- Oct. 2018 Indian PM Modi visited Japan (Tokyo and Yamanashi).

Free and Open Indo-Pacific

- The Free and Open Indo-Pacific (FOIP) concept, originally advocated by the Japanese government, is based on the recognition that a maritime order that is free and open under the rule of law represents a foundation for the stability and prosperity of the international community. To ensure the stability and prosperity of the Indo-Pacific region, it is vital to maintain or bolster its free and open maritime order by eliminating various kinds of threats such as those from piracy, natural disasters, terrorism, the proliferation of weapons of mass destruction and illegal operations.
- The entire Indo-Pacific region's economic activities will be stimulated by connecting Asian economies that have grown significantly through attaining a certain degree of political stability, with Middle Eastern and African countries that are expected to grow in the coming years and by boosting the regional connectivity.
- -Promotion and establishment of fundamental values (rule of law, freedom of navigation, etc.);
-Pursuit of economic prosperity (improvement of connectivity, etc.); and
-Commitment for peace and stability (capacity building on maritime law enforcement, etc.)

Cooperation in the third countries

India and Japan agreed to implement joint projects as

- Cooperation in Sri Lanka, such as the development of LNG-related infrastructure;
- Cooperation in Myanmar, synergizing development efforts in the Rakhine State by collaborating in housing, education and electrification projects;
- Cooperation in Bangladesh, for enhancing connectivity by way of four-laning of road and reconstruction of bridges on the Ramgarh to Baraiyarhat stretch, and providing rolling stock and constructing the Jamuna Railway Bridge over the Januma River; and
- Cooperation in Africa, such as organising an SME development seminar in Kenya and seeking a possibility of a collaborative project in the area of health service such as developing a cancer hospital in Kenya.

