

Chapter 3

A Portrait of Nine Ecovillage Communities

What are the ecological villages really like? What is their story? How are they similar? What makes each unique?

The case studies in this paper are a sampling of the ecovillages in Sweden. The profiles highlight the unique character, history, social, organizational style, and technical composition of each. Part II considers in more depth particular aspects of the communities.

The nine ecovillages below are presented in chronological order. The technical sheets following each profile are short summaries of different aspects of the ecovillage. The technical summaries are complete to the extent that information was available. Significant published sources of information for the ecovillages are listed after each description.



Fig. 1

Tuggelite



Fig. 2

Move in date:	fall 1984
Location:	Skåre 8 km NW of Karlstad
Project initiators:	future residents
Size:	16 households

Tuggelite, the first completed ecovillage in Sweden, is a source of inspiration for many ecovillage associations in Sweden. The seed for Tuggelite was planted, long before the first stone was turned, by a group of academics from Gothenburg who, in 1974, were working on the Välsviken ecological housing project. The Välsviken group splintered in 1979 when the developer backed out, but a core of diehard members persisted. Three families who joined the Välsviken project in 1977 still live in Tuggelite today. Most of the others who later joined the Tuggelite project, were either friends, or acquaintances of this core. Over the fourteen years of its existence turnover in Tuggelite has been minimal. Only three families have moved away. Tuggelite is the only area I surveyed where the majority of residents revealed that their closest friends live in the ecovillage. However, it isn't an exclusive club. The newest residents, who moved in just three years ago, said they

felt immediately welcome. Their children made new friends right away. Neighbors stopped by to help orient the family. It wasn't long, they said, before they felt like one of the "gang."

I was curious to know if the residents had over the years, become complacent about environmental conservation. The responsibilities and interests of work and family have a tendency to crowd out youthful energy and optimism. As parents, these residents carry a large load of responsibilities. The number of adults, 27, has been constant over the 14 years, while the number of children has soared from 9 to 39. Nonetheless, the residents seem to have retained their original commitment to environmental concerns. Respondents to the survey were quick to critique their own behaviors and cite areas for improvement. The residents could have contented themselves with the satisfaction of knowing they had done their part for the environment by building the ecovillage and receiving countless



Fig. 3 - Lunch time at the common house

numbers of visitors. But that was just the beginning, they said. Tuggelite is *"a place to live where concern for the environment plays a daily role."* On the other hand, progress can always be made, and living in an ecologically oriented neighborhood isn't a sufficient excuse for apathy for a resident who sees, *"... only marginal differences between Tuggelite and other similar homes. Looking at the total environmental impact, in that Tuggelite residents travel by plane or car several times a year to the other side of the world, it is a question as to whether there is any difference."* Residents made dozens of the other comments on how they can do more to protect the environment. With this continued fire of commitment I have little fear that Tuggelite will become more environmentally friendly over the years even while the original buildings stay the same. The years have apparently fueled, not dwindled, their commitment.

I arrived in Tuggelite on a workday in March. Workdays are held every fifth Sunday; each adult takes part in at least 5 work days a year. Residents meet in the commonhouse in the morning and divide a list of tasks to be done. On the day I arrived people had already split up and were planting, shaking out rugs, cleaning out the refrigerator in the common house, and so on. A resident who had been in on the planning from the very beginning, proudly showed me the central furnace. He shared stories of the trials of finding the right system at a time when no one was selling small scale, wood pellet, furnaces. Another resident gave me a tour of her house, which included an important trip to see the dry toilet and compost. Inside the greenhouse, just off the living room, a row of seedlings were poking through the soil in old milk cartons lined up along the sill, almost as if to spite the snow falling outside. At noon, we returned to the common house for lunch. The foyer was

overflowing with shoes and the kitchen was full of home-made breads and cookies. People were chatting about what to plant in their gardens, their children, and what could be done during the next work day. I was soon involved in a heated discussion about the ideal environmentally-friendly toilet system.

Tuggelite - Getting there

The first interest group for Tuggelite was established in 1981. This interest group began with ten member households. Just three years later, in the fall of 1984, 16 families moved to the newly built area. The creation of Tuggelite was expedited due to the knowledge and experience of several members brought to the group. Three households had participated in the Vällsviken project in Karlstad for 4 years, and brought their knowledge and skills with them. Many local contacts had already been established during the planning of the Vällsviken project. The idea of an alternative residential community had been under discussion for some time. The architectural firm for Tuggelite, EFEM, had also consulted on the Vällsviken project. The architects, therefore, were already familiar with the principles involved. Many of the ecovillage members had been active in the campaign against nuclear power and were ready and eager to do what it took to say “yes” to Tuggelite. *“We wanted to try a new alternative and we wanted to say YES for once. There was so much to say no to in questions about the environment and planning. It was a chance to say yes, to show something positive”* (Tidäng 17). Lars Nilsson, civil engineer, and Tuggelite resident, was an invaluable asset as project leader and spokesman. He had experience with building projects, and above all, unrelenting motivation. Nilsson invested over 4,000 unpaid hours in the planning and execution of the project.



