How to build an **Eco Green Village** based on **MILD HOME**

How to build an Eco Green Village based on MILD HOME
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Jointly for our common future

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Executive Summary

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Executive summary

Written by
Flavia Di Noto,
Donato Bedin,
Sara Momi and
Massimiliano Condotta

The present guide contains the main outcomes of the MILD HOME project, which has been funded under the Priority Axis 2 "Protection and improvement of the environment" of the South East Europe Programe 2007-2013.

The project has been carried out by a consortium of 13 partners coming from seven EU members and one non EU country. The partners are: UCV – Regional Association of Veneto's chambers of commerce (IT); CARA – Municipality of Castelnuovo Rangone (IT); ENERO – Centre for the Promotion of Clean and Efficient Energy in Romania (RO); CJCS – Caras-Severin County Council (RO); BCCI – Bulgarian Chamber of Commerce and Industry (BG); ELI – European Labour Institute (BG); SOF – Municipality of Sofia (BG); EEE – European Centre for Renewable Energy Güssing (A); SZE – Széchenyi István University (HU); BBI – Building Biology Institute Austria (A); RTHES – Region of Thessaly (GR); MSV – City-Municipality of Savski Venac in Belgrade (RS) and the EU Strategic Associated Partner RER – Region of Emilia-Romagna (IT).

The project aims at defining the modalities of design and triggering the construction of a new typology of civil building, called MILD HOME, having the following characteristics:

- *energy-environmental*, with zero emissions, low energy consumption, passive house oriented, made with recyclable materials; the MILD HOME is conceived to be situated in an Eco Green Village with zero emissions, a sustainable waste/water management system and to foster the promotion of a responsible and environmentally aware lifestyle;
- at *economic sustainability* level, with low construction costs (thanks to the recognition of local supply-chains, and the use of modularity, specific design patterns and standardization of raw materials, DiY – Do-it-Yourself) as well as low operating costs.

The innovative aspect of the project MILD HOME can be duly summarized in: providing the realization of a high energy performance house, with affordable building and operating costs for low-middle income people who aspire to have a new customized house in a sustainable way. In fact MILD HOME project aims at boosting the sustainable development of such buildings at the EU level, proving that erecting sustainable Eco Green Villages based on MILD HOMEs in South-East Europe countries is achievable and can be a reality. In the present guide it is possible to find an overview of the main outcomes produced by the project MILD HOME during two-years implementation. Starting from the description of market user expectations in the SEE involved territories (Austria, Bulgaria, Greece, Hungary, Romania, Italy and Serbia), the technology and performances of the MILD HOME has been defined and the model of the Eco Green Village developed.

Eight Competitions of Ideas have been issued and results shared among partners and stakeholders in a plenary meeting held at the University of Győr (Hungary). The process of the Competition of Ideas paved the way for starting four Pilot projects, which can be considered the basis of four Eco Green Villages: Municipality of Castelnuovo Rangone (IT), Sofia (BG), Savski Venac (RS) and Larissa (GR). Beyond the project implementation, interest on MILD HOME goals arise by building stakeholders, supply chains and professionals designers, leading to the launch of other Eco Green Villages in other areas and including existing Villages in the MILD HOME philosophy, within a vision of a new sustainability of the urban development.

For this reason, a specific chapter of this guide is dedicated to the importance of thinking an Urban Code for Sustainable MILD HOME, where new MILD HOMEs become new design labs that integrate the three basic criteria of urban sustainability:

- environmental sustainability,
- economic sustainability,
- social sustainability.

The experiences described witness that urban, economic, social and environmental progress plays a central role for the growth of the SEE territories and for the whole European Union. In this prospective the MILD HOME project is an important effort for giving to younger generations new chances for a more sustainable life quality.

Why a MILD HOME in South East Europe

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2.1
General overview

Written by Flavia Di Noto, Donato Bedin and Sara Momi

Energy efficiency in the building sector is one of the priorities of the European energy efficiency policy, as about 40% of final energy consumption and 36% of greenhouse gas emissions is registered in houses, offices, shops and other buildings. For this reason, the EU issued in 2002 the EPBD 2002/31/CE and then the recast in EPBD 2010/31/CE given clear obligations on building only houses with low energy consumption and zero emissions of CO_2 for the public sector by 2018.

On 28 June 2013, the Commission published a report on progress by member States towards Nearly Zero-Energy Buildings (NZEB), which are to become the norm for all new buildings in the EU by the end of 2020, and two years earlier for public buildings. The conclusion of the report is that too little progress has been made by the Member States in their preparations towards NZEBs by 2020. Member States have to significantly step up their efforts to implement the requirements regarding NZEBs in the EPBD, in order to ensure that the EU's longer-term climate objectives are not jeopardised and the building sector can take full advantage of the opportunities NZEBs present.

This idea is recently underlined once again within the 2030 Communication published by the European Commission in July 2014 stating that "the majority of the energy-saving potential is in the building sector". Improving the energy performance of Europe's building stock is crucial in order to meet the EU's 2020 targets, and objectives laid down in the low carbon economy roadmap 2050. By 2050, all buildings will need to have an emissions footprint close to zero. Buildings will need to become better insulated, use more energy-efficient products and obtain their heating from low carbon sources.

2.2
Meaning and scope of MILD HOME

In line with the above mentioned European targets, the MILD HOME project aims at defining, designing and boosting the building of the first zero emission, in passive house style, reliable, recyclable and low cost houses, conceived to be located in an Eco Green Village: energetically self sustainable, zero emission, with eco waste management and low water footprint.

The innovative aspect of MILD HOME lies in combining the characteristics of a nearly zero energy house with low costs (materials with good performance but not so expensive, modularity, standardization, simple but essential automation, Do it Yourself option). All houses nevertheless should not be alike, but should be able to differentiate according to the preferences of the clients, in line with their life style. This type of construction aims to becoming a crucial resource for the future development of the economy of construction sector and for improving the quality of life of citizens.

MILD HOME can contribute to improving the understanding of EU resources use (privileging new sustainable building construction sectors), raising environmental awareness among stakeholders and citizens and favoring a better understanding by the policy makers on these issues, in order to allow them to intervene on areas where they can really make the difference. MILD HOME addressed also all levels of governance starting from the bottom (local, regional and national level) up to the top (EU/transnational level) and then involving a wide range both of public and private stakeholders.

2.3
The design of an Eco Green Village

The development of Eco Green Villages based on MILD HOMEs is innovative and it is thought to answer to expectations of segments of market of building in SEE area. MILD HOME is an answer for all young citizens that are waiting energy saving homes and environmental friendly districts, not at higher but lower prices. To achieve this a lot of innovation is needed for combining new technology with old supply chains, new models of living with Municipality regulations often inflexible, finding sites for the establishment of Eco Green Villages with the price of terrains to be kept low, etc.

The innovative part of the MILD HOME project consists in involving citizens by making them part of pilots implementing concepts like Do it Yourself and also by the way of civil engineers and architects becoming assistant in collaborative projects for building the first MILD HOMEs. Innovation is also in the modeling of the Eco Green Village, where solutions was sought for additional energy saving and environmental added value.

MILD HOME offers a sustainable use of resources having in mind a long-term strategy for the Eco Green Village (energetically self sustainable, zero emission, with eco waste management and low water footprint), where MILD HOME has to be located.

2.4
Why a MILD HOME in South East Europe?

The project builds on the consideration that in SEE the time has to reach the 20-20-20 goals. It is considered fundamental to make it evident in the SEE area that low environmental footprint villages are feasible and within the reach of ordinary people who want to build a new home.

As already mentioned, the EU issued the recast EPBD 2010/31/CE gives clear obligations on building only houses with low energy consumption and zero CO_2 emissions for the public sector by 2018 and for the private sector by 2020. The directive also encourages anticipatory actions that can push and accelerate the processes for achieving the targets set.

These anticipatory actions will take place only if existing barriers will be overcome at SEE level:

- The increase in initial costs for homes when with high technological and energetic performance levels;
- The high costs of building sites;
- The expenditure-power of families decreasing because of unemployment and the ongoing global economic crisis;
- The lack of confidence in building automation.

The existing sporadic demonstrations of zero emission very costly building (as it is currently in SEE countries) is not enough for real change to happen; MILD HOME can instead become a process that is repeated in a spirit of continuous improvement. The experts working in the project made efforts to combine materials, components and subsystems already existing on the market to create MILD HOMEs on a common SEE basis, which then can be further customized, taking into account the specific geographical areas. Life Cycle Assessment approaches were adopted and EU best practices taken into account. The transnational cooperation was a good opportunity to identify ways to make a contribution on the way to reaching the EU objectives in the building sector in South Eastern part of Europe, taking into account it specific conditions, and in the same time taking advantage of existing know how in countries like Italy and Austria.

The MILD HOME Market and Users Expectations

3

3.1
Market overview

Written by
Andrea Moser and
Hermann Jahrmann

The market analysis within MILD HOME was done to get an overview on the environmental context, needs and tendency to purchase or build a MILD HOME in the involved SEE partner regions and to get an overview on who will be the target users in the specific areas. The market analysis was carried out in 8 SEE areas in Italy, Austria, Hungary, Romania, Bulgaria, Greece and Serbia to be able to set basic parameters for the characterization of a specific performance grid in terms of the local context.

The evaluation within the Market Analysis in Austria revealed that there are practically all kinds of buildings in various areas offered, while there is a lack in know how of the people for efficient and ecological buildings. Also the empathy to change the way of living and way of building is not very present and the focus lies on independent housing units. Social housing is also very common in practically all areas, but most of all the long-term modes are common.

In general it was found out that the attitude is quite positive towards new solutions but these must be on reasonable cost level. The factor of implementing renewable energy is also seen as very attractive but they are often considered as expensive. Details on the MILD HOME market in the involved partner countries are described in the following sections.

3.2
The MILD HOME market in South East Europe

3.2.1 Austria

Written by
Andrea Moser and
Hermann Jahrmann

The national goal lies on the stabilization of final energy consumption until 2020. In recent years there is a clear trend away from coal and gas and towards renewable energy sources. In the sector of residential buildings, energy goals are to be reached by increasing the energy efficiency of new constructions as well as increasing the environmental aspects in building materials by following Guidelines, where specifications are getting defined.

A MILD HOME in Austria is a model of a single-family house as well as a social house for all generations with more living units combining the aspects low energy demand (for electricity, heat and fuel), renewable energy use, low cost in construction and operation with an ecological footprint. The target groups for a MILD HOME are families and all generations. The size of the living spaces should lie between 100-120 m² and the expected lifespan for a MILD HOME should be at least 20-50 years. On the period of financial return it should be around 20 years by a construction price of 1.000 – 1.500 €/m².

The village should consist of different types of MILD HOMEs (detached houses, social houses, etc.), but mainly dominated by single family units based on the building tradition in Austria and further an efficient use of energy should be secured. A good infrastructure (like small retail units, post office, bar/restaurant…) should be established to keep ways in daily life short and consequently to reduce fuel needs. The Eco Green Village should offer different services like small retail units (food and drinks), nursery, sports field (outdoor and indoor), playground, primary school, doctor, library, a pub and a restaurant. The size of an EGV should be a maximum of 500 inhabitants and it should be situated close to a town. This is also a very important factor considering the energy supply as well as a good connection to a public transport system. The EGV should be autonomous in energy supply.

The Market Analysis revealed that a long term financing is important, with a low amount of own capital. A growing factor is also to have low operating costs to hold the monthly payments small. Further solutions for lower land costs are needed. That's why for the first planning of MILD HOME a village with low land costs was selected, but in general if you compare the land costs of small villages that are around 10 €/m² to the building plot prices close to a city or in a city they are minimum 3 to 10 times higher. The target price for building a MILD HOME should be below 1.500 €/m².

3.2.2 Bulgaria

Written by
Vanya Maneva,
Irina Terzyiska and
Maya Guevska

Bulgarians are ready to buy and live in MILD HOMEs and Eco Green Village in case these homes are financially affordable, comfortable, eco and energy efficient. The majority of people prefer to live in secondary (60-90 m²) or tertiary (90-140 m²) type. Target users of MILD HOMEs are students, young couples and young families. Bulgarians prefer to own the property/the house for lifelong stay with other options possible. A lifespan of a MILD HOME is expected to be 50-100 years. The financial return period of a MILD HOME should be approximately 15-20 years. It is foreseen target users to buy the dwelling with savings or with bank loans. Expected construction price of a MILD HOME is 1000-1500 €/m².

The potential inhabitants would like to have detached house (MILD HOME) with a private garden. The designers of EGV should also foreseen communal multifunctional spaces for sport, child care, laundry, garden, bicycle storage. Also networks and technological systems are expected: electrical, heating, domestic heat water, drinking water, rainwater collection, wastewater, selective waste collection, ventilation system with heat recovery, telephone, internet, television, automated shading system. Expected services in the EGV are: post office, bank, hairdresser, tailor, laundry, small retail units (food, drinks), shoe-fashion-book shop, nursery, health centre, pharmacy, sports areas, swimming pool, playground, restaurant.

The EGV should be energy independent village, not far from a city (5-20 km) and with population of 400-500 inhabitants. The expected technical infrastructure of the EGV includes: power plant for electricity, primary power plant for producing heat, equipment's for water purification and water softening, rainwater collection network, wastewater treatment equipment, waste treatment equipment. The transport to the village will be through public transport and own vehicles. Traffic in the village is expected to be by bicycles, eco-vehicles (electro mobiles) or going on foot. The developing of green system is vital for reducing CO_2 emission and controlling solar radiation and wind regime in the EGV.

Important aspects in MILD HOMEs design regarding the energy performance are: implementation of passive architecture and including RES technologies (the most available and cost-effective in BG are solar installations, biomass, bio fuel, geothermal). The most important aspects considering the building materials are to be recyclable, with a local and natural origin.

The number of the questionnaires filled to perform the market analysis has been: 69 by construction professionals and 94 questionnaires by non-professionals.

3.2.3 Greece

Written by
George Papadellis
George Agrigiannis

The analysis of the Greek market revealed that the Greek MILD HOME is adapted to the conditions of the Mediterranean climate and the financial status of the Greek citizens today, taking into consideration the European trends on the exploitation of RES, recycling and environmental management.

The Greek MILD HOME appeals to all generations, it has a size from 80 to 110 m² and it operates as an independent house. Its life expectance reaches 10 to 20 years with a depreciation of 15 years. The construction materials are natural or recycled, avoiding those with toxic effects and giving priority to local materials. The design of the MILD HOME takes into account its life expectance, the reduction of carbon emissions, the use of water management systems and the prediction of green spaces. Engineers – regarding energy efficiency-focus mainly on minimizing the need for winter heating, reducing the differences of the temperature between the inside air and the inside walls, maintaining thermal comfort during the summer season and using ventilation structures for the building shell.

The design of the Eco Green Village in Greece focuses on all available renewable energy sources (solar energy, wind energy, geothermal energy, biofuels, biomass and hydropower), but in relation with investment costs, solar, wind and

biomass energy are mostly preferred. Regarding transportation, new networks are demanded for the connection with the nearest town, while for the internal system, public transportation and private vehicles are most favorable.

The purchase of a MILD HOME will be done through bank loans and savings, while buyers are families with a net income of 1.000-2.000 €/month. The construction cost (500-700 €/m²) is apparently lower from the conventional construction cost (700-1.000 €/m²). It is proposed that the purchase of a MILD HOME will be covered at 20% from own funds and with a monthly deposit of 200 - 300 €, or that the MILD HOME will be rented at 200-300 €/ month.

The configuration of the construction cost of the MILD HOME is influenced mainly from the cost of land, the level of which depends on whether the Municipality or the private owner sells the land or builds to rent. Very important is also the role played by the construction materials and the manpower that reduce costs through the use of prefabricated, natural and local products and "do it yourself" systems. In the same manner, operating expenses rely heavily on the fourfold heating, ventilation, hot water and lighting" which can be satisfactorily handled if construction is driven towards zero energy buildings. Very important is also the maintenance of the buildings, which depends on the mid-term strength of materials and the common costs that depend on the expenditure of public spaces.

3.2.4 Hungary

Written by
Tamás Horváth and
Tamás Husz

Due to the changes in the everyday life, the social and economic changes need come up in people for changes in their residential spaces and their demands to them. On the basis of the Hungarian market analysis the people are open to a new interpretation of life way and space though they can hardly leave the old, usual life style and living style. More and more attention is paid in some social strata to common spaces, to the community as a new kind of social and life style tend. A great surprise of our market analysis that these questions were answered with almost the same experiences achieved by the inhabitants as the specialists.

Today in Hungary the most important demands for the MILD HOME to be a residential building type which can be economically built and maintained. The responders thought the residential units having approximately 22.48 m² per person areas as individual or 2-4 flat units. They determined living and bedrooms and the garden as fundamental functions. They thought the home-based business realizable but not too significant.

As regards the Eco Green Village the responders think dense building-up, a street- or block-level co-operation and a settlement-level ecologic operation. About materials the fundamental expectation is to use local materials and feasibility. As community spaces services (laundry, nursery) and garden are imagined.

In Hungary own property flats are typical because the flat prices are much lower than in Western-Europe, but the flat renting fees are almost the same as the European level. Consequently the responders imagine the MILD HOMEs in own properties for a long period. The expected building price of a MILD HOME is determined in 700-1000 €, using long term bank loans and an own fund of 18-28%. Despite the economic operators think the rental flat construction with dynamic, adjustable flats, in municipality or multinational company properties as a more realistic system reacting better to the economic and social challenges.

The average income of the target group is 500-1000 €/month per household. The construction prices in Hungary are between 700-1000 €/m². The expected construction price of a MILD HOME was determined by the responders between 700-1000 €/m² which is at the level of the present construction prices. In case of rentals the rental fee expected by the inhabitants is 100-200 €/month, the fee expected by the investor is 200-300 €/month. In the market analysis the inhabitants can imagine the "do it yourself" method with a minimum training.

3.2.5 Italy

Written by
Massimiliano Condotta,
Matteo Giuriato and
Ornella Restani

In Italy, the construction on new houses is quite a complicated issue. In fact, much of the Italian territory has been already massively urbanized. The target of the MILD HOME is therefore localized in already urbanized areas to be reconverted and reconnected from an urban point of view.

Also from this reason, on the basis of the Italian market analysis, people are ideally open to a new interpretation of house-living but are not willing to renounce at some conveniences like the private garden, the car and the in-house garage. On the other hand, attention is paid to common spaces and to the community as a new kind of social and life style tend. Comparing the results of marked analysis between answers of users (citizens) and specialists (architects) emerges that architects have more propensity for villages characterized by an high level of social sharing of services, while, on the contrary, people require houses with more privacy and private services. Regarding the other aspects, such as house dimensions, technical characteristics and energy performance, the vision of specialist and citizens is unanimous.

Today in Italy the most important demands for the MILD HOME is a single residential unit in the type of family detached house. Considering a young family, the required dimension of the house is about 90 m². The most required functions are living room, kitchen, bedrooms, bathroom, and the garden; but is also appreciated the presence of a dining room, an open terrace and, as introduced above, a covered space for the car.

As regards the Eco Green Village, the expectations are for a low-density village composed of detached or semidetached houses. About materials, the fundamental expectation is to use local and eco-materials. As community spaces services (laundry, nursery, multifunctional rooms, garden storage) and garden are imagined.

As is tradition in Italy, people imagine the MILD HOMEs in own properties for a long period.

The average income of the target group is 800-1500 €/month per household. The construction prices in Italy are between 1300-1500 €/m². The expected construction price of a MILD HOME was determined in 1000-1300 €/m² that is lower than the present construction prices. In case of rentals the rental fee expected by the inhabitants is 300-500 €/ month, the fee expected by the investor is 500-1000 €/month. In the market analysis the inhabitants can imagine the "do it yourself" to reduce construction costs but limited to marginal finishing.

3.2.6 Romania

Written by
the Romanian Team

The market analysis in Romania, which was developed within the first stage of the MILD HOME and EGVillage project, has revealed a series of conclusions regarding the wishes of the possible inhabitants and also the characteristics of the market in the area of Caras-Severin County. The study comprised a swatch of 87 persons, which have fulfilled a questionnaire, and then the analysis was developed by using charts. Considering the gender, there were interviewed 46 men and 41 women.

The conclusions which the market analysis led to were as it follows: the proper number of inhabitants is three people per home; the adequate surface should be around 70-80 m²; the homes should be designed as independent units; the perfect way of living is rental for a lifelong stay, with flexibility (adjustable to dynamic family model); the proper way of living in an Eco Green Village is staying in the same home temporarily (for a short period, e. g. up to 10 years); the expected lifespan of a MILD HOME should be about 20-50 years long. The kind of functions / rooms / spaces expected to be in a MILD HOME are: kitchen, bedroom, bathroom, play-room, work room, study-room, covered terrace, garden, storage; other spaces: garden, garage, laundry, parking, sport room. The expected services for Eco Green Village are: post office, bank, laundry, hairdresser and tailor. In terms of well-being and care, the Village should have the following units: a daycare center, primary school, pharmacy, medical offices, dentist cabinets, playgrounds and sports field. The target group would like the Eco Green Village to have small retail units (food and drinks); the kind of networks

necessary to be installed in a MILD HOME are a drinking water network, an electrical network, an Internet network, a rainwater collection network, water purification and water softening equipment. The Eco Green Village should be part of a town; the main aspects in building and finding the right place for its placement should be the geographical features (relief, climate, vegetation, soil, etc.), local materials (natural, recyclable/reusable, local-made). The distance between the Eco Green Village and the nearest city should be about 5-10 km; the village should be autonomous in providing electrical energy and the drinking water supply. The transport between the village and the nearby town should be connected to the existing public transport network; in the village there should be only bicycles, and also the target group prefers going by foot. In the design concept of MILD HOME there should be some aspects that should be taken into account; they are the avoidance of using materials with toxic impacts, the use of materials with natural origins, the possibility of "do it yourself", the possibility of renovation of building structures, the use of materials and structures manufactured in the same country/locally; the use of structures made of recycled or reused materials and also the use of materials and structures manufactured in close proximity to the building site. Regarding the environmental protection some aspects are really important in building the MILD HOMEs as the reduction of CO_2 emission connected to the use of the buildings, the use of green structures, plants in the building envelope, the reach of a satisfying level of fire prevention, the reduction of the electromagnetic pollution, the use of sparing water management systems. The energetic performance is given by the minimization of the building's heat needs in winter, the natural light inside every primary occupied space, the reduction of the risk of condensation and accumulation in the building's envelope, the support of healthy air moisture, the maximization of passive solar energy collection and also the use of heat recovery in the ventilation system.

The responders in the present market analysis have revealed that they wish to own an ecological house, showing their care for the environment and their clear preference for a healthy lifestyle.

3.2.7 Serbia

Written by
Jelena Pejković

The analyzed sample consists of 32 questionnaires on the demand side, and 10 questionnaires on the supply side. People are ready to buy and live in MILD HOMEs and EGV in case they are financially affordable, comfortable, eco and energy efficient. Responses to the questionnaire suggest that neither citizens nor professionals seem to fully comprehend the implications of living in a home with low environmental impact. Age of the respondents [years]: 24 – 55.

Both the citizens and the professionals typically see MILD HOMEs as larger than average homes: building professionals estimate an average of 80 m², with a range of up to 120 m² per unit. Citizens seem more reasonable in this regard and estimate MILD HOMEs to have, on average, a surface area of about 70 m². Most respondents actually see a 4-5 members family in a home larger than the usual 60 m², i.e. larger than currently available. Responses to the questionnaire suggest that neither citizens nor professionals seem to fully comprehend the implications of living in a home with low environmental impact.

Taking into account the responses of both professionals and citizens, and averaging out some of the answers, the following can be said about the MILD HOME model. It is a dwelling of about 70-80 m², for 4-5 people who could be a young family or simply a family. The main functions are the standard functions of a home: Bedroom, Living room, Kitchen, Dining room, Bathroom and Toilet. The unit should have some storage area (storage or pantry) and a terrace or a garden. MILD HOME is expected to be owned long-term by the same family, and to have some in-built flexibility for a dynamic family model. As a structure, it is expected to be long-lasting (50-100 years) and to be consciously and thoroughly planned, built with local materials and products, and with modest demands. MILD HOME materials should be devoid of toxic components and characterized by low built-in energy levels, certified and of natural origin. DiY option should be available. Use of recycled and reused materials as well as of nationally produced materials is desirable. Services should include all the standard services of a home (electric network, heating, water and waste water networks etc.).

The Eco Green Village is seen as a part of town or close to a town, at a distance of at most 5-10 km. It is expected to be connected to town by public transport. Traffic within EGV should be mostly by bicycle or on foot, although other modes of transport are acceptable to many survey participants. EGVs have 500-2000 inhabitants, and besides the residences contain other basic functions such as post office, bank, basic retail, basic childcare, a primary school, and basic healthcare. Sports facilities and some culture/entertainment facilities are available as well. Responses about various aspects of autonomy of an EGV are diverse; many of the participants checked at least one of the offered options, which include autonomy in heat supply, food supply and electric energy supply. Common services in EGV would be installed with the aim to further reduce energy consumption and environmental impact of the newly built homes. These common services could include: rainwater collection network, wastewater treatment equipment, waste treatment equipment, building management system, power plant for electricity, equipment for water purification and water softening, secondary power plant for producing heat.

Almost without exception, both demand and supply participants expect to own a home, stay in the same home (or at least the same village) for a long time, and to buy the home through a long term bank loan. The average expected initial payment rarely exceeds 10-12%, and the expected financial return period is 15 years (demand) to 20 years (supply). It should be expected that the intended target group – young couples and families – might, in fact, be able to invest even less than the 10% estimated via the survey.

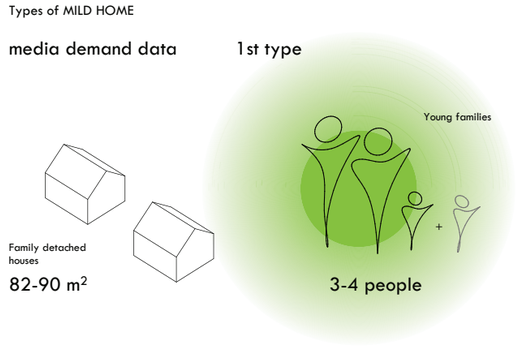
According to the estimate of building professionals, the current cost of construction in Serbia is 500-700 €/m². One of the guiding ideas of the MILD HOME project is to achieve a reduction of that price. It cannot be concluded from the survey if the price of 500-700 €/m² includes cost of land and land taxes, which can be a significant factor in the final price range in Serbia. Building professionals believe that MILD HOMEs could/should stay in the same price range of 500-700 €/m². Citizens place their estimate of the average construction cost in Serbia in the same range as professionals – the range of 500-700 €/m². In Serbia, the cost of materials greatly overshadows the cost of work. For this reason, DiY options would not significantly reduce the construction price if the entire village were to be constructed in one phase.

3.3
Main expectations

Written by
Massimiliano Condotta
and Matteo Giuriato

On the basis of the different Market Analysis performed in the seven different countries, emerged that exist a common demand from the final market users about the target group of the MILD HOME, about the composition of the typical family of a MILD HOME and about house characteristics.

The market expectation is a MILD HOME dedicated to young families of about 3 or 4 persons. The home characteristics should be an 80-90 m² family detached house or in alternative a social house of about 4 units.



Regarding the way of living for a MILD HOME, target people of the MILD HOME expects that it is an own property house for a long staying, but with some flexibility related to the possibility of change during time the configuration of the house. It is therefore expected that the MILD HOME had a life expectation of at least 40-50 years compared with a return period of investment of 15 years.

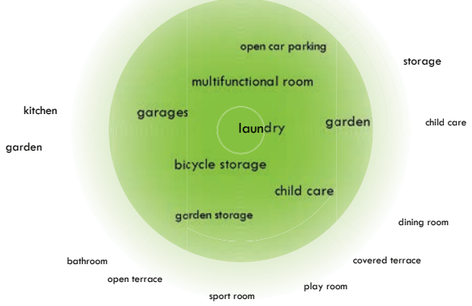
Comparing the asked functions that should be present in a MILD HOME, emerge differences from different countries. In any case is possible to identify a range of preferences that are illustrated in the following diagrams. They refer both to the functions of the single house and the functions that can be demanded in common spaces.

MILD HOME functional characteristics

functions in a MILD HOME

MILD HOME / Eco Green Village functional characteristics

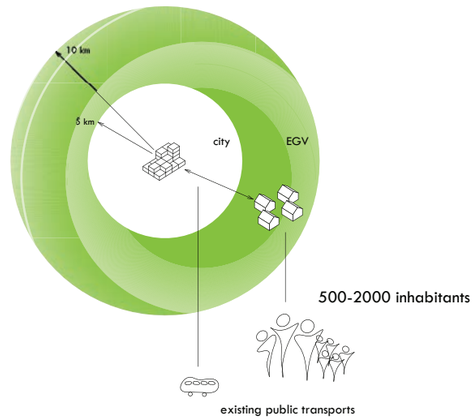
functions in a communal spaces



Moving to the Eco Green Village, the answers are more heterogeneous that compared to the expectations on the MILD HOME. These differences are for sure due to the different cultural aspects, tradition and political history of the involved countries. In any case is possible to define an average demand. The expected dimension of an Eco Green Village range from 500 to 2000 inhabitants; its location near the city around a radius that range from 5 to 10 km, distance that should be covered by public transportation.

