ISSN: 2321-8169
159 - 163

Way to the Development of Energy Efficient and Clean Cities

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Abstract:-Cities are an important engine for economic growth and socioeconomic development. By 2030, almost 5 billion (about 60 percent of the global population) will live in cities, leading to massive requirements for energy to power growth and expand basic infrastructure. Energy efficiency can offers practical solutions to budget- constrained cities to meet their energy needs without sacrificing their development priorities. This is because energy efficient activities are generally cost-effective; that is, higher upfront investment for a more efficient system is offset by lower recurring energy

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INTRODUCTION

With urban areas representing a large portion of the world's populace today, and 66% of worldwide vitality request, urbanization is demanding a genuine toll on the earth. As fast urban development proceeds with, vitality use in urban communities and related levels of green house gas (GHG) outflows are anticipated to proceed unabated; current projections show that around 70 percent of th world's populace will live in urban areas by 2050, creating somewhere in the range of 80 % of the world's GHG discharges. Lamentably, the greater part of this urban development will occur in creating nations, where by far most of individuals remain underserved by fundamental framework administration and where city powers are under-resourced to move current directions, encourage, the creating locales of Africa and Asia are the place the most fast urbanization is occurring, and they are slightest ready to adapt to the instabilities and furthest points of atmosphere effects. The improvement and mainstreaming of vitality – effective and low-carbon urban pathways that shorten atmosphere sways without hampering the urban advancement motivation in this way are vital to meeting such difficulties. Diminishing long haul vitality use through productivity additionally upgrades vitality security by diminishing reliance on foreign made and fossil fuel. What's more, lower vitality costs free up a city's assets to enhance or grow administrations while giving critical nearby co-advantages, from making new employments, upgrading aggressiveness, enhancing air quality and wellbeing, and giving a superior personal satisfaction

MAIN PROJECT OBJECTIVE

1. The project aim is to find out new approaches and possibilities for the development of energy efficient cities.
2. Reducing its CO2 emissions.
3. Use of renewable enrgy.
4. Subseantial growth in the energy saving practices.

All these mentioned points can be really achieved only after carrying out the total energy statistics for the city, for future planning based on the outcomes of the report and then execution of the same.

TECHNICAL DETAILS

Today urban areas possess a large portion of the world's populace and two third of worldwide vitality request. The quick urbanization will proceed in the same rate or might be speedier than the present, current projection demonstrated that around 70 percent of th world's populace will live in urban areas by 2050, delivering somewhere in the range of 80 % of the world's GHG emanations.

Shockingly all the advancement will take in the creating nations like our own (India).

The quantity of urban settlement in India have expanded from 1843 in 1951 to 5161 in 2001, which means more transformation of country area into urban. In 1991 urban populace of India was 217.18 million, which was 25.72 for every penny of the aggregate populace. By 2010, urban populace was almost 481 million that is 39.3 for every penny of the aggregate populace. Spontaneous sprawled advancement prompting utilization of assets such as area, vitality and so forth is expanding at a fast pace. The fast increment in populace is bringing about lodging deficiency which right now is 24.71 million (World Bank study,2009)
The advancement and mainstreaming of vitality effective and low carbon urban pathways that reduce atmosphere sways without hampering the urban improvement motivation in this way are key to meeting such difficulties.

Related city vitality appraisal have been helped out by ESMAP through different projects.

Sector	Case study Title	City	Country	Region
Building &	Energy Management Systems in Public Buildings	Lviv	Ukraine	Europe
	Energy Efficiency in Public Buildings	Kiev	Ukraine	Europe

ISSN: 2321-8169
159 - 163

Heating	Low-Energy Building Standards through sale of City-Owned Land Enforcement of Residential Building Energy Efficiency Codes	Munster Tianjin	Germany China	Europe East Asia
Public Lighting	Performance Contracting for Street Energy Efficiency LEDs for Traffic Signal Light Emitting Diode (LED) Street Lighting Retrofit	Akola Portland Los Angeles	India USA USA	South Asia North America North America
Solid Waste	Landfill Gas Recovery Program Solis Waste Compositing Eco2 Cities: Waste Use and Recycling	Tianjin Lahore Yokohama	China Pakistan Japan	East Asia South Asia East Asia
Urban Planning	Eco2 Cities: Integrated Resource Management Eco2 Cities: Land And Resource Management Eco2 Cities: Energy an Resource Saving Program Eco2 Cities: Integrated Regional Urban Planning	Stockholm Singapore Brisbane Auckland	Sweden Singapore Australia New Zeeland	Europe East Asia Australia Australia
Transport	Bus Rapid Transit Urban Transportation Taxi Scrapping And Recycling Project Eco2 Cities: Land and Land Use and Public Transportation Planning Congestion Charges For Urban Transport	Bogota Cairo Curitiba London	Colombia Egypt Brazil United Kingdom	South America Africa South America Europe
	Energy Management in the Provision of Water Services Water and Sewerage Management	Campinas Yerevan	Brazil	South America Europe
Water / Waste Water	Contract Water Leak Management Project Drinking Water System:- Monclova and Border Frontera Post- Conflict Water And Sewerage Rehabilitation Project	 Emfuleni Monclova Mostar	Armenia South Africa Mexico Bosnia and Herzegovina	 Africa Central America Europe
Finacing	Municipal Energy efficiency Fund	Ann Arbor	USA	North America

