THE NEW CLIMATE ECONOMY: OPPORTUNITIES FOR INDIA

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Executive Vice President
World Resources Institute

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Top right photo: Asian Development Bank
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A different growth pathway

Growth performance

Climate performance

Good

CARBON BUBBLE

TODAY

NEW CLIMATE ECONOMY

LIMITS TO GROWTH

Bad

Bad

Good

Good
The New Climate Economy Project

Commissioned by 7 countries: Colombia, Ethiopia, Indonesia, Norway, Sweden, South Korea, United Kingdom

Led by a Global Commission: 28 former heads of state, CEOs and heads of international institutions. Chaired by Felipe Calderon, former President of Mexico

Overseen by an Economic Advisory Panel of 14 world leading economists, chaired by Professor Lord Nicholas Stern

Delivered by 8 research institutes:

Contributions from 120+ organisations
Members of the Global Commission

Felipe Calderón (Chair)  
Former President, Mexico

Nicholas Stern (Co-Chair)  
IG Patel Professor at the London School of Economics and Political Science

Ingrid Bonde  
CFO and Deputy CEO, Vattenfall

Sharan Burrow  
General Secretary, International Trade Union Confederation

Suma Chakrabarti  
President, EBRD

Chen Yuan  
Former Chairman, Chinese Development Bank

Helen Clark  
Administrator, UNDP

Luísa Diogo  
Former Prime Minister, Mozambique

Dan Doctoroff  
Former President and CEO, Bloomberg

S. (Kris) Gopalakrishnan  
Co-founder, Infosys

Angel Gurría  
Secretary General, OECD

Chad Holliday  
Chairman, Royal Dutch Shell

Sri Mulyani Indrawati  
Managing Director and COO, World Bank

Naina Lal Kidwai  
Chairman, HSBC India

Caio Koch Weser  
Vice Chairman, Deutsche Bank

Ricardo Lagos  
Former President, Chile

Michel Liès  
CEO, Swiss Re

Kristin Skogen Lund  
Director General, Confederation of Norwegian Enterprise

Trevor Manuel  
Former Finance Minister, South Africa

Takehiko Nakao  
President, Asian Development Bank

Ngozi Okonjo-Iweala  
Former Minister of Finance, Nigeria

Eduardo Paes  
Mayor, Rio de Janeiro

Annise Parker  
Mayor, Houston

Paul Polman  
CEO, Unilever

Christian Rynning-Tønnesen  
CEO, StatKraft

Jean Pascal Tricore  
CEO, Schneider Electric

Maria van der Hoeven  
Executive Director, International Energy Agency

Zhu Levin  
Former CEO, China International Capital Corporation
Main findings of *Better Growth, Better Climate: The New Climate Economy Report*

- Economic growth and climate mitigation can be achieved together. We do not need to choose.
- A growing number of businesses, cities and countries are demonstrating this. Recent technological and policy developments mean that even more opportunities are available today.
- About US$90 trillion will be invested in infrastructure to 2030 – need to choose if it is low-carbon and climate resilient. Low-carbon would not cost much more, and fuel savings could fully offset additional investment costs.
- But if we lock-in the wrong path, we risk significant economic and social impacts of climate change. Need to act urgently.
- There are multiple economic benefits of action, e.g. reduced health costs from air pollution, less congestion & road deaths, enhanced energy, water and food security. In many cases these will outweigh the costs of action.
Critical economic systems and key drivers of growth

CITIES

Shutterstock: Radiokafka
Atlanta and Barcelona have similar populations & wealth, but different carbon productivities

**ATLANTA**

Atlanta’s built-up area

Population: 5.26 million  
Total area: 16,605 km²  
Urban area: 7692 km²  
Transport carbon emissions: 6.9 t/CO₂ p.c.

**BARCELONA**

Barcelona’s built-up area

Population: 5 million  
Total area: 3263 km²  
Urban area: 648 km²  
Transport carbon emissions: 1.2 t/CO₂ p.c.

A range of smart transport systems have taken off in numerous cities worldwide since 2000

Source: Sustainable Transport Adoption Curves, World Resources Institute, Embarq 2013
Raahgiri Day has spread from one to 40 cities in 3 years with half a million people participating every Sunday
Half of the world’s most polluted cities are in India

Figure 2.3. Cities with highest ambient PM 2.5 air pollution

Top 30 cities, 2009 – 2013 (ug/m3)