Eco Green Village

scale, size, location



One of the relevant aspects of a MILD HOME is its economic sustainability. It must be a low price house but characterized by low maintenance costs. Initial low costs (house price) should be gathered mainly by policies that assure a free land use, using prefabricated modules (and therefore Do It Yourself) and by sharing common facilities among village. Maintenance costs must be reduced by high levels of energy efficiency that include both a sort of Passive house and a renewable energy production at village level. It is interesting to note that, most users, prefer houses where the reduce of energy demand is obtained by using passive solar energy collection, while in summer is requested an house with a low use of cooling systems preferring natural ventilation and systems to keep house fresh.

Technologies and Performances of the MILD HOME

4

4.1 Introduction

Written by
Hermann Jahrmann
Ebba Buergel-Goodwin
Massimiliano Condotta

The network of technical experts has defined the preliminary positioning of the MILD HOME compared to energy requirements of the energy certification of houses, like KLIMAHOUSE, PASSIVE HOUSE, POSITIVE ENERGY, etc. and compared to the sustainable building certifications such as LEED, BREEAM, SBTooL, DGNB, ITACA, etc. The MILD HOME wants to pursue goals minimum energy consumption in the direction of the EPBD 2010 and targets of low cost. It does not necessarily fall within the requirements of any certification system. This will definitely be a next target, once MILD HOME will have reached the strategic above-mentioned goals, because these goals generate the necessary market breakthrough.

Anyway it is then necessary to establish a common technological frame of performance characteristics for the MILD HOME to be shared among MILD HOME countries. The performance indicators of this MILD HOME grid are the same for all municipalities and they reflect the spirit of the MILD HOME:

- low energy consumption and low emission;
- recyclable materials;
- health and comfort;
- materials and components manufactured with a low use of fossil energy;
- prefabrication features;
- Do it Yourself (DiY).

4.2 The technological frame

A MILD HOME is a modular, intelligent, low cost, do-it-yourself and nearly zero energy house in an Eco Green Village. The ecological and economical sustainability depends mainly on the house construction and the used materials.

Modularity – Modularity is a method to reduce construction costs by a high proportion of prefabrication and a common management of construction elements. It allows variable floor plan designs in multifamily houses and a good mixture of apartment sizes.

Do-it-Yourself – DiY is not only an issue of construction costs. If it is possible to include the future residents in the processes of design and in the construction phase the residents feel a higher identification with the new house and the village. Some studies show a higher degree of satisfaction of the inhabitants, a strong sense of community and a very low turnover.

Nearly zero energy – A MILD HOME shall have low energy consumption and low emission as required by European directives. The attention has to be given on construction, operation, and demolition phases although, for an easy calculation, only the operation phase will be valued.

Ecological material – There are a lot of definitions of what an ecological material is. The main point is not to harm human health and the environment. For MILD HOME materials count as ecological, if they are:

- renewable;
- recycled or reused;
- original system incorporation is possible[1];
- regional (within a radius of 800 km);

[1]/ *Incorporation into the original system means in this case, that it will not cause any environmental damage when we give the material back to nature.*

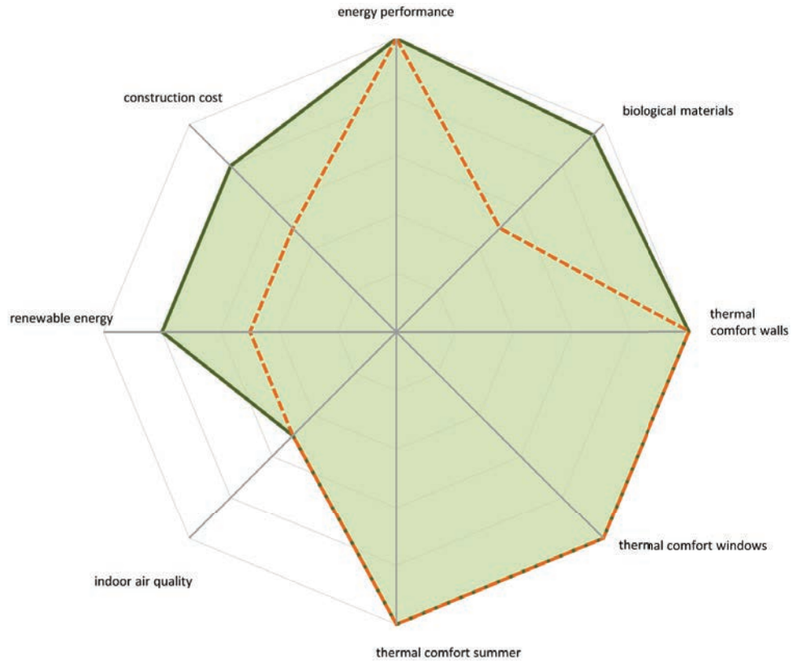
Health and comfort – For comfort reasons the minimum thermal comfort criteria shall be fulfilled. It seems naturally that living and recreation space has to be healthy and comfortable but in reality it is not. A lot of industrial products are eliminating pollutants. For MILD HOME the house design and the choice of construction materials shall eliminate the following pollutants from the indoor environment:

- formaldehyde;
- other VOCs (Volatile organic compounds) such as paints and coatings, chlorofluorocarbons and chlorocarbons, benzene, methylene chloride, perchloroethylene;
- radon;
- pesticide;
- mould;
- natural and artificial mineral fibers such as: asbestos, mineral wool, glass wool.

Low cost – It is a main issue in SEE countries to reduce housing costs: land cost, construction cost, operation cost, maintenance cost, financing cost. The chosen techniques shall support the aim of low cost during the whole building lifetime.

4.3 The common performance grid

The "Common Frame of performance characteristics for the MILD HOME" is an index composed by 6 indicators. The sum of the points reached in each indicators give the "MILD HOME index" value. Also for every indicator a minimum level of 50% (5 points) is defined.



Indicator		*Points reached*	*Percentage of fulfillment*
Indicator 1 Energy class	Best class	10	100 %
	Second best class	5	50 %
	Third best class	2	20%
	Legislation limit	0	0%
Indicator 2 Amount of ecological materials used	More than 30 %	10	100 %
	Between 10% and 30 % (>10% and < 30%)	Between 10 pt and 0 pt according specific percentage reached (e.g. 20% = 5 points)	
	Under 10 %	0	0 %
Indicator 3 Difference of inside surface temperature of outer-wall to room air temperature	Below 1 degree C (≤ 1°C)	10	100 %
	Between 1 and 3 degree C (> 1°C and <3°C)	Between 10 pt and 0 pt according to specific temperature (e.g. 2°C = 5 points)	
	Over 3 degrees C (≥ 3°C)	0	0%
Indicator 4 Level of absence of indoor pollutant reached	No pollutant (mean fulfilling SBM-2008)	10	100 %
	National regulation fulfilled	5	50 %
	No consideration on this	0	0%
Indicator 5 Usage of renewable energy	More than 70 % (≥ 70%)	10	100 %
	Between 20% and 70% (>20% and < 70%)	Between 10 pt and 0 pt according to specific percentage reached (e.g. 45% = 5 points)	
	Less than 20 % (≤ 20%)	0	0%
Indicator 6 Level of construction cost compared to standard	Less than 60 % (≤ 60%)	10	100 %
	Between 90% and 60% (<90% and > 60%)	Between 10 pt and 0 pt according to specific percentage reached (e.g. 75% = 5 points)	

Indicator 1: Energy performance of the MILD HOME building

Energy performance will be calculated according to the local regulations. In principle these regulations are following the EU Energy Performance Building Directive (EPBD) and are graphically presented in various energy classes. The MILD HOME should be in the best energy class or at least in the second or third best class that are foreseen in the country (or region) where it is located.

Indicator 2: Materials used for the MILD HOME building (construction, installation, …)

In the MILD HOME, ecological materials (renewable + recycled + local materials) should be used to a high extent. This indicator evaluates how many ecological materials are used in the MILD HOME. Calculation method: For each material the four eco-criteria have to be proved. The result will lead to an Eco Factor. With this Eco Factor the material goes into the calculation. The calculation of the percentage is cost based.

$$I_2 = \frac{\sum Cost \cdot EcoFactor}{Cost_{Total}}$$

	New natural stone mined regional	*Wood imported*
Renewable	0	1
Recycled	0	0
Original system reincorporation possible	1	1
Regional	1	0
Eco Factor	(0+0+1+1)/4 = 0,5	(0+1+0+1)/4 = 0,5

Indicator 3: Indoor climate in the MILD HOME building

The indoor climate in the MILD HOME defines the comfort experienced by the user. It is based on the quality of the building envelope not taking into account active heating or air conditioning systems (HVAC). Two categories are defined: Thermal comfort in winter and thermal comfort in summer.

Thermal comfort in winter: Defined by the difference of inside surface temperatures of outer-walls and windows glass to the room air temperature. The difference of the glass surface temperature to room air temperature should be below four degrees Celsius.

Thermal comfort in summer: Regarding thermal comfort in summer the MILD HOME building has to fulfil the national regulations against overheating of the most critical room of the building. This is a mandatory parameter that must be reached.

Indicator 4: Pollutant free indoor air quality in the MILD HOME building

The MILD HOME building has to fulfil the national regulations on indoor air quality in respect to pollutants. If no such regulations exist the indoor air quality should guarantee a healthy living environment. Nevertheless, since legislation about Indoor pollutant is still not well defined in many EU countries, the MILD HOME should go beyond the state of the art.

Indicator 5: Use of renewable Energy Supply for the MILD HOME building

The MILD HOME should be supplied with renewable energies if possible/feasible. The extent of the renewable energy source is judged in these sectors of electricity, hot water and heating.

Indicator 6: Construction cost of a MILD HOME building

The construction cost of a MILD HOME is compared to the normal price structure in the given country and judged in which extent a lower price is reached. The percentage to be used to find out points reached is calculated as:

$$I_6 = \frac{MILD\ HOME\ Construction\ Cost\ at\ m^2}{STANDARD\ Construction\ Cost\ at\ m^2} \cdot 100$$

Cost of land is not evaluated in this point because cannot be considered a value comparable in different situation. This doesn't mean that cost of land is an aspect that is not considered relevant for the MILD HOME village. Indeed it a mandatory aspect that needs to be negotiated in the course of the establishment of the Eco Green Village, and that is independent from the position of the MILD HOME.

Role and Importance of Eco Green Village in MILD HOME

5

5.1
Why MILD HOME in Eco Green Village

Written by András Cseh

Both the ecological and economical sustainability of MILD HOME depends on the performance indicators of the developed concept. On multiple levels (infrastructure, energy supplies, public spaces, social structure, etc.) shared facilities provide a solution for a higher efficiency. Therefore the integration of the MILD HOMEs in a larger scale system – a settlement called Eco Green Village – proves to be advantageous. The following key elements of a construction and maintenance model indicate the environmental-conscious and the cost-effective aspects of turning MILD HOMEs into a cooperating network.

Transportation
A single MILD HOME is similar to an average detached house, when it comes to accessibility. However, when creating an Eco Green Village, public transportation already appears as a reasonable solution (e. g.: a new train or a bus stop on existing routes is inexpensive) as a powerful tool in reducing the car-use and therefore the fossil energy use of MILD HOMEs as a group. Car-sharing is also becoming increasingly popular, but turning it into an effective model, a large amount of people is needed to live close to each other in a community, which works on an understanding of common rules. In a large-scale Eco Green Village the separation of the traffic inside and outside the settlement gains additional advantages: the long-distance journeys outside the settlement can be taken by cars as usual, while the short-distance inside trips can be reduced to alternative solutions, such as electric cars or bicycles, providing a healthy environment for its inhabitants.

Infrastructure
Most sustainable building services and facilities are either expensive or too complicated to implement in a MILD HOME as a detached house. However, once the whole network of the Eco Green Village comes under the same inspection, the results clearly show the numerous possibilities of profitable applications, placing the MILD HOME closer to autonomy. Water wells are expensive for one home, because of their construction costs, the maintenance of their multi-layered filter system and the un-effective exploitation of the appliances. In a slightly larger scale these expenses increase only marginally, while the well is still capable to provide the amount of water required by the consumers. On site sewage facilities are expensive and occupy an overwhelming part of the land in small pieces, while central reed sewage treatment works well for a settlement, not just providing environment-conscious solution for the liquid waste, but also improving the environment with the necessary lakes and reed-beds.

Energy performance
The sustainable energy production account is probably the most significant indicator of the Eco Green Village. Nowadays solar thermal collectors are easily integrated in an average household's building engineering system, but the rest of the known solutions using alternative energy sources (wind, hydro, solar, etc.) are developed for a larger scale structure. In the Eco Green Village the installation of a central wind-turbine field or a biomass plant can solve the electrical and/or heat energy demands, while the expenses per household still make it affordable for an average construction priced house.

Materials
Apart of the primal difference in retail trade and wholesale prices due to the scale-difference between a singular MILD HOME and an Eco Green Village the common management of construction materials have additional benefits, e. g.: lower transportation fees due to fully exploited vehicles, central quality control. Promoting sustainability with a noteworthy amount of MILD HOMEs in a dense settlement could also mean a market quantity enough for startup programs or already existing manufacturers to invent new ways of construction.

Maintenance
The shared responsibility of the maintenance allows the inhabitants to manage all different fields with professional approach, since either someone from this larger group might be acquainted with the arising problems or together they can afford to hire skilled assistance. Moreover, if setting up a collective maintenance budget for the Eco Green Village, all sudden expenses of the system can be covered, without putting unforeseen financial burden on a singular household.

Community
New community models are currently developed for achieving sustainability as a parallel or even alternative way to engineering solutions. Seemingly radical communal approaches, such as co-housing, flat-sharing or car-sharing take increasingly large platforms. The role of the community in these cases passes the more economical solutions. Living together, helping each other and sharing experiences have always been key issues in human history. Nowadays, in face of the world of virtual connections these personal encounters bare an extensive significance as never before. With these newly formed communities people accept and express their need to belong somewhere. The Eco Green Village is a place where its inhabitants can live in a community, sharing their resources and burdens, strengthened by the bond of their common interest of focusing on sustainability which is the inevitable path of the future.

5.2
Reference case: "4 Passi" eco-district in Villorba

Written by Simone Sfriso

The "Pace e Sviluppo" fair trade cooperative (studio tamassociati), the "Cambieresti Association" and the "Sa.fra cooperative enterprise", crossed their capacities and competences in order to realize an eco-district in the Treviso territory: the "Four Steps" eco-district.

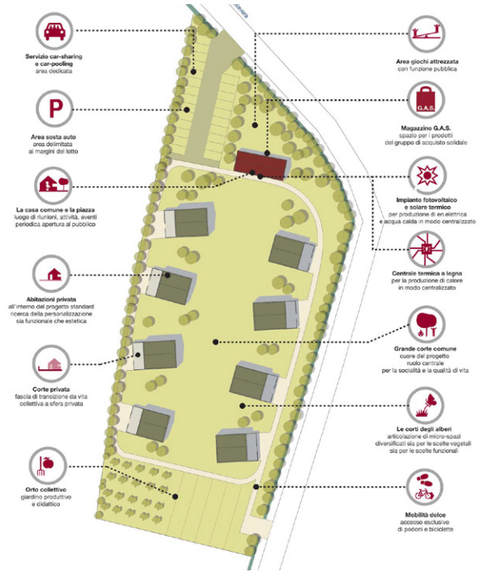
The eco-district "borrows" its name from the fair called "Four Steps" which is organized every year by the "Pace e Sviluppo" cooperative in the territory of Treviso. This because the project aims to be a concrete example of the application of those best practices which are already been promoted since many years. The eco-district is, first of all, a residential project of co-housing, structured in order to benefit the territory where it will rise and the people who will live there.

The experience began in 2010 when, after the "Four Steps" fair which took place in the same year, we launched together with the "Cambieresti association", a participatory path with the aim of identifying people and households interested in building co-housing groups. This path leaded to the establishment of a first group that successfully followed out the path in the north area of the province of Treviso, and to the formation of other groups currently active in both the provinces of Treviso and Venezia.

The first project, which involves 8 households (16 adults and 12 children) has been developed closed to Treviso, in the municipality of Villorba, as real-estate process, built in a parcel purchased in the free market.

The buildings are located in the lot according to a settlement principle, that refers to the local tradition village (as obligation of the current zoning law) but interpreted in a contemporary tone. All the "elements" of the project (buildings, car park and paths) are located closed to the borders; the purpose is to preserve as much as possible the *shared green central space*, which represents the establishing element of the eco-district. The green spaces, of shared ownership, are totally *without enclosures*. In this way, the intention was both to preserve the landscape qualities of the area and to foster the interaction and the sociality among the future inhabitants. Also the car park is located on the border of the lot in order to preserve the green and pedestrian areas. In this way *the car traffic is removed from the area*. Within the lot, people move by food or by bicycle along the circular path placed along the area perimeter, in a protected, calm and safe place, adults and children-oriented. *A residential annex for common use, named "common house", completes the individual houses and represents, with green spaces, the heart of the co-housing community.* This is the place for relaxing and leisure activities, for children's games and study, for groups reunions and, in general, for many activities, both the organized and informal ones. Moreover, the annex hosts a wide storehouse in the basement, the technical rooms of the common heating plants and the solar thermal and photovoltaic plants on the roof.

Initially, a rectangular house type was elaborated, developed in two floors (as obligation of the current zoning law). *After, three different in size versions were proposed according to the needs of the different households: M – L – XL.*



Every house is characterized by:

- non-changing elements, such as the stairs and the hydro-sanitary plants;
- changing elements, such as the inner partitions.

In this way, within a structured system in a simple and serial way it has been possible *to arrange with all the households the configuration of the interiors of the houses.*

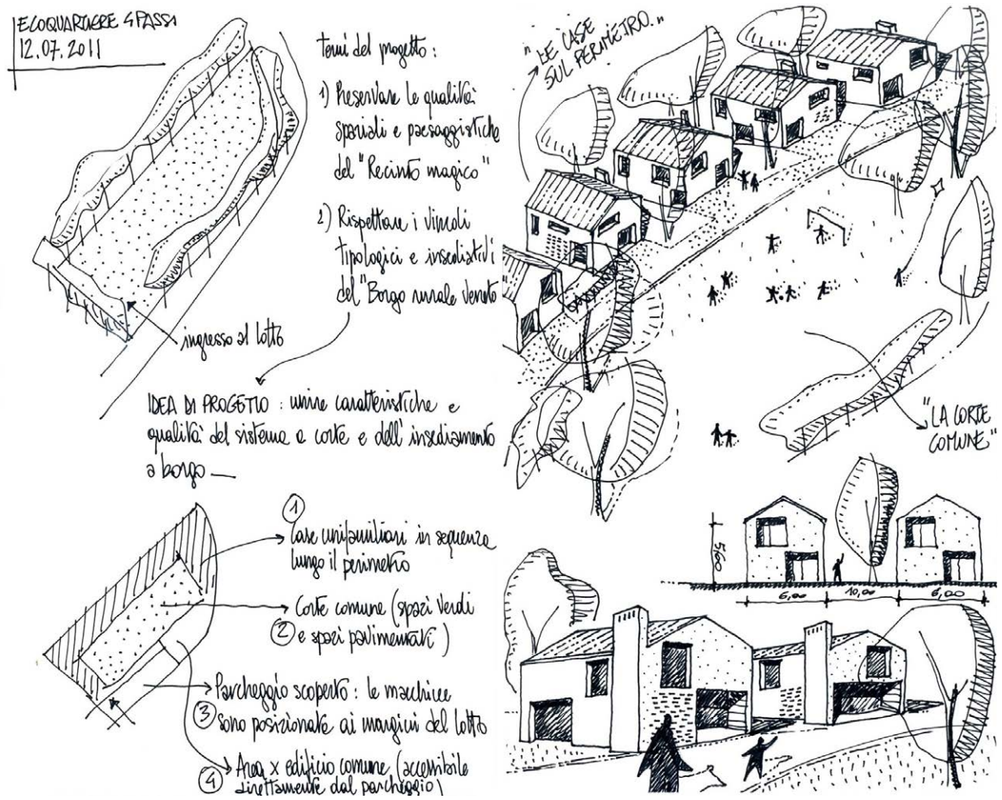
The same principle has been applied with the composition of the facades of the different houses. The work has been thought in an unitary way, in a general coordination perspective of the overall project, in relationship with the context in which it is includes. The variations introduced in the drawing of the facades of the single houses have been thought in order to be in equilibrium with a general coherence and the individual needs.

As regards the sustainability, the project meets high standards concerning the resources saving, environmentally-friendly materials use and renewable energies production.

Unusual attention has been given to the study of the building envelope. In fact, this component is essential as regards the coherence of the project with the founding principles of the eco-district. The base criteria to adopt for the selection of the stonework have been the environmental compatibility of the materials, the simplicity of the building system, its long-lasting strength and durability; the energetic performances. On the basis of these criteria, the planning choice has been the wall in thick brick blocks, with double side and cavity for summer ventilation.

As regards the thermal energy production, the choice has been a centralized boiler fueled by biomass and more precisely by pellet, located in the common house. The boiler is combined with a thermal energy storage tank, necessary in order to prevent over-temperature problems during low-energy demand periods. This tank is used also to collect free energy, provided by the sun and intercepted through the use of solar panels.

In this way, it is possible to exploit the solar energy, not only for the production of hot water for sanitary use, but also as integration source of the environmental heating, which, especially during spring and autumn, can lead to considerable energy savings. On the roof of the common house, a photovoltaic plant with a rated output of 8 KWp has been installed. The plant covers all the consumptions of the centralized plants and of the common spaces.



The "Four Steps" eco-district of Villorba is the result of a virtuous process. The households that joined the project have followed with pragmatism and obstinacy the objective to build their houses as well as a community of ethical neighborhood. The project preserves the privacy needs of the single households, but at the same time offers a greater quality thanks to the presence of common spaces and services.

On the economic point of view, the scale of intervention and the planning choices, shared at the group level, permitted to realize high-efficiency buildings with environmentally friendly materials and at competitive prices compared to the market. In the use phase, space, services and plants sharing permits to reduce the management and maintenance costs of the whole residential complex.

5·3
Reference case: Co-housing in Zürich

Role and importance of Eco Green Village in MILD HOME

Written by József Élő

In Western Europe co-operative housing has a more then 100 years old tradition. The description of housing co-operatives by CECODHAS (European Federation of Public, Cooperative and Social Housing) shows that this housing model could be a very good answer to the current housing, economic and social crisis in South-East Europe.

Zürich

The city of Zürich started to promote the housing development more than 100 years ago. Since that time the active discussion between the stakeholders in the public housing was always an important subject. This co-operation is important because this type of housing development is more affordable and it is more social and creates a liveable city. Since 1907 more than 150 housing co-operations and foundations (as independent enterprises) were established with courage, risk-talking and innovation to invest into the future.

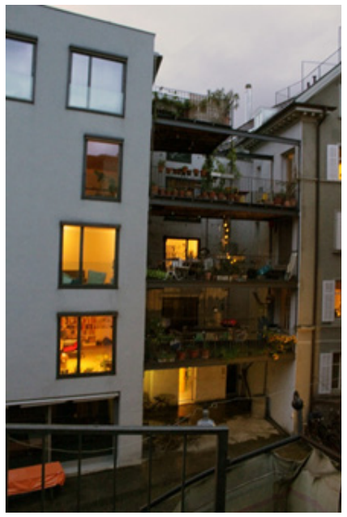
Types of housing co-operatives in Zurich

There are different types of housing co-operations. Just the city of Zurich has three different ones. Both their sizes and goals can be very various. They can range from a very small co-operative – initiated and maintained by a few people – to a huge one having more instruments. The number of members can be from a few people to a few thousands. With the increase of the members the number of buildings increases too. There are housing co-operatives with just one building but there are huge co-operatives on several sites (each with 10-20 building) as well.

Bottom-up

In bottom-up movements cooperation is a key factor. If individuals cooperate and combine their resources, organization and maintenance will be easier, the results will be far more complex. Cooperation in housing – co-housing – involves a collective way of life relating to social, economic, ecological and cultural values of the community. In a living democracy like Switzerland, self-organization and raising a voice are normal social behaviour in a 700 years old tradition. Bottom-up movements are a common phenomenon, so unsurprisingly a dense concentration of co-housing initiatives can be found here. The main motives of bottom-up co-housing initiatives – like Dreieck, Karthago or Kraftwerk – are cultural and socio-political dissatisfaction and the need for affordable housing and maintenance structures. The initiatives try to create new affordable housing typologies reacting to the new household types and living forms in a changing society. Due to the continuous social discussion and also the strong top-down support, these new typologies are now being integrated into the standard housing norms.

Dreieck co-housing in Zurich



Left: 'Dreieck'
Right: 'Kraftwerk 1'

Kraftwerk Project

Main data of 'Kraftwerk 1':

• Location:	Hardturmstasse, 8005 Zürich, Switzerland
• Project management:	Andreas Hofer, Andreas Wirz, Dominique Marchand
• General contractor:	Allreal AG
• Architects:	Stücheli Architekten mit Bünzli Courvoisier
• Landscape architect:	Ryffel + Ryffel
• Area	6 700 m²
• Total floor area	11 900 m²
• Living space	9 300 m²
• Community space	2 600 m²
• Living area per person	35 m²
• Number of flats	81
• Total cost	45 million CHF

Composition of 'Kraftwerk 1':

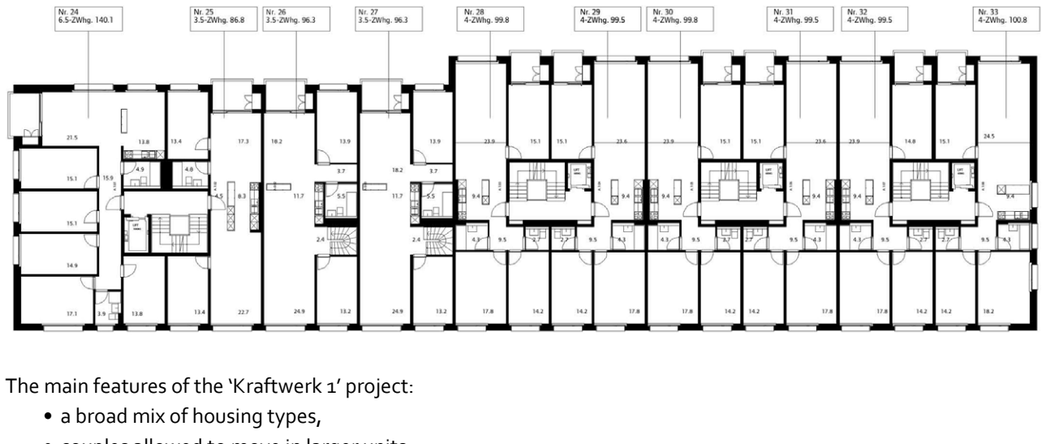
• 7 apartments	70-90 m²
• 22 apartments with room	49-96 m²
• 20 apartments with room	92-103 m²
• 24 apartments with room	125-144 m²
• 3 apartments with room	130-180 m²
• 2 community living spaces	239 m²
• 3 community living spaces	273 m²

In the real estate crisis of the 1990s a short window opened in which the young cooperative 'Kraftwerk 1' could use the perplexity of the speculative builders. With their diverse housing types, their ecological design and the participation of the residents in the planning started the first 'Kraftwerk 1' settlement which influenced the present settlements in Switzerland and contributed to the renaissance of the cooperative movements in Zurich.


'Kraftwerk 1' co-housing in Zurich

Groundfloor of 'Kraftwerk 1'

Firtst floor of 'Kraftwerk 1'



The main features of the 'Kraftwerk 1' project:

- a broad mix of housing types,
- couples allowed to move in larger units,
- development of community spaces,
- reduced number of parking spaces,
- ecological design and low-energy consumption,
- low cost development,
- mix of different people,
- affordable housing.

Architectural concept

An important idea was the 'suite' in which several apartments are combined into communities with 20 to 25 people. The architects blended two ideas which they named after their famous authors 'Loos-type' and 'Le-Corbusier-type': Sleeping and living quarters were located on the facade, they placed staircases, hallways, kitchens and bathrooms inside the house. On every third floor a corridor leads to the apartments as a 'rue intérieure' which had been developed by Le Corbusier for the 'Unités d'Habitation'. Small single-storey and duplex apartments are along these 'internal streets' which are extended by a floor up or down. These units are inserted and interwoven among the 'Loos-type' apartments with four rooms. Two flats are organized to a short staircase on each floor. This architectural concept created an incredible wealth of housing types by means of simple openings and connections of apartments above each other.

Human aspect

All members of the co-operative housing who live in 'Kraftwerk 1' are required to join the organization of users. All persons and groups are involved in the project. They have the same rights, regardless of gender, origin or income. The 'Kraftwerk 1' can see the diversity as a source of social wealth.

Bibliography:

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** Bence Komlósi: Living Democracy – Bottom-Up Initiatives for Sustainable Housing Developments in Budapest – Housing Co-operatives as Potential Tools, 2013 July*

Social and collective aspect

'Kraftwerk 1' is a possibility for groups of inhabitants to rent whole suites and to set them up and run them according to their own desires. Such suite communities can constitute the form of house-associations. They allow that manifold lifestyles and concepts of privacy and communal life (singles, couples, families, communities and communal households) can coexist. 'Kraftwerk 1' provides a wide array of collective services on the premises for child raising, health, food and drink, cleaning, use of goods, hospitality, culture, repairs etc. 'Kraftwerk 1' has pioneered and demonstrated that it is possible to create high quality of life with integrative concepts also in inhospitable locations with sustainable construction.

