JICA's Approach to Environment Issues

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Water Sector: Assistance Policy - Rejuvenation of Rivers

Assistances for rejuvenation of the lakes, Ganga River, Yamuna River and other rivers have been initiated over the last 20 years. The Projects aim to improve the water quality of the water bodies by augmenting sewerage collection and treatment capacity with the construction of the sewerage system, sewage treatment plants (STP) and pumping stations etc. Under Yamuna Action Plan Project (III), the largest STPs in India, with the capacity of treating 564 Million Litter per Day, is expected to be constructed. Technical Cooperation Project for proper classification, treatment, disposal and recycling of sludgt is currently under preparation to tackle the issue.

Right: Okhla STP (Phase II) of Yamuna Action Plan Project
Left: Water quality before and after the treatment of sewage

Yamuna Action Plan Project（ODA Japanese Yen Loan）

Poor water quality of Yamuna River

Dilapidated sewerage treatment facilities

<Background>
The Yamuna River is a river with a total length of 1,370 km, which originates from glacier in the Himalayas and passes through the capital city of Delhi and Agra, and joins the Ganges River. Along with the Ganges River, the Yamuna River is regarded as a sacred river, but domestic wastewater in the Delhi metropolitan area is the largest source of pollution of the river (80% of the total pollutant load in the entire basin). It has adversely affected the living environment of the local residents and the water quality of drinking water sources.

<Project Objectives>
The Project aims to improve the water quality of river Yamuna, by reducing pollution and other contaminants.

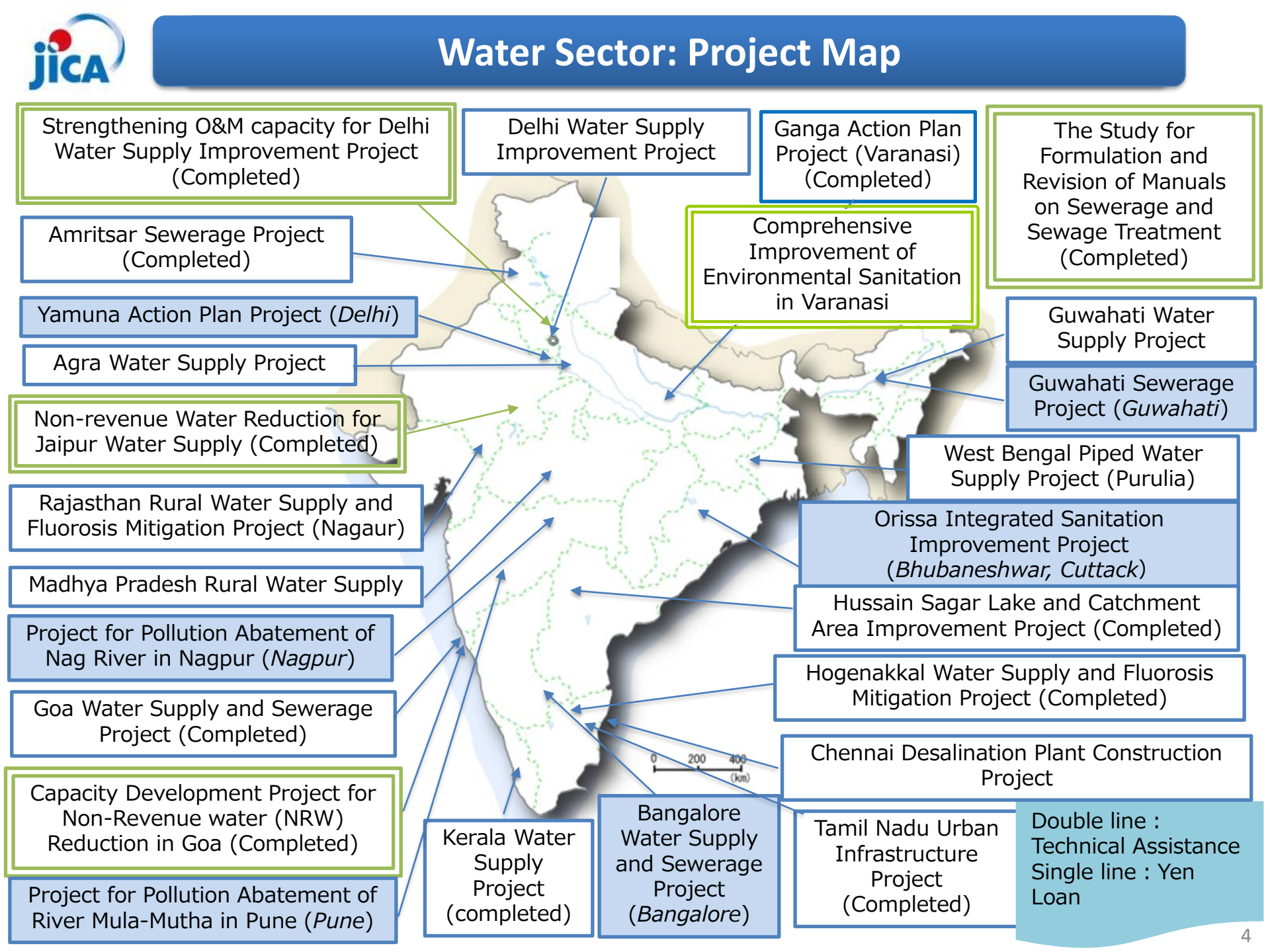
<Project Scope>
1) Sewerage components (Sewerage Treatment Plants (STPs), sewer lines), 2) Public awareness campaign, 3) Consulting Services

