



JICA's Experiences towards Better Air

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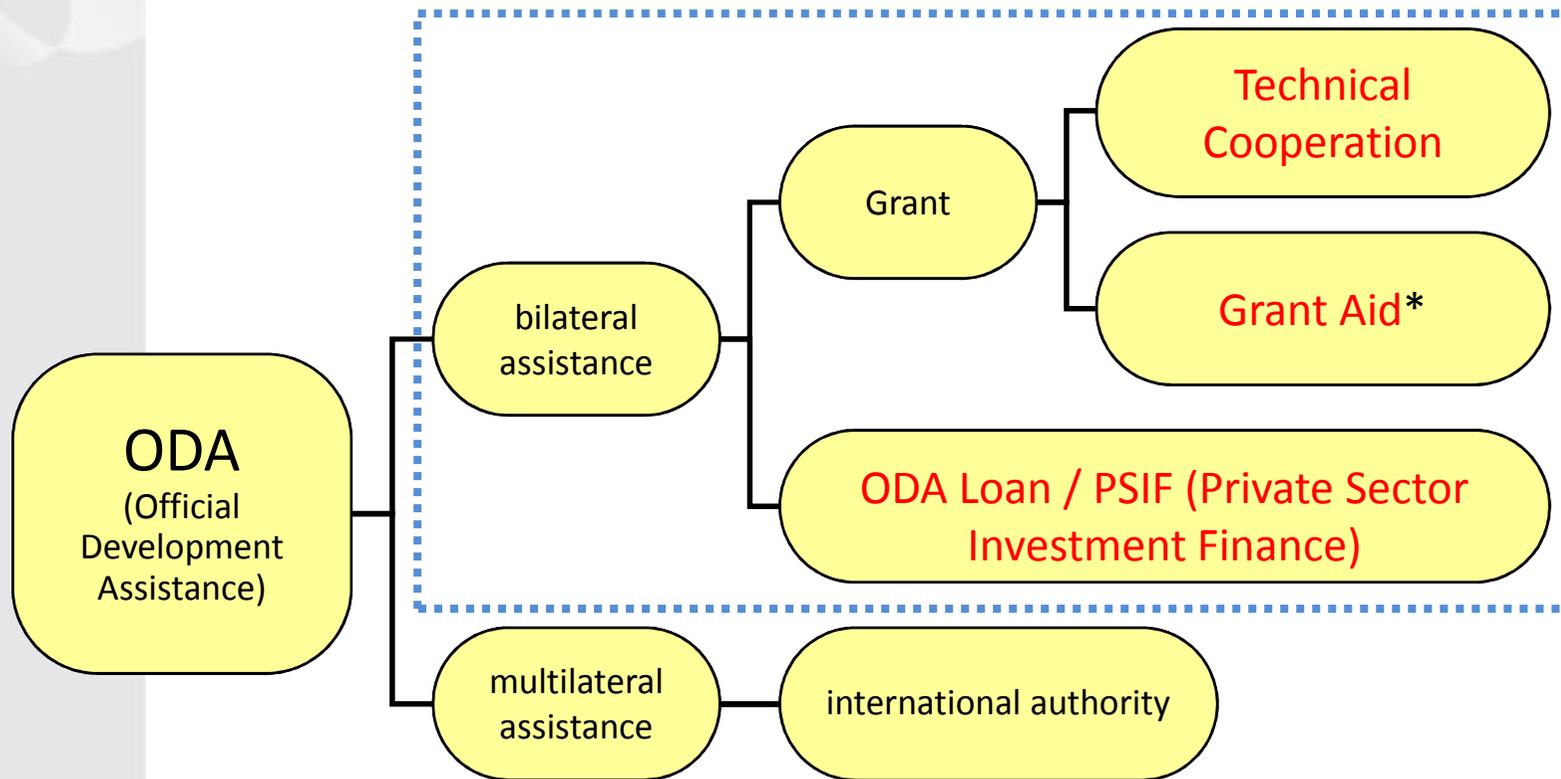
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1. About JICA

What is “JICA”?