Life in the 'Kraftwerk 1'

5.4

Reference case: Residential areas of GWG Munich

Written by Tamás Horváth

The GWG Städtische Wohnungsgesellschaft München mbH (GWG München) was founded in 1918; it has played a major role in housing construction in Munich ever since. It is both the oldest of the four housing associations in which the Bavarian capital Munich has a stake, as well as one of the oldest local authority housing associations in Germany. Its residential complexes, housing estates and redevelopment and modernisation schemes have made a significant historical contribution to Munich's architecture and buildings.

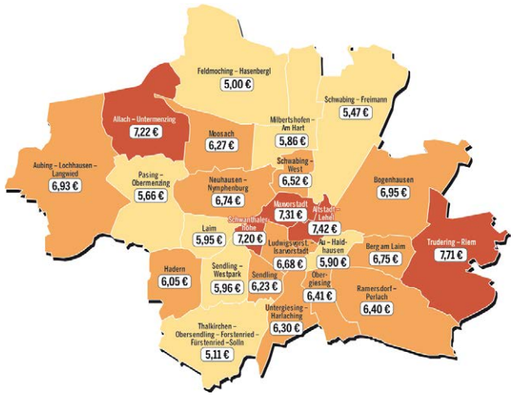
Together with its subsidiaries, the GWG München currently manages nearly 27,000 flats (both its own and those managed on behalf of third parties), thereby supporting nearly 50,000 tenants with socially-oriented housing administration. 27,000 residential units are the 3.5% of the total rented housing in the State Capital of Munich.

GWG with its more than 400 staff members also carries out comprehensive project management, urban redevelopment and social neighbourhood management. It is also involved in urban development – some of which is of a distinctly innovative nature – demolishing old buildings, building new rental flats on its own properties, buying additional land for new construction projects, purchasing rental housing stock, carrying out comprehensive modernisation measures and selling new-build flats for owner-occupation, mainly in the GWG München's already existing residential complexes.

GWG München is a member of a wide European organization. The European Housing Network, Eurhonet, is a network of 29 housing associations and through these 600,000 flats located in England (1), France (6), Germany (8), Italy (6) and Sweden (8). They are all publicly owned, they all support their owners in implementing urban development measures, and they all assist disadvantaged households by providing affordable, good-quality housing. Their common goal is creating a sustainable society where environmental impact is minimised through deliberate, targeted action. All

member associations agree to integrate social and ecological aspects, in cooperation with all stakeholders, in their own company's activities on a voluntary basis. These aspects are based on the consideration of social, ecological and economic responsibility and sustainability. Within Eurhonet, there are five thematically organised working groups, which concentrate on the following areas:

- corporate social responsibility,
- energy savings,
- social integration,
- ageing of the population,
- human resources.



Composition of GWG properties:

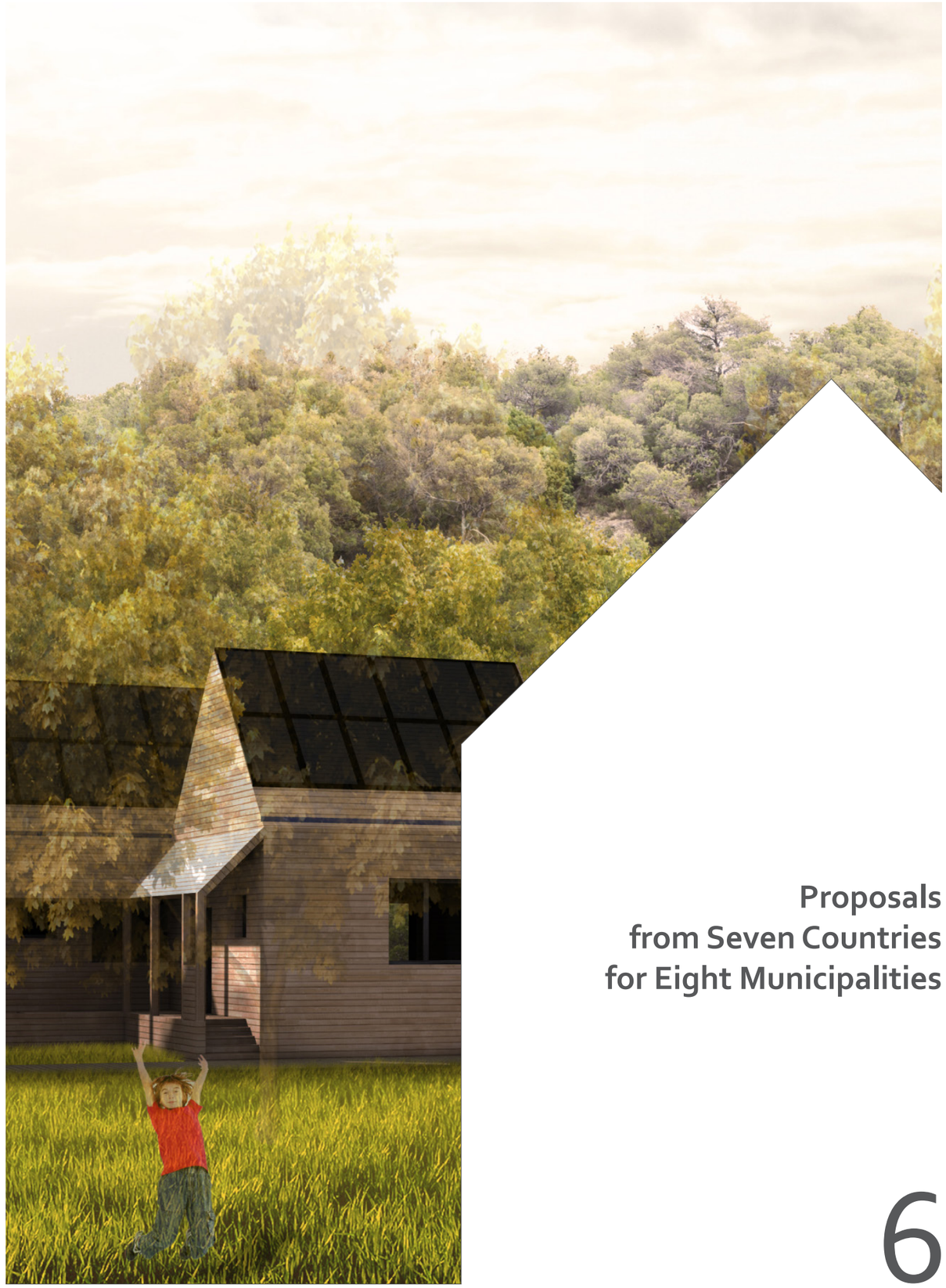
- 1-room flat, 9%, average size: 36,35 m²
- 2-room flat, 36%, average size: 47,88 m²
- 3-room flat, 37%, average size: 68,27 m²
- 4-room flat, 16%, average size: 85,43 m²
- 5-room flat, 1%, average size: 107,58 m²

Rent levels for the flats (4-10 €/m², see the figure) are consistently considerably lower than the rents charged in Munich in general, representing a significant regulatory force within Munich's housing market. The average age of properties is 42,7 years.

As a local authority housing association, GWG considers itself obliged to make a significant contribution to reducing CO_2 emissions to protect the environment. The GWG München has therefore consciously addressed the issue of energy efficient housing and building for a number of years now, making every effort to keep energy consumption to an absolute minimum in order to steadily reduce CO_2 emissions over time. At the end of 2011, the GWG München's first apartment building using the passive house method was completed. A passive house has certain unique features in comparison to conventional buildings. Another special project was in Grohmannstrasse under the City Building Authority's „e%-energy efficient housing" scheme. In the course of the "CO_2-neutral energy supply in the Lilienhof residential complex" project, a research project has been initiated in collaboration with the Fraunhofer Institute for Building Physics.

Modernized houses on the Neuherbergstraße, new built residential area Messe quarter





Proposals from Seven Countries for Eight Municipalities

6

6.1 Introduction

Written by Tamás Horváth

In 2014 necessity of thinking about sustainability is not a question. Sustainability is a very complex notion which came from economics, but nowadays it has also a social and environmental meaning. It embodies the harmony among the different aspects of these three fields as well. According to the usual definition sustainability aims to meet human needs while preserving the environment so that these demands can be met not only in the present but in the indefinite future. Notion and related issues are discussed by scientists for a long time ago often with intense debates. In contrast with the scientific discussion the ordinary people know about the sustainable issues just a few and their knowledge is influenced by the communication of the commerce and industry. In urban development and home buildings it's visible now, how initial is to create for everybody a realistic value judgments in connection with sustainable architectural and technical tools.

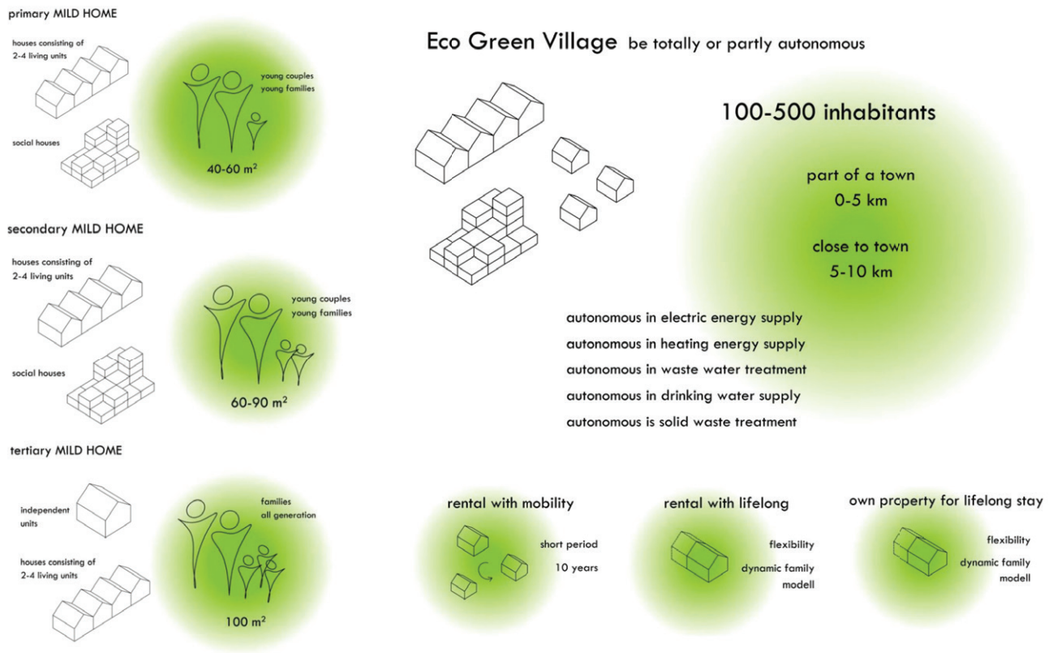
The MILD HOME project wants to help all participants of these development processes to have a more realistic picture. In the project ecological and economical sustainable solutions are researched for housing and urban development. The 'MILD HOME' was defined as the prototype of an affordable housing for the next few decades, discovering the appropriate architectural responses for the continuously changing environmental and social challenges. And the 'EcoGreen Village' is a complementary system to the individual MILD HOMEs, integrating those into an almost autonomous settlement.

At the beginning of the project the international partnership worked on the definition of the characteristics of MILD HOME and EcoGreen Village. In this process seven descriptions were created in seven countries, which are very similar in the environment and energy conscious issues, but they contain several small differences according to the local social, geographical, financial needs and conditions. The main chapters of these descriptions were the followings:

- General definition of MILD HOME and Eco Green Village
- Types of MILD HOMEs as basis of Eco Green Village
- Way of living in the MILD HOME and Eco Green Village
- Financial background in the country
- Functions and services of MILD HOME and Eco Green Village
- Scale, size and location of the Eco Green Village
- Transport connections of the Eco Green Village
- Applicable materials and structures
- Expectations in environmental impacts
- Expected energy performance
- Available energy resources
- Budget plan of building costs
- Budget plan of operating costs

Based on these general theoretical descriptions eight architectural competition calls were worked out to find the suitable solutions for different sites in Hungary, Italy, Austria, Bulgaria, Serbia, Romania and Greece. Eight sites were selected for the contests, where the applicants had to design residential estates. They had to find out real solutions for the MILD HOMEs and arranged them in an EcoGreen Village. The competition entries as several case-studies put the theory into practice.

The Hungarian competition was organized at first, because this was the example for the other competitions. The Széchenyi István University has a special role in this project activity because of its special experiences in the architectural and urban design. This is why the university became the responsible partner of the competitions.



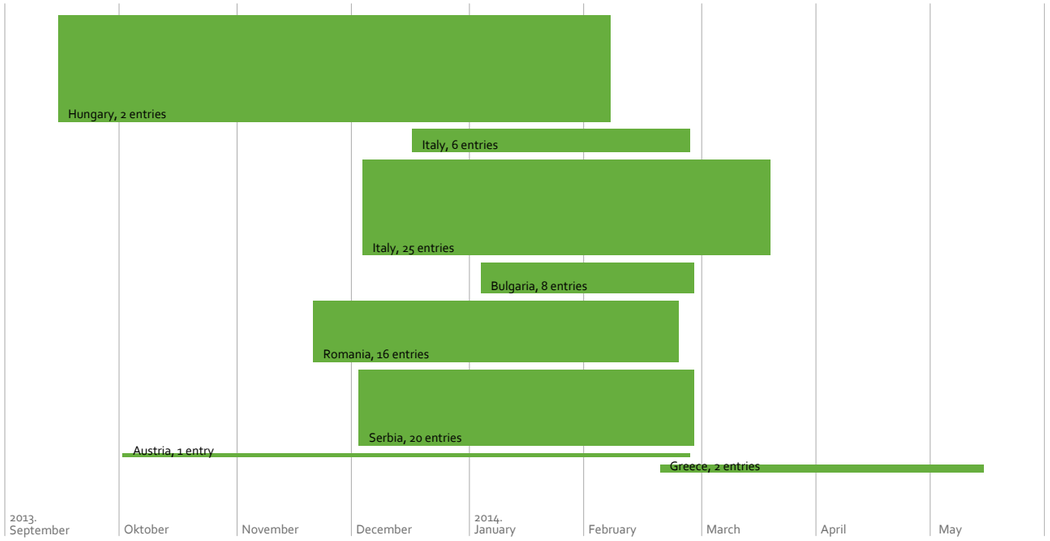
Types and main characteristics of MILD HOMEs and Eco Green Village

According to the call design task was to work out a prototype of a residential building which can be constructed in an economical way (MILD HOME) whilst providing appropriate architectural responses to the continuously changing environmental and social challenges during the forthcoming decades. The building type to be designed is not only an innovative construction model but rather a new philosophy, the expression of a new way of life, indicating the relation between human beings, their home and environment. Further task was to design a settlement (EcoGreen Village) in which a collection of residential buildings with a new ethos can be created by the integration of building types, the separate housing units and community spaces. In addition to these key issues project partners could define the main design aspects according to their special needs in the eight architectural competitions. For example in the Hungarian contest these specified aspects were:

- There were three different types defined for MILD HOME as a unit. The users of homes shall consist of young couples, young families, families and elder people. There was no restriction concerning the building design or flat types. The use of apartments was determined as a flexibly varying tenement flat system. The areas of units foreseen ranged from 40-100 m² depending on type, one housing unit should include following functions: windbreak, living room, kitchen, bedroom, toilet and bathroom.
- Within the areas of units there were 100-200 flats to be installed as foreseen. As a community area, the following functions should be located as a minimum: multifunctional area, laundry, bike storage, etc.
- The overall energy performance of buildings designed should be 50 kWh/m²a, their energetic classification A+, heat transmission coefficient in case of walls 0.20-0.26 W/m²K, roofs 0.16-0.20 W/m²K, and doors and windows 0.90-1.10 W/m²K.
- Reasoning in life cycles, searching innovative solutions and experimenting free conceptual design were equally expected as imperatives when designing housing units and the settlement integrating them.

The transacted competitions collected several very interesting and valuable works which could help the assigned places to the sustainable development and could be examples of MILD HOMEs in EcoGreen Villages. Although the contests were surrounded by special interests, it is generally true in all countries that there was no entry which could give the real complex solution for the problem statements. The awarded designs were highlighted in many cases not because they gave the most complex solutions from the society model to the applied materials, rather they had good partial solutions for the complex problem.

Implementation of the international competition series



Several environmental and energy conscious solutions were included in the competition designs. The entries could reveal in which country which problems were the most important and which solutions could solve them in a most suitable way. Beside the rich architectural content the entries showed a very interesting image about the attitudes of the young architects. Hopefully the publications of the most valuable entries in this manual and on other forums will get the special interest of home builders and indicate a fruitful discussion among the specialists. The MILD HOME project and its international staff is very proud because they could initiate this discussion with the competitions. Discussions can help us to have a clear picture about our present possibilities in creation of a sustainable future.

6.2
The competition of ideas in Strem, Austria

Written by
Andrea Moser,
Ebba Bürgel-Goodwin

In the considered area within the MILD HOME project which was the South of the Burgenland, there do exist a lot of municipalities having similar characteristics and facing similar problems like a bad traffic infrastructure, no railway connection, no industry, a high rate of commuters, a high rate of unemployment and migration. Consequently people leave the area because of not having job opportunities and a lower living quality. So the municipalities had to react on this negative trend and developed models for a local development led by renewable energy sources due to the availability of natural or derived resources. The use of those resources contributes a lot to the regional added value, creates jobs and attracts companies and industries. This trend of the municipalities to use the available renewable energy sources to create jobs and to attract people with new possibilities in their region, lead also to the necessity of creating new housing development areas.

This development was also the basis for MILD HOME and the competition within the project. So the starting point was that there actually exist a huge number of very efficient and active municipalities in the field of RES implementation, but they do not have the expertise and conception how they should in future plan their housing development areas in an efficient, effective and also ecological and CO_2 neutral way. For the competition within MILD HOME there was finally a municipality selected that requires support to develop the new housing area and that is very interested in the MILD HOME approach of creating Modular, Intelligent, Low Cost, Do-it-Yourself houses, but under the premise of having a character that fits into the building tradition of the town.

Consequently the location for the competition of ideas was a selected part of the new housing development area of the municipality Strem in the South of Burgenland.

The decision on how to execute the competition was a quite long process which lead finally to the result that for the purpose and the timeframe defined for the MILD HOME project it is only possible to organize a closed competition concentrating the main experts on the field of architecture, building biology, energy efficiency and renewable energy use. Consequently the competition in Austria was conducted by EEE and BBI with the assistance of a social housing company called OSG. This decision was based on the fact that the BBI has an enormous experience on the topic which is not readily available in the market and it is an educational institution on ecological house building and holistic urban settlement in Austria. So BBI had in this case a very important role to support the competition with its knowledge about qualification criteria, types and models of MILD HOME houses. This know how combined with the stand alone expertise of EEE in extraordinary solutions for the implementation of renewable energy systems and energy efficiency of municipalities lead to a holistic planning and holistic idea of MILD HOME and also in the combination of establishing Eco Green Villages. The social housing company OSG which was also involved in the competition was acting more in terms of observation and was the jury to select the winning ideas from the closed competition.

The competition was executed in a way that experts from both sides elaborated different ideas and the jury of the OSG selected the best ones and finally the winning ideas have been combined to one holistic planning for the MILD HOME area in the selected municipality Strem. Important for MILD HOME and Eco Green Village was also to elaborate a strong practical model representing the full philosophy of human buildings and settlement solutions with ecological approach and energy independency. This holistic view was only possible by executing such a closed competition with all expertise inside.

The result of the competition was that on the selected MILD HOME housing area will be implemented different types of MILD HOMEs and this not only from the architectural point of view, but also for different social classes. The MILD HOMEs should be divided in social housing parts, condensed building, low cost "Eco Boxes" and for richer people there should be a part with atrium type "villas".

Concerning the construction types of MILD HOMES there have been two winning types that have been chosen by the OSG jury and this are massive brick and massive wood constructions. It was decided that the brick construction can be covered by different surfaces which are e.g. mineralic plaster, wooden surface, etc. The benefit of the wooden construction is the high level of prefabrication and the possible high level of do-it-yourself.

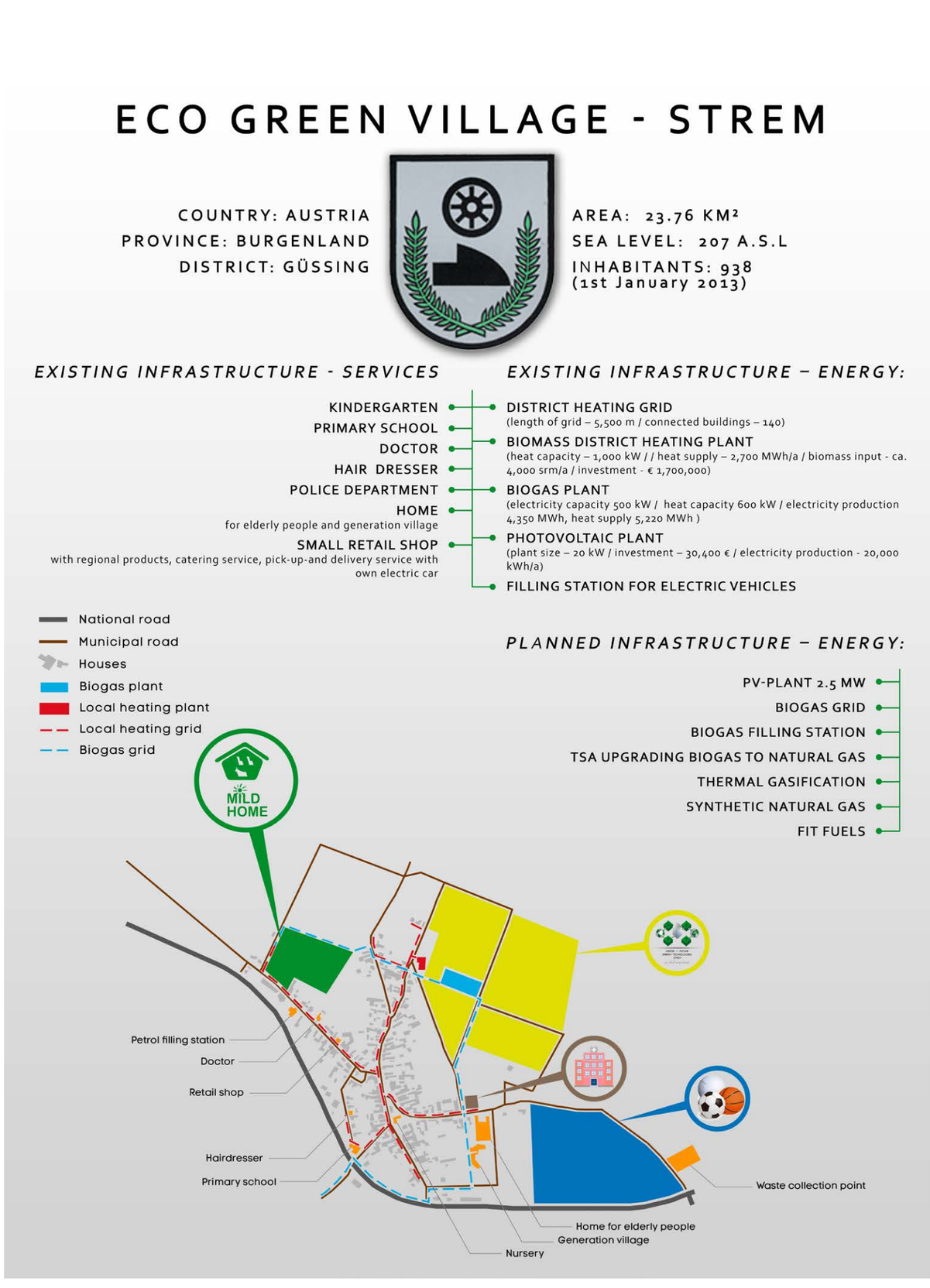
Concerning the architectural house system style the winning styles and types have been:

- Free architectural styles: Proposed construction and system types allow all kinds of architecture from a technical point of view for single family homes and larger housing setups. All house and apartments types surpass MILD HOME criteria by the Building Biology system criteria. Technical systems are limited and nearly zero energy standards are reached as well as high living comfort factors.
- Experimental prefabricated Modular Systems
- "Buchner-Box" Local system production possible, two layer massive wood construction

Regarding technical innovations and holistic Type Systems for the MILD HOMES have been the winning ideas on the one hand the *Pore Ventilation House* which has a massive monolithic construction (aerated concrete) within a wood frame construction. The heat transmission from inside warms up the incoming fresh air flow ("heat recovery"). In combination with photovoltaic it can be energy autonomous. As it is a system construction prefabrication is possible. And it is also a high degree of do-it-yourself possible, as the construction is very fault-tolerant. Last but not least it can be done fully with ecological materials. On the other hand it was the *Biological House* selected which is based on biological thinking where human and nature are one system. It is scaled from small to large units, is fully energy autonomous and offers plants and adventurous space.

As the competition was not only to define the styles and types for MILD HOME but also to develop an Eco Green Village based on MILD HOMEs, this idea was also integrated in the process of the competition. The municipality in Strem is already very advanced in the use of renewable energy sources and so the area where all the types of MILD HOMEs should be realized will be integrated in the energy system of the municipality and the infrastructure of the town will be used.

The most advantage for doing a closed competition observed by the local housing company was that they now are inspired by the MILD HOME and Eco Green Village idea and intend to realize the first MILD HOME on the competition area, which will be a housing block with up to 6 apartments fulfilling all criteria and ideas that are resulting from the MILD HOME competition.



1 Design for Güssing, Austria
Designed by Mag. Hermann J. Jahrmann, DI Ebba Bürgel- Goodwin, DI Hans Achatz, Mag. Wolfgang Strasser, DI Andrea Moser and Mag. Joachim Hacker

6.3
The competition of ideas in Sofia, Bulgaria

Written by
Vanya Maneva and
Maya Guevska

The territory analysis was developed to choose the best area to settle an EGV among four territories proposed by Sofia Municipality. All the areas stand in the Northern part of Sofia because of climate and strategic reasons. The Northern part is no well-developed as the southern one. This can be mainly due to social rating reasons. In fact the southern districts of Sofia, which include the Northern slopes of The Vitosha Mountain, are considered as a luxury area for high-class living. Moreover building environment stops mountain breezes which are valuable for natural city ventilation. Furthermore the city of Sofia is located in a low part of a valley (surrounded by mountains) and from a physical point of view that situation is a negative aspect for implementing passive natural ventilation. That is why the Northern part of Sofia, which is on the South slopes side of The Stara Planina Mountain, has been chosen for EGV development. Different criterions were discussed and chosen to analyse and compare the territories. They have all got good connections to the city centre of Sofia and are owned by Sofia Municipality. The main differences concern their dimensions and land use (it is necessary to change the status for most of them). Finally, the territory of Mramor was chosen more the most favourable than the others.

Among all the projects of the competition, four different design solutions that fit the MILD HOME vision were selected. *The authors of the First classified place are from the "Green Art"* – The master plan of the Eco Green Village was estimated being the best from all participants' proposals. The composition of the Eco Green Village (EGV) is functionally coherent and clear. The distances between the residential and the public spaces are short, so transportation on foot and by bicycle is promoted (prioritized). The MILD HOMEs orientation – in South – is in accordance with the local climate. The parking lots are situated in the periphery, which is a way to reduce the use of cars. The green spaces are favourably integrated with the public spaces and the primary MILD HOME type. The mixed use of the zone promotes social cohesion, especially for singles (as a whole, the primary type is defined for singles or young couples). Further, the agricultural lands are provided for cooperative actions in the community. The EGV proposal allows one-stage and several-stage performance. The organisation of the streets is simple, which is a prerequisite for cost effective implementation of the technical infrastructure. Recycling stations are equally spaced in the EGV territory. There is a good concept for the organic waste – to be used for energy production (bio gas) but additional calculations are needed in order to define the effectiveness of the solution. The MILD HOMEs construction materials are ecological and include straw, clay, reed mats, linen, wooden building structure, use of recyclable wooden particles. Photovoltaic roof installations are organically integrated in the architectural shape of the buildings. Natural ventilation is proposed. Modular system is formed by two major modules, which are closely related to the constructive system. The floor plans are functional and allow flexibility in a concrete design solution. There is an opportunity for relatively easy "Do it yourself" approach implementation i.e inhabitants' participation in the construction of their homes.

The "Green team" is the team on the second place of the Competition – The materials used for the building envelope are under 20 kg weight, which is determined ability to complete construction of the buildings of two people without heavy machinery. HVAC solutions are estimated as efficiency and cost effective and include air heat pump (air/air), central ventilation system with a heat recovery, photovoltaic panels and solar collectors for domestic hot water providing the required amount of hot water and electricity. The innovation feature of the proposal is that three levels of the option DIY are developed: 1. "Finish" it yourself – the less cost efficient and lower participation of non-professionals; 2. "Assemble" it yourself – the cost efficiency is at medium level as well as the participation of non-professionals. Training of the inhabitants and supervising during the construction process – will be necessary; 3. "Build" it yourself – the most cost efficient level but requires professional training and supervising during the process.

Third place – proposals of Studio H65 and arch. Nickolay Slavov – Sustainable and definitely efficient strategy in the Studio H65 is the Green design proposal. Deciduous trees are situated in the South side of the buildings in order a solar radiation control to be provided in the summer and the winter. Evergreens in the North side of the territory are forming a wind barrier in the cold period. Interesting vision of the MILD HOMEs is presented in arch. Nickolay Slavov's project. The houses building technology, so called "earth" (mainly consists of clay and straw), used in the period of Bulgarian Revival guarantees an annual internal thermal comfort.