<Executing Agency> Delhi Jal Board

<Loan Amount> 63,677 Million JPY (₹4,245 Crore)

<Period> December, 1992－February, 2025 (Plan)

Water Sector: Project Map



Private Sector Investment Finance (PSIF)

PSIF Product: Debt & Equity

Debt	**Corporate Loan**	Agribusiness (upstream to downstream), Manufacturing, Social sector (Health, Education etc.) , Infrastructure
	Project Finance	Power & Energy, Infrastructure such as Transport (port, airport, road, railway) , Water and sewerage, Waste to Energy, Health etc.
	Financial Institutions (Bank Loan)	Local Tier 1 –Tier 2 banks outreaching to SMEs, MFIs, farmers and vulnerable people. Multi-project facility for climate change etc.
Equity	**Private Equity Investment**	Ranging from early-stage to growth-stage Strong justification of JICA participation required
	Fund Investment (Limited Partner)	Climate change (renewable energy, energy efficiency), SMEs, vulnerable regions/countries etc.

Note: Mezzanine products (sub-debt, preferred equity, etc.) can be also considered.

Private Sector Investment Finance (PSIF)

Existing PSIF investments in India: 4 Debt / 2 Equity

1. **Support for Micro, Small, and Medium Enterprises**
   (Loan to Mahindra and Mahindra Financial Services Limited)

2. **Project for Affordable Housing Finance for Low Income Households**
   (Loan to PNB Housing Finance Limited)

3. **Climate Change Management Project**
   (Loan to Tata Cleantech Capital Limited)

4. **Financial Inclusion for Women Project**
   (Loan to Nothern Arc Limited)

5. **DX Start-ups Investment Project**
   (Fund Investment to Rebright Partners IV)

6. **Promotion of SME through impact investment**
   (Fund Investment to Neev Fund II)

Solar project financed through Tata Cleantech Capital Limited

Strategic Partnership between JICA and Neev Fund II

Strategic Partnership between JICA and Neev Funds for private sector

- Building on Neev Fund I success, Neev Fund II was launched with a target of ~USD 251 Mn.
- Neev Fund II invests in early and growth stage SMEs with a strong focus on climate, environment, and sustainability.
- All the investors of Neev Fund I i.e., FCDO, SIDBI and SBI participated in Neev Fund II as well. European Investment Bank (EIB) has also invested in Neev Fund II
- In December 2021, Japan International Corporation Agency (JICA) concluded INR 2.14 billion (approximately Yen 3.2 billion) investment agreement with the SVL-SME Fund (known as Neev Fund II)
- JICA and SVL, together in collaboration, will continue its efforts to support SMEs that are tackling environmental and social issues and take forward their collaboration through private sector finance.

