Sustainable Community Housing Initiatives for 2050

**Project Summary**

MIT has partnered with Sekisui House for a research project on the urban retrofit of Nagayama area in Tama New Town close to Tokyo, Japan for design of a low carbon community. The research explores the design and development of a community located in a suburban setting that will reach zero net energy usage by 2030 and 2050 and maintains the conditions that enhance the livability and sustainability of the community while also striving for zero net energy usage towards carbon neutrality and for minimizing the use of natural resources. The focus is on community agriculture and industry, food production, and sustainable site development.

**Design Principles**

1. 100% energy production on site
2. Development of zero-emission mobility
3. 100% grey water reuse
4. Adaptable community housing units (long life-loose fit)
5. 80% reduction on 1990 levels of carbon by 2050
6. 50% of open space used to support community agriculture and industry
7. 60% reduction in energy use
8. Use of ecological construction systems
9. Conservation of habitat and landscape continuity
10. Building and sustaining the local economic base of the community
11. Deployment of advanced information systems
12. Reconfigurable architectural systems for housing

**Site & Infrastructure.**

- **Energy**
  - 100% energy production on site
  - Development of zero-emission mobility
- **Water**
  - 100% grey water reuse
- **Housing**
  - Adaptable community housing units (long life-loose fit)
- **Carbon**
  - 80% reduction on 1990 levels of carbon by 2050
- **Open Space**
  - 50% of open space used to support community agriculture and industry
- **Energy Use**
  - 60% reduction in energy use
- **Construction**
  - Use of ecological construction systems
- **Habitat**
  - Conservation of habitat and landscape continuity
- **Economy**
  - Building and sustaining the local economic base of the community
- **Information Systems**
  - Deployment of advanced information systems
- **Architectural Systems**
  - Reconfigurable architectural systems for housing

**Research.**

- **Chart**
  - The size of building that can be energy neutral based on different technologies and how that changes over time.
- **Diagram**
  - Carbon Calculation Diagrams showing the current calculated carbon and the reductions towards zero over time.
- **Map**
  - Map showing the network of solar electric charging hubs for car share vehicles.
  - Site plan of proposed energy production for each neighborhood.
  - Site plan of community agricultural areas and stormwater collection.
- **Diagrams**
  - Diagrams of the low density housing prototype that can adapt to different living groups.
  - Exploration of medium density facades typologies.
  - Components of a self-sufficient community.