Several Architectural House System styles and types will be used in the Eco Green Village:

Two principal construction types

1. **Massive brick with ecological insulation (hemp, soft wood fiber etc.)**
   a. Usage of brick type with high heat storage capacity
   b. U-values are reached with the external insulation layer
   c. Surface is completely open to vapour diffusion: Mineralic plaster, wooden surface,…
2. **Massive wood construction with ecological insulation**
   a. Type used is a prefabricated wood construction with high level of prefabrication
   b. High level of Do-It-Yourself is possible

Several Architectural House System styles and types will be used in the Eco Green Village:

1. Free architectural styles

Proposed construction and system types allow all kinds of architecture from a technical point of view for single family homes and larger housing setups.

All house and appartement types surpass MILD HOME criteria by the Building Biology system criteria.

Technical systems are limited and nearly zero energy standards are reached as well as high living comfort factors.

Building Biology Certificate.

Natural systems will be used, e.g. shading by trees

Several Architectural House System styles and types will be used in the Eco Green Village:

2. Experimental prefabricated Modular Systems

"Buchner - Box"
Local system production possible

"ECO - BOX"
Low Cost Prefab-System

80 m² modular-design

65 m² modular-design

Several Architectural House System styles and types will be used in the Eco Green Village:

3. Technical Innovation and Wholistic Type Systems

a. Pore Ventilation House

- Massive monolithic construction (airated concrete)
- Wood frame construction
- Heat transmission from inside warms up the incoming fresh air flow ("heat recovery")
- Low cost Nearly Zero Energy Building
- Energy autonomous in combination with photovoltaic
- System construction / prefab possible
- Do it yourself possible - very fault-tolerant
- Can be done fully with ecological materials

b. Biological House

- Human and Nature in system
- Based on ecological system thinking
- Plants and adventurous space
- Fully energy autonomous
- Scaleable from small to large units

1. Revival of the old village center

Important institutions of public interest should be locatet at the center of the old village

e.g.
- village offical
- police department
- grocery
- etc.

2. Connection on higher level structures

Structures of nature
- orientation on 1st global grid (large space)
- orientation on geomancy zones

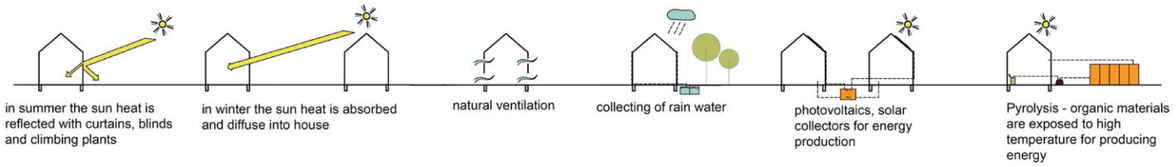
Structures of culture
- connection to the center of the old village
- connection to the district capital Güssing

3. Zones of the village

1. untouched nature landscape
2. landscape park
3. trade and crafts
4. public interior zone
5. houses and courtyards
6. private indoor garden
7. public exterior zone (holy area)

4. Planing based on City Ecological Manifest 1979 and Agenda 21 ff

- neighborhoods
- environment protection
- land use
- transport reduction
- part of self-sufficiency
- gardens
- courtyard houses
- natural and cultural heritage
- health
- social concept
- senses, symbol, metrics
- middle, orientation



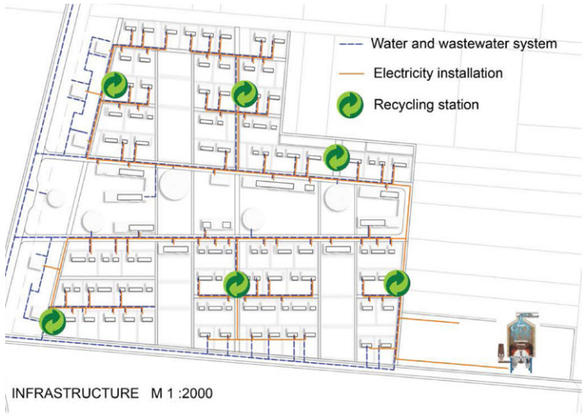
TRANSPORT SCHEME M 1:2000

GREEN SCHEME M 1:2000

MASTER PLAN M 1:1000

First awarded design for Sofia, Bulgaria
Designed by arch. Milen Arnaudov, arch. Dniela Angelova, arch. Daniele Marinangeli and arch. Lorenzo Botteghelli

1



INFRASTRUCTURE M 1 :2000

Synergetic gardering, fruit and vegetables small areas
The planned water areas serve as a natural drainage

AGRICULTURAL ZONE ORGANISATION

PUBLIC PARK SKYLINE

TEXTURES

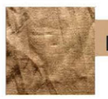
modular system
professional execution
earthquake safe
platform frame

STRAW

good thermo insulation
make yourself
economic
the straw is very cheap

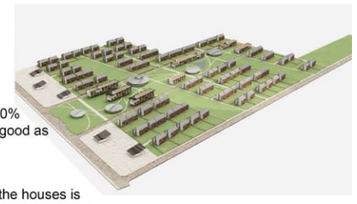
CLAY

material breathability
make yourself
transpirant
recyclable



LINEN

high thermo insulation
breathable
the linen insulation is 100% recycable, and still it as good as the artificial insulations



WOOD

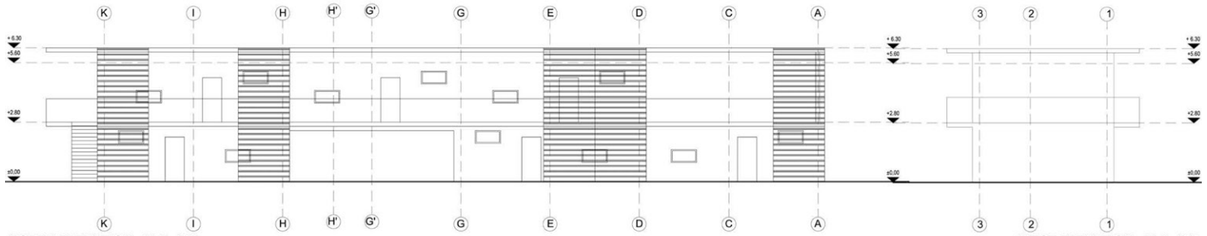
modular system
professional execution
earthquake safe
platform frame
quick

recycled WOOD

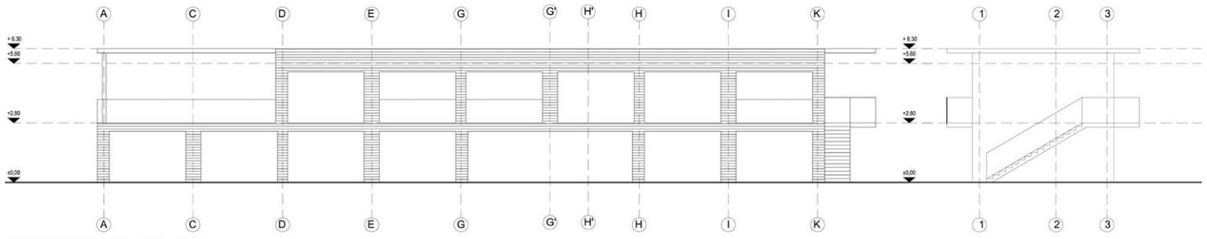
for the outer coating of the houses is used reczcled wood. This material was chosen to decrease the expenses and for environment protection.

2

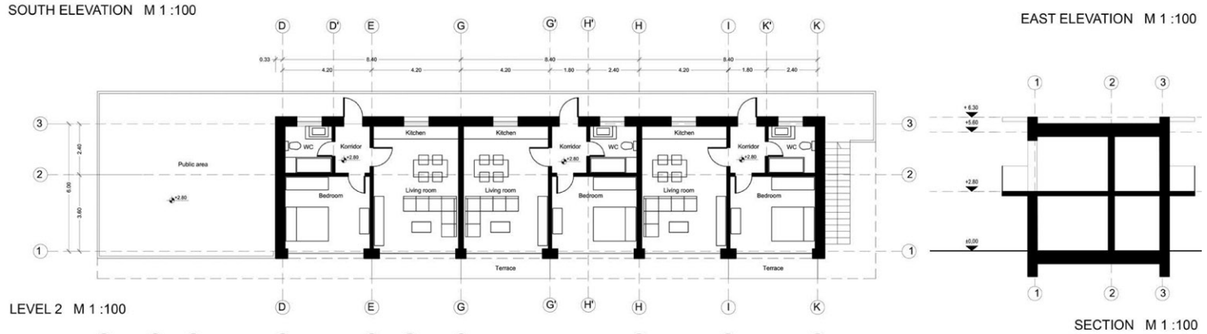
UNIT 1 M 1 :100



NORTH ELEVATION M 1 :100

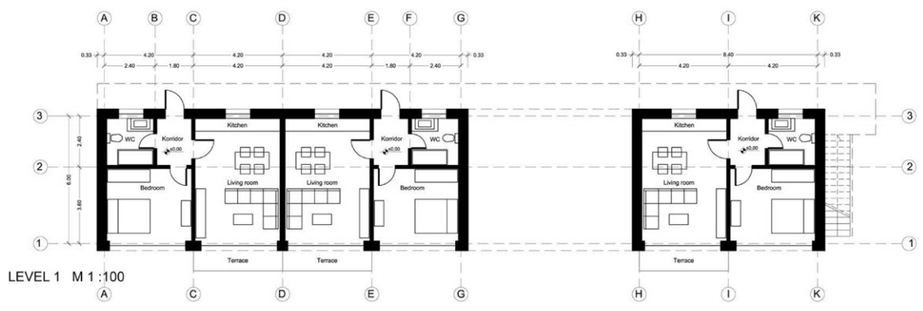


WEST ELEVATION M 1 :100



SOUTH ELEVATION M 1 :100

EAST ELEVATION M 1 :100

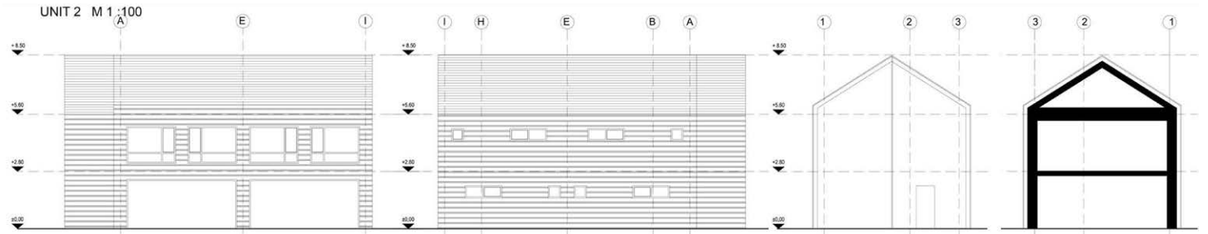


LEVEL 2 M 1 :100

SECTION M 1 :100

LEVEL 1 M 1 :100

UNIT 2 M 1 :100



SOUTH ELEVATION M 1 :100

NORTH ELEVATION M 1 :100

EAST ELEVATION M 1 :100

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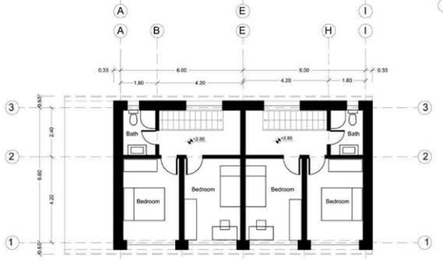

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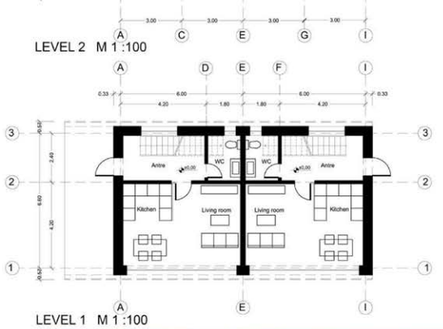
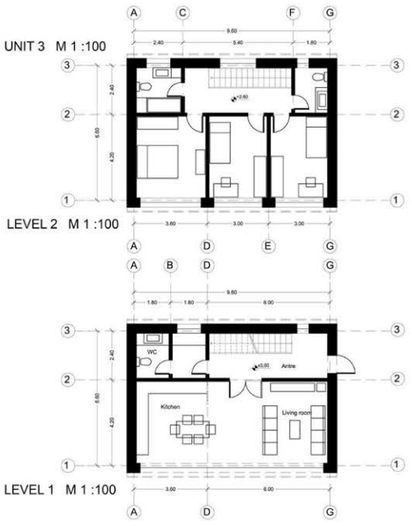


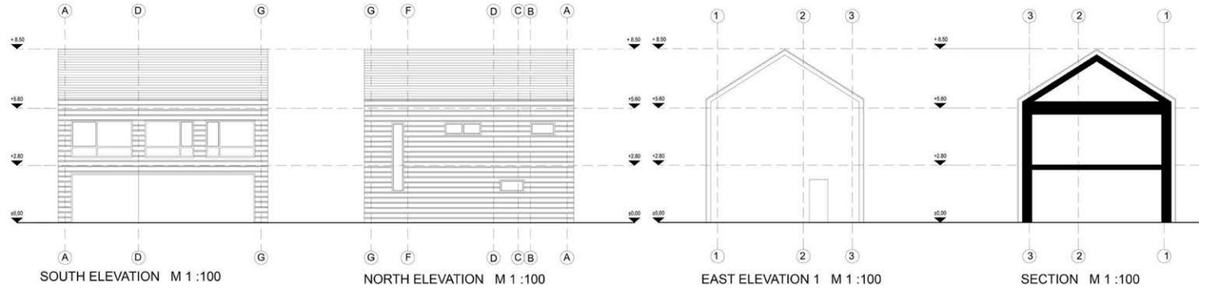
LEVEL 1 M 1 :100



UNIT 3 M 1 :100

LEVEL 2 M 1 :100

LEVEL 1 M 1 :100



SOUTH ELEVATION M 1 :100

NORTH ELEVATION M 1 :100

EAST ELEVATION 1 M 1 :100

SECTION M 1 :100

ECO GREEN VILLAGE
MASTER PLAN 1:1000

PLOT SIZE	93440 m2
BUILDING DENSITY	12%
OCCUPANCY INDEX	0,21
FLOORS	2
HOUSES TYPE 1	7 / 63 AP
HOUSES TYPE 2	34 / 102 AP
HOUSES TYPE 3	41
PUBLIC AREA	8%
ROAD AREA	7%
PARKING	237
GREEN AREA	80%

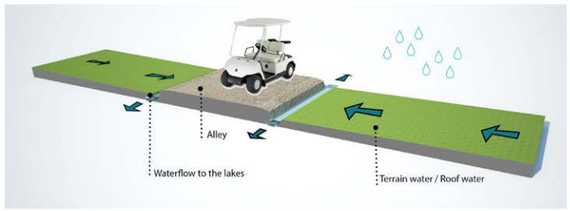
ECO GREEN VILLAGE
SILHOUETTE 1:1000

TRANSPORT SCHEMES 1:2000

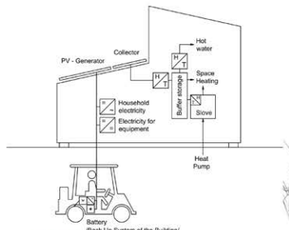
GREEN SYSTEM 1:2000

WATER DRAINING SCHEME 1:2000

POWER SUPPLY SCHEME 1:2000

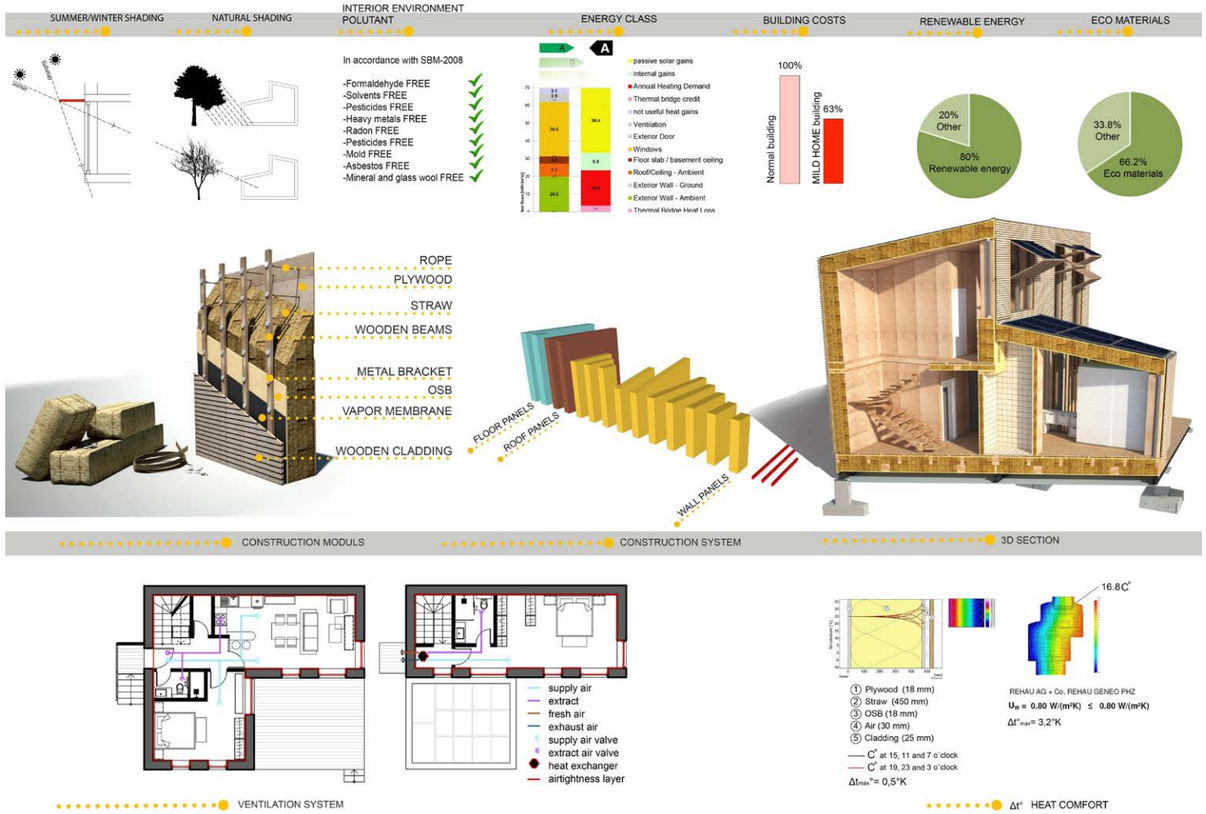


WATER DRAINING SYSTEM



POWER NEEDS AND RELATIONS

TRASH SCHEME



CONSTRUCTION MODULS

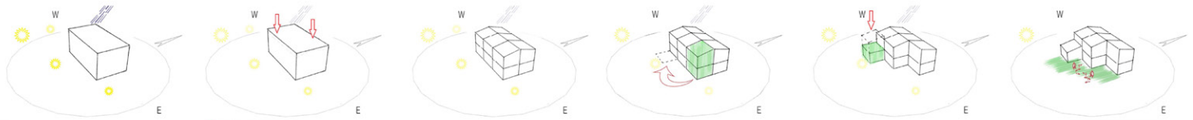
CONSTRUCTION SYSTEM

3D SECTION

VENTILATION SYSTEM

Δt° HEAT COMFORT

Second awarded design for Sofia, Bulgaria
Designed by arch. Victoria Atanasova, arch. Zornica Petrova, arch. Ilina Stoyanova and arch. Georgi Grozdanov



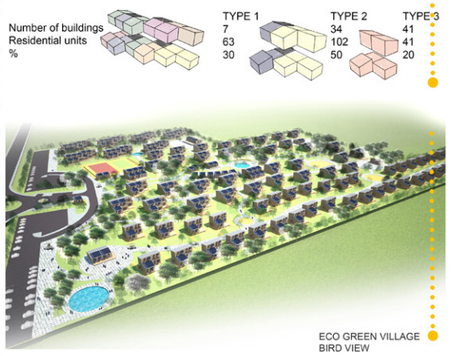
FORM SHAPING

RESIDETIAL TYPES / APARTMENTS

HOUSE TYPE 1 FIRST FLOOR 1:100

HOUSE TYPE 1 SECOND FLOOR 1:100

HOUSE TYPE 1 ROOF 1:100



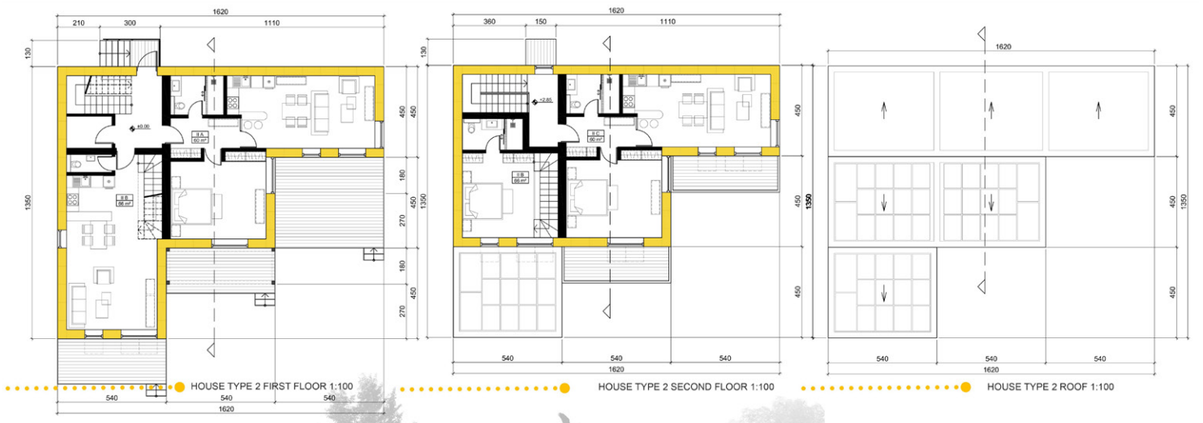
ECO GREEN VILLAGE
BIRD VIEW

HOUSE TYPE 2 PERSPECTIVE VIEWS

HOUSE TYPE 1 SECTION 1:100

HOUSE TYPE 1 SOUTH ELEVATION 1:100

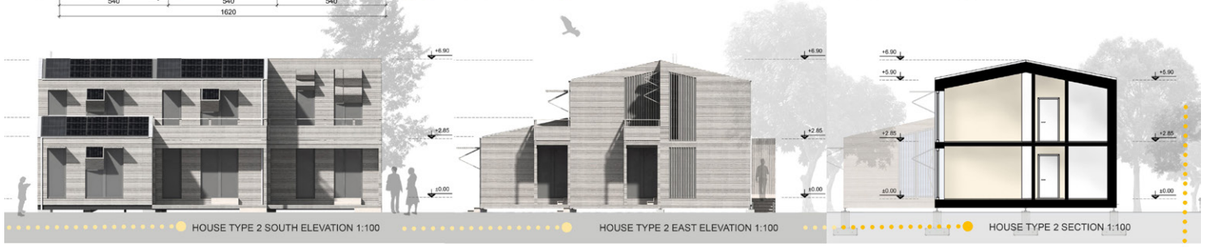
HOUSE TYPE 1 EAST ELEVATION 1:100



HOUSE TYPE 2 FIRST FLOOR 1:100

HOUSE TYPE 2 SECOND FLOOR 1:100

HOUSE TYPE 2 ROOF 1:100



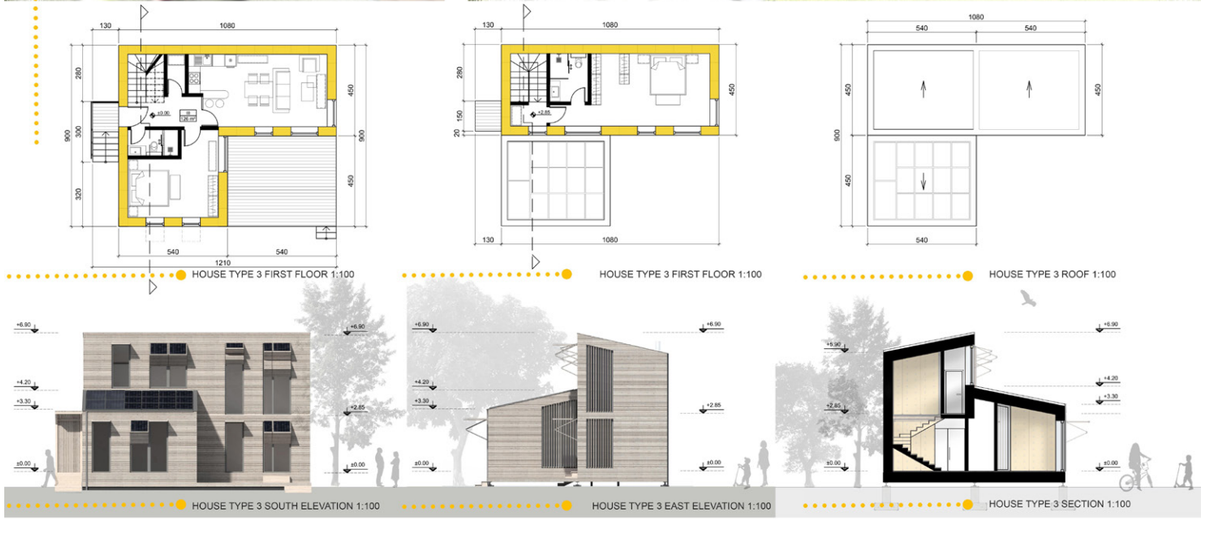
HOUSE TYPE 2 SOUTH ELEVATION 1:100

HOUSE TYPE 2 EAST ELEVATION 1:100

HOUSE TYPE 2 SECTION 1:100

HOUSE TYPE 2 PERSPECTIVE VIEW

HOUSE TYPE 3 PERSPECTIVE VIEW



HOUSE TYPE 3 FIRST FLOOR 1:100

HOUSE TYPE 3 FIRST FLOOR 1:100

HOUSE TYPE 3 ROOF 1:100

HOUSE TYPE 3 SOUTH ELEVATION 1:100

HOUSE TYPE 3 EAST ELEVATION 1:100

HOUSE TYPE 3 SECTION 1:100

DETAILED PLAN

constructed with lightweight straw-clay

Kids space

silhouette

public services

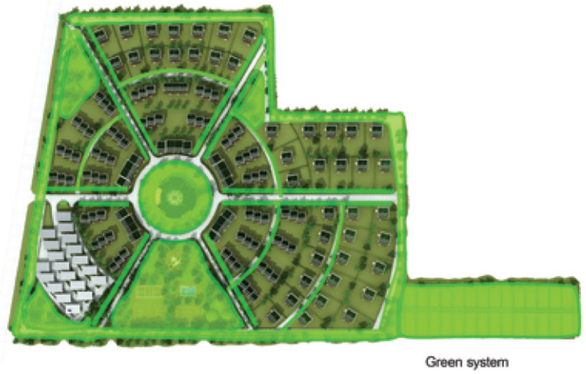
stop intercity tansport
pedestrians and cyclists
cars

Transport and communication

perspective

small wind turbines
photovoltaic

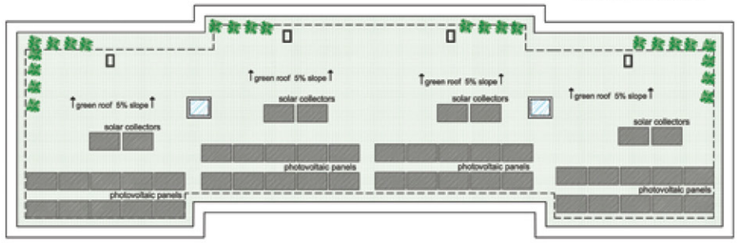
Renewable Energy



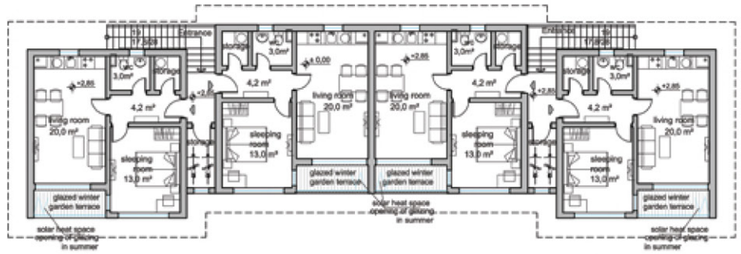
Green system

Third awarded design for Sofia, Bulgaria
Designed by Team Studio H65: arch.Nikolay Galabov, arch. Petar Kasadzhikov and arch. Stanimir Tonev

