JICA’s Experiences towards Better Air

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Takema Sakamoto
Chief Representative
Japan International Cooperation Agency (JICA) India Office
Contents

1. About JICA
2. JICA’s Approaches to Air Pollution
3. Case Studies
4. Key Message
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.*
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)

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

3. GLOBAL (Climate Change, Ozone layer)

2. REGIONAL (Acid rain, POPs*)

1. LOCAL (city-level) (SOx, NOx, PM*)

*POPs: Persistent Organic Pollutants
*PM: Particulate Matter
Approach to LOCAL (City-Level) Air pollution

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
**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

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

**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

To mitigate the VOCs air contamination

Newspaper report the VOC air pollution

Teaching status monitoring activities

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.

Before

After

Electric dust collector installed into Steel Plant

**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

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

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 low) 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.
• 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.
Delhi, India

WHO Ambient (outdoor) air pollution in cities database 2016
### Air quality in world cities, November 7

<table>
<thead>
<tr>
<th>City</th>
<th>Air Quality Index (AQI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Delhi</td>
<td>Red 101-999 AQI</td>
</tr>
<tr>
<td>Mexico City</td>
<td>Yellow 51-100 AQI</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>Green 1-50 AQI</td>
</tr>
<tr>
<td>Beijing</td>
<td></td>
</tr>
<tr>
<td>Addis Ababa</td>
<td></td>
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<tr>
<td>London</td>
<td></td>
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<tr>
<td>New York</td>
<td></td>
</tr>
</tbody>
</table>

### AQI Category (Range)
- **Good** (0-50)
- **Satisfactory** (51-100)
- **Moderately polluted** (101-200)
- **Poor** (201-300)
- **Very poor** (301-400)
- **Severe** (401-500)
## Benefits of Delhi Metro

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

*Extrapolated for ridership of 2.7 Million

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 опасности и преимуществ метрополитена в Дели, включая уменьшение загрязнения и снижение аварийности. Подробные данные приведены в таблице."
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)

- **Sanko (Tottori)**
  High Efficient Compost Producing Technology
  (with Kochi city in Kerala)

- **Kodansha (Tokyo)**
  Publication of picture-books related to environment and hygiene awareness improvement and activities
  “Reading Aloud Campaign”
Thank you!

धन्यवाद


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