

## ANALYSIS AND DESIGN OF SUSTAINABLE RESORT

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**Abstract** : Sustainability is at the forefront of discussion regarding the development of our natural environments. With the tourism industry continuing to expand, particularly in developing nations it has become apparent that the sustainability and longevity of developments must be considered. This project explores the meaning of a “sustainable resort” and to identify the opportunities and challenges of developing a “sustainable resort”. The aim of this project was to analyze existing methods for assessing the sustainability of the development of resort areas, analysis and evaluation of indicators and their impact on sustainable development of the resort area. Sustainable resort is a resort in which we are providing natural and eco-friendly environment for the visitors. In it we are not taking any things artificial or materials which will be harmful to the environment and human beings. Sustainable resort is a resort which will bring the tourists, visitors close to the nature. There is a lot of stress in the day to day life of individual. Also there is lots of pollution in the cities where we live and offices where we work. Visit to our eco resort and you will find a peaceful and healthy atmosphere.

**Keywords**-Sustainability, Sustainable or Eco Resort

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### I. INTRODUCTION

Sustainable development is one of the most well-known concepts of the latter half of the twentieth century. The term sustainable development first came into prominence in the World Conservation Strategy (WCS) published by the International Union for Conservation of Nature (IUCN) in 1980.

Sustainable development was defined by the World Commission on Environment and Development (WCED) in 1987 as “meeting the needs of the present without compromising the ability of the future generations to meet their own needs”. Sustainable resort development is now becoming recognized as a key to long term success. Tourism has greatly affected the sustainability of local environments, economies and communities. It has become one of the world largest and fastest growing industries, with almost all of the world nations.

A tourist resort whose facilities are intended to have a minimal impact on the local environment. The resort will consist of units which are eco-friendly and made of naturally available material and will maintain the ecological balance. The key idea of the concepts of sustainable development of the resort is progressive movement growth, aimed at improving the living standards without doing harm to the environment.

## II. LITERATURE STUDY

### **1. TO, DESIGNING SUSTAINABLE TOURISTIC RESORT COMPLEXES, SUBMITTED TO INSTITUTE OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULLFILLMENT OF THE REQUIREMENT FOR DEGREE OF MASTER SCIENCE, JAN 2011 FAMAGUSTA, NORTH CYPRUS.**

Thinkers believe that one of the critical issues in present century is achieving a suitable life, observing the limitations and compatible with the optimum use of energy resources. Due to this idea, on the threshold of the third millennium, achieving the goals of sustainable development in order to solve the environmental crises, economical consumption of energy and creating sustainable economics has changed to the base of planning and managing in many countries.

conclusions of the research in the form designing sustainable resort and tourist complexes are presented in a way that the methods suggested to be used in the studied regions would be the most common methods of providing sustainable cooling for constructional comfort.

### **2. ACCORDING TO SUSTAINABLE DEVELOPMENT OF THE RESORT REGIONS (AREA)**

**Authors -Evgenia Vidishcheva, Yuriy Dreizis and Andrey Kopyrin**

The majority of indicators found in specialized literature can be divided into 4 categories: socio-economic, environmental, human impact and tourism. Only a comprehensive assessments of all aspects of the sustainable development of the territorial system allows us to obtain a reliable assessment. It is also worth noting that sustainable development is a global process, the participants of which are all economic entities, cities and countries. Therefore, it

is extremely important to develop in harmony with other elements of the global system. To ensure sustainable development of resort areas in the constituent entities of the Russian Federation, it is necessary to develop a system of indicators that takes into account existing international experience and the specifics of the economic, social and environmental conditions of the Russian region.