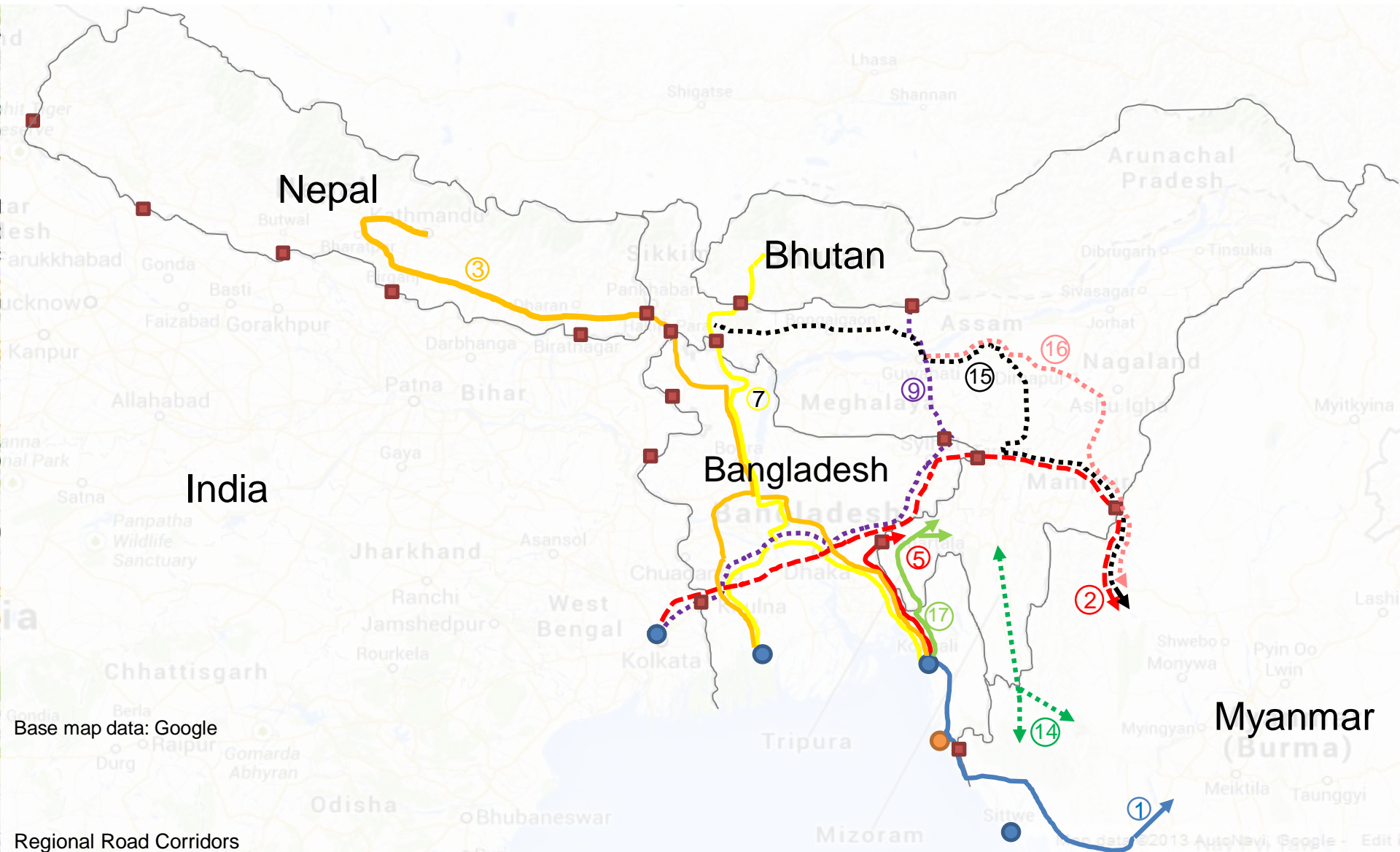
Act East Forum

The Forum aims to further expand the cooperation between Japan and India in North East and to strengthen the relationship between Japan and North East, as well as that between Japan and India. In this regard, the Forum discusses cooperation in various fields and promotes Japan's cooperation in the region.

- 1. Enhancing Connectivity**
- 2. Forest Management**
- 3. Bamboo**
- 4. Disaster management**
- 5. People-to-people exchanges**



