APEIS Project: India Report

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Presentation Agenda

1. Strategic Database Development
   - Local Innovations (Examples)
   - Database Preparation
   - Indian SDB
2. AIM/CGE Model Development
   - Data Development
   - Indian Scenarios
   - Model Modification
   - Results
3. Interface with APN's CAPaBLE Project

Strategic Data Base (SDB)

- Environmental Innovations in India (Examples)
- Narrative Description
- Quantitative Data Card
- Socio Economic Scenarios
- Model Applications

Vermiculture Compost

- Earthworms maintain the fertility of the soil and ward off harmful pests
- No chemical fertilizers and pesticides required
- The know-how popularly known as "Surface Bed Method" has penetrated to over 1,00,000 farmers and 500 entrepreneurs

Bio-organic soil enricher

- Made from biodegradable organic substances through microbial conversion process
- Results in higher yield
- Improvement in soil aeration and water holding capacity
- Increased disease resistance and tolerance

Collect Information about innovations and prepare narrative description cards

- Literature searching
- Interview with experts

Format
- Present: Free
- Future: Free form & Access

Sales Campaign for Electric Vehicle

Reva: India's First Electric Car

TV Star - Anu Kapoor

Reva is the India's first zero-polluting electric vehicle heralds a new era of non-polluting, cost effective, quiet city transportation - A boon for city commuters. This elegant, light-yet rugged, two-door sedan comfortably seats 4 people. It has a range of 80 kilometers in stop-and-go city driving, and a top speed of 65 km/h. Reva runs 80 Km on a single charge of 9 units of electricity. The cost of the vehicle is approximately $ 7000.

Eco-Friendly

Being an Electric Vehicle, Reva is zero polluting and noiseless. It does not require frequent oil changes. Moreover Reva has high recyclable content

High on Technology

Two computers and the state-of-the-art electronics in the Reva provide an efficient energy management system with advanced computerized vehicle diagnostics. The regenerative braking in the Reva recovers useful electricity by putting it back into the batteries. Regenerative braking lets the motor act as a generator, converting the vehicle's momentum into electricity….