### **3. ACCORDING TO SUSTAINABLE ECO -RESORT**

**Authours- Alho, C. Faculdade de Arquitectura da Universidade Técnica de Lisboa Pina, J.C.**

Eco-camping resort gains a new importance in front of the new paradigm and it seems to appear in the camping leisure, two different and opposite forms in evolution. In an upward direction, where this proposed project is integrated, expresses sophistication and the constant institutionalization, earning new contours pointing until the new classifications of "Luxury". In descending direction, the provisory lodging becomes in a form of permanent residence for a considerable part of population with modest incomes. Tourism is to move, answering the new ecological and environmental concerns and also to a dramatic problem created by the development of masse tourism, that aggravate from Second World War until present, leaving entire cities structures that are not used during half of the year, what configures a clear problem of sustainability. Changes in society creates new human and physical conditions on the built environment witch defines emerging concepts for eco sustainable resorts in rural areas of Europe.

### **4. ACCORDING TO THE DEVELOPMENT OF A SUSTAINABLE RESORT AND INDICATORS**

**Authors - Komet Kulkajonpluna, Vorapoch Angkasithb ,Dhiranantha Rithmaneea.**

The new index sustainability index can be used as a tool to assess the level of sustainable development of services offered by the tourism industry. The index is significantly beneficial to stakeholders and relevant parties of resorts and hotels. In addition, the GRI has been used in line with the new index to improve on the current sustainability reporting. The highlight of the index, particularly in the subsections of the index, is the ability of the meet the needs of resorts for sustainable tourism development. It can be seen that the results are limited in the ways certain social factors are examined. Quality assessments for a number of topics need to be made in order to reach a final conclusion on sustainable tourism.

## III. METHODOLOGY

Sustainable resort are structures that are built in an environmentally responsible manner by maximizing use of materials, minimizing use of resources and ensuring the health and well-being of occupants and the surrounding built environment both today and for generations to come. With respect to the LEED guidelines there are few topics that should be addressed in the designing of new environmentally friendly resort.

**3.1 selection of site :-** Sites should be selected by determining which site would pose the least environmental threat if construction were to take place. Pollution prevention including controlling soil erosion, waterway sedimentation

and airborne dust generation are important factors to be considered. Sites should also be chosen that are closer to urban development where supporting infrastructure is available this will preserve green spaces and wildlife areas. Alternative transportation is another important factor to consider. Other factors that promote sustainability would be for example preferential parking for low-emission vehicles and Another factor are the water management systems that take into

account the natural environment design for storm-water systems to ensure proper management of water.

For considering all those factors we are choose Arnala area for our project site selection, Arnala is located in vasai tahsil of Thane district in Maharashtra, India. It is situated 20km away from sub-district headquarter vasai. Arnala area comes under vasai assembly and palghar parliamentary constituency. virar is nearest town to Arnala which is approximately 9km away. The area of Arnala has good transformation connectivity like public bus service or private vehicle service are available, also the railway station available within 7-10km distance .



**Fig. 1: Google map image of site**

### **3.2 DESIGN OF SUSTAINABLE RESORT IN AUTOCAD**

Before designing we find out some of designing aspects and designing principles as per given in research paper;

1. Windows and rooms are provided in east direction for more natural light.
2. In resort wc and bath should be provided at entrance.
3. Waste water treatment plant and water treatment plant is provided at east and west direction because flow of air from north direction. Rainwater harvesting pipe should be provided on the roof of all house. Rainwater harvesting water pipe is directly connected to the pure water outlet.

We have design resort in AutoCAD as shown in figure;

