



# Govardhan Ecovillage

<b>Location</b>	: Galtare, Wada, Thane, Maharashtra - 421303
<b>Site area</b>	: 70 acres
<b>Built-up area</b>	: 2,400.65 m <sup>2</sup> (including spaces such as Goushala, Yagya shala that have not been considered under energy performance)
<b>Air-conditioned area</b>	: 0 m <sup>2</sup>
<b>Non Air-conditioned area</b>	: 2,400.65 m <sup>2</sup>
<b>Energy consumption reduction</b>	: 57% reduction in energy consumption compared to GRIHA benchmark (for 839 m <sup>2</sup> non air conditioned space)
<b>Energy Performance index (EPI)</b>	: 37.5 KWh/ m <sup>2</sup> /year
<b>Renewable Energy</b>	: Rated capacity of solar PV installed on site is 39KW
<b>GRIHA provisional rating</b>	: 5 Stars
<b>Year of completion</b>	: 2012

The following strategies were adopted to reduce the building impact on the natural environment:

- 🌱 **Sustainable site planning**
  - Buildings planned in such a way that minimal trees are cut and agriculture is not impacted
  - Buildings on hard ground to save on foundation cost .
  - Layout based on Hydrogeological survey's inputs so that development does not impact negatively the recharge and discharge zones of water.
- 🌱 **Reducing water consumption**
  - Recovering up to 95% of sewage water using a green sewage management technology called Soil Biotechnology, which is used for landscaping.
- 🌱 **Reducing water consumption**
  - Use of precast arch panels for roofs
  - Use of Stabilized Soil Cement blocks on walls and maintaining the same unplastered .
  - The building blocks used in the construction are stabilized mud blocks, mixing ratio is 1:4:6 (Cement/lime, quarry dust, soil) and cement lime at 80%, 20% ratio
  - Instead of fly ash, soil was used for the composite mortar of proportion 1:11 (1 of Cement and 11 is the site soil and stone dust/sand) is used. Entire construction is done with this mortar. Plastering is completely eliminated for the walls as the walls are exposed stabilized mud block walls.
  - Stone walls for foundation are built using composite mortar of cement, quarry dust and soil.
  - Sills and lintels with U-blocks are used which reduces need of concrete.
  - Intermediate roofs of buildings except for toilets are made of arch panels made of stabilized mud blocks and precast concrete beams are used to reduce need of concrete in buildings.
  - Final roofs of all the buildings except yoga hall are made of double tiled sloping roof which eliminates need of concrete and steel used as members can easily be reused.
  - Thatch roof for yoga hall is made of sugarcane thatch, grown on the site. These leaves are agricultural waste.
- 🌱 **Non-structural application**
  - Stabilized mud block wall is used for the non-load bearing walls replacing fired clay bricks.
- 🌱 **Reducing energy consumption (compared to GRIHA benchmarks) while maintaining occupant comfort:**
  - o For achieving visual comfort:
    - Optimum window openings
    - Light floor for light diffusion
    - Soft landscape outside giving no reflected glare
  - o For achieving thermal comfort:
    - Double tile roofing for final roofs.
    - Shaded walls and openings
- 🌱 **Renewable energy technologies installed on site:**
  - Solar PV panels of 39KW capacity
  - Solar water heaters of capacity to meet 100% hot water needs
  - Biogas plant processing the food wastes and animal waste and producing upto 30cu.m gas
- 🌱 **Waste mangement:**
  - GEV ready has a Biogas plant in its campus which utilizes cattle dung to produce biogas, to be used as a fuel for cooking. The Biogas plant also takes kitchen wastes like vegetable and fruit peels to produce Biogas. The slurry produced after extraction of gas is utilized as a natural fertilizer in organic farming
  - Wood dust forms an ingredient along with cow dung, in making of dhooop sticks or chemical free incense sticks. These dhooop sticks are fragrant and also have the utility of being a chemical free mosquito repellent.
  - All the organic garbage like kitchen wastes, horticulture wastes etc are collected to make compost. The compost is packed in cement bags when ready.
  - Card board cartons – Few of the card board cartons are used as a mulch in the agriculture field.

## Integrated Design Team

<b>Client</b>	: ISKCON Girgaon Chowpaty
<b>Project Coordinators</b>	: Chitra Vishwanath, Sharath Nayak, Anshu Ahuja
<b>Principal Architect</b>	: Biome Environmental Solutions Pvt Ltd, Bangalore
<b>Project Management Consultant</b>	: Biome Environmental Solutions Pvt Ltd & GEV
<b>Structural Consultant</b>	: Alternate Technologies - Prof MRYogananda of Mrinmayee Bangalore
<b>Steel Structures</b>	: Mr Ravindranath.
<b>Electrical Consultant</b>	: Mr Setlur Veeraraghavan Nagesh, Mr Thulasidas
<b>PHE Consultant</b>	: McD BERL
<b>STP Design</b>	: Life link- Biplab Patnaik, Sunil Rathi