Shortlist – 11 Regional Road Corridors



Base map data: Google

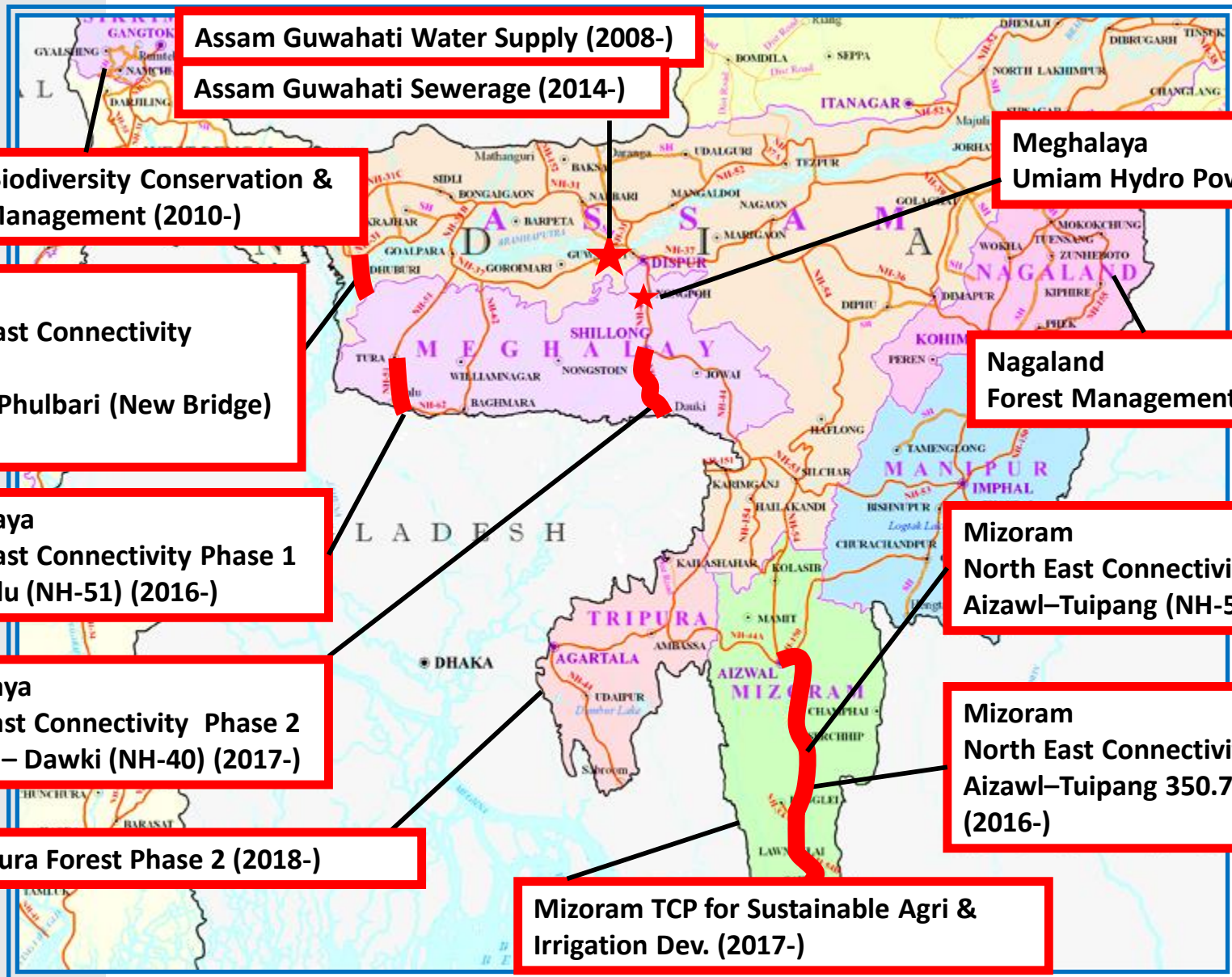
Regional Road Corridors

- RO1
- RO2
- RO3
- RO5
- RO7
- RO9
- RO14
- RO15
- RO16
- RO17
- Port
- Potential Port
- Major Border Crossing Point