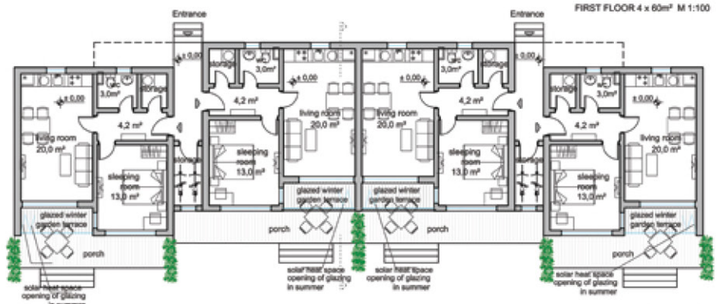
MILD HOME TYPE 1
8 apartments x 60 m²



ROOF M 1:100



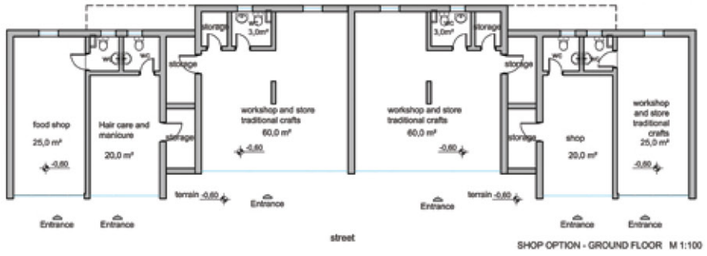
FIRST FLOOR 4 x 60m² M 1:100



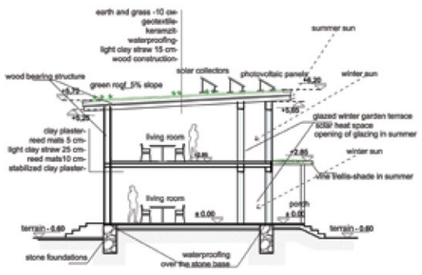
GROUND FLOOR 4 x 60m² M 1:100

Facade 1 M 1:100

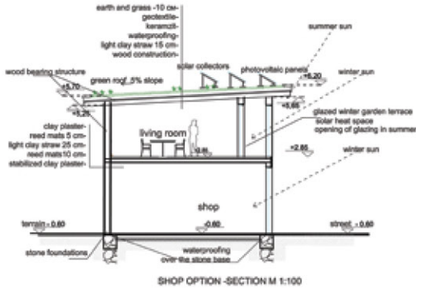
Facade 2 M 1:100



SHOP OPTION - GROUND FLOOR M 1:100

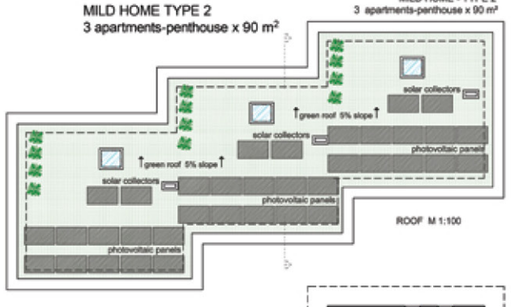


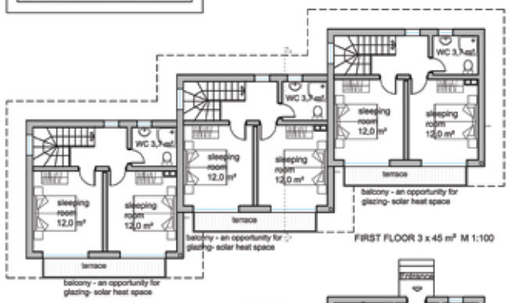
SECTION M 1:100

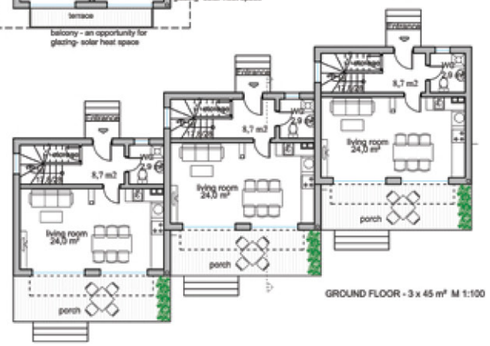


SHOP OPTION -SECTION M 1:100

MILD HOME TYPE 2
3 apartments-penthouse x 90 m²

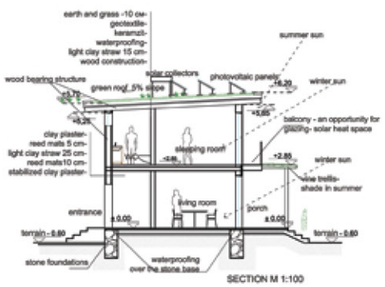




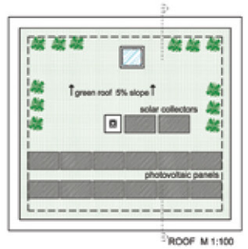


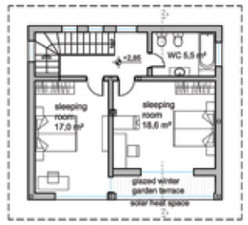
Facade 1 M 1:100

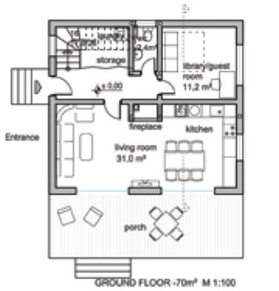
Facade 2 M 1:100



MILD HOME TYPE 3
140 m²







buildings examples-izvor

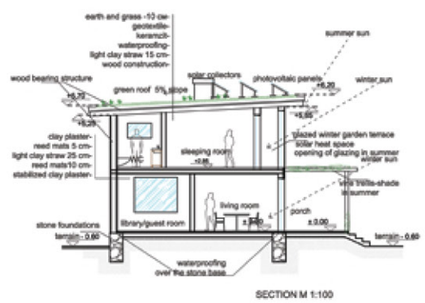
buildings examples-rahovitsa

Green roof example

parking and solar park

Facade 1 M 1:100

Facade 2 M 1:100



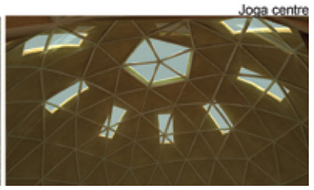
parking and solar park

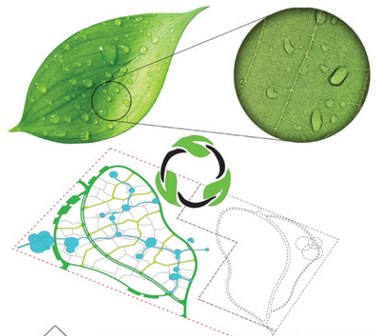
Type 3

Earth Village

Kids space

Joga centre





LEAF`S CONTOURS
SITE`S MAIN STREETS

LEAF`S VANES
SITE`S SECONDARY STREETS

LEAF`S LAMINA
SITE`S SINGULAR UNITS

WATER - LEAF`S LIFE
PEDESTRIAN FLOAD

POSSIBILITY FOR FUTURE DEVELOPMENT OF THE SITE SCHEME OVER THE WHOLE AREA

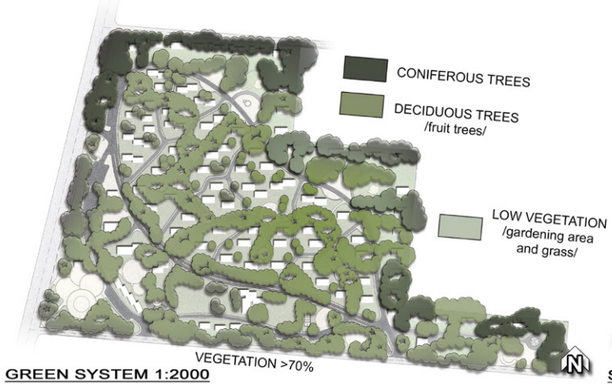
1. POSSIBILITY FOR WORK-LIVE UNIT
2. EVERGR.TREES - WIND BARRIER
3. GREEN PAVEMENT
4. WOODEN TRELLIS
5. FLOWERS
6. RESTRICTED AREA SIGN
7. COVERED BICYCLE STOR.
8. EL. CAR CHARGING
9. GLASS HOUSE
10. SOLAR PANELS
11. OUTDOOR READING
12. PUBLIC SQUARE
13. RECYCLING BOX
14. FREE ACCESS
15. ART

LEGEND
01. RESTAURANT
1`. BISTRO
02. LIBRARY AND BOOK SHOP
03. LAUNDRY
04. LOCKERS /SWIMMING-POOL AND SPORTS/
05. BANK OFFICE
06. STORE - FOR RENT
07. STORE - FOR RENT
08. SHOES STORE
09. FASHION STORE
10. TELEPHONE / INTERNET / TV SUPPLIER
11. HAIR STYLIST
12. HEALTH CENTER AND PHARMACY
13. OUTDOOR FITNESS
14. OFFICE FOR RENT
15. TECHNICAL OFFICE RES
16. OUTDOOR AMPHITHEATER
17. SUPERMARKET
18. RETENTION POND / WATER PURIFICATION
19. ARTIFICIAL GREEN LAKE
20. WATER CENTRAL
21. TRAF STATION
22. MAIN PUBLIC ART SQUARE
23. COVERED BICYCLE STORAGE
24. SWIMMING POOL
25. BASKETBALL FIELD
26. TENNIS COURT
27. VOLLEYBALL FIELD
28. SOCCER FIELD
29. BADMINTON FIELD
30. WATER ATTRACTION
31. DOG GARDEN
32. PLAYGROUND
33. REST AREA
34. GREEN HOUSE
35. WILD PARK

MASTER PLAN 1:1000

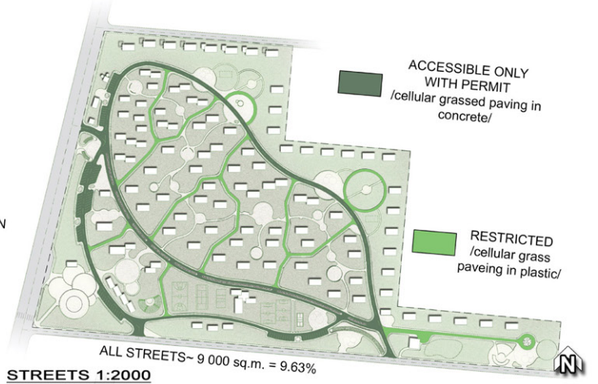
PUBLIC | CLUSTERS | INDIVIDUAL | APARTMENTS

STREETS | PEDESTRIANS | BICYCLES | TREES | LOWER VEGETATION | FLOWERS | WATER | GREEN HOUSE



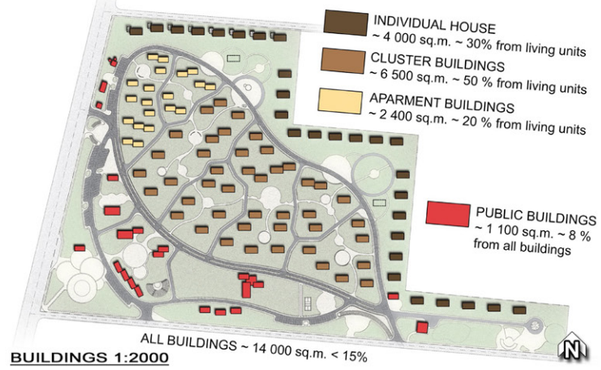
VEGETATION >70%

GREEN SYSTEM 1:2000



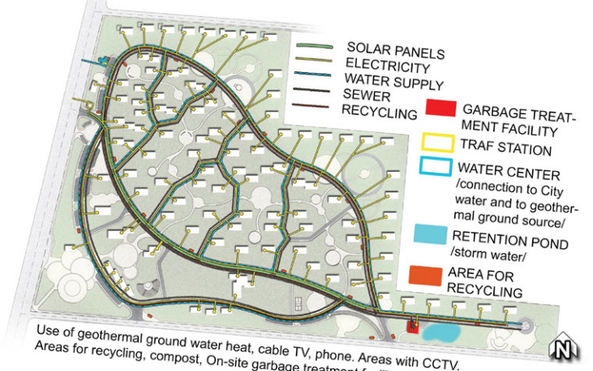
ALL STREETS~ 9 000 sq.m. = 9.63%

STREETS 1:2000



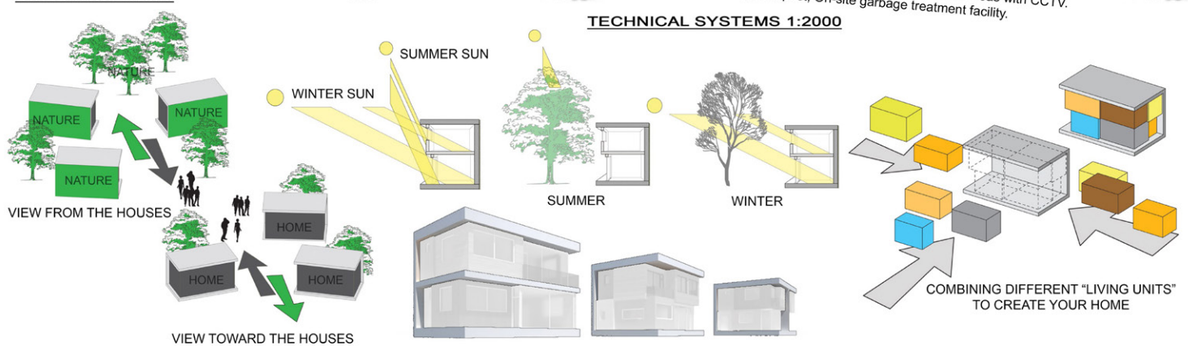
ALL BUILDINGS ~ 14 000 sq.m. < 15%

BUILDINGS 1:2000



Use of geothermal ground water heat, cable TV, phone. Areas with CCTV.
Areas for recycling, compost, On-site garbage treatment facility.

TECHNICAL SYSTEMS 1:2000



Third awarded design for Sofia, Bulgaria
Designed by arch. Nikolay Slavov

1

2

LEGEND

- HOUSE "O"

- TYPE "A" FIRST FLOOR	-	42.47 sq.m.
01. ENTRY	-	4.31 sq.m.
02. WC	-	2.25 sq.m.
03. MECH. EQUIPMENT	-	2.65 sq.m.
04. LIVING/DINNING ROOM AND KITCHEN	-	25.23 sq.m.
05. VERAND	-	5.82 sq.m.

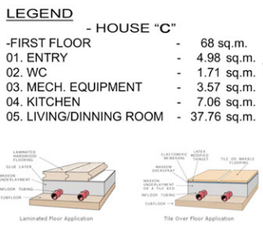
- HOUSE "O" .

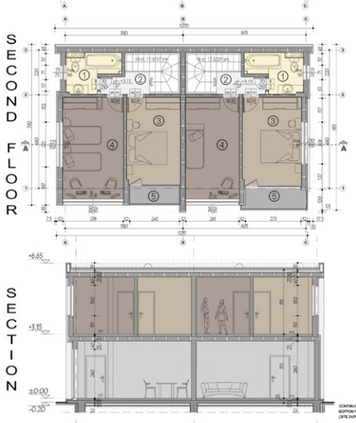
- TYPE "B" FIRST FLOOR	-	44.42 sq.m.
01. ENTRY	-	4.44 sq.m.
02. WC	-	2.25 sq.m.
03. MECH. EQUIPMENT	-	2.65 sq.m.
04. LIVING/DINNING ROOM	-	26.56 sq.m.

LEGEND

- HOUSE "C"

-FIRST FLOOR	-	68 sq.m.
01. ENTRY	-	4.98 sq.m.
02. WC	-	1.71 sq.m.
03. MECH. EQUIPMENT	-	3.57 sq.m.
04. KITCHEN	-	7.06 sq.m.
05. LIVING/DINNING ROOM	-	37.76 sq.m.





LEGEND

- HOUSE "O"

- TYPE "A" SECOND FLOOR	-	46.31sq.m.
01. BATHROOM	-	4.39 sq.m.
02. STAIRS AND HALLWAY	-	6.63 sq.m.
03. MASTER BEDROOM	-	11.39 sq.m.
04. BEDROOM	-	15.00 sq.m.
05. BALCONY	-	2.42 sq.m.

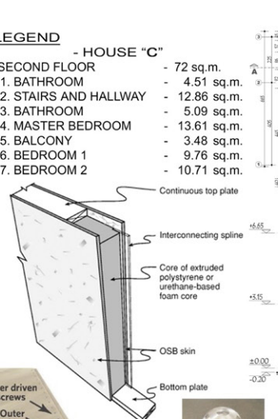
- HOUSE "O"

- TYPE "B" SECOND FLOOR	-	45.36sq.m.
1. BATHROOM	-	4.74 sq.m.
02. STAIRS AND HALLWAY	-	6.63 sq.m.
03. MASTER BEDROOM	-	12.61 sq.m.
04. BEDROOM	-	13.25 sq.m.
05. BALCONY	-	3.32 sq.m.

LEGEND

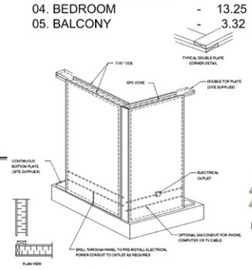
- HOUSE "C"

-SECOND FLOOR	-	72 sq.m.
01. BATHROOM	-	4.51 sq.m.
02. STAIRS AND HALLWAY	-	12.86 sq.m.
03. BATHROOM	-	5.09 sq.m.
04. MASTER BEDROOM	-	13.61 sq.m.
05. BALCONY	-	3.48 sq.m.
06. BEDROOM 1	-	9.76 sq.m.
07. BEDROOM 2	-	10.71 sq.m.



CLUSTERS - HOUSE "O" 1:100

IT IS POSSIBLE TO MISS MATCH
TYPE "A" AND TYPE "B" FLOORS



INDIVIDUAL - HOUSE "C" 1:100

SOLAR TUBES

ROOF PLAN -TYPICAL 1:100

INDIVIDUAL HOUSE - EAST ELEVATION 1:100

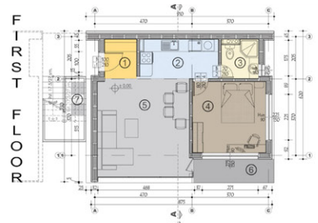
INDIVIDUAL HOUSE - SOUTH ELEVATION 1:100

INDIVIDUAL HOUSE - WEST ELEVATION 1:100

CLUSTERS - EAST ELEVATION 1:100

CLUSTERS - SOUTH ELEVATION 1:100

CLUSTERS - WEST ELEVATION 1:100



LEGEND

- APARTMENT - HOUSE "E"

- TYPE "A1"	-	57.72 sq.m.
01. ENTRY	-	2.95 sq.m.
02. KITCHEN	-	7.22 sq.m.
03. BATHROOM	-	2.42 sq.m.
04. BEDROOM	-	12.25 sq.m.
05. LIVING/DINNING ROOM	-	21.22 sq.m.
06. VERAND	-	4.48 sq.m.
07. MECH. EQUIPMENT	-	3.10 sq.m.

APARTMENTS - HOUSE "E" -TYPE "A" 1:100

LEGEND

- APARTMENT - HOUSE "E"

- TYPE "A2"	-	58.86 sq.m.
01. ENTRY	-	2.95 sq.m.
02. KITCHEN	-	7.22 sq.m.
03. BATHROOM	-	4.05 sq.m.
04. BEDROOM	-	13.57 sq.m.
05. LIVING/DINNING ROOM	-	16.35 sq.m.
06. BALCONY	-	4.48 sq.m.

LEGEND

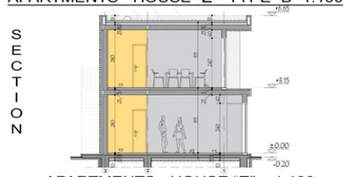
- APARTMENT - HOUSE "E"

- TYPE "B1"	-	58.22 sq.m.
01. ENTRY	-	2.95 sq.m.
02. KITCHEN	-	7.22 sq.m.
03. BATHROOM	-	2.42 sq.m.
04. BEDROOM	-	12.25 sq.m.
05. LIVING/DINNING ROOM	-	21.22 sq.m.
06. VERAND	-	4.48 sq.m.
07. MECH. EQUIPMENT	-	3.60 sq.m.

- APARTMENT - HOUSE "E"

- TYPE "B2"	-	59.68 sq.m.
01. KITCHEN	-	6.08 sq.m.
02. ENTRY	-	4.94 sq.m.
03. BATHROOM	-	4.05 sq.m.
04. BEDROOM	-	13.56 sq.m.
05. LIVING/DINNING ROOM	-	15.84 sq.m.
06. BALCONY	-	6.11 sq.m.

APARTMENTS - HOUSE "E" -TYPE "B" 1:100



APARTMENTS - HOUSE "E" 1:100

MATERIALS AND SYSTEMS

ROOF
- SOLAR TUBE - FOR LIGHTING
- SOLAR PANELS - POSSIBLE
- STRUCTURAL INSULATED PANELS

SECOND FLOOR SLAB
- RADIANT HEATING/COOLING SYSTEM
- STRUCTURAL INSULATED PANELS

FIRST FLOOR SLAB
- RADIANT HEATING/COOLING SYSTEM
- CONCRETE SLAB
- THERMAL INSULATION

WALLS
- STRUCTURAL INSULATED PANELS

WINDOWS
- BUILT IN SENSORS FOR HUMIDITY
- TRIPLE GLAZED K-GLASS

ELEVATION MATERIALS

ENTRY = TARGET =
= VIVID COLOR

LIVING ROOM = LIGHT =
= WINDOWS / GLASS

KITCHEN = CHROME =
= GRAY COLOR

BATHROOM = SANITATY =
= PALE COLOR

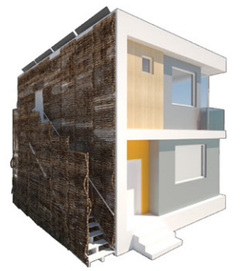
BEDROOM = COSY =
= WOOD MATERIALS

NORTH ELEVATION - TYPICAL 1:100

APARTMENTS - SOUTH ELEVATION 1:100

APARTMENTS - WEST ELEVATION 1:100

APARTMENTS - EAST ELEVATION 1:100



6.4
The competition of ideas in Larissa, Greece

Proposals from seven countries for eight municipalities

Written by Mata Papadimopoulou, Nestoras Kanellos and Chara Triantafyllou.

The competition of ideas in the Region of Thessaly aimed at designing the Eco Green Village based on the MILD HOME, with a view to:

- designing the model building of the mild home which can be constructed with the lowest cost, providing the appropriate architectural answers for the continuously changing environmental and social challenges in the next decades, a building that will not only be innovative in construction terms, but that will also promote a new way of life which will empower the relation among people and the relation of people with their home and their environment,
- designing the settlement (Eco Green Village) that will constitute a sum of independent MILD HOMEs and also an integrated space promoting a new way of mild life, interconnecting the mild homes and developing open public spaces that will allow the creation of social bonding and common life and ownership values.

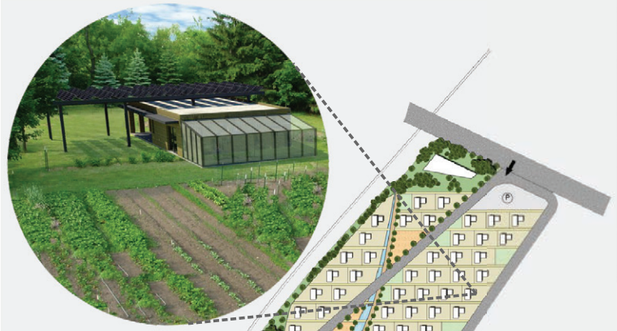
The competition received two competitive proposals from teams of the Department of Architecture of the University of Thessaly. The received proposals proved that the young people of Thessaly can give solutions in complex matters, such as in the development of construction practices, that will bring the purchase of a house in the former affordable economic limits for a young couple and that will develop the conditions to achieve high quality of life standards in Thessaly. The first prize was won by the team of Gallou, Kanellos, Koutrogiannis and Kipritzis. The second prize was won by the team of Gatsiou, Nitsakos, Tzaros and Triantafyllou.

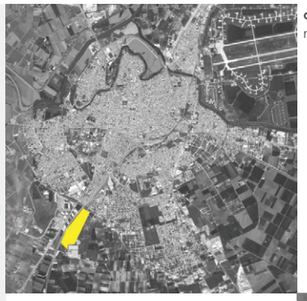
A' Prize

The winners of the A' Prize, given the technical specifications in terms of bioclimatic design of the building (A+ energy class), tried to meet the local requirements for maximizing the space but also the life span of the building while finding solutions that would reduce the construction cost. Thus, they proposed the idea of a gradual development of the village in both construction and operational level over the years, depending on the several needs. The specific team felt that, after the alignment of the blocks and the construction of the roads, a metal skeleton of photovoltaic panels could be fitted in each plot creating essentially an energy park. The purpose of this move, without losing any usable space, could be a way of financing and depreciating the entire investment. So, in each plot, at the beginning, the Municipality of Larissa could construct the foundation, the queues of existing networks and the energy roof. Then, each owner could buy the plot that desires having only to pay a small cost for the completion of the house. In the same sense, the team felt that the living conditions of the owners could change over the years, so there should be some possibility of space extensibility according to specific functional needs. Thus, at the beginning, the house relates to a bachelor or a young couple, then to some family and then to an elderly couple. At the basic unit of the building, which is the core of the house, either two extra children's rooms or a laboratory-office, or a greenhouse, or a guest house could be added. Increasing the functionality and versatility of the house, its ecological character rises as the period of use is growing, too. In essence, the team proposed an ecological village having an active approach, while they achieved sustainability and an interesting architectural effect. The versatility of the building and the space of the energy panel shelter escaped the standard form that usually the corresponding buildings of bioclimatic character have.

B' Prize

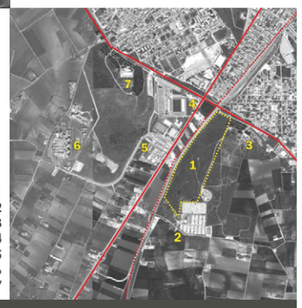
The winners of the B' Prize, had, as a basic principle, the maximum exploitation of the micro-climate and the production of a cell based less on the user's behaviour for the reduction of energy consumption, considering that the citizens of Larissa and Thessaly have not developed this philosophy yet. Very significant parameter for the combination of a synthetic proposal and the bioclimatic design was the study of traditional energy planning tactics, such as the solar chimney and the natural cooling with an underground network of fresh air. Moreover, most significant was actually orientation. Focus was made on direct solar profit that can be exploited, thus operations in the inner parts followed the positioning and the geometry of openings, while appropriate sunshades provide shadow during summer months. Moreover, to manage the problem of hot summers, there has been a prediction made for solar chimney, underground water tank to exploit rain water and underground cooling system. All these will, with a minimum energy consumption, contribute in the natural cooling of the residence. Heating is being secured through a natural gas network, while its consumption decreases from passive heating systems and the energy fireplace. For the production of electrical energy, the team proposed photovoltaic panels on the roof, large part of which is planted to decrease losses in the winter and to increase natural cooling. The materials used (wood, OBS, glass) secure the reduction of energy consumption and a low cost. Finally, waste management takes place through recycling bins in the whole village, having a central management unit in a south-eastern spot, so that water is managed to irrigate public green spaces. In terms of urban environmental design, the car streets, bicycle streets and pavements have been designed to secure connections among areas (in order to ease social life) and to avoid problems derived from winds and orientation. The team developed a village of 260 houses (either two-floor 120 m² houses for families with two or more children or ground-floor 80 m² houses for families with 1 child , with all required services and with a population of 520 to 1.040 people.

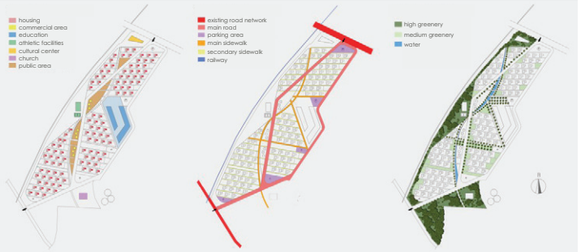




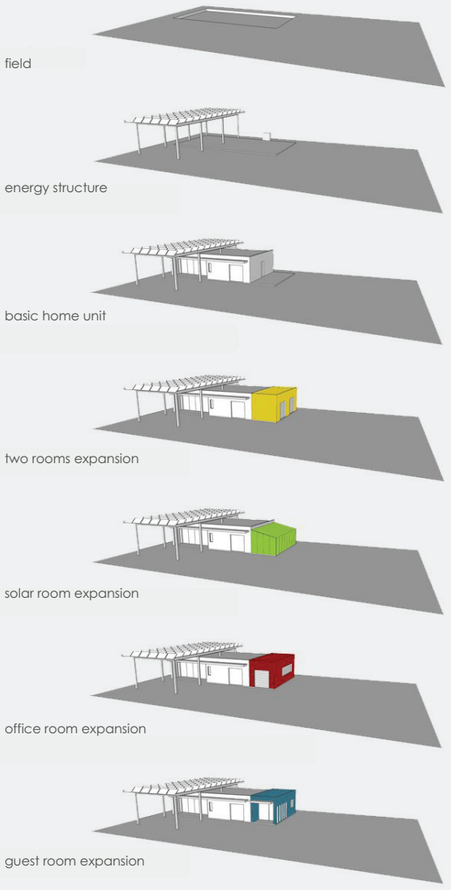
city of Larissa
mezourlo area

area_ **1**
cemetery_ **2**
military installations_ **3**
stadium_ **4**
prison_ **5**
univesity hospital_ **6**
museum_ **7**

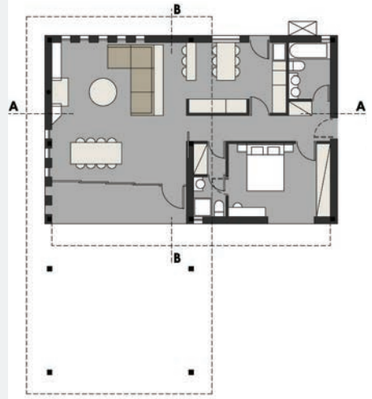




First awarded design for Larissa, Greece
Designed by Anthi Gallou, Nestoras Kanellos, Vaggelis Koutrogiannis and Chrysostomos Kypritzis



basic unit _ ground floor plan 1/100

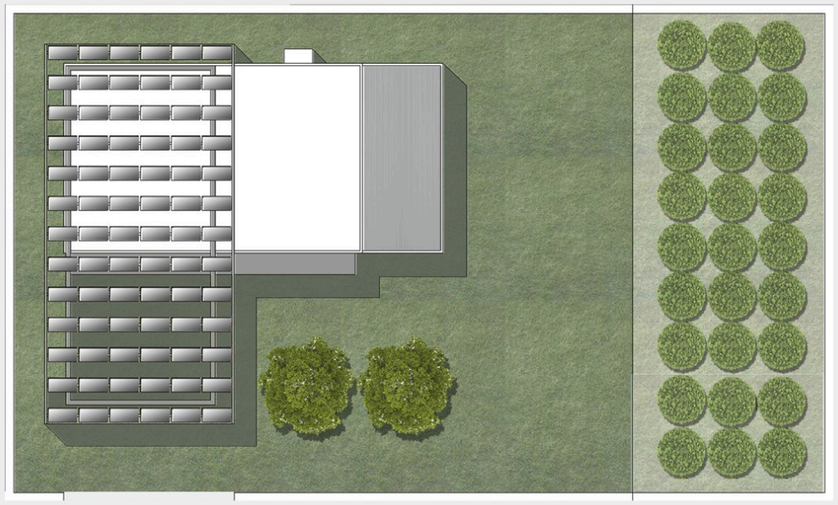


In our proposal, given the technical specifications in terms of bioclimatic design of the building (A+ energy class), we tried to meet the local requirements for maximizing the space but also the life span of the building while finding solutions that would reduce the construction cost. So, we proposed the idea of a gradual development of the village in both construction and operational level over the years, depending on the several needs.

