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- Climate Change
- Energy Security
- Economic Growth

Low-Carbon Green Growth

Sustainable Development

Clean Energy Investment

Fiscal Policy

used by many nations to drive innovation, stimulate capital investment, and alter investment/consumer behavior.
Fiscal Concept for Clean Energy Investment

- Revenue window (Tax Facilities)
  - Income Tax/Carbon Tax
  - VAT
  - Import/Excise duties
  - Stimulus for Low-carbon infrastructure
  - New Renewable & Energy Conservation
  - Subsidies & Incentives
  - Project Guarantees for Investors
  - Revolving Fund

- Spending window

- Financing window

Low-Carbon Development
**Fiscal Policy Reforms are tied to Energy Sector Reforms**

### Policy tools

- Regulations
- Financial incentives
- Institutional support
- Feed-in tariff
- Renewable portfolio standard
- Tax on fossil fuel
- Support for R&D
- Deployment of existing technology
- Technology transfer

### Energy sector reforms

- Energy efficiency
- Renewable energy

### Emission reduction potential

- New low-carbon technologies

### Emission reduction cost

- Cost

### Emission reduction potential

- Potential

### Country

<table>
<thead>
<tr>
<th>Country</th>
<th>Pledges of carbon emissions reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRC</td>
<td>Cut in carbon emissions/GDP by 40–45% below 2005 levels by 2020</td>
</tr>
<tr>
<td>India</td>
<td>Cut in emission intensity by 20–25% below 2005 levels by 2020</td>
</tr>
<tr>
<td>Indonesia</td>
<td>26% below BAU projection for 2020</td>
</tr>
</tbody>
</table>
**Japan: Base Taxation Rates on Fuel Consumption Plus Carbon Tax Schedule**

<table>
<thead>
<tr>
<th>Year</th>
<th>Petroleum and Petroleum Products (kiloliter)</th>
<th>Gaseous Hydrocarbons (tonne)</th>
<th>Coal (tonne)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base tax rate</td>
<td>JPY 2,040</td>
<td>JPY 1,080</td>
<td>JPY 700</td>
</tr>
<tr>
<td>2012 increase</td>
<td>JPY 2,290</td>
<td>JPY 1,340</td>
<td>JPY 920</td>
</tr>
<tr>
<td>2014 increase</td>
<td>JPY 2,540</td>
<td>JPY 1,600</td>
<td>JPY 1,140</td>
</tr>
<tr>
<td>2016 increase</td>
<td>JPY 2,800</td>
<td>JPY 1,860</td>
<td>JPY 1,370</td>
</tr>
</tbody>
</table>

Source: MOEJ, 2014

By 2016 – the estimated revenue is JPY 240 billion – JPY 310 billion per annum

1/3rd from power companies with the reminder paid by primary and secondary consumers

All revenue from the tax will be allocated to introducing renewable energies and promoting energy efficiency
Fiscal Policy Reforms are Tied to Market Maturity of Technologies

1. Development
   RD&D financing, capital cost support, investment tax credits, rebates, loan guarantees
   Prototype & demo stage (e.g. 2nd gen biofuels)

2. Stable, low-risk, sheltered
   FIT, FIP, Tenders
   Low cost-gap (e.g. wind onshore)

3. Shared/imposed market risk, guaranteed minimum but declining support
   FIT, FIP, TGC (technology banding)
   High cost-gap (e.g. PV)

4. Technology-neutral competition
   TGC, Carbon trading (e.g. ETS)
   Mature tech (e.g. hydro)

Market Deployment

Development

- Niche markets
- Mass market

Time
## PRC: Funds required and Fiscal Policy Instruments to support RE in 12th FYP Period (RMB 100 million)