- ✓ **JICA** is a governmental agency of Japan that coordinates official development assistance (ODA)
- ✓ **JICA** is the world’s largest bilateral development agency
- ✓ **India** is the largest and the oldest partner of JICA



* Part of grant aid is provided by the Ministry of Foreign Affairs.



India is JICA's Largest Partner in the World

Soft Loan

Major Sector (FY2006/07-2015/16)

Accumulated Commitment by FY2015/16:

- JPY 4.6 trillion in total
(equivalent to over Rs. 2 lakh crore)

Operational Results in FY2015/16:

- Commitment: JPY 377.3 billion
(equivalent to about Rs. 20,000 crore)
- Disbursement: JPY 185.8 billion
(equivalent to about Rs. 10,000 crore)

Terms and conditions:

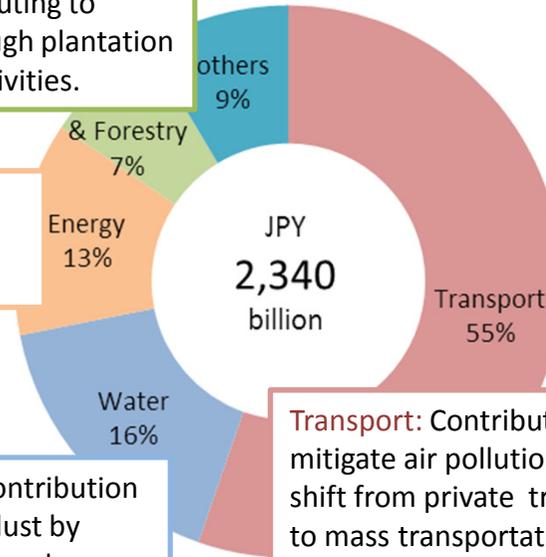
- General terms: Interest rate 1.4%, repayment period 30 years (including 10 years grace period)
- STEP: Interest rate 0.1%, repayment period 40 years (including 10 years grace period)

Forestry: Contributing to purifying air through plantation and livelihood activities.

Energy: Contributing to ease air pollution by introduction of advanced technology.

Water: Possible contribution to prevention of dust by increasing water supply.

Transport: Contributing to mitigate air pollution by modal shift from private transportation to mass transportation.



Grant Aid

One on-going project in health sector in Chennai

Technical Cooperation

- Results in FY 2014/15
JPY 3.8 billion (about Rs. 200 crore)
- About 800 Japanese experts to India
- About 300 Trainee from India to Japan

Citizen Partnership / Public-Private Partnership

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

2. JICA's Approaches to Air Pollution

Approach to be Considered (1)

Government

1. Introduce / modernize eco-friendly systems
2. Formulate appropriate policies and developing legal systems
3. Strengthen administrative organization to ensure the effectiveness of air pollution control