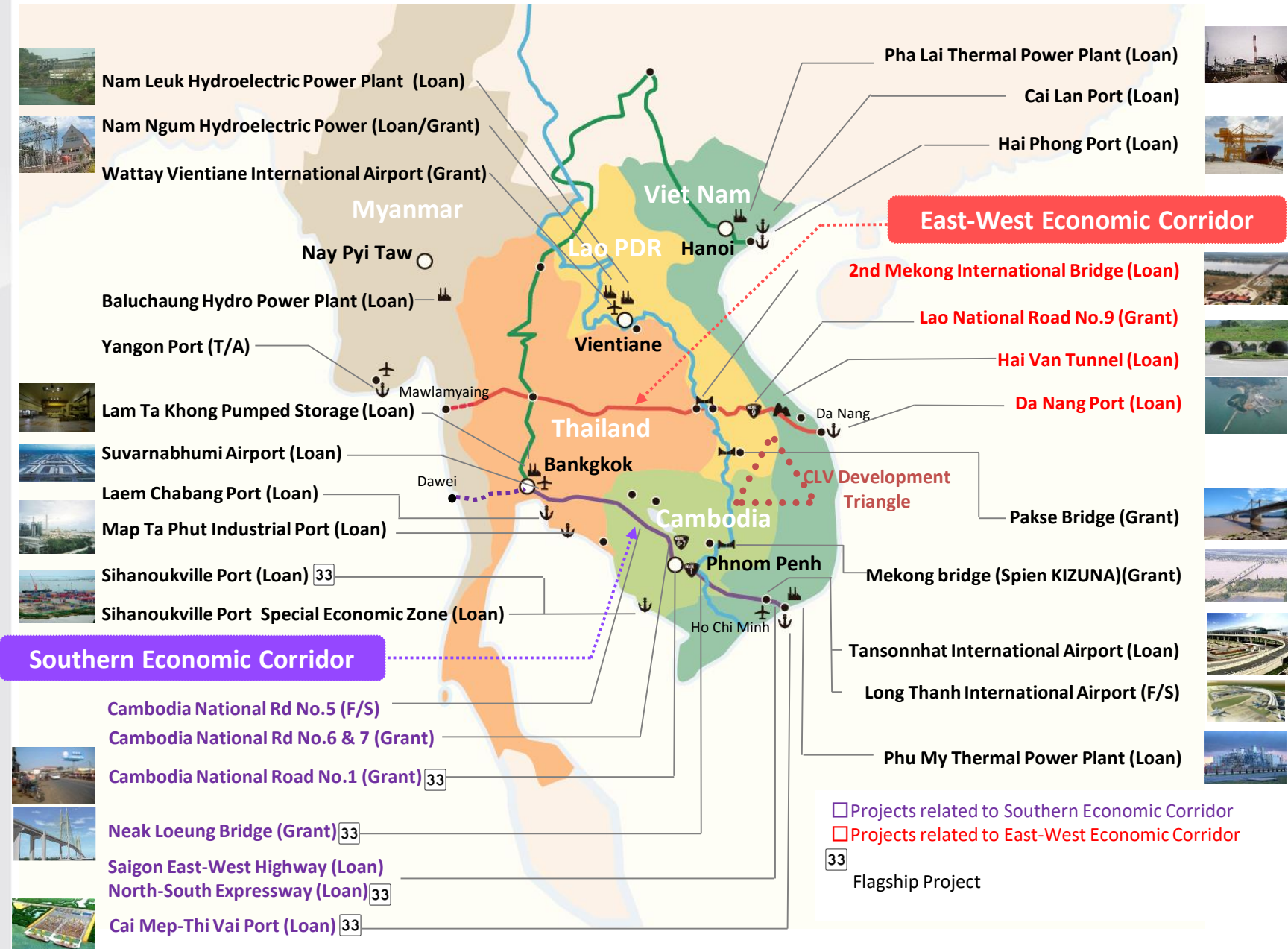
Alignments are indicative only

JICA's Cooperation for NER