SVL won the 'TOKYO FINANCIAL AWARD 2021' for Neev Funds in the ESG Investment category

Investments in Neev Fund II

Chakr Innovation - a clean-tech company combating climate change by using their proprietary technology to reduce emissions from diesel generator sets

GPS Renewables - a bio-energy technology and project integration company

Blue Planet - an integrated waste management platform company

Hygenco - a clean-tech company deploying Green Hydrogen and Green Ammonia powered industry solutions

Introduction to Chakr Innovation

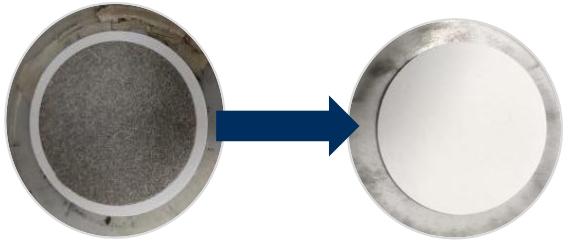
A Clean-tech Company

Chakr Innovation
Revolution through pollution

Overview

- Diesel Generator (DG) sets are a major contributor to PM emissions and cause global warming along with significant health impact.
- **Novel technology, tested by 5 National Labs**, used in Chakr Shield has capability to **reduce key pollutants by 70-90% with miniscule power usage** & no impact on DG sets
- **Patented & tested for 84% reduction in PM emissions.** US Patent and 2 additional Indian patents filed
- Have also developed **Metallic-Air Battery System** for EVs **to replace dependence on fossil fuels and lithium imports – proof of concept successful with 3 patents filed**

Chakr Shield



Exhaust Filter showcasing Chakr's efficiency

Founders Profile

Kushagra Srivastava – Founder, IIT Delhi, Textile Engineering, Forbes 30 under 30 Global, one of the 7 MIT GSW fellows and 'Echoing Green" fellow