Private Sector

4. Enhance partnership for introduction / modernization of eco-friendly technologies

Citizens

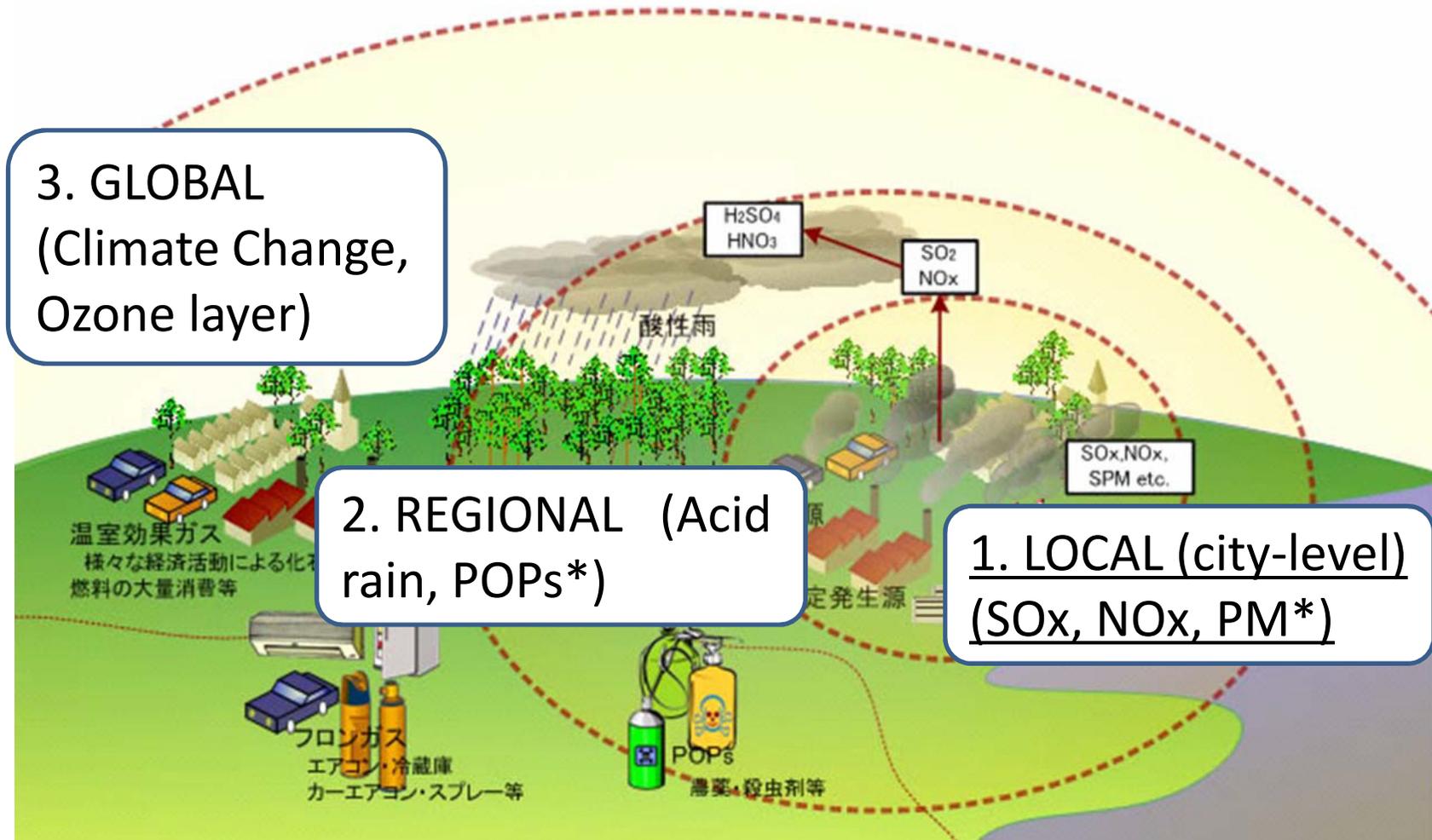
5. Enhance the capacity of citizens to manage air pollution
Cf. Awareness raising (mindset changing, environmental education, etc.) activities

Research Institute

6. Enhance the capacity of research institute to manage air pollution

Approach to be Considered (2)

Holistic air pollution management by target areas



*POPs : Persistent Organic Pollutants

*PM : Particulate Matter

Scientific Analysis of cause of air pollution, as to grasp situation is the first step.

Measures against air pollution sources

1. Measures to **point sources (factories, power plants, waste incinerators)** : Not only end-of-pipe technology but also comprehensive measures
2. Measures to **vehicular sources** : Consider Technology, Regulatory, Economical measures by cooperation of concerned agencies (fuel, road, traffic management, modal shift, etc)
3. Measures to **area sources (road dust, open burning, fuel from domestic sector)** : Regulatory control, etc.

Contingency Plan for the emergency situation

Alert system for citizen, Regulation for industry sector, etc. using real time monitoring data.

Preventive Measures

Land use plan, traffic plan considering air pollution sources.
Environment impact assessment for point sources.