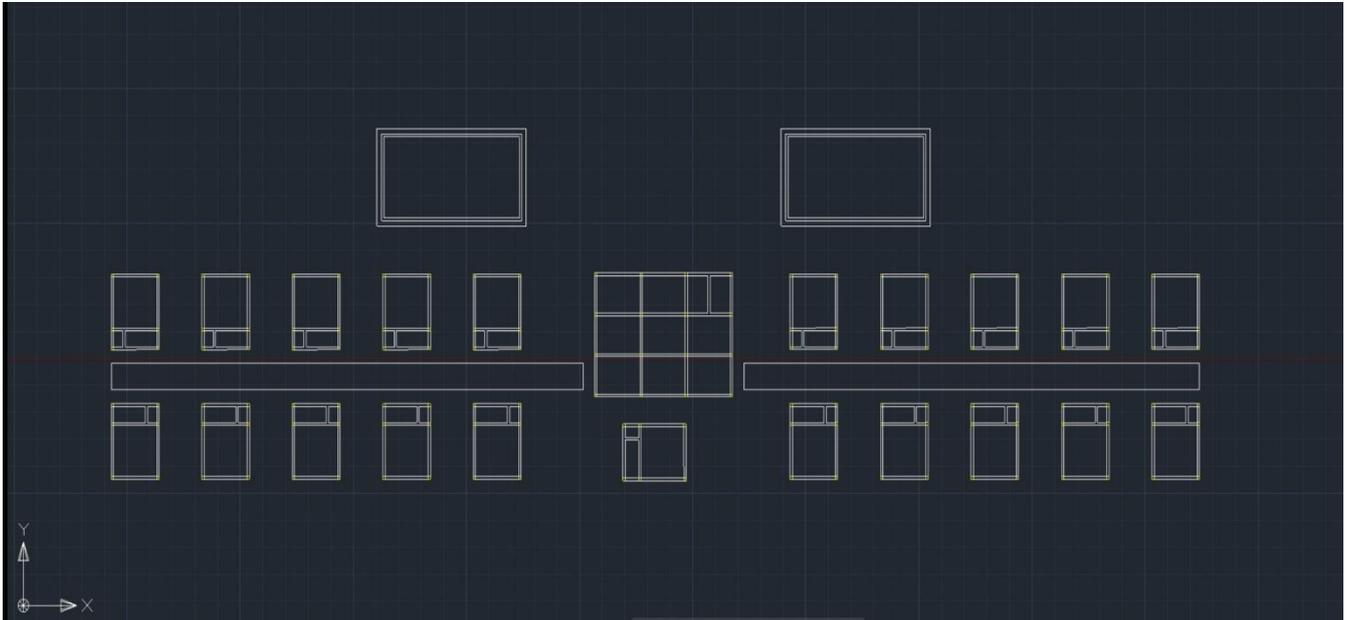


Fig. 3: AutoCAD plan of Sustainable Resort ▲

#### IV . CALCULATIONS

##### 4.TOTAL ENERGY REQUIREMENTS

##### 4.1.1ENERGY REQUIREMENT FOR HOUSE.

##### Energy calculation for Room

Name	company	cost	No.	Total cost	Energy rating conventional appliances (w/h)	daily use (h)	Energy consumed conventional Appliances (w) per day	cost of energy Alternative (Rs)	Total cost of energy efficient alternative	Energy consumed by Efficient alternative (w/h)	Energy consumed by Efficient alternative (w/h)	Total saving per room (w) per day
TV	Penasonic	16999	1	16999	100	5	500	20000	20000	70	350	150
Table lamp	Philips	800	2	1600	5	5	25	1000	2000	5	25	0
A.C	LG 1 Ton	36900	1	36900	400	5	2000	40000	40000	333	1665	335
Tube lights	Eveready	350	4	1400	20	12	240	500	2000	12	144	96
Geaser	powerpye	4000	1	4000	3000	1	3000	5000	5000	2500	2500	500
Mini Fridge	Mitashi	7600	1	7600	250	24	6000	9000	9000	100	2400	3600
Telephone	Motorola cord.	1365	1	1365	20	24	480	2000	2000	20	480	0
LED	Phillips	5	10	5000	3	4	12	1	100	2	8	4
Decorative lamps	New Raipuria	650	10	6500	1.5	7	10,5	1000	10000	13	115	0
CFI Bulb	phillips	250	4	1000	5	5	25	500	2000	3	15	10
		69414		82364			12292.5	80000	102000	306.5	7597.5	4695