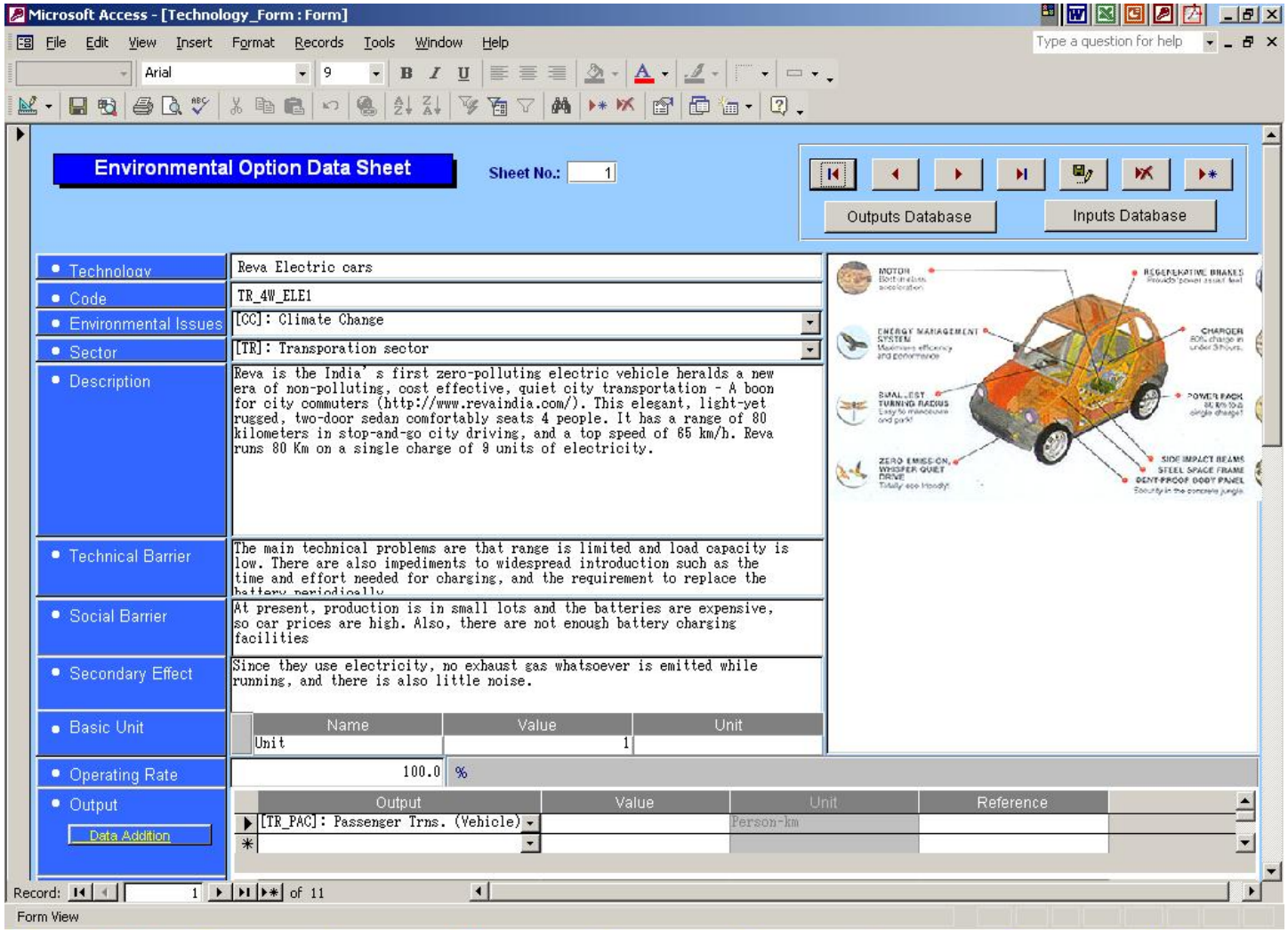
Translate narrative description to systematic and quantitative data card

Capacity
- 4 persons
- Top Speed: 65Km/h

Energy Needed
- 9KWh for 80 Km run

Emissions
- No direct Emissions

Quantitative Data Card



Prepare storylines and socio-economic scenarios

Write Storyline Description

Projections
- **Workout Scenario Numbers**

Application to Selected Sector

Description of Indian Storyline

IB1 scenario

In the IB1 scenario, the Indian economy is characterized by a shift towards a high level of environmental and social consciousness. There is an increased emphasis on environmental damage prevention and long-term sustainability of socio-economic developmental actions on the part of government, business, media and the public. Heightened environmental consciousness manifests itself in the positive impacts on natural resource use. Technological change plays an important role.

Economic development is balanced and efforts to achieve equitable income distribution are effective. Efficiency improvement measures, low and carbon free technologies and cleaner fuels penetrate faster and infrastructure to facilitate these has to be built. Technological progress is accelerated, both in terms of indigenous efficiency improvements and earlier and higher penetration of advanced clean technologies. The scenario assumes more emphasis on development of renewable technologies. …….

Projections Corresponding to Storylines

			2010			
			IA1	IA2	IB1	IB2
General	Economic Growth Rate	% per year	9	6	7	5
	Population	Million	1157	1192	1157	1183
Transport	Cars	BPKM	413.5	376.5	376.5	322.8
	Bus	BPKM	3522.3	3300.0	3340.2	3011.7
	Total road passenger	BPKM	4244.9	3969.5	4004.7	3590.0
	Heavy commercial vehicles	BTKM	1251.5	1173.6	1099.0	1036.2
	Light commercial vehicles	BTKM	64.7	59.4	56.0	50.2
	Total road freight	BTKM	1316.2	1233.0	1155.0	1086.4
	Rail passenger	BPKM	659.4	628.0	643.0	588.3
	Rail freight	BTKM	541.7	500.0	520.0	481.0
	Air passenger	BPKM	45.3	44.0	42.7	38.3
	Ship freight	BTKM	15.3	14.6	15.0	13.3

