The current generation approach to sustainable housing is to focus on highly optimized building envelope and photovoltaics to generate household energy. In a northern climate this has the drawback of being ineffective during the winter months when the grid is most strained, while during the summer months it produces a surplus of electricity that the grid cannot effectively use. This approach often overlooks the accompanying technical complexity and high embodied energy costs of the technology.

By understanding the limitations and advantages of available technology, the Five Tree House enables a new sustainable lifestyle rather than passively supporting an outdated one. Utilizing a micro CHP (Combined Heat and Power) system powered by wooden pellets, the house achieves its heating and electricity needs annually through the consumption of five trees. The five trees provide a renewable and carbon-neutral energy resource that is no longer an abstract source of energy, but one that the inhabitants of the home can actively support through the annual planting of trees.

As the community grows, the planted trees enhance the community in the form of a recreational forest. The trees grow to replace the existing technical infrastructure that is complex and vulnerable to outages. The forest is a more resilient source of energy and promotes a healthy relationship with nature.

The Five Tree House is a new sustainable lifestyle where the inhabitants of the home can actively support through the annual planting of trees.
THE FIVE TREE HOUSE BY AALTO UNIVERSITY - NEXT GENERATION SUSTAINABLE HOUSE IN TAIKI-CHO INTERNATIONAL STUDENT COMPETITION

NEXT GENERATION SUSTAINABLE LIVING

CARBON FOOTPRINT
Total 15% KE

NEXT GENERATION
SUSTAINABLE LIVING

TERRACE ACTIVITIES
BRING THE NATURE IN

SEASONAL GROWTH
FOOD STORAGE INSIDE THE BUILDING

VEGETABLE GROWTH
HIGH LEVEL OF SELF-SUFFICIENCY

ADJUSTABLE FABRIC SCREENS
SUN- AND PRIVACY PROTECTION

FLEXIBILITY
EASILY REPLACABLE FACADE BOARDS
MADE OF RE-PURPOSED WOOD

FABRIC
CLT
+ 0.8
+ 6.0

RE-PURPOSED WOOD

FLEXIBILITY
EASILY REPLACABLE FACADE BOARDS
MADE OF RE-PURPOSED WOOD

FABRIC
CLT
+ 0.8
+ 6.0

RE-PURPOSED WOOD

NEXT GENERATION
BARRIER-FREE ACCESSIBILITY
ONE STOREY BUILDING

RAMP

ENERGY PRODUCTION AND CONSUMPTION
VISIBILITY OF
PELLETS

CONCRETE COLUMN
200 mm

CONCRETE FOOTING 1m²

FOAM GLASS INSULATION 100 mm

CELLULOSE INSULATION 530 mm

RIGID INSULATION 50 mm

CELLULOSE INSULATION 325 mm

EXTERIOR DECKING 25 mm

CELLULOSE INSULATION 200 mm

WOOD PANEL 20 mm

WOOD FLOORBOARDS 25 mm

FOAM GLASS INSULATION 100 mm

EXTERIOR FIBERBOARD SHEATHING 25 mm

CELLULOSE INSULATION 200 mm

EXTERIOR FACADE BOARDS 20-100 mm

VENTILATION GAP 75 mm

VENTILATION GAP 150 mm

CELLULOSE INSULATION 50 mm

GUARDAMAR 500 mm

WOOD FLOORBOARDS 20 mm

EXTERIOR FIBERBOARD SHEATHING 25 mm

CONCRETE COLUMN 200 mm

CONCRETE FOOTING 1m²

SEDUM ROOF

SOUTH ELEVATION 1:100

NORTH ELEVATION 1:100

EAST ELEVATION 1:100

SECTION A 1:100

SECTION B 1:100

INTERIOR PERSPECTIVE TOWARDS SOUTH

TERRACE PERSPECTIVE TOWARDS WEST

INTERIOR PERSPECTIVE TOWARDS SOUTH

TERRACE PERSPECTIVE TOWARDS WEST

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