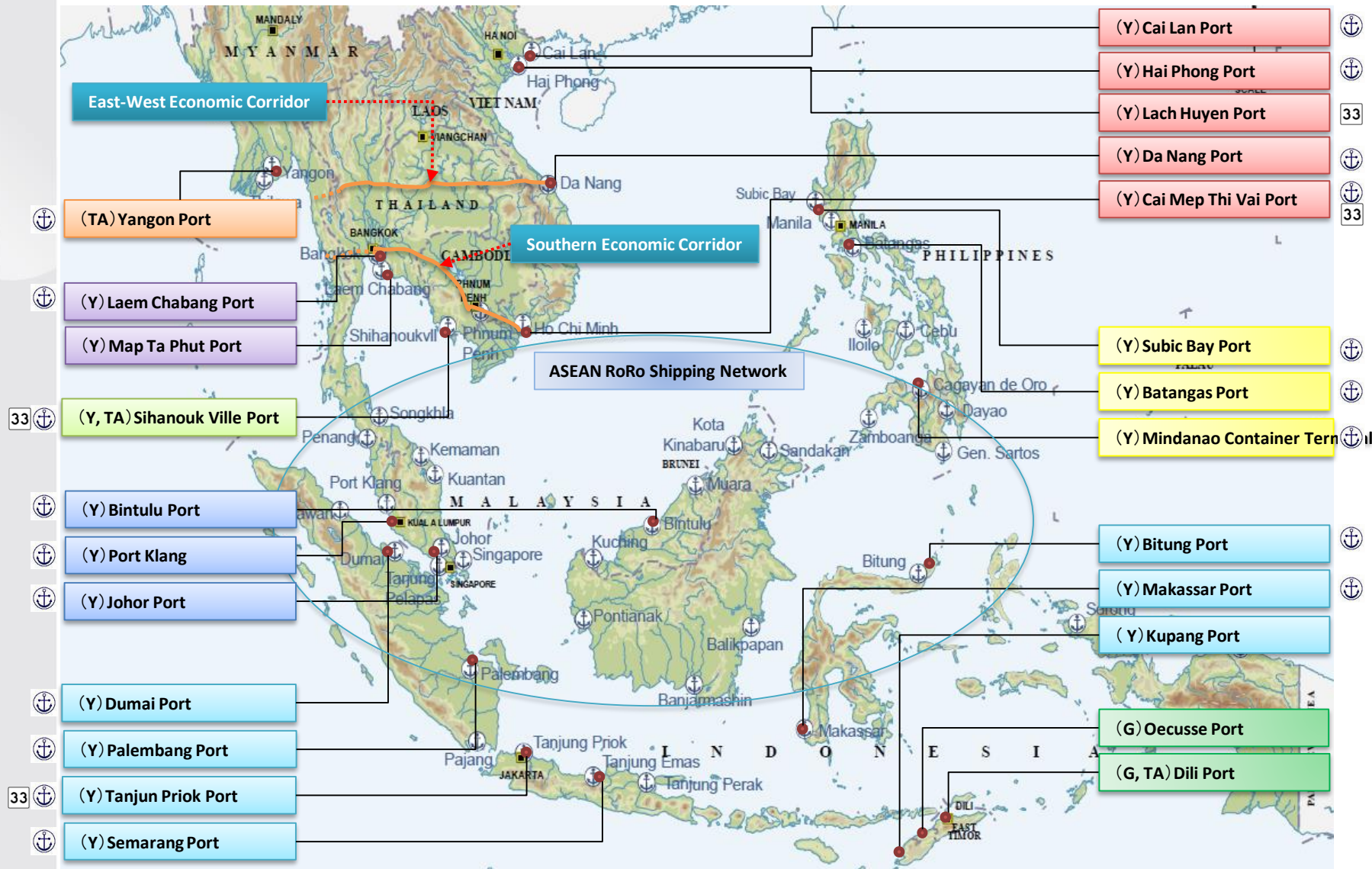
Continuous Cooperation for Sustainable Development including Connectivity Enhancement