We felt that after the alignment of the blocks and the construction of the roads, a metal skeleton of photovoltaic panels could be fitted in each plot creating essentially an energy park. The purpose of this move, without loosing any usable space, can be a way of financing and depreciating the entire investment. So in each plot at the beginning, the municipality of the city can construct the foundation, the queues of existing networks and the energy roof. Then each owner can buy the plot that desires having only to pay a small cost for the completion of the house.

In the same sense we felt that the living conditions of the owners can change over the years so there should be some possibility of space extensibility according to specific functional needs. So at the beginning, the house relates to a bachelor or a young couple, then to some family and then to an elderly couple. At the basic unit of the building, which is the core of the house, either two extra children's room or a laboratory-office, or a greenhouse, or a guest house can be added. Increasing the functionality and versatility of the house, the ecological character of it rises as the period of use is growing too.

In essence, we propose an ecological village having an active approach, while we achieve sustainability and an interesting architectural effect. The versatility of the building and the space of the energy panel shelter escape the standard form that usually the corresponding buildings of bioclimatic character have.

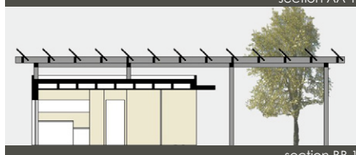


site plan 1/100

section AA 1/100

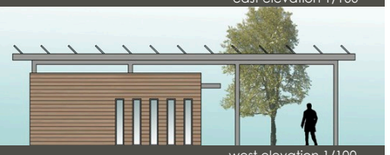
south elevation 1/100

east elevation 1/100



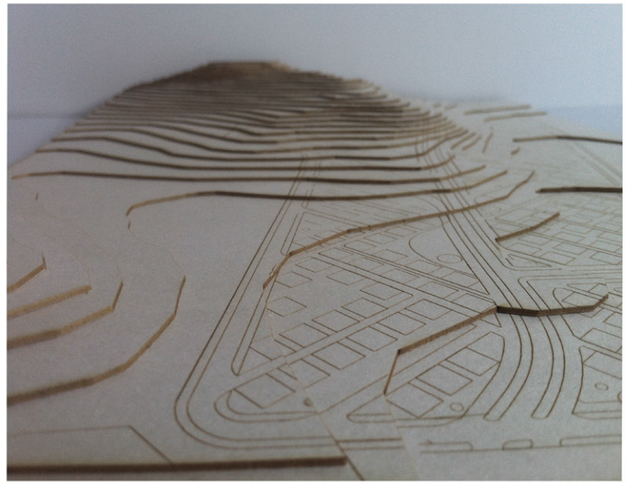
section BB 1/100

north elevation 1/100



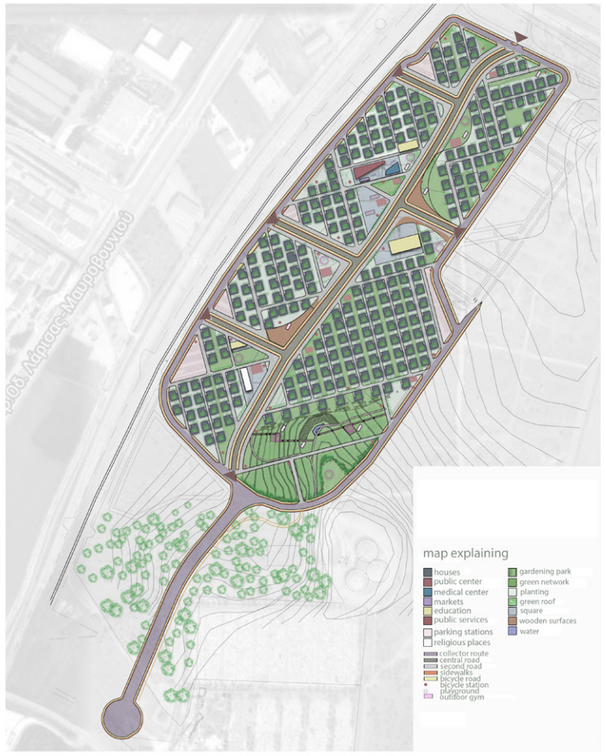
west elevation 1/100

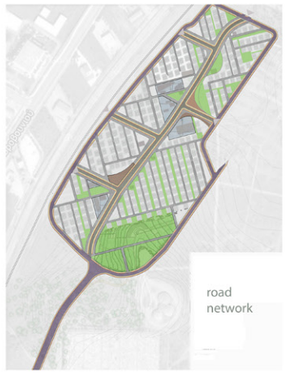
Due to the growing urban environmental pollution arises an increasing need for bioclimatic urban and residential design. The basic principles of this shaped our strategy for this design competition. Purpose of the study was the creation of an eco-village in Mezourlo at Larissa in an area of 300 acres. In terms of urban environmental planning, car roads, bike paths and walkways were designed in such a way that on the one hand ensure connectivity between areas and on the other hand avoid adverse as to the winds and orientation phenomena. So were created blocks with a total of 260 residences. The aim is to design an "integrated" village, so down beyond habitation, there are functions of a public nature, such as administration, education, health, sports, green – open spaces, culture, commerce and religion. After calculating the capacity it showed that the number of residents of the eco village can range from 520 to 1,040 people. We believe that, as in any society, so in the eco village, should be no more than one residential typology to suit the needs of different family forms. Thus, provided two residential typologies. The first (two-storey house with 2 rooms, bathroom, kitchen and living room on the ground floor and master bedroom and bathroom on the first floor) is 120 square meters and is aimed at families with 2 children. The second (bungalow with 2 bedrooms, bathroom, living room and kitchen) is 80 square meters and is aimed at families with one child or elderly couples. Primary role in designing played orientation. We attributed great importance to the direct solar gains that can be exploited and in conjunction with the geometry and size of the windows, we placed the interior spaces on the most appropriate guidelines. That is, rooms such as living room and bedrooms are located in the Southeast and Southwest orientation, while rooms such as kitchen and bathroom on the North. We provide suitable shades for each orientation (blinds, pergola planting) so that there is the possibility of exploiting the direct solar gains in the winter and shade in the summer warm months, improving the behavior of the proposed preparatory model. Furthermore, is planned the creation of solar chimney, underground water tank for holding rainwater and underground cooling system. The heating in the house is ensured through natural gus, while reduces its consumption the fireplace and the passive heating systems (large glass surfaces with Southwest and Southeast orientation). For electricity production is planned the installation of photovoltaic panels on the roof, while for cooling and the reducing of the consumption, we create a green planted roof and the design of the outer green open space in such way to exploit the winds in the owners' favor. Finally, on the management of waste and household sewage, are provided bins for recycling throughout the whole study area and central management of domestic sewage in a hub, in the Southeast region of the village in order to process and be available for watering the public gardens and vegetable gardens.

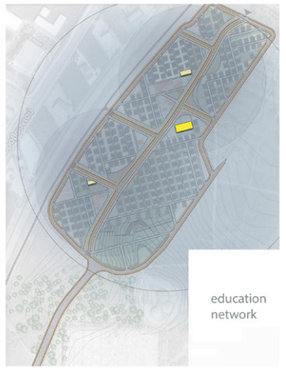


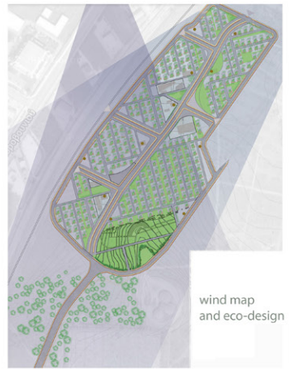
models of the village

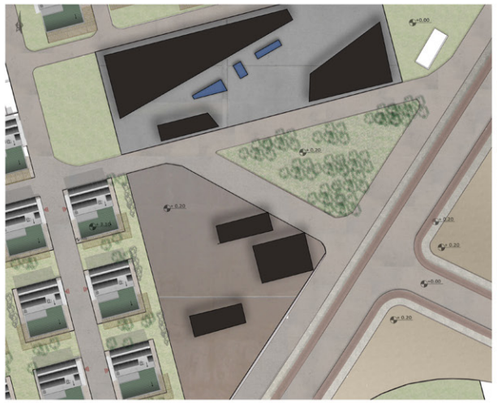
1 Second awarded design for Larissa, Greece
Designed by Gatsiou Vasiliki, Nitsakos Georgios and Triantafyllou Charikleia

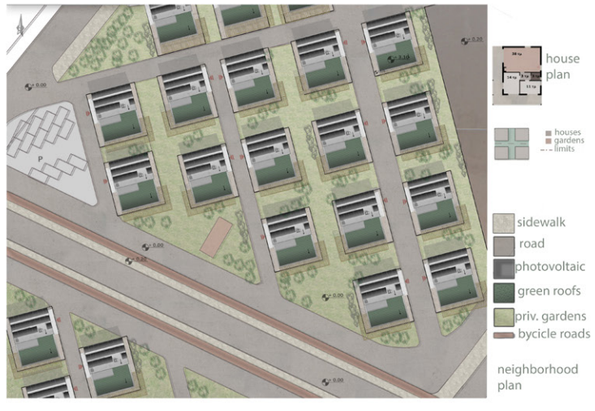




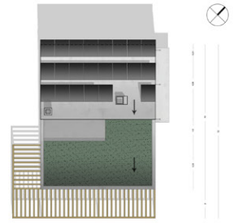




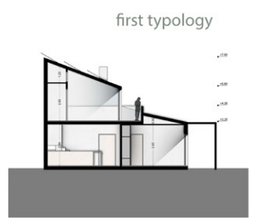


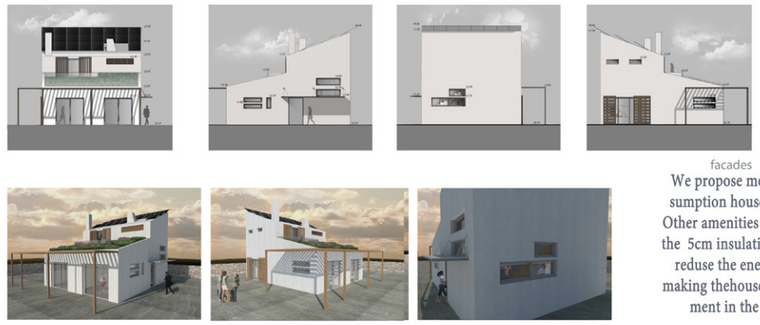


the houses



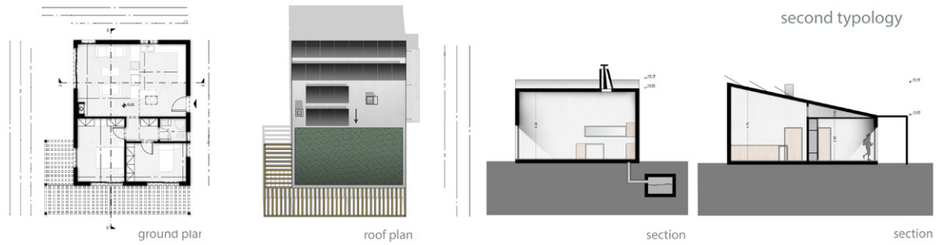
first typology

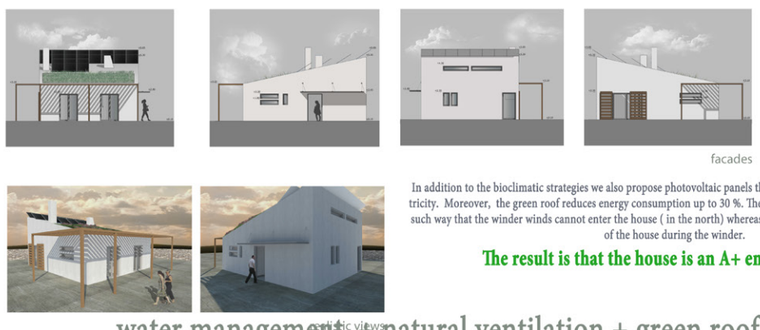




We propose modern , low energy consumption houses with spacious rooms. Other amenities such as the fireplace and the 5cm insulation betwen the OBS walls reduse the energy needed even more, making thehouse a very attractive investment in the economic crisis era.

second typology





In addition to the bioclimatic strategies we also propose photovoltaic panels that exploit sun's light and produce electricity. Moreover, the green roof reduces energy consumption up to 30 %. The windows of the house are designed in a such way that the winder winds cannot enter the house (in the north) whereas the doors in the south help the heating of the house during the winder.

The result is that the house is an A+ energy class one.

principles of the study

water management + natural ventilation + green roof + photovoltaic panels

6.5
The competition of ideas in Tatabánya, Hungary

Written by
Tamás Horváth

The Hungarian competition was organized by the Széchenyi István University. For the competition an external partner, the city of Tatabánya gave the place and the half of the financial background. Tatabánya is an industrial city with 68.000 inhabitants, which has firm intention to go along the path of sustainable development. Three sites were examined here and the area called Alsógalla-Falurét was selected for this purpose with its 25.000 m² size. Considering the available funds and striving for the best accessible quality the Hungarian competition was a restricted competition in which the students of Hungarian postgraduate architect schools were invited.

The submission of the competition entries happened on 13th of January 2014. 28 works arrived in time. The evaluation process started with an expert jury in which five experts examined the works. Building structures, load-bearing structures, energetic solutions, building service systems and the budget plan of building and operating costs were rated by the experts. Specialists were not in a good situation, because in several cases the conformity of the solutions could not be judged, because of the missing information. After that the entries and the professional opinions were passed to the architect jury which was composed by the staff of MILD HOME project, the representatives of Tatabánya city and each postgraduate school. The Assessment Committee selected works for the first, the second and the third prizes, and gave honorable mentions to further five works.

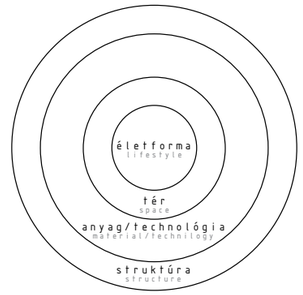
Third prize, created by Antal Gabriella, Bartha András, Gyulovics István, Nagy Balázs and Klobusovszky Péter: In this design the site is divided into two parts by the relocated brook which ran before along the north border of the area. The south part of the site is reserved for single family houses evoking the land use of the traditional Hungarian village. The wooden structures of houses can be built by the residents with do-it-yourself technology. On the north part of the site four multi-story buildings stand. The blocks of flats are formed according to the principles of passive sun energy collection. These buildings have heavy concrete walls with a glass surface to use the greenhouse effect. Although the block houses represent a high quality architecture they got a lot of critic in the final report. The public and semi-public spaces are well designed and assigned. The facility of the existing district heating was accepted. It was used in the blocks of flats and the waste heat of the pipeline was also used, because a greenhouse was located over it.

Second prize, created by Sztranyák Gergely and Schunk Tímea: According to the final report this design is the closest to a feasible MILD HOME prototype. Designers created a very wise structural composition which resulted good covered open spaces. These spaces can have community building forces, as well. The two-story houses are made of wood-straw-clay structures under a big and cheap steel roof. Four homes are under one agricultural hall. The mating of these strange structures is a good symbiosis, the roof solve the problems caused by the rainwater, what can endanger the straw-clay structure. The roof makes shadows and between the roof and the top of the building air can move. In this way the indoor climate can be comfortable not only in winter but in summer as well. The natural materials grant a low level of built-in energy.

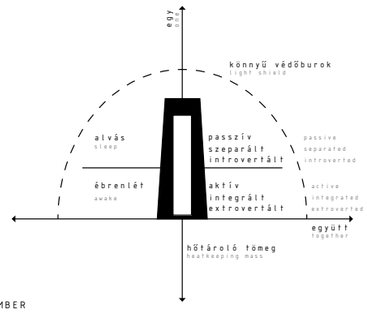
First prize, created by Kovács Zsófia, Alkér Katalin, Pelle Zita, Balázs Marcell and Kozma Zoltán: In this work not the technical solutions but the rethinking of our way of life and our social relations were appreciated by the Assessment Committee. The site is imagined as a poplar forest where as time goes by buildings appear. The buildings are designed for a big multi-generational family or for a community of ten people. The central core of the house is a massive and thick wall. On the north side of the wall the communicating spaces are, on the south side the living areas are, on the ground floor the spaces of daylight activities, upstairs the bedrooms are located. These spaces are incorporating in a bigger volume, where covered, open spaces come up. This work has symbolic meanings expressing that the environment and the community can live together in harmony as the traditional and organic cultures did it in the past.

The Assessment Committee declared that the competition was successful, but there was no entries which could give a complex solution for all the problems described in the competition call.

A MILD HOME építészeti ötletpályázat alapkérdésének a közeljövő *életmód*jának definiálását tekintettük. Az otthoni munkavégzés széles körű elterjedése miatt a lakás átértelmezése építészeti megoldására váró feladat. Egyrészről a lakótér új funkcióval, a munkahellyel bővül, másrészt szükségessé válik, hogy a teljes napjukat otthon töltő, izolált emberek közösséget alkossanak, e gyűjt éljenek. Ezen új életformának a generációs családi ház elvén alapuló épülettípus felel meg. A differenciált *térhasználat* igénye határozza meg a ház felépítését és energiagazdálkodását. Nagy hőtároló képességű *anyagok*, gyorsan felfűthető, könnyű szerkezetek, valamint természetes árnyékoló és szellőztető rendszerek biztosítják a ház gazdaságos működését. Az épületek telepítési *struktúrá*ja embernek és otthonának a világhoz való viszonyát tükrözi: ég és föld között álló, önálló egyén, mely homogén rendszer elemeként is társul egymással.

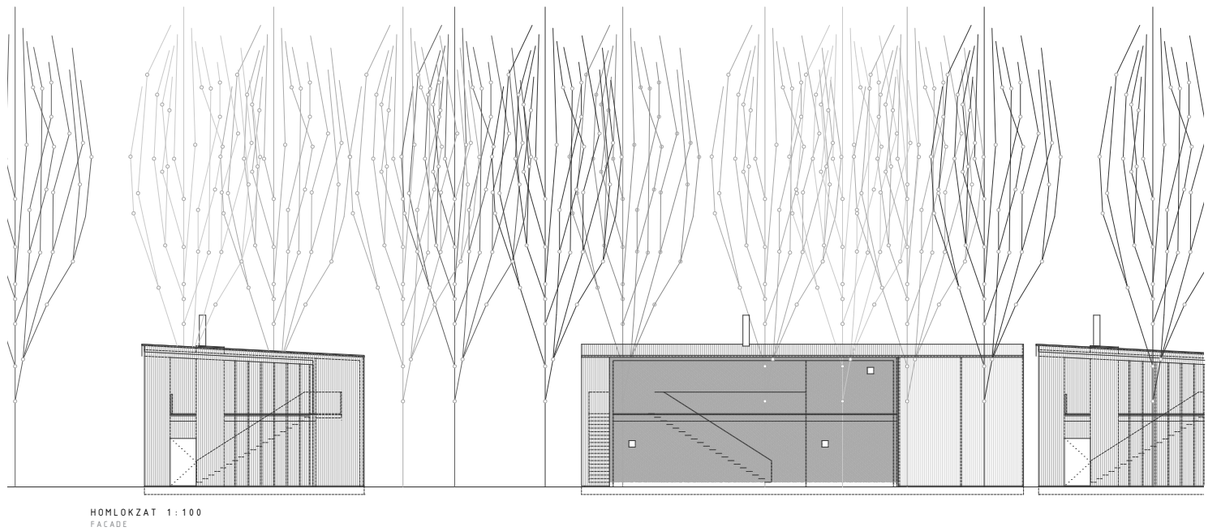


We considered the definition of the way of life in the near future as the main question of the MILD HOME Architectural Competition of Ideas. As off-site work becomes more and more common the reconsideration of the home calls for an architectural solution. Firstly the living area gains a new function of a working area, secondly it becomes inevitable for isolated people spending their whole day at home to make a community and live together. The building type corresponding to this lately arisen need derives from the single-family home. The demand for different space use determines the structure and energy management of the house. Materials with high thermal capacity, lightweight structures heating up fastly, natural shading and ventilation systems guarantee the economical maintenance of the house. The disposition of the buildings reflects the relationship between man, home and the world: standing between heaven and earth, an autonomous person entering into a partnership even as an element of a homogenous system.



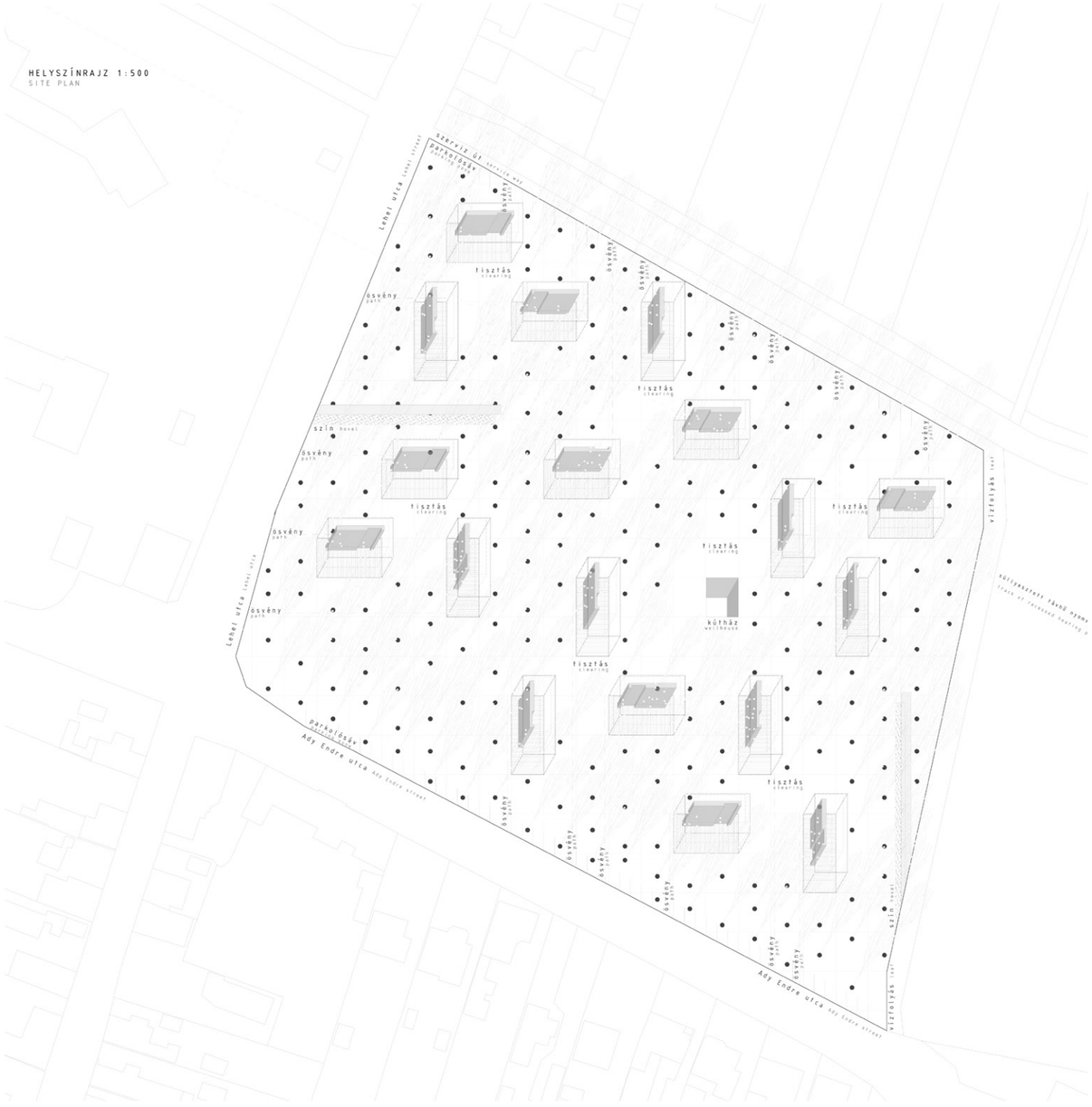
AZ EMBER

Tervünk középpontjában az ember és emberségének legalapvetőbb vonása: a csoportkötődés igénye áll. Nem tartjuk ugyanis fenntarthatónak a modern társadalmat, mely egymástól elidegenedő autonóm egyének, egymással versengő egyszemélyes csoportok megapopulációjává vált. A jövő kiszámíthatatlanságának oka a kulturális stabilitás megbomlása. A közös értékek belső szabályozórendszere híján a végletekig fejlődő technológiai lehetőségek okozzák Földünk bioszférájának kritikus mértékű pusztulását.



1 First awarded design for Tatabánya, Hungary
Designed by Zsófia Kovács, Katalin Alkér, Zita Pelle, Marcell Balázs and Zoltán Kozma

HELYSZÍNRAJZ 1:500
SITE PLAN



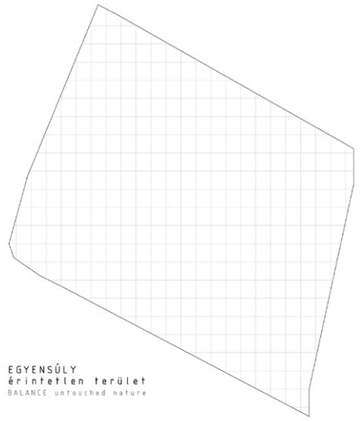
A nyárfa (Populus) a fűzfafélék családjának egyik nemzetsége mintegy 30 fajjal. 15–50 méteresre is megnő, törzsének átmérője elérheti a 2,5 métert. A fiatal fák kérge sima, színe a fehértől zöldesig vagy sötétszürkéig bármilyen lehet. Néhány faj kérge öregkorára mélyen barázdálódik. A levelek mérete még az egyes fákon is nagyon eltérő lehet: a kis levelek főként az oldalágakon, a nagyobbak az erősebb ágakon nőnek. Sok faj levelei ősszel sárgára vagy világos arany árnyalatúvá színeződnek. Lombhullató. A levelek rombusz alakúak, a szélük karéjos vagy fogas, a nyelük hosszú. Virágai a sallangos murvalevelek hónaljában ülnek, laza barkavirágzatban. A szél porozza be őket. A nyárfa gyorsan növő fafajta. A szikesedő homoktalajok és a folyóparti füzesek jellemző fája. Használati eszközöket, dobozokat, gyufát, papírt készítenek belőle. Egyes nyárfafajokat homokos-szikes területeken erdőtelepítés előtt használnak talaj-előkészítőnek. Kutatások folynak az építőipari felhasználást illetően is, a faanyag jól alkalmazható paneles szerkezet külső rétegeként.

Én sem volnék, ha nem volnál,
ha te hozzám nem hajolnál,
te sem volnál, ha nem volnék,
ha én hozzád nem hajolnék.

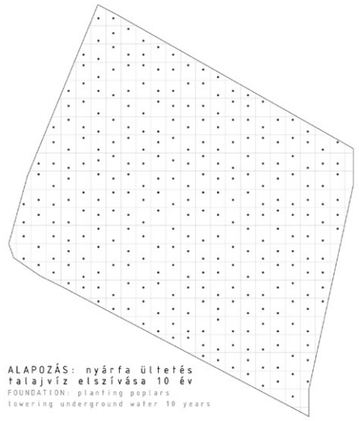
Szellőm vagy, ki megsimogatsz,
viharom, ki szerteszaggatsz,
szellőd vagyok, ki simogat,
viharod, ki szétszaggatlak.

Ha nem volnék, te sem volnál,
én sem volnék, ha nem volnál.

