

Initiatives of
Bhubaneswar Municipal Corporation
India

on
Building Energy Efficiency
Cities For Climate Protection
Programme



Friends of Cities

Temple City of India





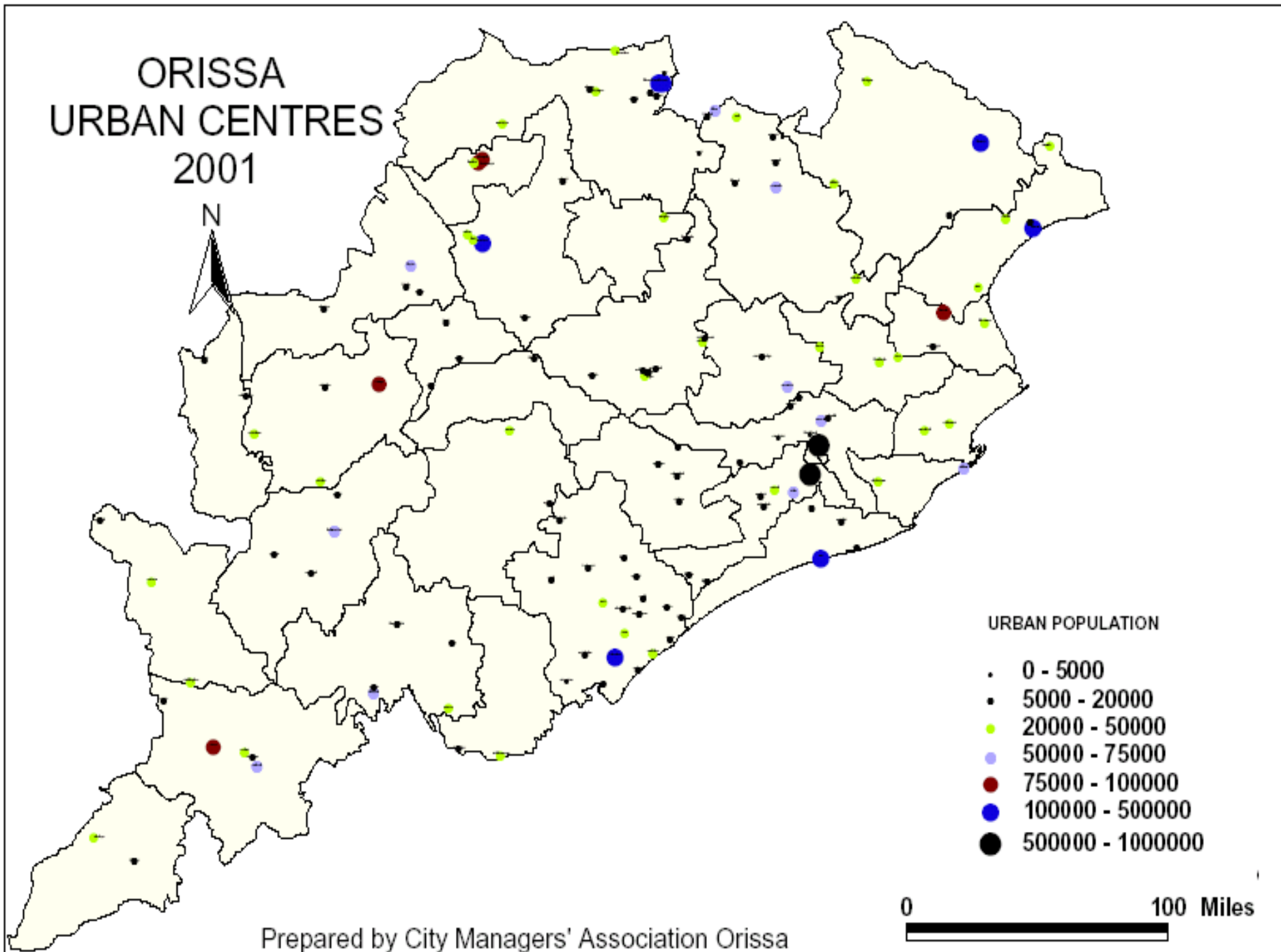
Where we are Located

cmoo@sancharnet.in

City M:

ORISSA URBAN CENTRES 2001

N



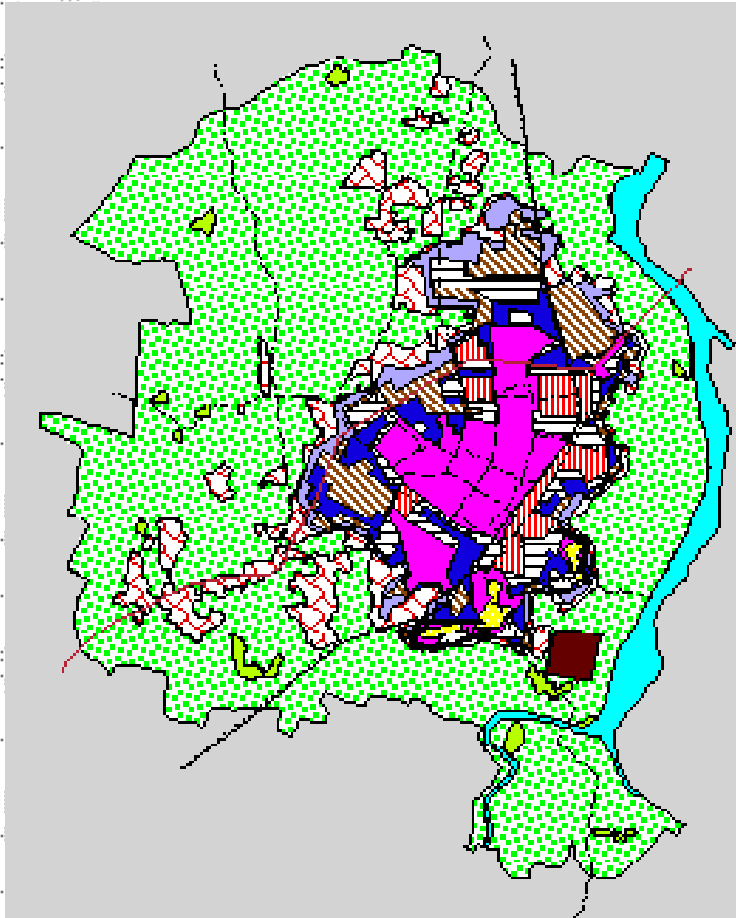
Prepared by City Managers' Association Orissa

ORISSA URBAN PROFILE

- ❖ **Population 36.7 million**
- ❖ **14.97% Urban Population**
 - ❖ **63.61% Literate**
 - ❖ **138 Urban Centres**
 - ❖ **103 Urban Local Bodies (City Council)**
- ❖ **Bhubaneswar one amongst two Planned Capital City of Independent India**



BMC Profile



Area -	135 Sq. Kms.
Latitude -	20 ⁰ -12' 42"N
Longitude -	85 ⁰ 47'-18"E
Height from -	45 Mtr. Sea level
Density of -	4800 perSq. Km.
Population	
Number of -	47
Wards	

Historical Development of Bhubaneswar

• Before 300BC

- Ekamra Vana
- Ekamra Kanan
- Utkal Varanasi



Hindusism Shiva Culture,
Ashoka Buddhism, Kalinga
War

• 300BC

- Tosali



Kharvela
Jainisim

• 11th Century

- Bhubaneswar



Capital shifted to Cuttack
then Jajpur back to
Bhubaneswar



BINDUSAGAR



The Temple City



BHASKESWAR TEMPLE



City M

Demography

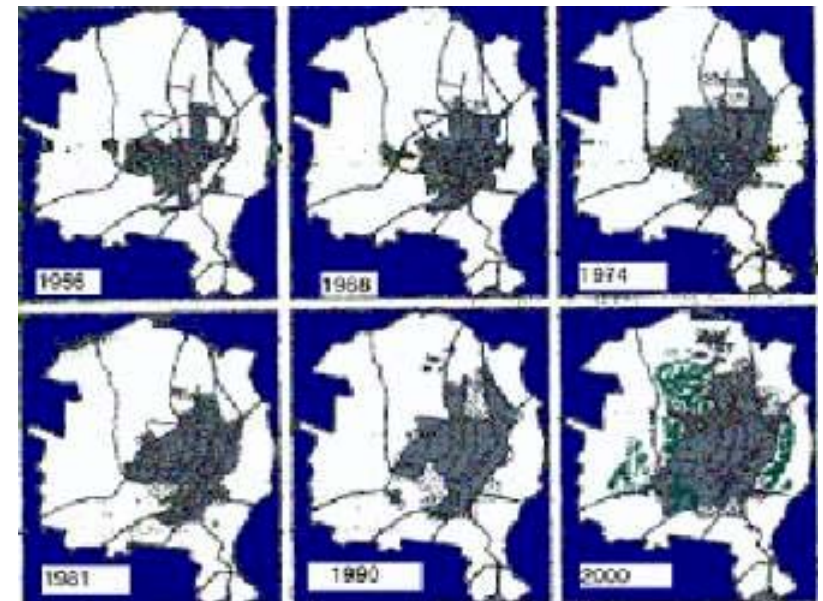
Year	Area (Km ²)	Population	Percentage of Growth	Density Per Km ²
1951	26.09	16512	-	933
1961	50.25	38211	131.41	760
1971	65.05	105491	176.07	1622
1981	92.91	219211	107.80	2359
1991	124.70	411542	87.73	3300
2001		647302	57.3	