JICA's contribution to Economic Corridors and Mekong Area



JICA's contribution to Maritime ASEAN Economic Corridor

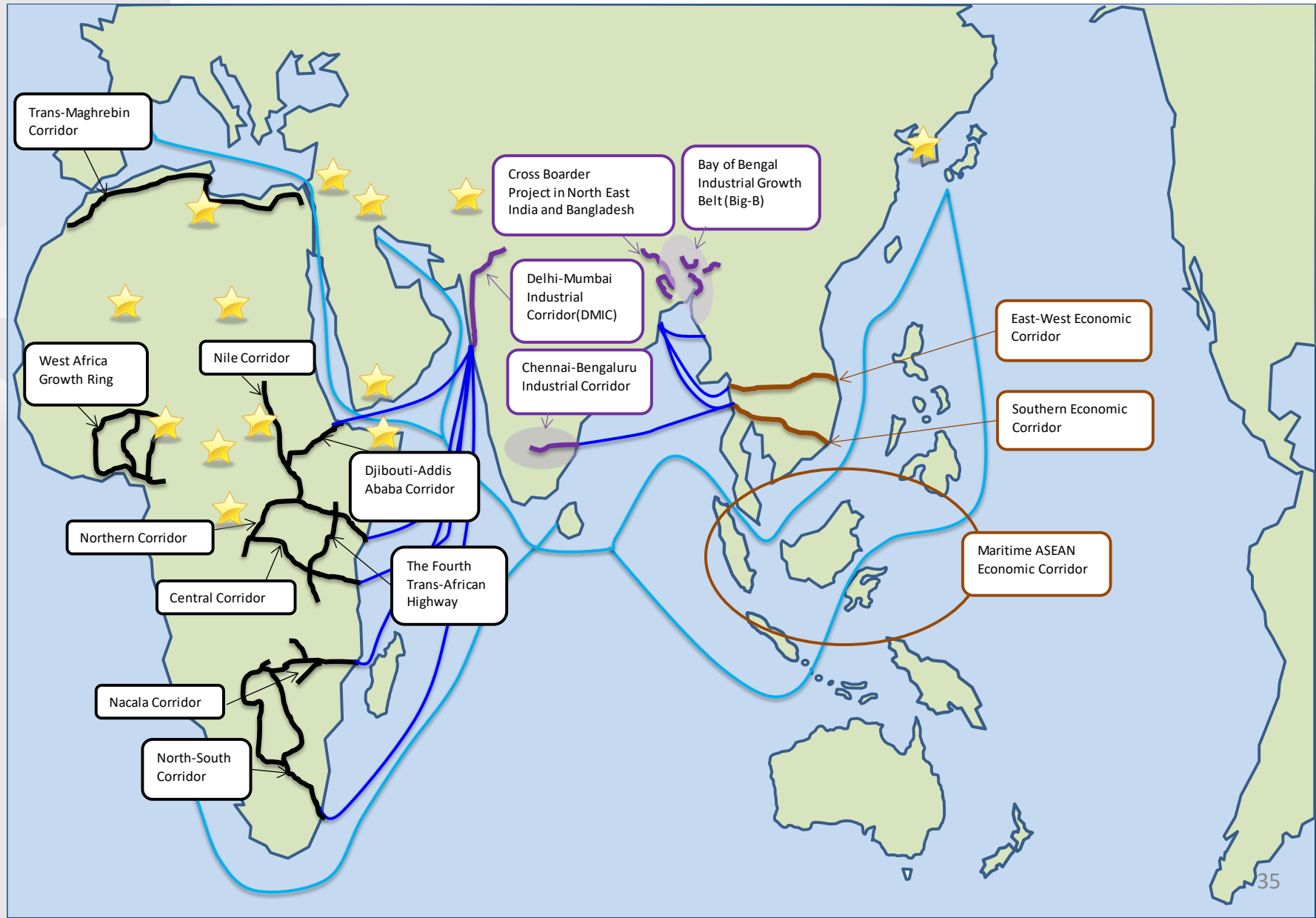


(G) Grant, (TA) Technical Assistance, (Y) Yen Loan

⚓ ASEAN 47 Network Ports

33 Flagship Project

JICA's activities for prosperity of the Indo-Pacific



1. Southeast Asia

(1) East-West Economic Corridor

- 2nd Mekong International Bridge (Loan)
- Hai Van Tunnel (Loan)
- Da Nang Port (Loan)

(2) Southern Economic Corridor

- Cambodia National Road No. 5 (Loan)
- Neak Loeung Bridge (Grant)
- Cai Mep-Thi Vai Port (Loan)

(3) Maritime ASEAN Economic Corridor

- ASEAN RoRo Shipping Network
- Maritime Safety (Loan, Grant, Technical Cooperation)

(4) Institutional connectivity for Economic Corridors

- Projects for E-Customs and National Single Window for Customs Modernization in Vietnam and Myanmar (Grant)

2. South Asia

(1) Bay of Bengal Industrial Growth Belt (Big-B)

- Dhaka-Chittagong Railway Development (Loan)
- Matarbari Ultra Super Critical Coal-Fired Power (Loan)

(2) Cross Boarder Projects in North East India and Bangladesh

- North East Connectivity Improvement (F/S)

(3) Delhi-Mumbai Industrial Corridor

- Dedicated Freight Corridor (Loan)

(4) Chennai-Bengaluru Industrial Corridor

- Chennai Metro (Loan)
- Bangalore Metro Rail (Loan)
- Tamil Nadu Investment Promotion Program (Loan)

3. Africa

(1) Northern Corridor

- Mombasa Port Development in Kenya (Loan)
- Master Plan on Logistics in Northern Economic Corridor (Technical Cooperation)

(2) Nacala Corridor

- Nacala Port Development (Loan and Grant)

(3) Central Corridor

- Comprehensive Transport and Trade System Development Master Plan in the Tanzania (Technical Cooperation)

(4) West Africa Growth Ring

- The Corridor Development for West Africa Growth Ring Master Plan (Technical Cooperation)

Thank you!

धन्यवाद



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<http://www.jica.go.jp/india/english/office/others/brochures.html>
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