Fig. 4 - South Facade & Garden [Bokalders1995]

The residents did much of the planning work themselves, including overseeing the building process, filling the role of developer, and the landscape design. It was not an easy task. There was no frame of reference for such a project in Sweden. The residents had to gather, from scarce resources, all the information they could. As one resident noted, *“there was no one else finding the answers for us”* (Tidäng 24). Several members took it upon themselves to travel to see a Danish collective and report their findings to the rest of the group. The residents’ personal time investments paid off financially and in other ways. As one resident noted, *“It takes a lot of time and energy, but it welds the members together in a way that is beneficial once you move in.”*

City officials and the builders had little knowledge of ecological principles. Consequently, problems surfaced. Delays arose due to concerns about sanitation standards in the use of composting toilets and ash from pellet furnaces. These particular concerns were voiced

by the city board of health, the county commissioners' office and neighbors. A compromise was reached when the future residents agreed to allow the systems to be altered for 'standard' use at a later date, if necessary. The necessity for building in a "back-up" system raised building costs. Another snag occurred because the builders were not familiar with the methods for building a highly insulated house. The plans required windtight walls and the avoidance of all "cold bridges". A cold bridge is an object (such as a nail or board) that penetrates the insulating windtight shell. The penetrating object provides a "bridge" by which cold and vapor enter the house. With this type of construction flaw, maximum energy savings are not achieved. Nevertheless, in Tuggelite, the energy savings are still higher than standard housing. Solar panels were added to the roof of the commonhouse a few years after the houses were built.

In comparison to the planning of other ecovillages, the planning of Tuggelite went smoothly, quickly, and without major disappointment.

Tuggelite - Location

Tuggelite is located eight kilometers northwest of the center of Karlstad in a suburb called Skåre. Karlstad is a mid-sized city in central Sweden, population 75,000. Tuggelite is on a main bus line that runs through the center of Skåre. Skåre's center is just one kilometer from Tuggelite, a 3 minute bicycle ride, a 10 minute walk. All the basic services, including as a grocery store, post office, schools, banks, and medical care, can be found in Skåre. Most of the adults in Tuggelite commute by bicycle or automobile to Karlstad for work.

Two sides of the Tuggelite site are edged with woods. The remaining two sides are edged by roads and other residential housing.

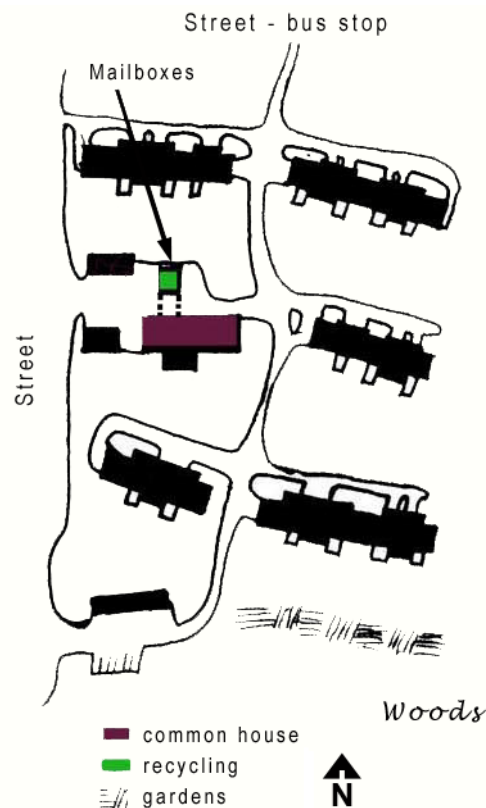


Fig. 4 - Site Diagram

A note on organization of Swedish cities.

Swedish cities are compact. The typical organization is: a main city center surrounded by districts, or neighborhoods, each with a smaller center. The districts are often defined by their own name, and have stores, schools, and services such as a post office, bank, and medical care. Six of the nine ecovillages presented are located in a residential neighborhood within walking distance of a district center. All nine are located within bicycling distance of the town or city center. District residents may have to travel to the main city center for work and specific purchases, but basic needs can be met locally, within the district. The largest cities in Sweden are still small in comparison to the typical sprawl of American cities. Even Stockholm can be traversed from end to end, by a bicyclist, in a less than an hour. The edges of more

and more Swedish cities are being covered with strips of huge single-story discount stores, but this suburbanization is less advanced than in American cities. Northern Sweden is far less populated than southern Sweden. In the North, the cities and towns are significantly smaller, therefore it is often necessary to travel long distances between towns to reach work or special services.