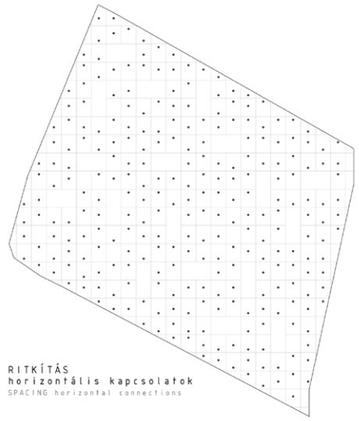
Kányádi Sándor: Két nyárfa



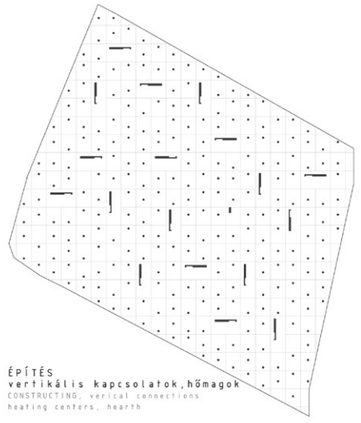
EGYENSÚLY
érintetlen terület
BALANCE untouched nature



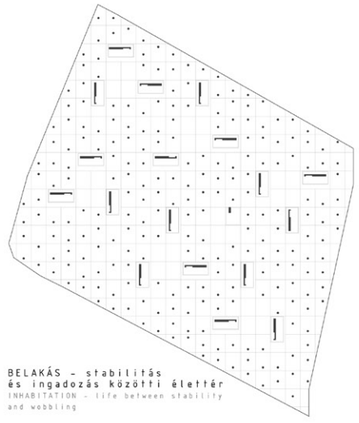
ALAPOZÁS: nyárfa ültetés
talajvíz elszívása 10 év
FOUNDATION: planting poplars
lowering underground water 10 years



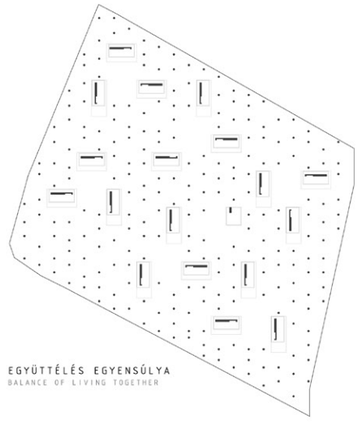
RITKÍTÁS
horizontális kapcsolatok
SPACING horizontal connections



ÉPÍTÉS
vertikális kapcsolatok,hőmagok
CONSTRUCTING, verical connections
heating centers, hearth



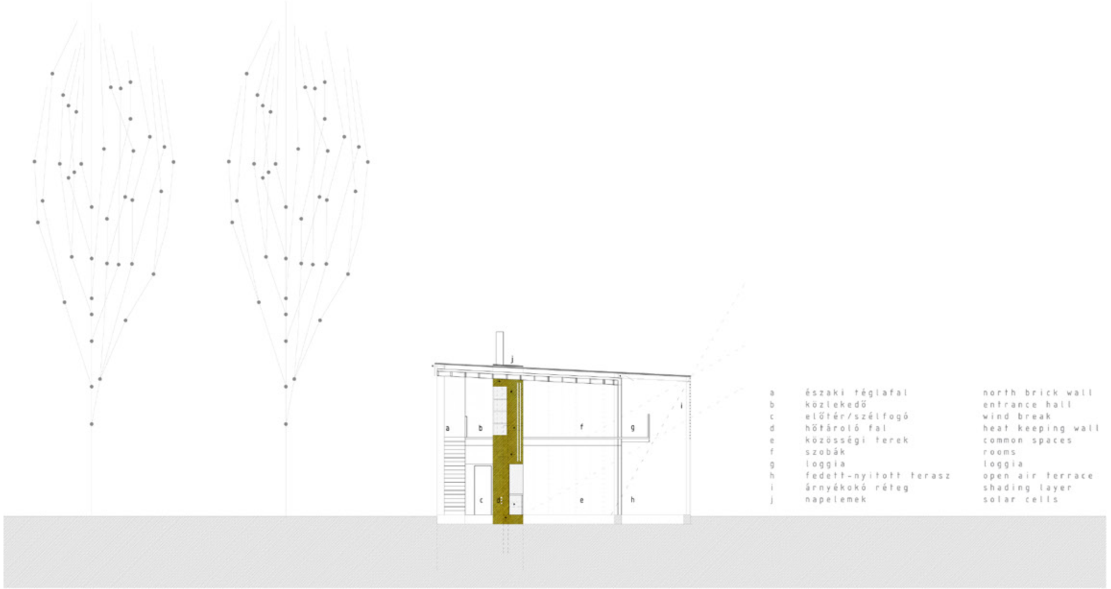
BELAKÁS - stabilitás
és ingadozás közötti élettér
INHABITATION - life between stability
and wobbling



EGYÜTTÉLÉS EGYENSÚLYA
BALANCE OF LIVING TOGETHER

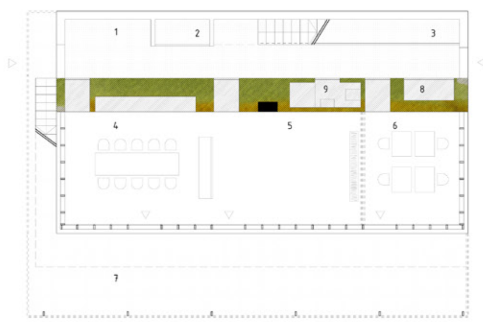
NYÁRFÁK KÖZÖTT

A tervezési területen magas a talajvízszint, ezért első lépésként nyárfák telepítését javasoljuk. A házak építése azután kezdődhet, hogy a fák által előidézett talajvízszint süllyesztés bekövetkezett. A nyárfaerdő magas hozzáadott értékkel növeli a telep környezeti minőségét, fontos klimatizáló szerepe van, egyben lehetőkönnyű utalás ember és természet kölcsönös egymásrautaltságára. A raszterben ültetett nyárfák között 3-4 épület által közrezártan tisztások alakulnak ki. Egy-egy épületcsoportban élő 30 ember osztozik a kertgondozási, gyermekmegőrzési feladatokon, közös műhelyet, kerékpártárolót használnak. Az épületeket személygépkocsival csak szállítási céllal lehet megközelíteni. A parkolást a telek határán oldottuk meg. A terület súlypontjában álló épület ugyancsak a raszterhálóba illeszkedő elem, azonban közösségi funkciókat lát el. A do-it-yourself elvet nem az építés, hanem a fenntartás terén tartjuk megvalósíthatónak. Csökkenthető a lakbér azáltal, ha a lakók maguk végzik el az alapellátáshoz tartozó feladatokat. Hosszú távon a telken át vezető távhő vezeték lesüllyesztésével számolunk hőveszteség csökkentési megfontolásokból, ezért a teljes telekterületet kihasználttuk a lakóegységek elhelyezésére.



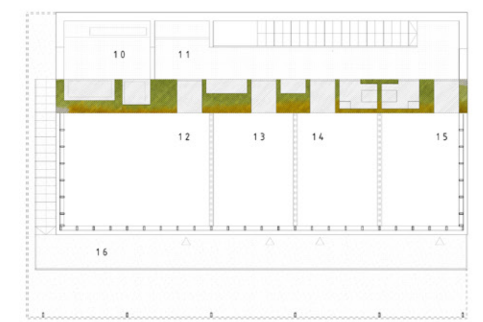
KERESZTMETSZET 1:100
CROSS SECTION

a	északi téglafal	north brick wall
b	közlekedő	entrance hall
c	előtér/szélfogó	wind break
d	hőtároló fal	heat keeping wall
e	közösségi terek	common spaces
f	szobák	rooms
g	loggia	loggia
h	fedett-nyitott terasz	open air terrace
i	árnyékokó réteg	shading layer
j	napelemek	solar cells



FÖLDSZINTI ALAPRAJZ 1:100
GROUND FLOOR PLAN

1	előtér/szélfogó	entrance
2	kamra	store-room
3	tárolók	storage
4	konyha/étkező	kitchen
5	nappali tér	living space
6	dolgozó/szoba	study/room
7	fedett-nyitott terasz	terrace
8	hőközpont	heating center
9	mosdó	bathroom



EMELETI ALAPRAJZ 1:100
FIRST FLOOR PLAN

10	fürdő	bathroom
11	gardrób	gardrobe
12	szoba	room
13	szoba	room
14	szoba	room
15	szoba	room
16	loggia	loggia

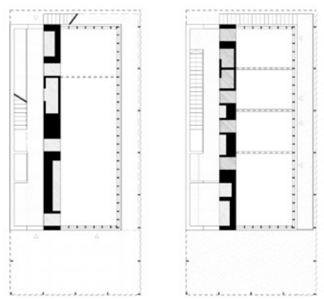
A MI HÁZUNK

Mintatervünkben ezért olyan házakra adunk javaslatot, mely több hagyományos értelemben vett lakást integrál azáltal, hogy 10 ember él együtt benne. Ők lehetnek egy család tagjai, távolabbi rokonok, vagy összefűzheti őket baráti kapcsolat, azonos élethelyzet. Javasoljuk több generáció: idősek, gyerekek, egyedülállók és családok együtt élését, de belakható a ház egymástól független bérlők által is. A kellő intimitás biztosítása számukra nagyobb térszervezési kihívást jelent, azonban magasabb életminőség érthető el gazdaságosabban a közös használatú terek és a bennük folytatható tevékenységek, különösen az otthoni munkavégzés előnyei révén. Az egyes lakrészek külön megközelíthetősége kívülről is biztosított, a földszinti bejárati elosztó-pufferzónából az emeletre vezető belső lépcsőn túl. Építészeti hangsúlyt kap a tűzhely: a főzés és az étkezés centruma, a ház hőmagja, valamint ennek ellenpontja, a víz és a tisztálkodás tere. Ezeket a lakók közösen használják, még ha kisebb felszereltségű teakonyhával, fürdővel rendelkezik is saját lakrészük. A ház terei ezen vertikális tengely köré szervezettek. A földszinti terek nyitottak, integráló jellegűek, az emeleti, szeparált cellák befelé fordulók. Kétszint magas árnyékoló terasz teremt köztük kapcsolatot, ahonnan az emeletre vezető külső lépcső is indul. A hőmag két oldalán található terek eltérő minőségűek.

KÁLYHÁK ÉS FŰTŐFALAK

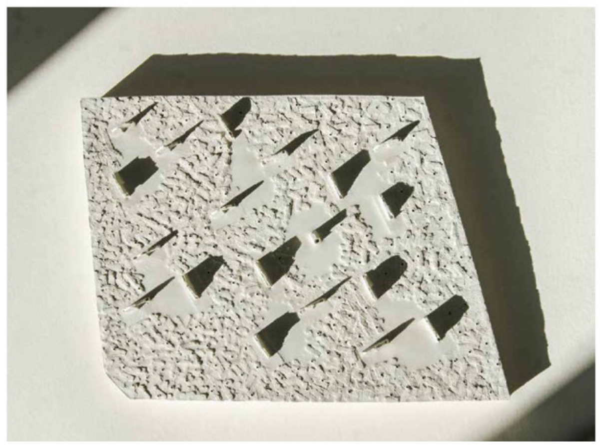
Az épületek hőháztartását szerkezetfűtéssel kívánjuk megoldani. A központi elhelyezkedésű hűtő-fűtőfal magába foglalja a konyhai tűzhelyet, a kályhát és a fürdőket. Az épületszerkezet temperálás elvén működő nagy tömegű égetett kerámia szerkezetben télen meleg, nyáron hideg víz és levegő kering és szabályozza ezáltal a lakóterek hőmérsékletét. Elsődlegesen a földszint étkező-dolgozó-pihenő terét, melyet a lakók közösen használnak. A fal túloldalán található tér csupán temperálást igényel, míg az emeleti cellák az ott tartózkodás idején fűtöttek. Az épület a nyárfa paneles hőszigetelő burkon túl egy további, árnyékoló héjat kapott. Ez a déli oldalon terasszá szélesedik, az északin homlokzatburkolatként jelenik meg és magába rejti a külső lépcsőt is.

Az épületek energiaellátása leggazdaságosabban és a környezetre legkevésbé káros módon távhővel biztosítható. Amennyiben az adott településen ez nem áll rendelkezésre, földhő használatát javasoljuk a 18 épületet részére közösen létesített hőközpont által. A terület beépítése során először az energiaforrásra csatlakozó kályhák és a fűtőfalak épülnek meg. Egy-egy magelem köré különböző méretű és tájolású házat lehet építeni. Elképzelésünk szerint a házzal még körül nem vett, csupaszon álló kályhák közös nyári konyhaként használhatók.



VARIÁCIÓ 1:200
VARIATION

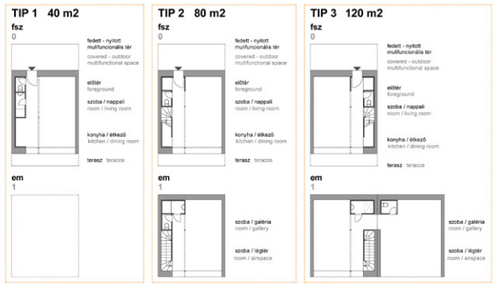
A központi mag körül épülő héjszerkezetek különböző formákban készülhetnek el. Az épületek szerkezeti rendje, struktúrája azonos, viszont tömegük és homlokzatuk sokféle lehet. A fedett-nyitott terasz mindig déli tájolású, a hőtároló fal változtathatja helyzetét.



1 Second awarded design for Tatabánya, Hungary
Designed by Gergely Sztranyák and Tímea Schunk

variálhatóság
variability

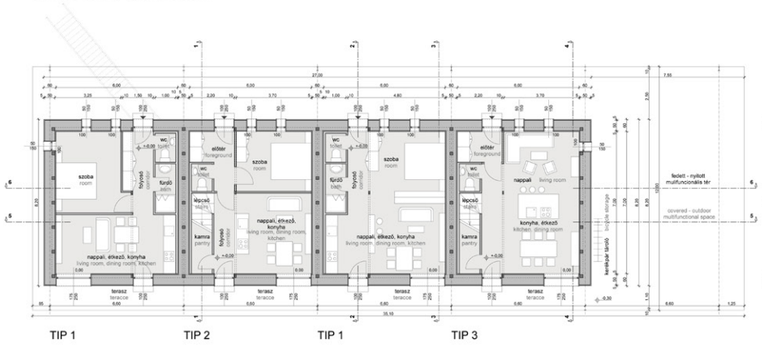
m1:200



közösségi kert látványa, háttérben a közösségi épülettel
view of the community garden in front of the community building

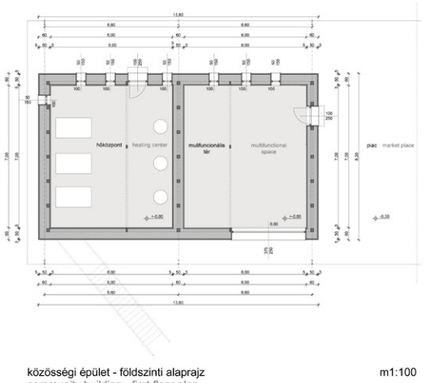
prototípus épület - földszinti alaprajz
prototype building - ground floor plan

m1:100



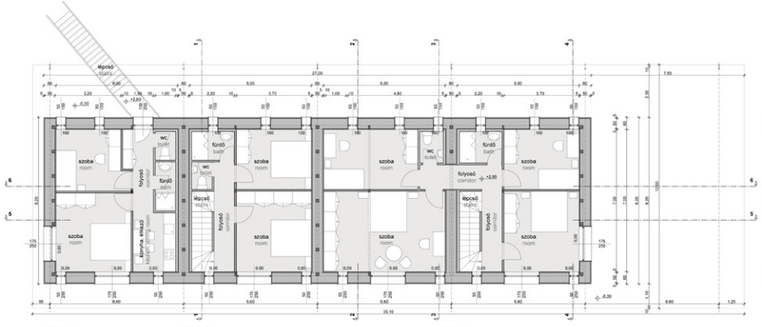
közösségi épület - földszinti alaprajz
community building - ground floor plan

m1:100



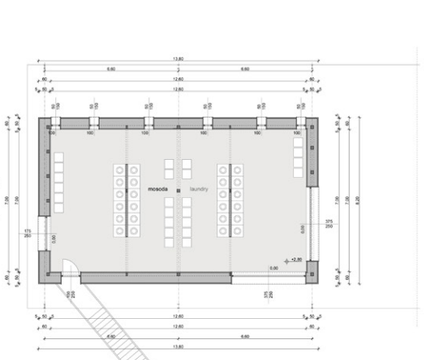
prototípus épület - emeleti alaprajz
prototype building - firt floor plan

m1:100



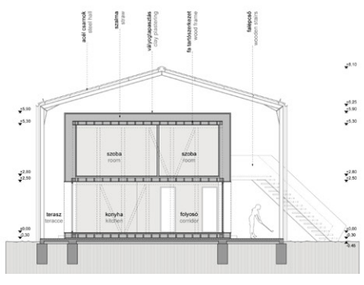
közösségi épület - földszinti alaprajz
community building - first floor plan

m1:100



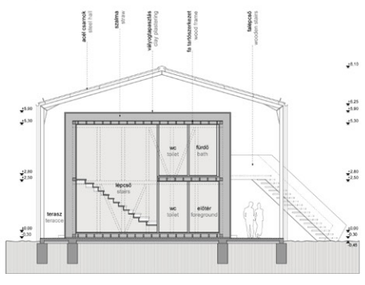
prototípus épület 1 - 1 metszet
prototype building 1 - 1 section

m1:100



prototípus épület 2 - 2 metszet
prototype building 2 - 2 section

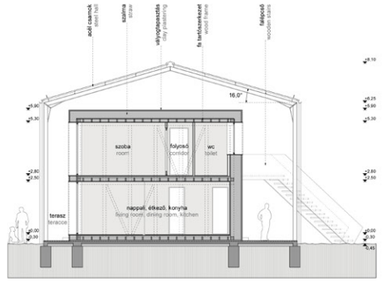
m1:100



átlátás
cross view

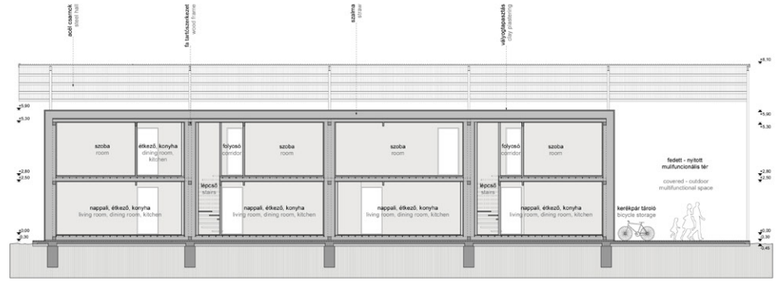
prototípus épület 3 - 3 metszet
prototype building 3 - 3 section

m1:100



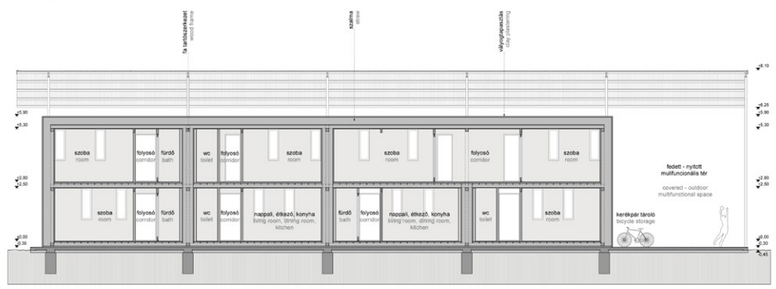
prototípus épület 5 - 5 metszet
prototype building 5 - 5 section

m1:100



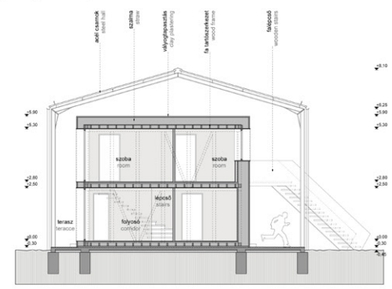
prototípus épület 6 - 6 metszet
prototype building 6 - 6 section

m1:100



prototípus épület 4 - 4 metszet
prototype building 4 - 4 section

m1:100

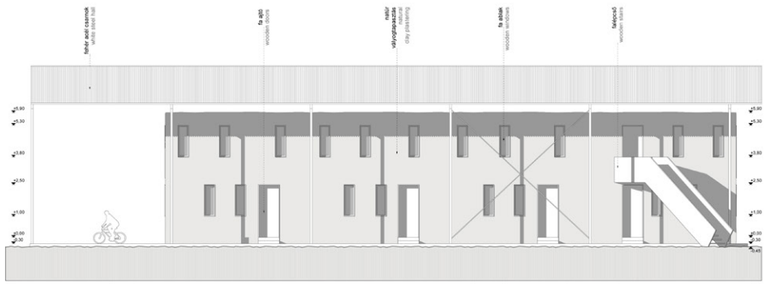


északi homlokzat
north facade

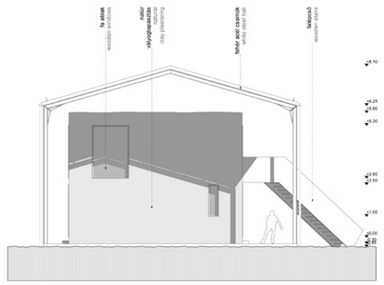
inspirációk
inspirations

látvány az Ady Endre utca felől
view from Ady Endre Street

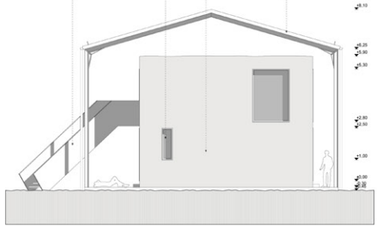
prototípus épület északi homlokzat m1:100
prototype building north facade



prototípus épület keleti homlokzat m1:100
prototype building east facade



prototípus épület nyugati homlokzat m1:100
prototype building west facade



prototípus épület déli homlokzat m1:100
prototype building south facade

sétány a házak között
walway between the buildings

Koncepció / Concept

Életmodell
Life model

Az új Eco Green Village kialakításánál a feladat által kért lakásszámot a Központi Statisztikai Hivatal felmérési adatait alapján osztottuk típusokra. A telep minden életkorra és családi állapotra kínál megoldást, az 1. lakástípus 40-60m2-es, és az 1, 2 vagy 3 személyes háztartásoknak biztosít lakóhelyet. A 2. lakástípust a 3 és 4 fős családok lakják, míg a 3., egyedülálló/családi ház típus pedig a 4 vagy annál több fős családok otthona jellemzően.

Háztartásadatok, Magyarország, 2005 (Központi Statisztikai Hivatal)
Household data, Hungary, 2005 (Hungarian Central Statistic Office)

1 személyes háztartás / 1 person household 12%
2 személyes háztartás / 2 person household 24%
3 személyes háztartás / 3 person household 23%
4 személyes háztartás / 4 person household 24%
5+ személyes háztartás / 5+ person household 17%

→ 1. típusú lakás - 40-60m²
→ 2. típusú lakás - 60-90m²
→ 3. típusú lakás - 100m²

47,5% 1. típusú lakás - 40-60m² → társasházakban helyeztük el
23,5% 2. típusú lakás - 60-90m²
29% 3. típusú lakás - 100m² → önálló lakóházakban helyeztük el

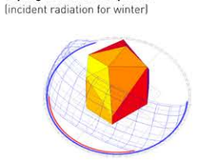
47,5% 1. típusú lakás - 40-60m² 48 db
23,5% 2. típusú lakás - 60-90m² 24 db
29% 3. típusú lakás - 100m² 29 db

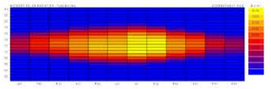
A statisztika szerint ilyen elosztásban lakunk ma Magyarországon -» ezt az eloszlást tartottuk a tömbön is.

Formatan- passzív szolár társasház
Typology - Passive solar dwellings

A jövőbemutató Eco Green Village és az abban található MILD-HOME-ok tervezésekor a különlegesebb aktív gépészeti szerkezetek felhasználása helyett a passzív rendszerek alkalmazására helyeztük a hangsúlyt. A gazdaságosan üzemeltethető, jó energetikai mutatókkal rendelkező házak tervezésekor azt a formát kerestük, amelyik különlegesebb gépészeti rendszer nélkül is gazdaságosan üzemeltethető, jó energetikai mutatókkal rendelkezik azáltal, hogy a szoláris sugárzásból érkező energiát direkt módon hasznosítja. A formák elemzése során az ikozaéder-metszet igen előnyösnek mutatkozott. Mivel ez a forma bonyolult, nem építhető könnyen kézi erővel, de remekül viselkedik az energetikai számításnál, így az a hasznos, ha nagy ház épül belőle. A társasházak formája az ikozaéder-metszetből vannak származtatva.

beeső napsugárzás téli hónapokban
(incident radiation for winter)



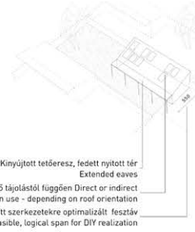


Január 1208491 [Wh/hö]
Február 1801237 [Wh/hö]
November 1318925 [Wh/hö]
December 983345 [Wh/hö]

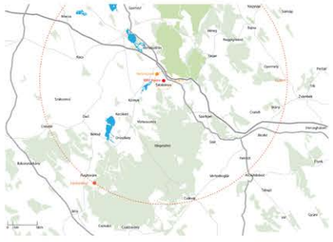
Saját erővel felépíthető családi ház
DIY single family house

Az ökológiailag tudatos építés matematikus vállfaja mellett fontosnak tartjuk az emberi erő felhasználásával, low-tech épületek és szerkezetek használatát, amely szintén nem a túlságosan gépiesített irányt képviseli. Az önálló családi házak egyszerű szerkezetekkel, kicsi fesztávukkal ezt teszik lehetővé.

A változatos tetőformák lehetőséget kínálnak differenciált szoláris rendszer kiépítésére a telepen belül. A dél felé tájolt félnyeregtetők alkalmasak a direkt szoláris nyereség hasznosítására, az ezzel ellentétes hajlásszögű tömegek pedig az indirekt, (szórt fényt hasznosító) szoláris rendszerek és a nagy függőleges falfelületeket által alkalmasak a napenergia felhasználására.



50 km-en belül található építőanyagok
Building materials in 50 km radius circle



A közösség terei
Passive solar dwellings

Az ökológiai fenntarthatóságnak ugyanolyan fontos eleme az ittlakók közösségi életének folyamatos életben tartása. Ahhoz hogy szeressék, és hogy emiatt jól bánjanak a környezetükkel, szükséges, hogy kötődés alakuljon ki, amelyre remek alkalom a közösségi kertek művelése vagy a közösségi műhely használata. A közös használatú terek a megosztott használat révén szintén az ökológiai lábnyomot csökkentik.

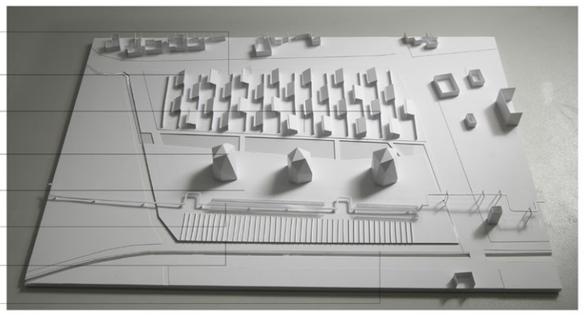
1 Third awarded design for Tatabánya, Hungary
Designed by Gabriella Antal, András Bartha, István Gyulovics, Balázs Nagy and Péter Klobusovszky

Helyszínrajz 1:500
site plan

A beépítés alapvetéseit a két - felfogásában és eszközhasználatában is eltérő beépítés találkozása határozza meg.

A szövetszerű, szőnyegszerű egyszintes "do it yourself" módon felépíthető low-cost beépítés intenzív jellegű telepítés, ami mégis megfelelő teret, kerte az itt élőknek.

A társasházi beépítés elegáns közpakban, közterekkel övezve, játszóterek és újonnan létrehozott tópart között kerül elhelyezésre. A két szövethez a meglévő és megmaradó távhővezeték csatlakozik.A vezeték felett közösségi kert és üvegház alkotta gazdálkodási lehetőséget kínál a patak parti felület.

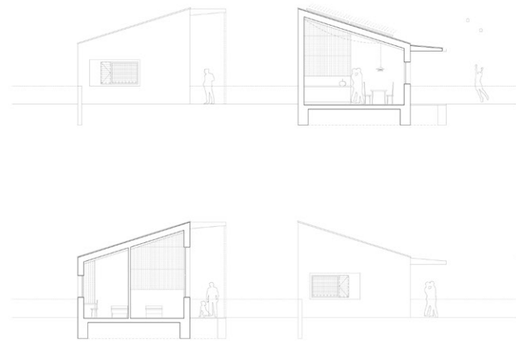


Családi ház
Single family house

Individuális lakóegységként szövetszerűen telepitettünk családi házas zónát a tó partjára. A lakóegységek alap kiépítésben 37,1 m² alapterületűek, amelyek maximálisan 65,6 m² méretűre bővíthetőek. A házak részlegesen előregyártott faházas elemekből készülnek, melyeket kalákában felépíthetnek a majdani használók. Az építéshez használt szerkezeti és külső-belső burkolatok nyersanyaga szigorúan a 20 kilométerre található fűrésztelepről származik, ezzel is csökkentve az épületek széndioxid lábnyomát. A fa megújuló építőanyag forrás, mely nem csak környezetbarát, de a lakó környezet barátságos és egészséges része is. A külső és belső fa burkolatok kiváló párapufferként működnek a házon.

A ház nem csak építési rendszerében, anyaghasználatában igyekszik egyszerű és gazdaságos lenni, hanem épület gépészeti megoldásaiban is. A tetőfelületen kiegészítve a hálózati áram ellátást polykristályos napelemek egészítik ki. A használati meleg víz és fűtés biztosítását gazdaságos kis gázkondenzációs kazán és napkollektor biztosítja.