##### Energy calculation for Hotel

### Energy calculation for Reception

Name	company	cost (Rs)	No.	Total cost	Energy rating conventional appliances (W/h)	daily use (hours)	Energy consumed conventional Appliances (W) per day	cost of energy efficient Alternative (Rs)	Total cost of energy efficient alternative (Rs)	Energy consumed by Efficient alternative (W/h)	Energy consumed by efficient alternative (W/h)	Total Saving per room (W) per day
T.V	Panasonic	16999	1	16999	100	5	500	20000	20000	70	350	150
Table lamp	Phillips	800	2	1600	5	5	25	1000	2000	5	25	0
A.C	LG 1 ton	36900	1	36900	400	5	2000	40000	40000	333	1665	335
Tube lights	Eveready	350	4	1400	20	12	240	500	2000	12	144	96
Telephone	Motorola cord	1365	1	1365	20	24	480	2000	2000	20	480	0
LED	Phillips	500	10	5000	3	4	12	1000	10000	2	8	4
Decorative lamps	New Raipuria	650	10	6500	1.5	7	10.5	1000	10000	1.5	10.5	0
CFL bulb	Phillips	250	4	1000	5	5	25	500	2000	3	15	10
computer	lenovo	45000	4	180000	50	12	600	45000	180000	50	600	0
water filtration	kent	6500	1	6500	35	24	840	6500	6500	35	840	0
				257264			4732.5		274500		41375	595

### Sample Calculation

Total Energy Requirement for resort

= Energy requirement for house + Energy requirements for hotel + Energy requirements for reception.

Sample calculation on table data ex., Energy consumption of TV per House Considering 5 hours of daily use

Energy rating of TV is 100 w/h

Therefore the energy consumption of conventional TV is 5\*100= 500 w

Name	company	cost (Rs)	No.	Total cost	Energy rating convention al appliances (W/h)	daily use (hours)	energy consumed convention al appliances (W) per day	cost of energy efficient alternative (Rs)	Total cost of energy efficient alternative (Rs)	Energy consumed by efficient alternative (W/h)	Energy consumed by efficient alternative (day)	Total saving per room (W) per day
Microwave	LG	8495	2	16990	1200	14	33600	12000	24000	1100	30800	2800
Refrigerator	LG	25999	2	51998	250	24	1100	32000	641	100	4800	7200
T.V	Panasonic	16999	9	152991	100	17	15300	20000	1100	70	10710	4590
A.C	LG 1 ton	36900	12	442800	1200	8	115200	40000	480000	1000	96000	19200
Tube light	Phillips	40	36	1440	15	14	7560	50	1800	12	6048	1512
Decorative lamp	New Raipuria	600	80	48000	15	7	840	600	4800	15	840	0
Coffee maker	Mitashi	700	4	2800	600	4	9600	900	3600	500	8000	1600
Telephone	torola cord	1365	2	2730	130	24	6240	1365	2730	130	6240	0
Toaster	prestige	1075	2	2150	800	8	12800	1075	2150	800	12800	0
Deep fryer	American Micronic	3000	2	6000	1000	16	32000	4500	9000	800	2540	6400
Mixer and juicer	Prestige	2700	2	5400	500	12	12000	2700	5400	500	12000	0
Griddle	prestige	6000	1	6000	500	4	2000	6000	6000	500	2000	0
Grinder	prestige	3000	2	6000	500	6	6000	3000	6000	500	6000	0
music system	LG	8000	15	120000	55	24	19800	8000	120000	55	1981	0
CFL bulb	Phillips	250	40	10000	12	5	2400	500	20000	12	2400	0
water filtration	kent	6500	1	6500	35	24	840	6500	6500	35	840	0
				881799			288180		979180		24878	43302

To Reduce the Energy Consumption Alternative Energy efficient TV is used Considering Energy rating of TV

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70 w/h

Therefore the energy consumption of Energy efficient TV  $5 \times 70 = 350$

Total savings per room

= Requirement of Conventional TV- alternative energy efficient TV

= 500-350

= 150w/day

### CONCLUSION:

By all the details on the topic of Analysis and design of sustainable resort come to know sustainable development in resort industries and which data required while constructed sustainable resort, the project aims to contribute to the development of the backward areas by using modern approach throughout the selected area And To introduce the world to an eco- friendly atmosphere. We can also find out total energy required for sustainable resort and approximate estimations. This study help to people to know about sustainability on resort development and it's important for future generations.

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