Simulate future environmental pressures and analyze effect of strategies

Affected Model Parameters

Identify Extent of Effect

Suitable modifications in the model parameters

Indian SDB

AIM/CGE Model Development for India

- Data Development
- Indian Scenarios
- Model Modification
- Results

Data Development

- Indian I/O Table (CSO, 1995)
  - Make Matrix
  - Use Matrix
  - Fixed Capital Formation Matrix
- Energy Balance Table
- Emission Coefficients

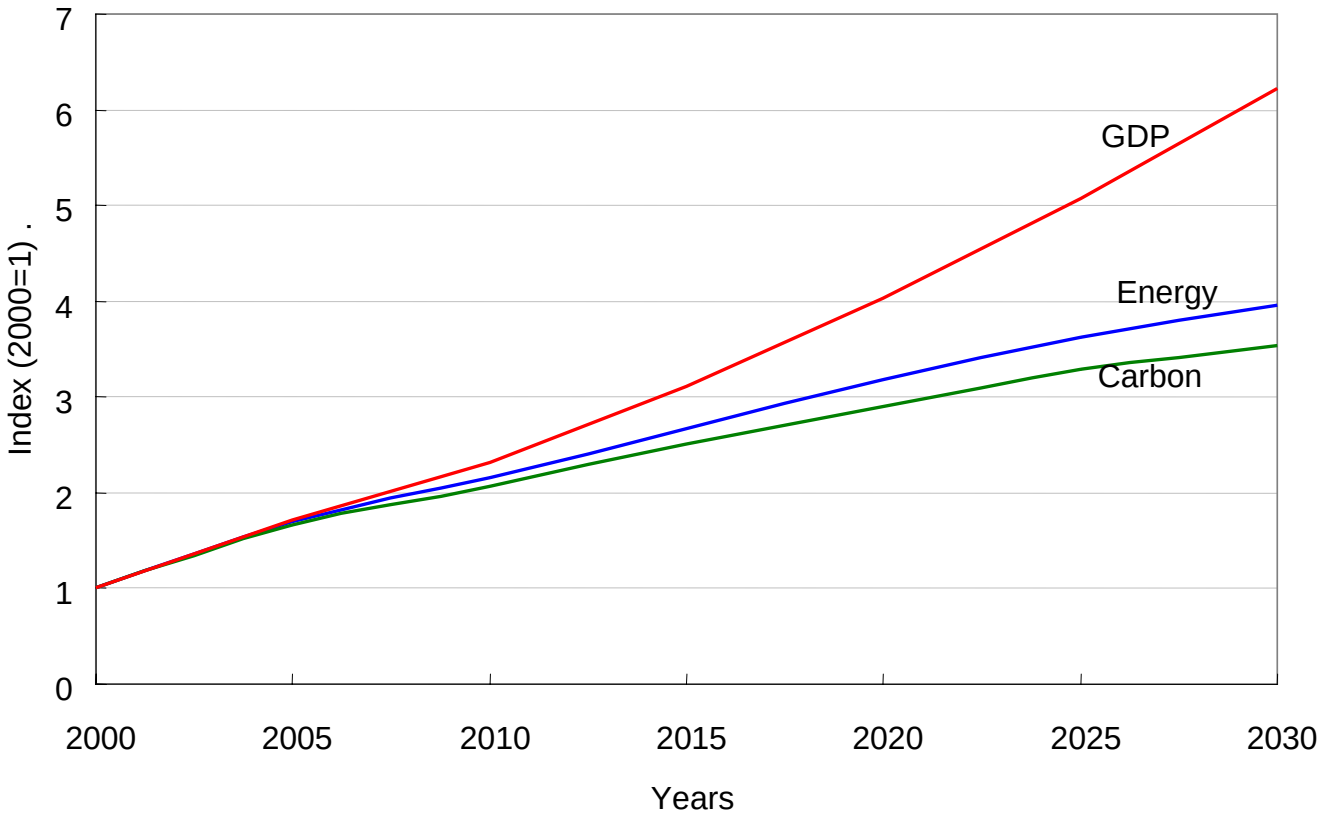
→

115	Commodities
35	Sectors
6	Energy Commodities
6	Energy Sectors

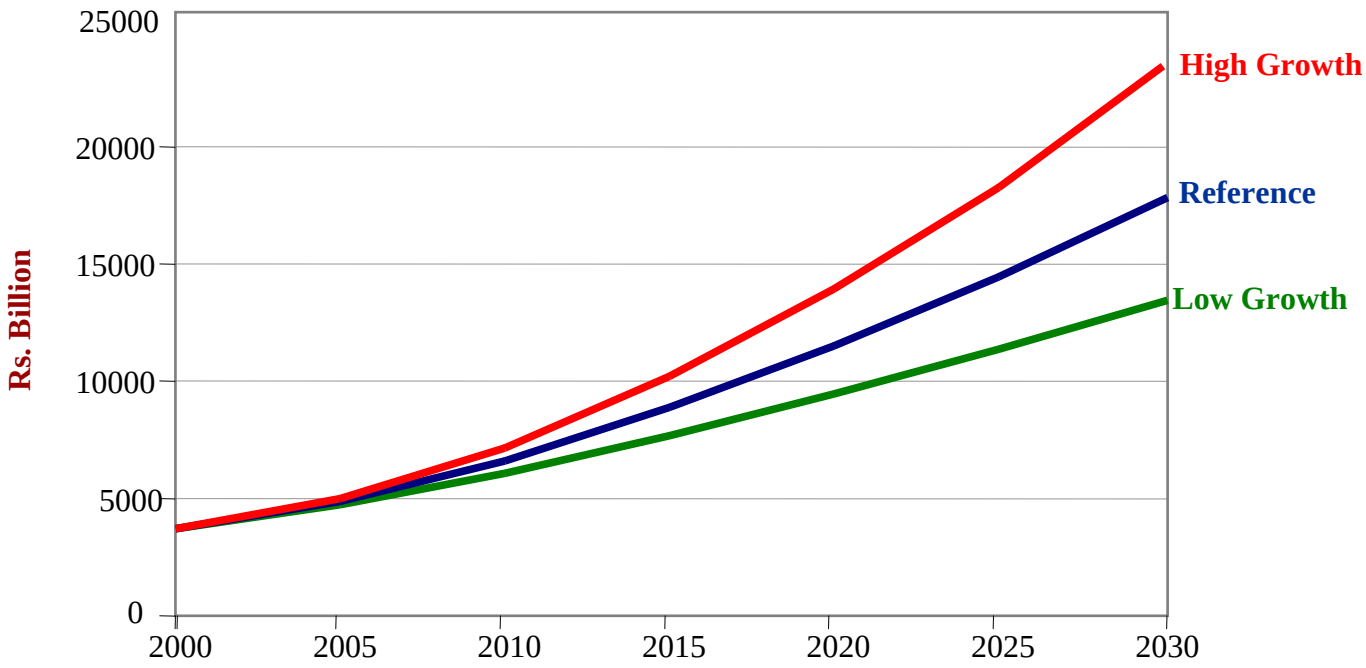
Scenarios

- Reference (Initial 6% annual growth)
- High economic growth (Initial 9% annual growth)
- Low economic growth (Initial 5% annual growth)
- Efficiency improvement (Initial 3% annual improvement)