Impact

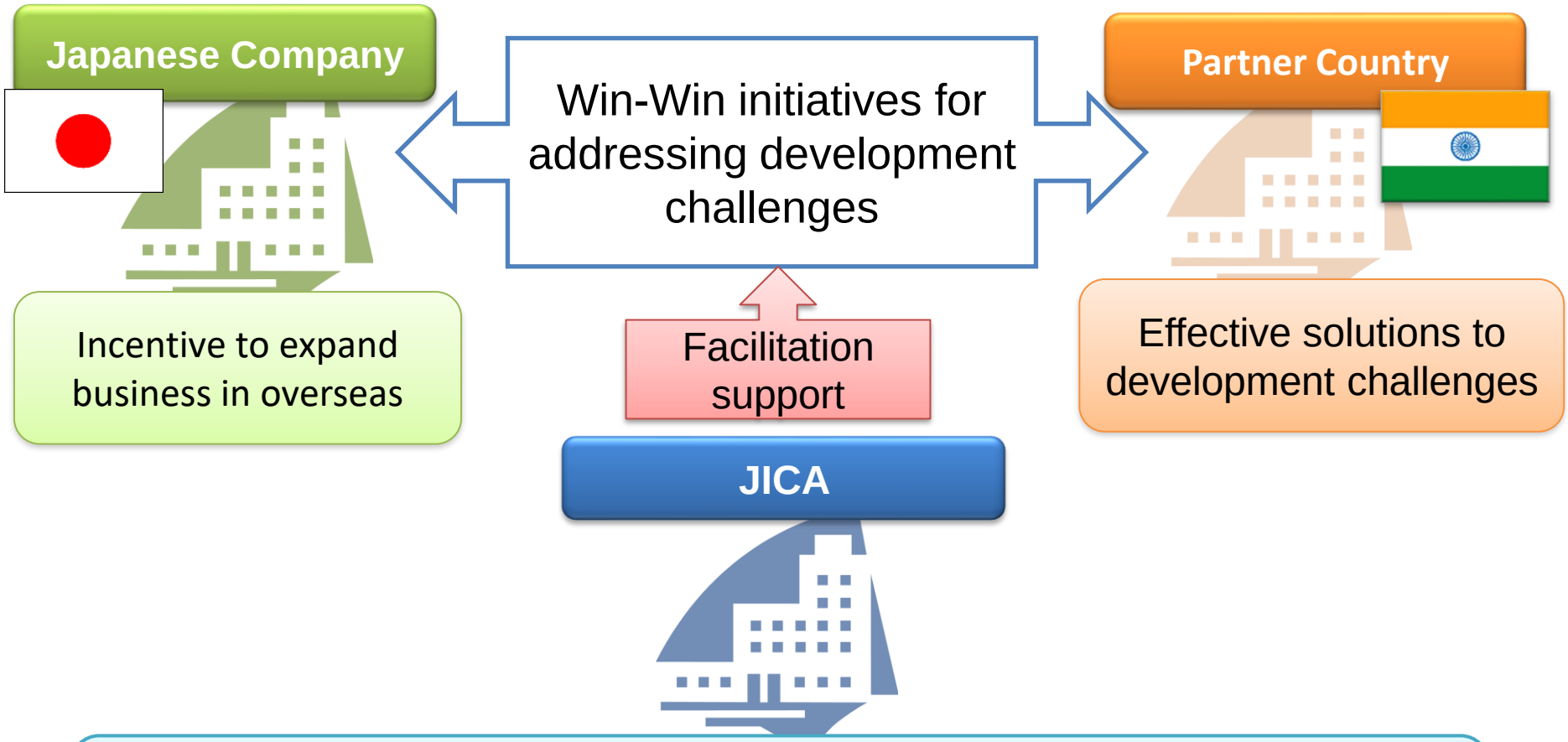
- ✓ ***Particulate matter collected in FY22****: ~4,837 kg/year*
- ✓ ***Emissions reduced in FY22****: 2K TCO2,* ***People benefitted*** *8.2 Mn*
- ✓ ***Air purified in FY22****: 24K Bn Litres*
- ✓ ***Employment generated*** *for 105 people*

SDG linkage

13 CLIMATE ACTION

9 INNOVATION AND INFRASTRUCTURE

JICA's Private Sector Participation Program



JICA facilitates the realization of both Japanese companies for business expansion and partner countries' initiatives for achieving their development goals through utilizing technologies/products of Japanese companies

SDGs Business Model Formulation Survey with the Private Sector for promoting effective energy use in buildings by energy saving and renewable energy package

Advantec co., Ltd, (Tokyo Metropolitan)

Development Issues Concerned in Energy Sector

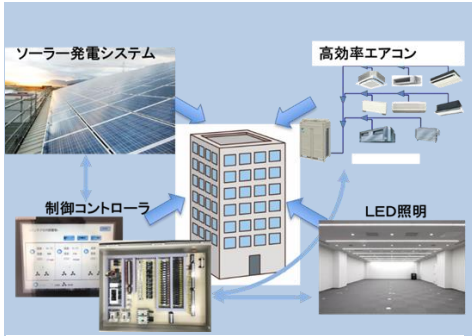
・The power supply shortage by increasing energy demand is serious. Issues are diversification of electric power and energy efficiency.
・Energy conservation in buildings has hardly been implemented yet.

Products/Technologies of the Company

・Energy solutions that combine energy efficient air conditioning, replacement to LED, rooftop solar installation, and equipment automatic control.

Survey Outline

- Survey Duration：Dec. 2019～Jul. 2023
- Country/Area：Republic of India/Delhi NCT of Delhi
- Name of Counterpart：Energy Efficiency Service Limited
- Survey Overview： We will collect information on energy consumption and energy conservation in buildings and examine the possibility of future business development by quantitatively grasping the energy conservation effect and cost effect by ESP business.