Tuggelite - Design

Top priorities in Tuggelite are energy efficiency, resource conservation and a strong social network as evidenced by; small windows on the northern face of the houses and broad glassed-in verandahs on the southern face, and the common house which is a hub of activity.

The 16 households are located in five attached sets of three and four, each with the long side facing south. The houses reflect traditional Swedish style; copper red paint with white trim. Only the small northern windows on the houses, and solar panels on the roof of the common house, prompt a second look. The houses were designed with passive solar principles to take advantage of the sun's free energy. Each household has a greenhouse on the south side which some residents use as an additional room. In winter months, a portion of incoming air is drawn from the greenhouse where it has been pre-heated by the sun. Houses surround the commonhouse on three sides. Garages are located on the edge of the site. Each house has a its own garden plot located next to a larger, shared, garden plot on the southern end of the site, where the compost heaps also reside, and there is a larger shared plot. Residents have not been as successful in their gardening attempts as they might like, because the soil contains a large amount of clay.

The houses use about 30% less energy, per year,

than a standard Swedish house built in 1980. A result of combined energy and resource conservation measures for water, electricity, heating, and hot-water-heating needs. (Blomsterberg 11). The residents do their laundry in the common house. This saves the energy that would be embodied in the production of fourteen separate washers and dryers. (see the discussion of Life cycle analysis in the Design chapter, for further information on embodied energy). Tuggelite has a district heating system provided via a central wood pellet furnace, which incorporates 120 m² of solar panels. Initially, Tuggelite had problems with their heating because in 1984, no mid-sized wood pellet furnaces were being produced. Residents had to fabricate a solution until the right furnace became available.

District heating is a hot water heating system common in Sweden. A central furnace provides the energy to heat the water stored in a central hot water tank called the accumulator. The hot water is then pumped via underground insulated culverts, to the homes' radiators. The water, after giving off its heat to the room, returns to the central accumulator where the water is then re-heated. Solar panels are easily incorporated into this system. District heating can be very small scale or for a large city. In addition a district heating system usually incorporates delivery of hot water for washing as well as bathing.

Water (both tap water and sewage) is connected to the municipal system. The gray water, from the shower and kitchen, runs into a settling tank. In the spring and summer, the gray water can be used for watering the gardens. Overflow from the settling tanks leads to the municipal sewage system. All the toilets are composting toilets. The trials and triumphs of the composting toilet are discussed in the Design chapter in

Part II.

Tuggelite - Social and organization

The common house forms the hub of activity. Residents make regular trips to the common house to: collect mail, do laundry, drop off their children for daycare, relax in the sauna, drop off recyclables, work in the woodshop, meet for coffee, enjoy the occasional meal prepared by the gourmet club, or any other of a number of reasons. Until 1998, Tuggelite home owners' association rented out the first floor of the common house for a city daycare facility. The daycare had 4-5 employees and 14 children; up to half of the children were from Tuggelite. When I visited, the daycare had recently been closed. A public school, adjacent to the ecovillage, had just opened. The school had larger facilities to house the city daycare. The residents were somewhat at a loss for what to do with the space, remarking that the area, inside and out, seemed quiet and empty without the bustle of young children about especially during weekdays.. Although there were some conflicts between the resident's and daycare's need for space and resources, the benefits of the daycare seem to far outweigh the disadvantages.

All of the residents surveyed agreed that the social network in Tuggelite was better, or much better, than in "regular" housing. Although they indicated that neighborliness can occasionally be "too close," benefits such as, "If you have a problem there is always help nearby for babysitting, company, rides or loaning things," clearly outweigh the disadvantages.

Residents themselves maintain the property and the association's finances. Daily and weekly maintenance is attended to by five different work teams. The work includes such tasks as: mowing and snow removal, small repairs such as changing lightbulbs, general cleaning in the commonhouse, or monitoring the central furnace. Workdays are held every fifth week

to attend to larger tasks such as planting flowerbeds or defrosting the commonhouse refrigerator. Residents participate in, at least, five workdays a year. Residents can add tasks to a list in the commonhouse. To address shared concerns association meetings are held every other month. The association steering committee meets more frequently, but most decisions are made in the larger forum.

Tuggelite - Resources

Tuggelite is the most well documented of all the ecovillages.

The most comprehensive book about Tuggelite, *Att bo i Tuggelite*, was sponsored and published by Bygghälsöförbundet. The author, Kristina Tidäng, is an architect at EFEM Architects, the firm which designed Tuggelite and other resource efficient homes. The book covers both social and design aspects. It has many quotes from the residents addressing both the pros and cons of the design and function of Tuggelite.

Tillämpad Passiv Solvärme: Resurssnål bebyggelse i Karlstad by Åke Blomsterberg and Hans Eek, presents the results of a two year study of the efficiency of the energy saving measures, especially passive solar, built into the Tuggelite homes. The research was sponsored by Statens Råd för byggnadsforskning, now known as Bygghälsöförbundet.