Awareness raising activities (cf. environmental education)

3. Case Studies

JICA's Cooperation on Air Pollution

- Mongolia (PM10, PM2.5)
- Thailand (Development of standard)
- China (NOx, PM2.5, Volatile Organic Compound (VOC), Ozone Layer)
- Vietnam (Establishment of systems)
- Kosovo (Capacity Development)
- Mexico (Ozone Layer, VOC, PM2.5)
- Argentina, Chile (Ozone Layer, Aerosol)
- Serbia (Installation of flue gas desulfurization apparatus in a thermal power plant)

*JICA have experiences against air pollution at over 20 countries.

*Officials participated over 50 countries for training in Japan.

Trainings for air pollution management to be held in 2017

- Capacity Building towards Air Quality Management
- Control of Air Pollution from Motor Vehicles

Mongolia : **Capacity Development Project for Ulaanbaatar City** <Technical Cooperation Project>

Overall Goal : Measures for emission reduction of air pollutants will be strengthened in Ulaanbaatar City. (Main targets : Major stationary sources such as **3 power plants** and around **200 Heat Boilers**)

Project Purpose : Strengthen capacity for air pollution control in Ulaanbaatar City

Major Outputs

1. Emission Source **Identification** & Evaluation Capabilities
2. Emission Control **Regulatory Capabilities**
3. Emission Reduction Capabilities at **Public / Private Sectors**
4. **Coordinating Mechanism** for Emission Control



exhaust gas from a power plant

Strengthen the capacity of Ulaanbaatar officials to manage air pollution by their hand.



Thailand : Development of Environmental and Emission Standards of Volatile Organic Compounds (VOCs) <Technical Cooperation Project>

Overall Goal: Concrete actions on air pollution by VOCs will be taken

Project purpose: Government (PCD & ERTC) capacity to take countermeasures against VOCs air pollution including development of environmental and emission standards in Thailand is enhanced.

Pollution Control Department
(PCD)

Set up environmental and emission standards of VOCs

Environmental Research and Training
Center (ERTC)

To conduct monitoring and reveal the situation of airborne VOCs



Newspaper report the VOC air pollution

To mitigate the VOCs air contamination



Teaching status monitoring activities
Japan International Cooperation Agency

China : Guiyang Environment Model City Project <Loan>

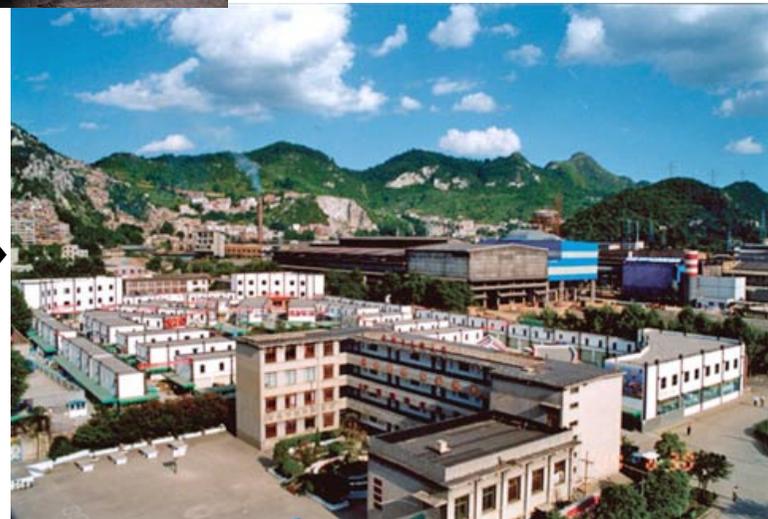
Providing finance for installation of air pollution control facilities (such as flue gas desulfurization facility, electric dust collector, etc.) to targeted factories and thermal power plants.