Package of energy management

How to Approach to the Development Issues

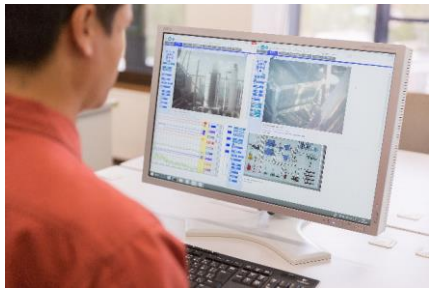
・We will conduct field surveys on individual buildings and combine various devices and systems to provide optimal energy solution for customers.
・We will also improve business profitability of both customers and Advantec by applying ESP contracts.

Expected Impact in the Country

・Stable supply of energy by increasing energy consumption efficiency on the demand side
・Strengthening industrial competitiveness, revitalizing the economy, and improving people's lives by stabilizing energy supply
・Environmental conservation by enlargement of the ratio of renewable energy power

As of Jan. 2020

Feasibility Survey for Holistic Management System of Sewage Treatment Plant with Remote Monitoring Technology in India



SMEs and Counterpart Organization

- Name of SME : Hiyoshi Corporation
- Location of SME : Shiga Prefecure, Japan
- Survey Site・Counterpart Organization : Chennai, India. CAAIIUC

Concerned Development Issues

➢ Improvement of sewage treatment technology and management capacity

Because of lack of capacity and technology in the sewage treatment facilities, sewage that has not been treated properly has been discharged to the environment. It causes water pollution in the surrounding areas.

Products and Technologies of SMEs

➢ Introducing "Holistic Management System of Sewage Treatment Plant with Remote Sensing Monitoring Technology" by combining ICT, Internet, IoT and sensors.

➢ This technology enables to provide prompt and proper maintenance at site by real time monitoring in Japan and cooperation between subsidiary company in India and headquarters in Japan corresponding to the fluctuation of conditions of inflow and discharged water

Proposed ODA Projects and Expected Impact

➢ After survey this project will be proposed as Promotion and Demonstration ODA project

By introducing maintenance technologies for sewage treatment plant to adjust facility capacity and continuous water quality management, the capacity of sewage treatment plant maintenance engineer will be improved. It will improve the public water quality surrounding area of the facility.

SDGs Business Verification Survey with the Private Sector for Electrodialysis Purification System for Safe and Efficient Drinking Water Supply

AGC Inc.（Tokyo）

Challenges in target country

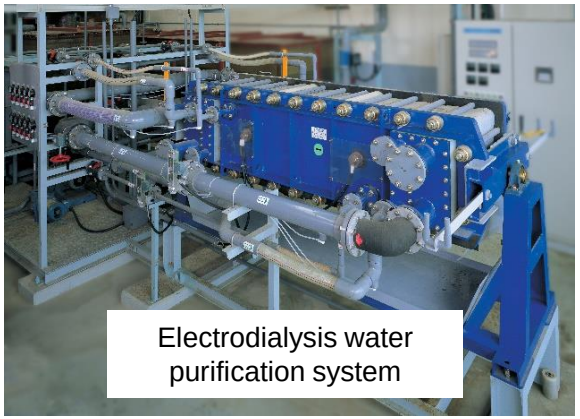
・Occurrence of health damage by using polluted groundwater as drinking water
・Serious escalation in groundwater level down by pumping up a large amount of groundwater

Proposed product / technology

・Electrodialysis purification system using photovoltaic generation and ion exchange membrane
・Improvement of groundwater use efficiency
・Cost reduction by local production of non-core parts

Contents of this project

- Contract period: July 2019 – February 2023
- Target area: India (Jalgaon Province, Maharashtra, and surrounding areas)
- Project Outline: Aim to improve access to safe and inexpensive drinking water. Introduce electric dialysis purification systems using solar power and ion exchange membranes to residents in rural areas of India where groundwater pollution and groundwater levels are becoming worse. Purification groundwater contaminated with nitrate etc. and improve water use efficiency.