Karlstads Kommun - Stadsbyggnadskontoret (city building office) produced, an eight page brochure, *Bostadsområdet Tuggelite, - en presentation* (author, Gunnar Sewén), and a 10 minute video, in cooperation with Tuggelite residents. The brochure is a concise overview. The video can be loaned from the city of Karlstad, tel. 054- 15 69 20.

Newspaper articles on Tuggelite contain little that is not already covered in the above resources.

Tuggelite - Overview

Planning start: Move in date: Location: Project initiators: Number of Households: Project leader: Architect: Landscape architect:	Fall 1981 Fall 1984 Skåre 8 km NW of Karlstad future residents 50 Lars Nilsson Hans Gronlund, Helena Westhol	Number of Households: Size of homes: Type of ownership: Project developers: Builder: Building cost:	16 households, circa 65 people 4 at 96m ² - single story 12 at 120m ² - two stories, some later additions made home-owner's association residents Pltzer Bygg AB general contractor SEK 5,370 SEK per m ² at 1985 of EFEM arkitektkontorprices residents
S I T E			
Location:	walking or short biking distance to schools, childcare, stores, and the woods		
Transportation:	bus line to the center of Karlstad twice an hour, 25 minute bike ride to center		
Design:	total area of site is 1205m ² five groups of houses encircling common house house placement to maximise sun exposure, minimize wind exposure asphalt pathways no automobile access except for emergencies parking garages on edge of site, plus space for guest parking play areas - two playground areas, one ball field, TV room in common house		
Landscaping:	some trees, many flower beds, stunted growth due to clay soils		
Gardens:	small individual lots and large shared lot		
food storage:	four earth cellars, not well used due to insufficient insulation and ventilation		
compost:	pantry - cellar in home used for food storage multiple compost bins for organics from food, yard, and bathroom		
Common house:	324 m ² , similar in design to houses with large green house, 120m ² of solar panels laundry room used by all residents, large kitchen, meeting room, sauna, loft with weaving stools and television, photography studio, and a ping pong table Childcare - city rented space during daytime for day care		
other structures:	Adjoining common house - central furnace, recycling/trash room, mailboxes, woodworking shop		
House exterior:	traditional style: copper red wash on wooden siding with white boarders red tile roof large awnings shade house from summer sun one greenhouse per household on south side		

TUGGELITE - Overview continued

INTERIOR	
General:	houses designed on passive solar principles
Floor plan:	some individual variation between houses - bedrooms & entry on north side, kitchen & livingroom facing south, greenhouse on south side, unheated front vestibule, bathrooms by front entry directly over one another in 2 floor plan
Foundation:	concrete slab foundation on gravel, insulated underneath with polystyrene plastic, extended polystyrene skirt around foundation, mildew and mold problems avoided by well insulated slab and underlying drainage
Frame:	bearing interior frame of cement for passive solar heat storage, double outer wall of to ensure windtight construction - outer wooden boards bear the facade, inner frame of steel, with mineral wool between the two, the two frames do not touch
Insulation:	mineral wool: walls - 36 cm (<i>U-value 0.12 W/m² C</i>), roof - 56 cm (<i>U-value 0.08 W/m² C</i>), foundation 14 cm (<i>U-value 0.12 W/m² C</i>)
Floors:	parquet or linolieum
Walls:	drywall [[[paint]]]
Woodwork:	window sills - laquered pine, doors - oiled or painted pine
Windows:	triple glazed windows (2 + 1), double glazed doors, minimal window area on north side, northern windows have additional low-emissive coating, reflective venetian blinds to reduce heat loss
Glass rooms:	wooden frame, double glazed glass, acrylic roof with air chanel, ventilation originally manual some changed to automatic
Kitchen:	different plans, most open to living room, recycling space under sink, energy efficient appliances
SYSTEMS	
Heating:	district heat: central wood pellet furnace (100 kw), with oil back-up (60 kw), 120 m ² solar panels, attached to two accumulator tanks (total 20 m ³) [original furnace required hand feeding replaced with automatic feeding and more efficient burning furnace]
Ventilation:	original system without air canals, summer intake on northern side, othertimes through greenhouse to be prewarmed, air circulated via fans mounted in walls and floors, problems with noise, experimentation being done for best remedy
Water:	tap water from city
grey water:	water saving attachment on shower collects in two chambered settling tank, one for every two houses, water used in garden and greenhouses, excess runs to city sewage, a high water table precluded soil infiltration
black water:	no black water - composting toilets, Snurredass
Electricity:	energy efficient lights and appliances
Trash/Recycling:	standard under the sink storage, centrally located recycling next to common house



Fig. 5 - Inside the sun porch



Fig. 6 - Small windows on North side [Bokalders 1995]