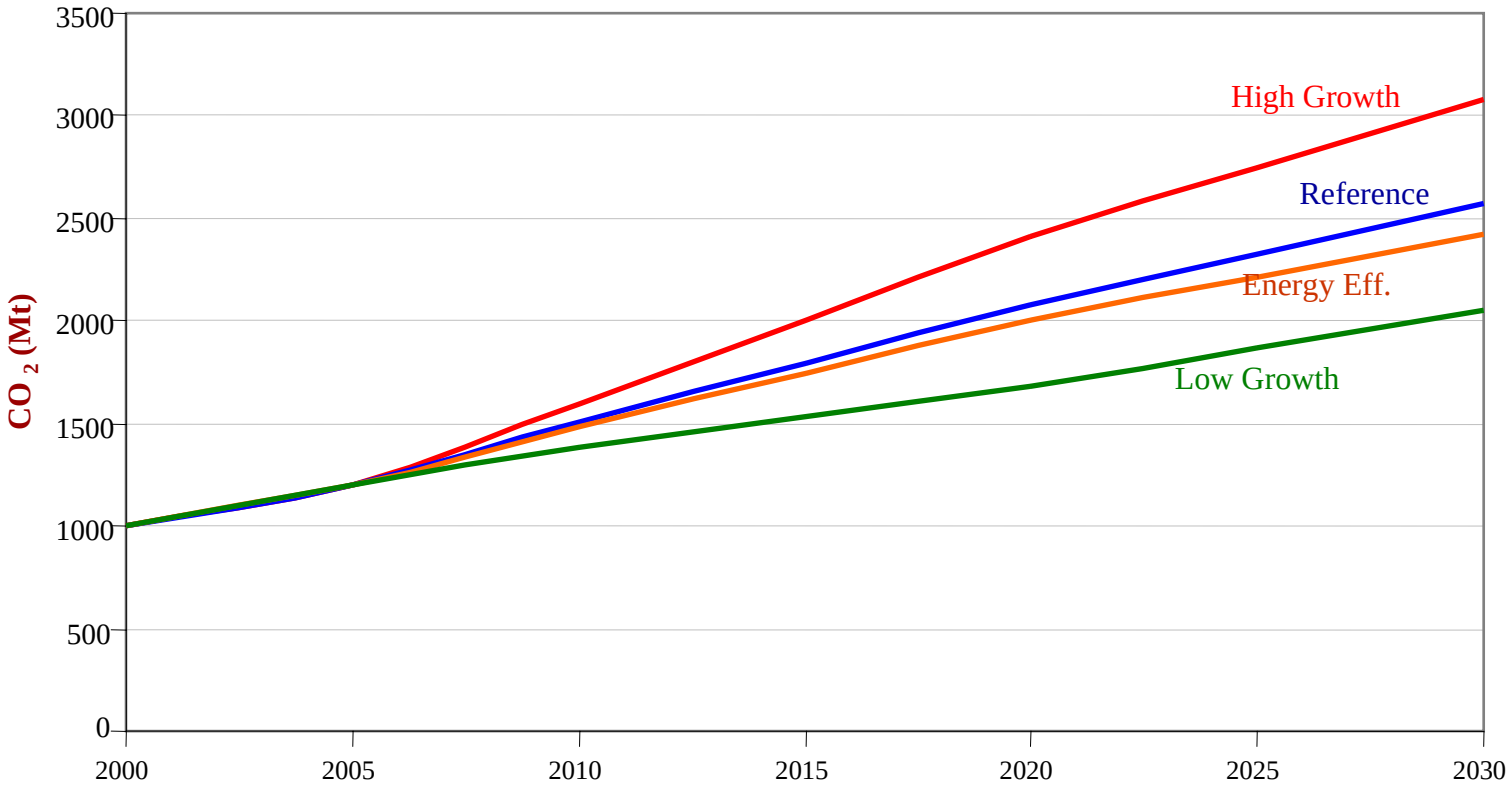
Reference Case Results



GDP

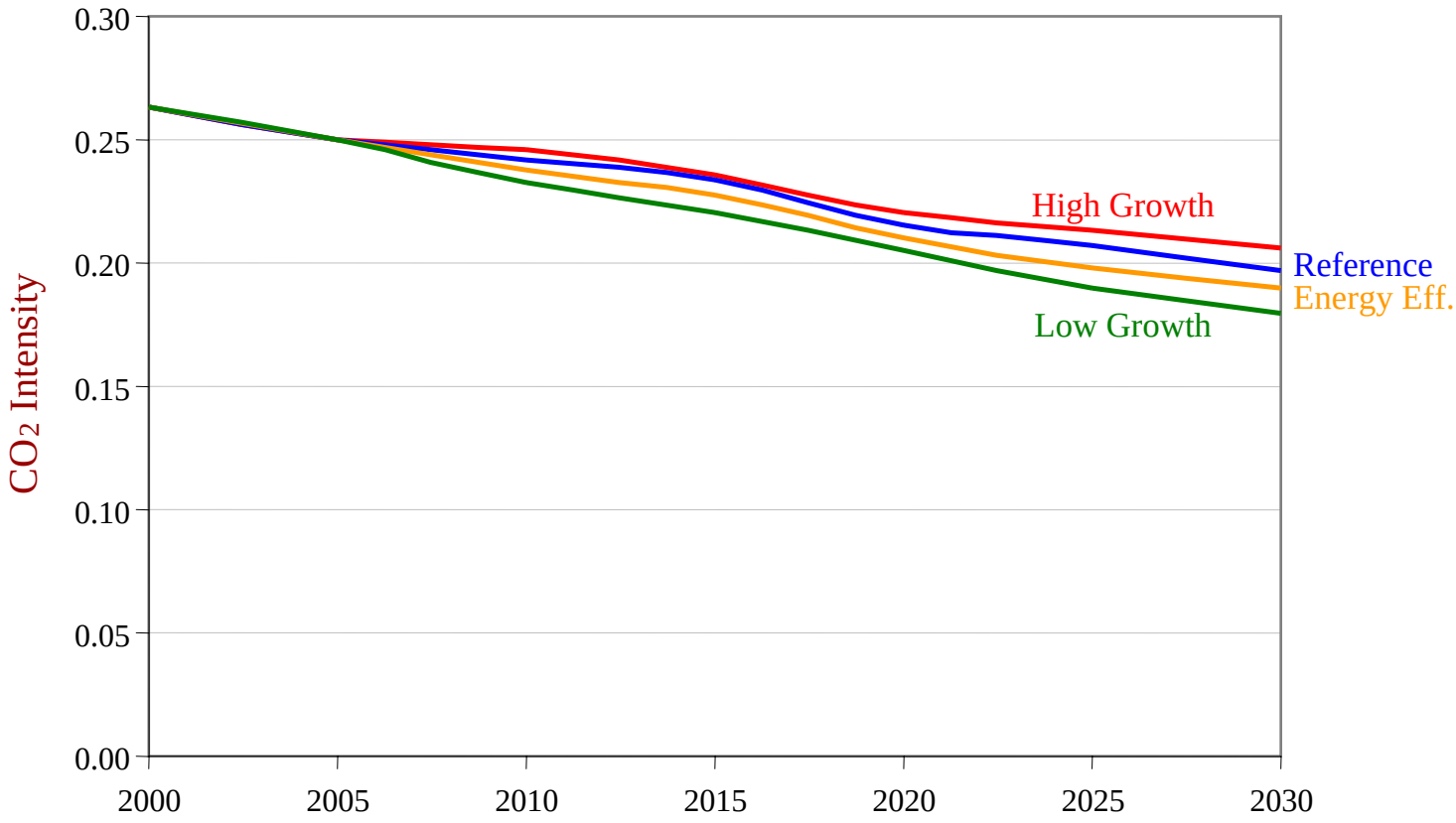

Rs. Billion
25000
20000
15000
10000
5000
0
2000
2005
2010
2015
2020
2025
2030
High Growth
Reference
Low Growth

CO_2 Emissions



CO_2 Intensity of GDP

CO_2 Intensity: Ton/Thousand Rs. (1995)



CAPaBLE Project

Integrated Assessment Model for Developing Countries and Analysis of Mitigation Options and Sustainable Development Opportunities

APEIS Session was held at the CAPaBLE Workshop at AIT, Bangkok