Electric dust collector installed into Steel Plant



Before



After

Vietnam : The Project for Implementation Support for 3R Initiative in Hanoi City <Technical Cooperation Project>

Key Factors of the Project

1. Demonstrating the effectiveness of **pilot projects** on source separation, composting, environmental education and people's participation
2. Strategy focusing on **involvement of various stakeholders**
3. Emphasis on close coordination and collaboration with the stakeholders such as leaders of residential groups and collection workers



Collection Containers
(Green is for Organic Waste)



Distribution of Household
Containers to Residents

Over 15,000 households in Hanoi city implement source separation at home (Nov. 2009)

4. Key Message

Clues to Environmental Law Compliance based on JICA's experience

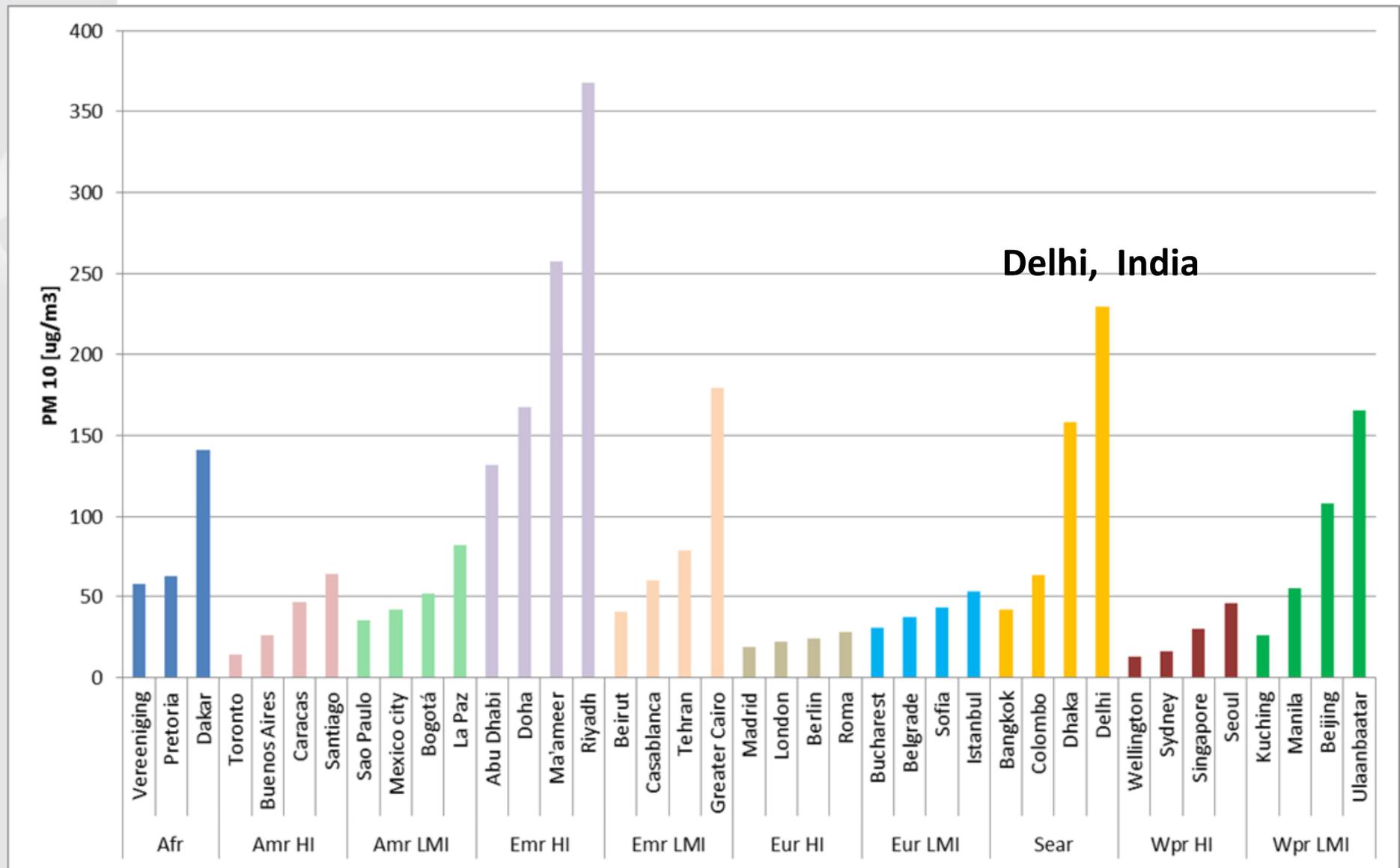
- **Identification** : It is critical to specify and prove noncompliance of polluter based on the accurate monitoring.
- **“Stick” and “Carrot”** : Comprehensive approach, such as capacity development, regulatory management and technical guidance with financial support is effective for polluter's compliance.
- **Participatory Approach** : Involvement of civil society and polluter jointly into establishment / enforcement of environment regulations and standards is productive. Top-down approach (enforcement of law) works well when Bottom-up approach (on-the-ground activity) is taken in parallel.
- **Awareness Improvement** : Mindset changing through environmental education, public campaign etc. is important as a foundation.