<table>
<thead>
<tr>
<th>City</th>
<th>PM 2.5 Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delhi, India</td>
<td>155</td>
</tr>
<tr>
<td>Patna, India</td>
<td>143</td>
</tr>
<tr>
<td>Gwallor, India</td>
<td>128</td>
</tr>
<tr>
<td>Raipur, India</td>
<td>121</td>
</tr>
<tr>
<td>Karachi, Pakistan</td>
<td>116</td>
</tr>
<tr>
<td>Peshwar, Pakistan</td>
<td>114</td>
</tr>
<tr>
<td>Rawelpindi, Pakistan</td>
<td>110</td>
</tr>
<tr>
<td>Khoramabad, Iran</td>
<td>100</td>
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<tr>
<td>Ahmedabad, India</td>
<td>100</td>
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<tr>
<td>Lucknow, India</td>
<td>100</td>
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<tr>
<td>Firozabad, India</td>
<td>100</td>
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<tr>
<td>Doha, Qatar</td>
<td>100</td>
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<tr>
<td>Kanpur, India</td>
<td>100</td>
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<tr>
<td>Amritsar, India</td>
<td>100</td>
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<tr>
<td>Ludhiana, India</td>
<td>100</td>
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<tr>
<td>Igdır, Turkey</td>
<td>100</td>
</tr>
<tr>
<td>Narayonganj, Bangladesh</td>
<td>100</td>
</tr>
<tr>
<td>Allahabad, India</td>
<td>100</td>
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<tr>
<td>Agra, India</td>
<td>100</td>
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<tr>
<td>Khanna, India</td>
<td>100</td>
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<tr>
<td>Gazipur, Bangladesh</td>
<td>100</td>
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<tr>
<td>Kabul, Afghanistan</td>
<td>100</td>
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<tr>
<td>Dhaka, Bangladesh</td>
<td>100</td>
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<tr>
<td>Jochpur, India</td>
<td>100</td>
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<tr>
<td>Al Wakrah, Qatar</td>
<td>100</td>
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<tr>
<td>Darkhan, Mongolia</td>
<td>100</td>
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<tr>
<td>Batman, Turkey</td>
<td>100</td>
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<tr>
<td>Barisal, Bangladesh</td>
<td>100</td>
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<tr>
<td>Dehradun, India</td>
<td>100</td>
</tr>
<tr>
<td>Delhi cities, Egypt</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: WHO (2014)
India’s PM2.5 pollution is exceptionally high even for countries at or near its per capita income level.

Cities Recommendations

- Reform land regulations
- Expand and renew urban infrastructure
- Reform and strengthen urban local government
ENERGY
The cost of solar PV is dropping fast

USD/MWh

Sources: Citi Research 2012; G. F Nemet, "Beyond the learning curve", Energy Policy 34, 3218-3232 (2006)
Wind and solar power have become cost-competitive in several markets, even without subsidies

Rooftop solar cheaper than electricity retail rates in at least 11 countries

U.S.
Wind at 5-8 ¢/kWh, cheaper than new coal

U.S. southwest:
Solar plant at ~8 ¢/kWh, competitive with coal

Chile:
First solar plant with no govt. support

Brazil:
4.5 ¢/kWh wind, cheaper than any other source

South Africa:
7 ¢/kWh wind, 30% cheaper than new coal

Parts of India:
Wind at 6-10 ¢/kWh, close to coal at 5-8 ¢/kWh

India’s fast-rising demand for energy

India: new energy imports 1971 – 2012

As % of energy use

India has begun to capitalize on its renewable energy potential

**India: Installed wind and solar capacity**

(MW) 2008 – 2013

Installed capacity in 2013 remains less than 1% of physical potential

Source: BP 2014; India Ministry of New and Renewable Energy 2014; Lawrence Berkeley National Laboratory
Off-grid Energy
Financing costs for solar power eliminate natural cost advantages in India. But innovative new financing models can unlock the potential of renewables.

Energy Recommendations

- Complete fuel subsidy reforms
- Complete electricity sector reforms
- Promote energy efficiency standards
- Consider fuel taxes to promote a more efficient fuel mix
- Policies to reduce the high cost of finance for renewable energy
LAND USE
China’s Loess Plateau shows how an agricultural landscape approach can deliver economic and climate benefits

1990
- In an area of 640,000 sq. km, lifted more than 2.5 million people out of poverty, boosting farm incomes from $70 to $200 pp pa
- Average grain yields increased by 60% over 10 years
- Stopped Yellow River silting, reduced air borne dust to Beijing, and increased soil carbon storage

2012

Agricultural R&D has a much higher return on investment than agricultural subsidies

**India: Agricultural public expenditures, 1990s**

Figure 4.3a. Returns in agricultural GDP (Rs per Rs spent)

<table>
<thead>
<tr>
<th>Expenditure Type</th>
<th>Return (Rs per Rs spent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation subsidies</td>
<td>n.s.</td>
</tr>
<tr>
<td>Fertilizer subsidies</td>
<td></td>
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<tr>
<td>Power subsidies</td>
<td></td>
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<tr>
<td>Credit subsidies</td>
<td></td>
</tr>
<tr>
<td>Irrigation investment</td>
<td></td>
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<tr>
<td>Education investment</td>
<td></td>
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<tr>
<td>Road investment</td>
<td></td>
</tr>
<tr>
<td>Agricultural R&amp;D</td>
<td>7.0</td>
</tr>
</tbody>
</table>

*SOURCE: Fan, Gulati and Thorat (2008)*
Agricultural R&D is better for poverty reduction too

Figure 4.3b. Returns in poverty reduction (decline in number poor per million Rs spent)

<table>
<thead>
<tr>
<th></th>
<th>Returns (number poor per million Rs)</th>
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<td>Irrigation subsidies</td>
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</tr>
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**Source:** Fan, Gulati and Thorat (2008)
Land Use Recommendations

- Restructure public spending in agriculture
- Scale up forestry initiatives
Main finding of *India: Pathways to Sustaining Rapid Development in a New Climate Economy*

Key reforms in energy, cities, and agriculture/forestry policies and institutions can unlock more rapid economic growth and improved welfare while tackling many of the unwanted national side-effects of the existing model of growth, such as severe air pollution, stress on water resources, rising energy insecurity and growth urban sprawl. Such reforms also provide important climate-co benefits by mitigating greenhouse gas emissions and climate risks.
The Paris Agreement
Thank you

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