ISSN: 2321-8169
159 - 163

Procurement	Municipal Eco-Purchasing	Vienna	Austria	Europe
Housing	Low-Income Energy Efficiency Housing Project	Capetown	South Africa	Africa

At present, chandrapur is at a phase of transition from a town toward a city with total population of 3.27 lakh as per 2011 censes (Wikipedia) a planning is required today to have an energy efficient chandrapur tomorrow.

A brief status about Chandrapur,

	Total Population (2011)	**Total Consumption of Electrical Units (KW hr)**	**Average Per Capita Electricity Consumption (Watt Per Person)**	**Average per capita consumption in KW hr per Year**
Chandrapur	3.27 Lkhs	42860000(approx)	131W	1147
India	1,210,193,422	103350901090	85W	745
World	7,035,000,000	2204008778447	313W	2741

Though Chandrapur city has better average per capita energy consumption statistics better than the national average statistics but still it is far behind the world average of 313W per person.

Main parameters which are to be considered for cities energy management are as follows.

1. Basic details(Such as Population, water consumption, CO2 emissions per year, electricity consumption etc)
2. Energy consumption pattern of the city(Fossil Fuel energy)
3. Electricity consumption pattern of the city (Lord curve)
4. Availability of green energy and its assessment.]
5. Energy integration options.
6. City waste utilization.

Firstly our goal with this task work is to think about the careful vitality utilization design (, for example, per capita power utilization of the city, load bend, water use, use of LPG and other fossil powers) of the chandrapur city by gathering all the subtle element from the city arranging power and different concern offices, An investigation of this vitality utilization example of the city will let us discover the "valuable vitality" use of the city and "wastage" in vitality use of the city, on the premise of which this "wastage" eliminatory models can be thought for the urban communities e3nergy use design separated from this different other interest side burden administration models can be proposed.

Accessibility of green power vitality, use of environmentally friendly power vitality is the greatest commitment towards worldwide hot gas lessening. Chandrapur is known for its hot and dry atmosphere which is suitable for the era of sun powered vitality. Investigation of city's land information which can be acquired from the Indian meteorological office will give the accurate accessibility of environmentally friendly power vitality, on the premise of which every one of the conceivable outcomes of efficient power vitality can be completely dissected and its application models can be recommended here.

Climate Data for Chandrapur													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Year
Avg High Degree C (Degree F)	27 (81)	30 (86)	35 (95)	40 (104)	41 (106)	36 (97)	30 (86)	29 (84)	31 (88)	31 (88)	29 (84)	26 (79)	32 (90)
Avg Low Degree C (Degree F)	14 (57)	16 (61)	21 (70)	26 (79)	28 (82)	26 (79)	24 (75)	23 (73)	23 (73)	21 (70)	16 (61)	13 (55)	21 (70)
Precipitation mm (inches)	13												

Micro grid Models for the city; since city has a solar energy source in abundance Micro grid models can be very effective for the city. As micro grid has advantage of reduced transmission losers.

City waste and its utilization ; Since water scarcity is a major problem of the cfity during summer season thus waste water utilization and sewage treatment plant can be a boon for a city like chandrapur to handle its peak season water demand.
In short this study will tell us exactly what the current energy usage pattern in the city is and how it should be to become a energy efficient city.

CHAPTER SCHEME

1. Basic details (Such as Population, water consumption, CO2 emissions per year, electricity consumption etc.)
2. Energy7 consumption pattern of the city (Fossil fuel energy)
3. Electricity consumption pattern of the city (Load curve)
4. Compilation of all the details(using soft skills)
5. Total Energy demand v/s availability.
6. Availability of green energy and its assessment.
7. Energy Integration options.
8. City waste Utilization.
9. Conclusion.

CONCLUSION

The outcome of the project study will give the detailed energy data for the chandrapur city, Management and data sharing will provide city with information that can increase businesses capabilities of monitoring, managing and reducing energy consumption.
This kind of detail study of energy consumption & its reduction parameters is a common practice in various European countries (especially Germany) to actually reduc3e the CO2 emission.

1. This will give an idea about the energy consumption pattern of a small city.
2. Energy awareness.
3. Energy Planning.

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