Growth of Bhubaneswar City

- **Planned for a Population of 40000 in 1948 with an area of 16.48 km²**
- **1952 Class IV Town with Notified Area Council**
- **1961 Class III Town**
- **1979 Class I Town with Municipality**
- **1992 Become Municipal Corporation**
- **First Elected Municipal Corporation 2003**

Spatial Growth

- **Max Population growth in 1961-71 with 176.67% which is highest in India**
- **Municipal Area Increased from 26.09 km² to 124.70 km² in a period of 40 years 1951-1991**
- **Density from 633 to 3300**
- **Present Population 647302 - 2001 census**



Partners in the Process

- City Managers' Association Orissa (CMAO) – *Local Government Association*
- International Council for Local Environmental Initiative (ICLEI)
- United States Agency for International Development (USAID)

CCP Projects in Bhubaneswar

- Preliminary Discussion & MOU 2003-04
- Phase – I CCP Carbon Emission Study
- Total Carbon Emission 934,319 T/year
- It increased by 6% for the year 2004
- Per Capita Emission 1.27 T/year i.e about 3.5 kg per day
- Intervention in Bhubaneswar Municipal Corporation Building



eCo2 Emissions (Tonnes)	2000-01	2001-02	2002-03	2003-04
Community level	854,854	870,253	866,082	925,061
Corporation Level	9,338	9,590	9,299	9,258
City level	864,192	879,843	875,381	934,319



BMC Main office building and existing energy consumption

- **This main office building houses**
 - Offices of Mayor, Commissioner, Council Hall and all technical & administrative sections, finance, law, old age pension etc.
- **The corporation premise consists of 3 buildings**
 - Corporation building
 - Mechanical department/ store
 - Land revenue section/ bank.
- **The total plinth area of all 3 buildings is about 7000 sq ft.**
- **Normally 950-1200 people visit corporation premise daily**

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Energy Consumption

- **Office Building consumes about 48,510 Kwh/Year (2003-04).**
- **Similarly the energy consumption in the corporation building was**
 - 47,510 Kwh/Year during 2000-01
 - 54,815 Kwh/Year during 2001-02
 - 54,456 Kwh/Year during 2002-03
- **The energy bill for the office building costs Rs 3,16,025 per year.**
- **From the CCP Study, it is found that the GHG emissions due energy consumption in corporation building was**
 - 60 T/Year during 2003-04
 - 59T/Year during 2000-01
 - 68 T/Year during 2001-02
 - 67 T/Year during 2002-03

Pilot Project Intervention “Building Energy Efficiency”

•Energy Saving During Project Period

- The pre project monitoring show 291 Kwh average daily energy consumption during 4th to 31st May 2005.
- The daily readings vary substantially due to change in ambient temperatures at Bhubaneswar during May 2005 and working/non working days in a week.

Duration	Days	Average Kwh per day
Week 1	May 4 th to 8 th	258
Week 2	May 9 th to 15 th	267
Week 3	May 16 th to 22 nd	283
Week 4	May 23 rd to 29 th	306
Week 5	May 30 th to 31 st	342
Month	May 4 th to 31 st	291

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Energy consumption after installation of Power Savers

- The first eight week of post project monitoring shows an daily average consumption of 243.82 Kwh **which is about 16.25 % i.e.47.5 Kwh less than the pre project** daily average energy consumption

Duration	Days	Average Kwh per day
Week 1	June 4 th - 10 th	292
Week 2	June 11 th - 17 th	211
Week 3	June 18 th - 24 th	283
Week 4	June 25 th - July 01 st	226
Week 5	July 02 nd - 08 th	214
Week 6	July 09 th - 15 th	240
Week 7	July 16 th - 22 nd	293
Week 8	July 23 rd - 29 th	192
Month	June 4th to July 29th	243.82
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Financial savings

During the last eight weeks after installation of power saver corporation has saved

2612.5 units of electricity amounting to Rs 11,756.25 (@ Rs 4.5 per unit).

The estimated savings from power savers are:

Particular	Savings
	@ 16.25 % Savings
During 2003-04 energy consumption	48,510 * 16.25%
Energy Saving	7,883 Kwh/ Year
Cost savings	34,473.5 Rs /Year
Pay back period	16 Months

Carbon emission reduction

10T eCo2/ Year (Approx)

Building Energy Efficiency Power Saver Switching & Dissemination Workshop



Way Forward through City Managers' Association Orissa

- Replication in other Cities of Orissa
- Participation in Clean Development Mechanism (CDM) programmes
- Energy Action Plan for Municipal Services
- GHG emission reduction campaign
- A resource centre on Energy conservation and Environment Management

Thank You



“Successful Plans are not those which improve aesthetic quality of the environment, wealth for a few....But those which improve the life of the poorest”

Mahatma Gandhi
Father of the Nation



Visit Bhubaneswar

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