### Clean Energy Investment

<table>
<thead>
<tr>
<th>Clean Energy Investment</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsidies for RE power prices</td>
<td>280</td>
<td>381</td>
<td>473</td>
<td>557</td>
<td>632</td>
<td>2,323</td>
</tr>
<tr>
<td>The golden Sun project</td>
<td>72</td>
<td>72</td>
<td>65</td>
<td>65</td>
<td>57</td>
<td>331</td>
</tr>
<tr>
<td>New energy cities</td>
<td>23</td>
<td>45</td>
<td>55</td>
<td>45</td>
<td>23</td>
<td>191</td>
</tr>
<tr>
<td>Green energy demonstration counties</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>New energy micro-grid demonstration</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Straw energy utilization</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>R&amp; D of clean energy technology</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>40</td>
</tr>
</tbody>
</table>

### Revenue Generating Instruments

- Charges, taxes, carbon market schemes

### Budget Revenue Providing Instruments

- Direct subsidies, tax exemptions

### Non-Revenue Instruments

- Deposit refund systems, permit trading

*Source: CNREC, 2013*
India: Clean Energy Investment Trends

RE Investment Trends in India

- 2006: 4.8
- 2007: 5.3
- 2008: 4.5
- 2009: 4.3
- 2010: 7.8
- 2011: 12
- 2012: 13.7
- 2013: 14.2

RE Investment Trends in India by Technology

Solar
- 2009: 2.2
- 2010: 3.3
- 2011: 4.6
- 2012: 5.3

Wind
- 2009: 0.5
- 2010: 1.2
- 2011: 6.2
- 2012: 7

Source: Bloomberg New Energy Finance, UNEP FI Reports
A lot of progress depends on Progressive Fiscal Policies to correct the Market Failures

<table>
<thead>
<tr>
<th>Policy Framework</th>
<th>Wind</th>
<th>Solar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Renewable Energy Certificates</strong></td>
<td>Introduced in 2011</td>
<td>Introduced in 2011</td>
</tr>
<tr>
<td>Market based instruments to meet the state renewable purchase obligation (RPO)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A 100% tax waiver on profits for any single year period during the first 15 years of the operational life of a power generation project</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other Benefits (excise, wheeling)</strong></td>
<td>Introduced in 2002</td>
<td>Introduced in 2002</td>
</tr>
<tr>
<td>Concessional rates of excise (reduced from 8% to zero) and customs duty (reduced by 5 – 2.5%)</td>
<td>(Rotors and turbine controllers are fully exempted from excise duty)</td>
<td>(Transmission equipment used in the setup stage is exempted from excise duty)</td>
</tr>
</tbody>
</table>
# Impact of Interest Rate on Reduction in Support Prices for RE

<table>
<thead>
<tr>
<th>Concessionary Interest Rates</th>
<th>Reduction in Total Support Subsidy*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wind</td>
</tr>
<tr>
<td>3%</td>
<td>-7%</td>
</tr>
<tr>
<td>5%</td>
<td>-9%</td>
</tr>
<tr>
<td>7%</td>
<td>-10%</td>
</tr>
<tr>
<td>10%</td>
<td>-11%</td>
</tr>
</tbody>
</table>

*Reduction in total support subsidy relative to no interest rate concession

Source: RBI, 2012
Fiscal stimulus for invigorating clean and green investments in 2009-2011

Source: Anbumozhi et al, 2013
Indonesia: Fiscal Policy Focus -> Phasing out energy subsidy

Source: Ministry of Finance

...and achieving pro-growth, pro-job, pro-poor RE targets
Fiscal Policies for Clean Energy Investment: Key Messages

• Fiscal policies are of critical importance to redirect the investments towards clean energy.

• Governments use variety of fiscal policy instruments such as dynamic tax shifts, incentives, subsidy removal and stimulus packages, thus becoming flexible enough to bring catalytic changes in investment environment.

• Tax reliefs accelerate clean energy investments. In general, taxing bad investment is preferable to subsidizing clean energy investment, but in some cases, both might be useful to bring revenue neutrality.