Electrodialysis water purification system

Business model to achieve

・Rental of water purification system to rural communities and installation of water ATM (prepaid system)
・Selling purification systems to water vending machine suppliers (EPC) and daily maintenance and maintenance (O & M)
・Providing EPC・O & M service of water purification system to bottled water manufacturers

Contribution to issues in target countries through business development

・Prevention of health damage caused by purification of groundwater contaminated with nitrate etc.
・Mitigation of groundwater level down
・Substantial improvement of groundwater use efficiency
・Achieving universal and equal access to safe and inexpensive drinking water

Created on February 8, 2022

Recycling and Environmental Business from Recycled Copper

- JICA supports advanced recycling of high quality copper from ELV wire harnesses -

三立機械工業 株式会社
sanritsu machine industry co.,ltd

1) Environmental contribution (End-of-Life Vehicle (ELV) Recycling)

2) Profitable metals to recycle

Current Situation

Outcomes

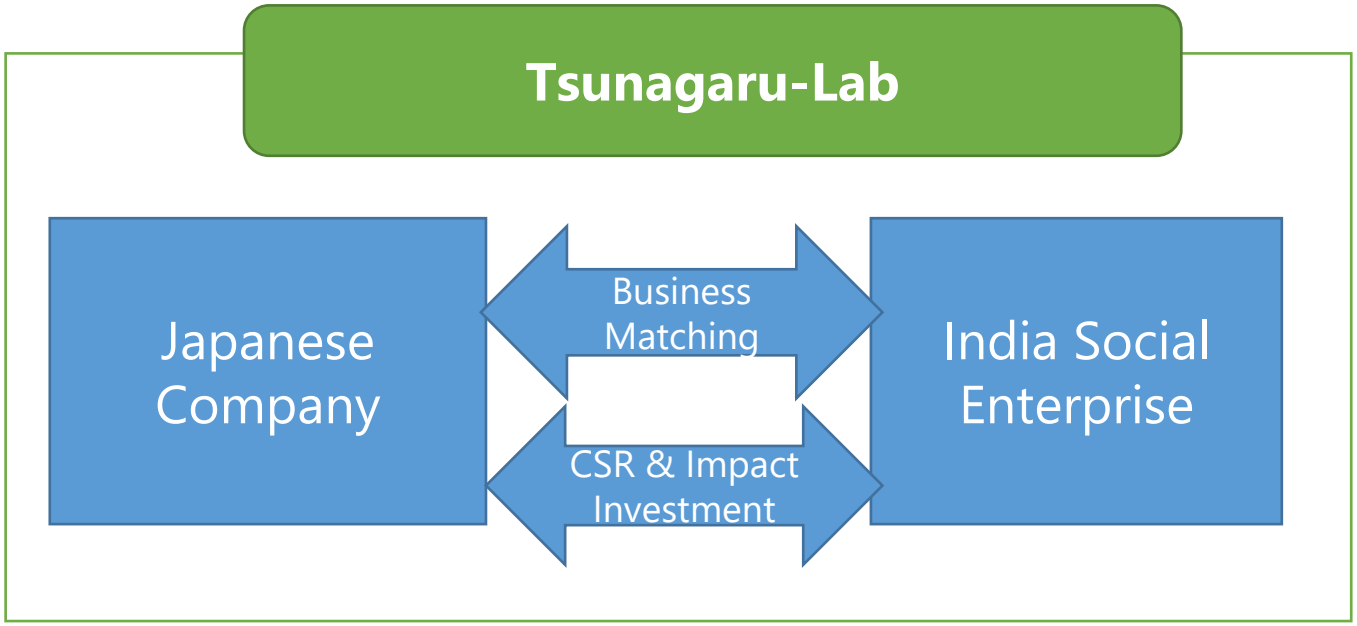
COPPER RECOVERY RATE OF WET-TYPE PLANT: 99%

（10% INCREMENT IN COMPARISON TO INCINERATION & DRY TYPE !!）

Implementation System

SDG s Business Co-Creation Lab

JICA India office launched SDGs Business Co-Creation Lab (Tsunagaru-Lab) on June 2020. More than 160 Japanese companies registered to Tsunagaru-Lab. Tsunagaru-lab held 12 times webinar related to 1. business matching, 2. Impact investment, 3.CSR activities.



Thank you!
ধন্যবাদ

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