(Example) Children Forest Programme (Uttar Pradesh India)



- The programme aims to not only develop a sense of voluntary tree planting among children, but also supports **eco/environment awareness activities, including environmental education.**
- The CFP is an environmental learning programme that is typically based in schools with children as the main actors. (**over 1,000 schools** in Uttar Pradesh involve in this JICA support programme.)
- In addition, **teachers, parent and others in the community also join** the children in making mini-forests on or near the school grounds.

(Reference) Ambient (outdoor) air pollution in cities (PM10, 2016)



(Reference) AQI in Delhi on November 7, 2016



(Reference) Benefits of Delhi Metro

BENEFITS OF DELHI METRO

Descriptors	Phase - I 2007	Phase - I & II 2011	Phase- I & II 2014*
No. of vehicles off the road daily	16,895	117,249	390,971
Annual reduction in fuel consumption (t)	24,691	106,493	276,000
Annual reduction in pollutants (t)	31,520	179,613	577,148
Savings in time per trip (minutes)	31	28	32
Annual reduction in fatal accidents (no.)	21	111	125
Annual reduction in all accidents (no.)	93	591	937

*Extrapolated for ridership of 2.7 Million

Examples of JICA's Collaboration in India – for Better Air

■ Delhi Metro

Modal Shift !



Numerous private transportation

>> Mass transit public transport

over 200km long and nearly 3 million passengers/day.

- ✓ Reduction of vehicles No. : 390,971 /day
- ✓ Reduction of fuel consumption : 276,000 t/year
- ✓ Reduction of pollutants : 577,148 t/year

JICA's support (1997-) : soft loans (JPY642 bil. (about Rs40,000 crore)) and technical cooperation

■ Power Sector

Loss Reduction !

Energy Efficiency !

Renewable Energy !



e.g.

- ✓ Transmission system upgrading in Haryana
(Transmission loss : 2.2% (lowest in India) <<< 2.7%)
- ✓ Over 200 Indian experts joined JICA training courses in Japan for “energy efficiency & conservation” just in 10 years
- ✓ IREDA’s sub-lending scheme for wind/solar etc.

■ Partnership with Japanese Private Companies

Advanced Technology ! Awareness Improvement !



e.g.

- ✓ Security Japan / Ogawa Seiki (J/V) (Tokyo)
Heat Resistant Cameras inside Coke Ovens & Boilers
(with SAIL and NTPC in Bihar and Chhattisgarh)
http://open_jicareport.jica.go.jp/pdf/1000022819.pdf
- ✓ Sanko (Tottori)
High Efficient Compost Producing Technology
(with Kochi city in Kerala)
https://www2.jica.go.jp/ja/priv_sme_partner/document/281/A143014_summary.pdf
- ✓ Kodansha (Tokyo)
Publication of picture-books related to environment and hygiene awareness improvement and activities
“Reading Aloud Campaign”



Thank you!

धन्यवाद



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

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