Homlokzat, metszet 1:100
Facade, section 1:100



Alaprajzok 1:100
Floorplans 1:100

FÖLDSZINT / GROUND FLOOR

A	lakás / flat	37,1	m²
B	lakás / flat	65,6	m²

Társasház
Dwelling

A jövőbemutató Eco Green Village és az abban található MILD-HOME-ok tervezésekor a különlegesebb aktív gépészeti szerkezetek felhasználása helyett a passzív rendszerek alkalmazására helyeztük a hangsúlyt. A gazdaságosan üzemeltethető, jó energetikai mutatókkal rendelkező házak tervezésekor azt a formát kerestük, amelyik különlegesebb gépészeti rendszer nélkül is gazdaságosan üzemeltethető, jó energetikai mutatókkal rendelkezik azáltal, hogy a szoláris sugárzásból érkező energiát direkt módon hasznosítja. A formák elemzése során az ikozaéder-metszet igen előnyösnek mutatkozott. Mivel ez a forma bonyolult, nem építhető könnyen kézi erővel, de remekül viselkedik az energetikai számításnál, így az a hasznos, ha nagy ház épül belőle. A társasházak formája az ikozaéder-metszetből vannak származtatva.

A nagy hőelnyelő és hőtároló kapacitással rendelkező tartószerkezet színezett vasbetonból készült, amelyet kívülről üveg héj vesz körül a hatékonyabb hőelnyelés érdekében. A tömegfal és a héj között belső hőtükrös rolókkal és gravitációs szellőztetéssel szabályozható az ideális nyári-téli használata a háznak. Ezek a rendszerek gazdaságosan automatizálhatóak a hatékony működéshez, ugyanakkor nem igényelnek sok elektromos energiát a működtetésükhöz. A fűtés alapvetően a jelenleg korszerűsítés alatt álló tatabányai távhő vezeték meleg vizét használja. Az innen érkező energia teljes mértékben megújuló lesz a biomassza tüzelésre átállás után. A korszerű távhő fűtés használata a legolcsóbb alternatíva a társasházi lépték ben. A társasházak egy kis hőközponttal alakítják megfelelő hőmérsékletűre a vizet a lakások födémfűtéséhez. A ház "lassú" alkalmazkodó képessége miatt - tömegfal, felületfűtés - egy egészséges és takarékos rendszerben működik a környezetével.

Alaprajzok 1:500
Floorplans 1:500

FÖLDSZINT / GROUNDFLOOR

1	lépcsőház / access	28,2	m²
2	biciklitároló / bycicle storage	13,0	m²
3	távhőgazdá - gépészet / building services	27,4	m²
4	mosoda / laundry	30,3	m²
5	közösségi műhely / community workshop	105,2	m²
6	lépcsőház / access	28,2	m²

1. EMELET / 1ST FLOOR

A	lakás / flat	~47	m²
B	lakás / flat	~38	m²
C	lakás / flat	~44	m²
D	lakás / flat	~42	m²
	lépcsőház / access	20,2	m²

2. EMELET / 2ND FLOOR

A	lakás / flat	94,9	m²
B	lakás / flat	52,2	m²
C	lakás / flat	46,9	m²
	lépcsőház / access	28,2	m²

3. EMELET / 3RD FLOOR

A	lakás / flat	~80	m²
B	lakás / flat	~44	m²
C	lakás / flat	~41	m²
	lépcsőház / access	20,2	m²

4. EMELET / 4TH FLOOR

A	lakás / flat	~73	m²
B	lakás / flat	~41	m²
C	lakás / flat	~41	m²
	lépcsőház / access	20,2	m²

5. EMELET / 5TH FLOOR

A	lakás / flat	~87	m²
B	lakás / flat	~40	m²
	lépcsőház / access	20,2	m²

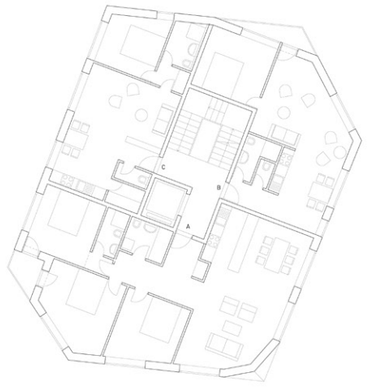
6. EMELET / 6TH FLOOR

A	lakás / flat	~81	m²
	lépcsőház / access	8,7	m²

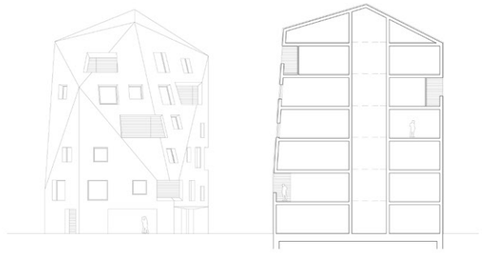
Alaprajz 1:100
Floorplan 1:100

2. EMELET / 2ND FLOOR

A	lakás / flat	94,9	m²
B	lakás / flat	52,2	m²
C	lakás / flat	46,9	m²
	lépcsőház / access	28,2	m²



Homlokzat, metszet 1:100
Facade, section 1:100



6.6
The competition of ideas in Castelnuovo Rangone, Italy

Written by
Davide Fava,
Chiara Pederzini,
Ornella Restani,
Alessandro Bellentani

The competition of ideas in Castelnuovo Rangone was a private competition of ideas in a single phase, aiming to achieve ideas concerning an area located in Castelnuovo Rangone (MO). The competition of ideas will select innovative proposals on three main issues:

- a general urban planning (Eco Green Village),
- MILD HOMEs, a detailed design proposal for Social Housing and
- a proposal for a business model.

The winner will concretely design four residential social housing units, having a surface of 250 m² and to be rented at reduced fee for not less than 16 years: village design will be realised by winners of competition of ideas as developed by MILD HOME project who will propose the better sustainable solution and the better business model for the Municipality. This competition drives to an unexpected result in Castelnuovo Rangone: not just the collection of 25 project for the Castelnuovo Rangone's call but a panel of proposals tackling with a creative approach different aspect of the MILD HOME project. Local companies are able to build new solutions, with MILD HOME construction criteria, in a sustainable way for social housing: houses'modularity, use of local materials, low management costs (buildings will be characterised by energy efficiency), land given by the municipality at a fixed price.

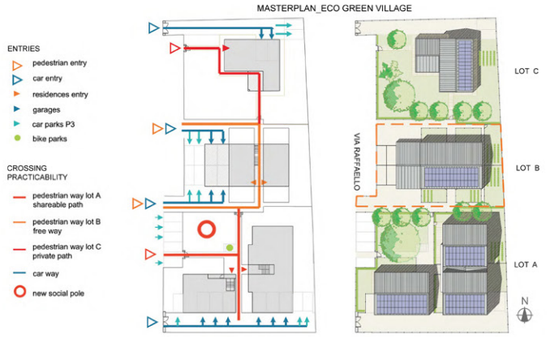
New social housing buildings will be rent directly from the builders at a low price (determined by the Municipality of Castelnuovo Rangone). This is a business solution for all stakeholders: for the municipality (no building costs; no management costs), for builders (business model is efficient), for citizens (low rent and low management cost).
The pilot project site is situated close to the Castelnuovo Rangone city hall, in a residential district. The area is 2700 m² wide and 650 m² will be used to build four apartments (80 m² each). The area is close to a public park in a peri-urban area.

Participation at the Competition was open to all professionals who are not inhibited to the profession and that are members of Registers of respective Italian professional orders or professional qualifications recognized in other European countries and to all companies on the Italian and European territory. The Competition was open from 03/12/2013 to 20/03/2014. First three classified proposals were "Il Borgo Condiviso" (representative Arch.Elisa Gozzi), "Studio C.R.E.A." (representative Arch. Timothy D. Brownlee) and "LoA7" (representative Arch. Giuseppe Passaro).

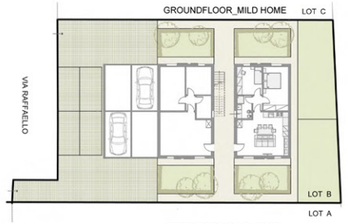
THE SHARED VILLAGE
IL BORGO CONDIVISO

The Eco Green Village is the answer to an identity need.
The traditional Village in this specific italian countryside, is based on simple and regular volumes.
Their shapes indicate a specific use, in a system of distances and relations.
The Eco Green Village catches the same spatial concept of volumetric system, where each building stands for a different residential typology.
Further, the social model created, is based on the maintenance of personal identity in a wider complexity of opportunities and relationships.

MASTERPLAN_ECO GREEN VILLAGE



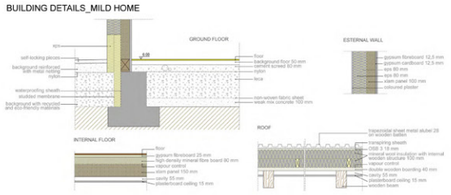
GROUNDFLOOR_MILD HOME



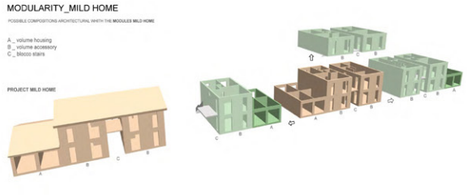
FIRST FLOOR_MILD HOME

Mild Home is the answer to a social, green and economic sustainability.
The easy construction system is expressed in a symbolic volume.
In this italian countryside, the "porta morta" building is a tradition: Mild Home keeps the same idea of crossing building.
This architecture reflects, once more, an urban attitude to create visual and physical relationships between the building itself and the sorroundings.

BUILDING DETAILS_MILD HOME



MODULARITY_MILD HOME



COMPETITION OF IDEAS
FOR REALIZATION
IMPLEMENTATION OF A
SUSTAINABLE VILLAGE

architectural project
Sofia Cattinari architect
Francesca Cibelli engineer
Elisa Gozzi architect
Paolo Leoni architect
Duccio Randazzo architect

structural engineering
Alessandro Leoni engineer

mechanical systems
Nicola Zecchini p.i.

client
Dimensione Srl with
Castelnuovo Rangone Municipality

location
Comparto 35C, Via Raffaello
Castelnuovo Rangone Municipality

CONSTRUCTION COST:
860€/sq.m

SOCIAL HOUSING:
- different types of users
- community management and spaces for common activities

SELF-BUILD
- low tech buildings can be built using simple technologies
- use of simple and regular "BOX STRUCTURES"

SHORT CHAIN:
- use of materials produced within 300 km

SUSTAINABLE WASTE MANAGEME
- composting to use in the green areas
- UNDERGROUND WASTE SEPARATION AREA

MODULARITY:
- many possible combinations
- the Mild Home can be modeled in other shas
- cost reduction

ORIENTATION:
- favorable sun exposure
- indoor comfort (high level indoor comfort)
- outdoor liveability

BUILDING SITING:
- maximize the distance between buildings (in order to optimize access to the sun)
- greater privacy

VEGETATION USE:
- rows of trees used as solar shading
- trees used as microclimate mitigators

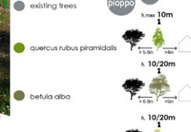
SUSTAINABLE MOBILITY:
- pedestrian and bike paths to connect the site with the context

ENERGY EFFICIENCY:
- ENERGY CLASS A+
- High quality shells in order to ensure energy efficiency and thermal inertia
- NZEB (ZERO ENERGY BUILDING)

VIEW:
- Bright spaces in visual contact with the surrounding landscape

Master Plan: 1m

Tree species:



Surfaces:

Dwelling types:

Customize your balcony:

Section:

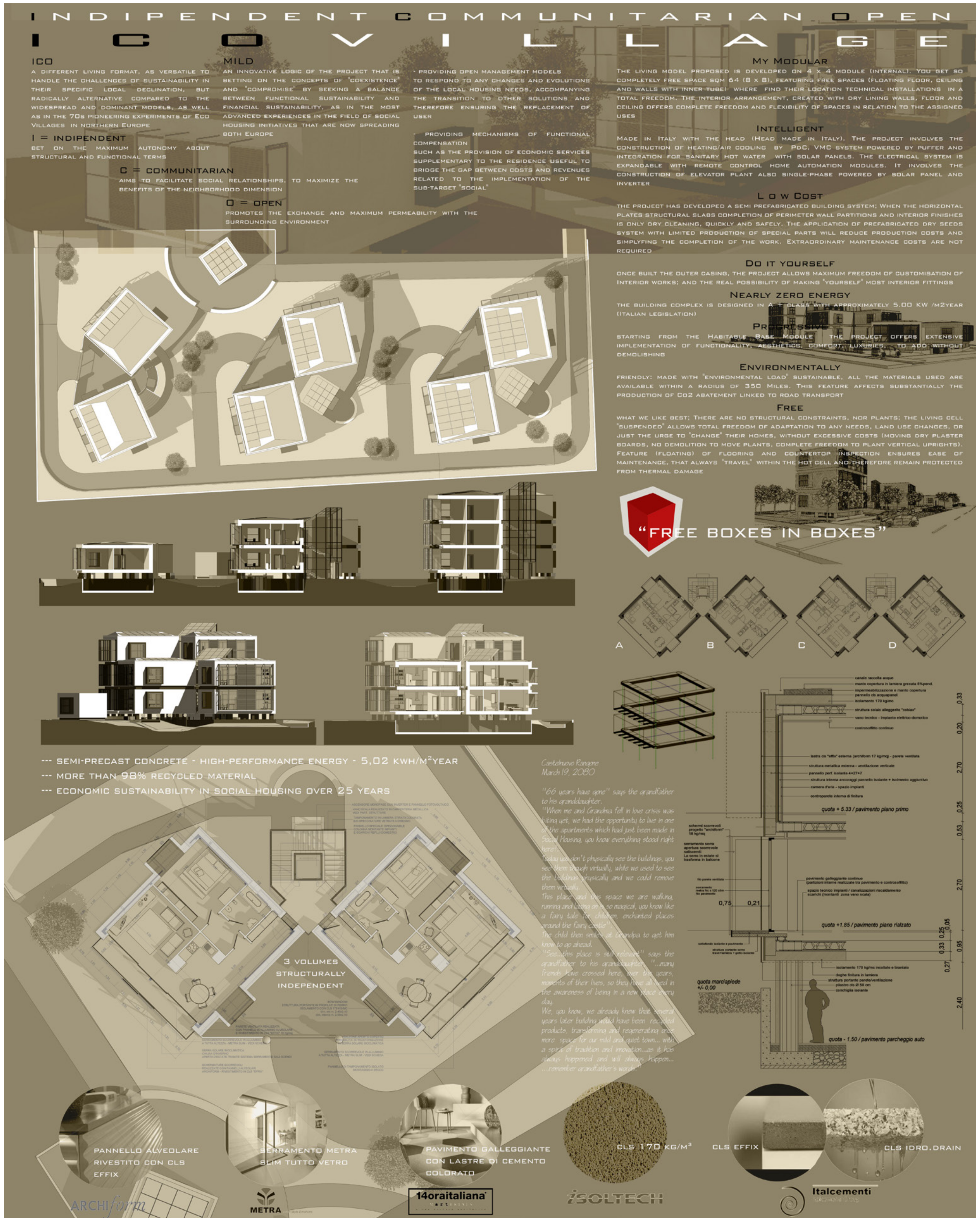
Street furniture:

Plan: 1m

First awarded design for Castelnuovo Rangone, Italy
Designed by Sofia Cattinari, Francesca Cibelli, Elisa Gozzi, Paolo Leoni, Duccio Randazzo, Alessandro Leoni and Nicola Zecchini

Second awarded design for Castelnuovo Rangone, Italy
Designed by CREA: Timothy D. Brownlee, Marco Appolloni, Guido Graziani, Dajla Riera, Michele Romoli, hiddenoffice: Simone Pirro, Luca Tappata and Roberto Turtu

Third awarded design for Castelnuovo Rangone, Italy
Designed by arch. Passaro



Design for Castelnuovo Rangone, Italy
Designed by Franco Carnicelli, Roberta Colombelli, Matteo Seghezzi, Chiara Del Sant,
Silvio Pacati, Maria Grazia Bergamini, Giorgo Casilli, Enrico Villa and Alessio Ronchi

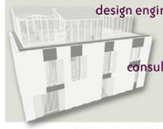
Competition of ideas

Call for proposals on the implementation of a sustainable eco green village in the area called

comparto 35c, via Raffaello

Dimensione s.r.l.

in collaboration with the Municipality of Castelnuovo Rangone



design engineer

Arch. Massimo Giuliani (project leader)
Arch. Marco Bianchi
Ing. Bruno Bernardo Bosco
Arch. Marco Tosca

consultant

dott. Gianluca Nascimbene (geologist), P.I. Francesco Micheletti (plant engineer)
B.P. Termoidraulica (system), geom. Marco Pecchio, Paolo Alberico

with

Roberto Malinverni, Maxim Brinza

PORTION C
private building

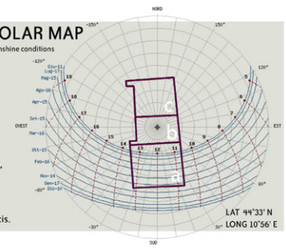
PORTION B
social housing

PORTION A
private building

The volumes of the project following the north-south orientation, in order to optimize the contributions of natural light along the geothermal axis.

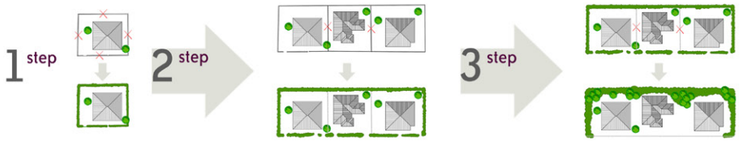
SOLAR MAP

Sunshine conditions

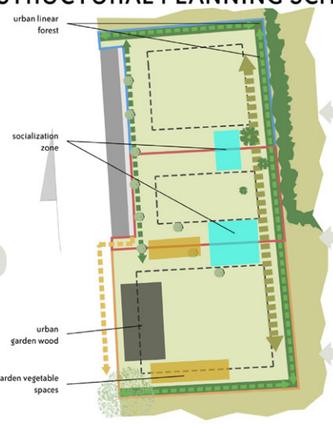


URBAN ANALYSIS: WHY REMOVE THE FENCES

some examples of the fences urban system



STRUCTURAL PLANNING SCHEME

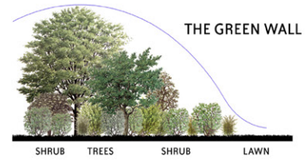


portion c private building

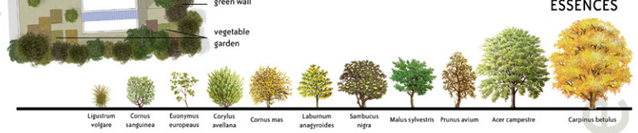
portion b social housing

portion a private building

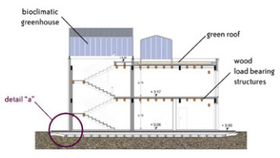
OPEN SPACES

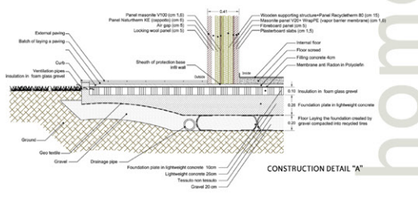


ESSENCES



DRAFTING AND SECTIONS





ELEVATIONS

summer season

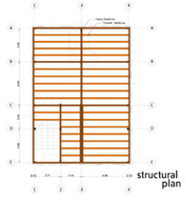
turning wood panels

winter season

STRUCTURAL DETAILS

WHY USE A BUILDING STRUCTURE IN WOOD

The modular structure of wood can be removed and reused in their components.
A house with the wooden frame has no problems of setting and is designed to withstand the seismic phenomena, for the elasticity, ductility and deformability of the joints, not least the lightness of the construction.
The wooden structure has a strong thermal and acoustic insulation.



FOR IMPROVING THE SEISMIC BEHAVIOR ARE CREATED AT THE COST OF SEISMIC INSULATORS VIRTUALLY NIL

Performed the excavation for the laying of foundations, is cast a layer of lightweight concrete, so called cleaning, on which are laid for used tires, linked between them to prevent any displacement.

The tired are filled with gravel, cemented of the upper face, after having laid nonwoven, the surface is loaded with lightweight concrete to create the foundation block.

The purpose of this system is to reduce the period of oscillation of the building during a possible seismic event.

turning panels

On the facades of the building are installed wood panels that can rotate 180°, with different coloration on two opposite sides.

The mobile panel system exploits the different coefficients of absorption of solar radiation in order to optimize the effects of solar energy on the building in the different seasons of the year.

The black configuration of the facades favors the absorption of sunlight and determines an increase in temperature of the enclosure; opposite, the white configuration is the more indicated for the summer season.

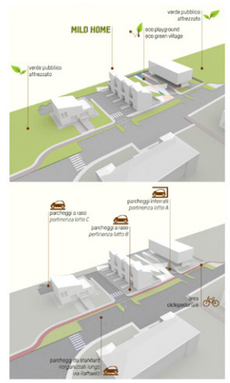
The rotation of the panels is operated manually.

eco green village

partp-mild homes

Design for Castelnuovo Rangone, Italy
Designed by Dimensione: arch. Massimo Giuliani, arch. Marco Bianchi, ing. Bruno Bernardo Bosco and arch. Marco Tosca

THE MASTERPLAN: ECO GREEN VILLAGE



RECYCLING DEPOT

100% recycled materials

The waste depot is made of recycled pallets and is covered by a photovoltaic plants that can produce the 100% of electricity used by urban lighting system.

URBAN FURNITURE

100% recycled materials

Benches, flower pots, waste bins are made with recycled pallets and tires.

PARK FURNITURE

100% recycled materials

Park furnitures made with recycled materials reassembled into games and rides for children.

URBAN LIGHTING

0% grid electricity used

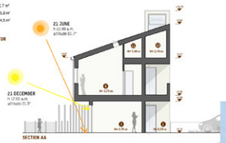
Luminaires chosen to optimize the illumination and reduce the upwards emission (light pollution) are equipped with a flow regulator to reduce level of illumination durning the night. The use of this system (by varying the power from 54,5W to 37,5W), will save up to 17% of energy.

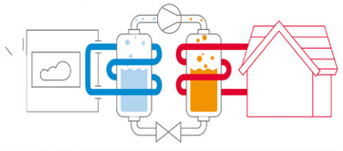
ECOFRIENDLY HOUSING: MILD HOMES

WOOD STRUCTURE

100% natural & renewable material

PV power: 2760 W each house





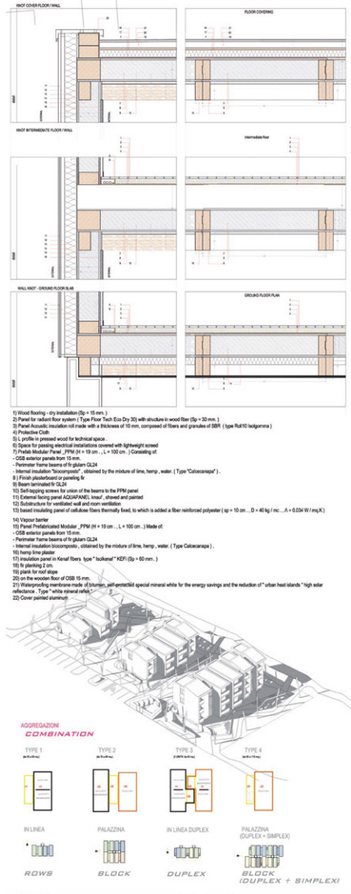
HVAC & LIGHTING

100% energy self-sufficient

The high-performance building's envelope reduces heating and cooling loads up to the Passivehaus standards. The small amount of heat is provided directly by a packaged building services units integrated in a mechanical ventilation system. The exhaust air (extracted from toilettes and kitchens) is used as heat source by the termodynamic heat pump integrated in the packaged unit, thus recovering the heat for cold) and producing domestic hot water too.

All the electricity needed to drive this system is produced by the photovoltaic on the roof.

Design for Castelnuovo Rangone, Italy
Designed by eng. C. Barbieri, eng. O. Mazzarella, eng. A. Camarca, eng. A. Salvetti



- **Electrical and heating system**

The energetic concept of the 'Eco Green Village is based on the idea of getting a very usefull build up system and the use of renewable energetic resources, considering the building of near zero energy (NZEB) as it has been said by the D. 2010/31/UE about building energetic consumption. The external envelope provides insulation solutions that let ensure high performance both in winter, to saving heat leaks, and in summer thanks to a system of solar screens that reduces the entrance of warm, especially for those sections in the southern and south-west.

U-Values of of opaque and transparent elements are under limits indicated by D. Lgs. 192/05 e and 311/06.

The heating generation system solution consists of a central system to produce both the heating for each room and domestic hot water demand.

The main heating generation system will be made with biomass heating systems feeded with wood chips.

The supplying of energy from renewable sources, given by the presence of biomass systems, solar thermal and photovoltaic will be of 92% for water and of 81.2% as a whole for all the thermal usages.

- **Mild Home description**

1) My modular Home

The concept of modularity of the project has been made up with according to two differents scale and levels.

a) according to a techonogical point of view, it is based on the possibility of buildig up minimum modular elements (modular boxes MS) that give the all structure of the home system.

So it has been studied a minimum modular that corresponds to a wall/slab portion of minimum 100 x 300 x 19 cm.

This modulus is concepted as an empty box system to put vertical for walls and orizontal for slabs.

The assemblance is given by the simple union of this elements with screws and brackets (holdown, angolar brackets, self-tapping screws); slab panels are fixed to the wall to also make a linking bracket to the slab.

To get more flexibility the use of under modulus of 33 and 66 cm of width has been prevented: furthermore windows will be set using proper modulus with frames giving space to the insertion of shawdowing boxes.

b) according to an architectural point of view, houses are thought to be modular units made of two main elements: living unity UA (that can include living room, kitchen and/or bedrooms) and a service unity US (that can include bathrooms, kitchen, store room, inside staicase if it is a duplex).

2) Intelligent

The project wants to be a natural meeting point between high standar building up process and nowdays building up procedure.

The project is intelligent because its aim is to combine these two different building up strategies to make a balance between two different techniques: tradition versus a new coming industralized techique that decentralized the whole building up process.

The modularity (both technological and architectural) together with the easy way of producing elements and to the fexibiliy given by the possibility to fill the structure with different materials, makes the project extremely cheap, social useful (it enriches the places it took place), sustainable according to an ecological point of view (total recycling of materials) and at an almost zero energetic consumption.

3) Low cost,

the modular home is based on a low prefabricated system in contrast with the use of the growing use of high prefabricated modular system.

The aim is to go towards modular building up system with a low technological profile, to develop the use of wood at a high scale in the territory.

Today we have a technological development (such as the use of xlam panels) where the production of wood building-structure materials is concentrated only amongs few monopolizing market firms.

On the other hand, the high specialization in the heavy prefabrication, and the consequent high labour costs, forces the market to move towards the use of semi-final products coming from countries with specialized labour at a low cost more and more.

So the project wants a simple building process that introduces light prefabricated production elements easily got without the use of specialized labour.

This leads to a "*short supply chain*" in the building up process with the most often use of local firms and materials.

4) Do it yourself,

Following the idea of a light prefabrication, the building progress could be exended to everyone.

Modular minimum elements (modul box MS) are conceived as empty boxes to be filled with insulation materials produced in place.

This procedure has a double advantage:

a) first of all it's very light (about 85 kg) and easy to move and put in the place as if they were modules like the Lego to self build.

b) Furthermore it could be filled with insulation materials more suitable to the building area: the choice will be made not only according to the climate but (preferring materials with high mass in a mediterean climate and more insulation but light in a cold contidental one) also according to the economic necessity and the local materials availability.

- **Flexibility.**

The houses are designed as modular units composed of two basic elements:

the living unit AU (which may contain living rooms, kitchen, or bedroom)

the service unit U.S. (where there are bathrooms, kitchen, the hallway, the internal staircase in case of a duplex and a small courtyard for natural ventilation).

These units can be coupled to realize a single storey or duplex apartments of different sizes:

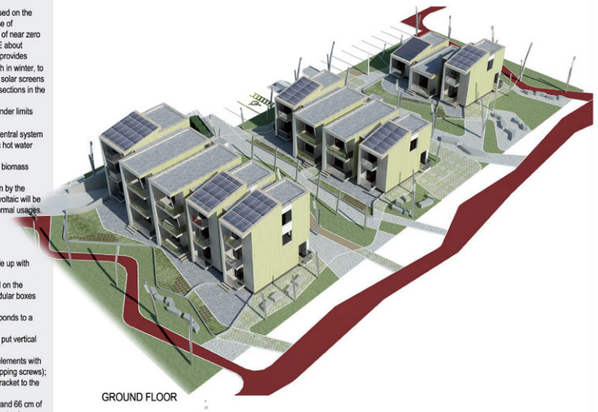
Type 1 = UA + U.S. levels (45 to 55 sqm.)

Type 2 = UA + U.S. + AU level (75 to 90 sqm.)

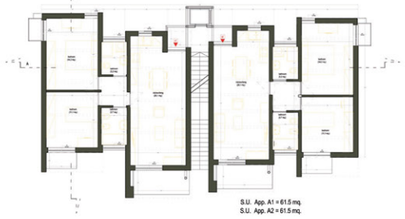
Type 3 = 2 unit (45 square meters).

Type 4 = UA + U.S. two levels (90 to 110 square meters).

The modules can be connected to form rows, douplex or simplex, or multystorey buildings with central staircase (blocks oriented east-west). maximum of 4 floors.



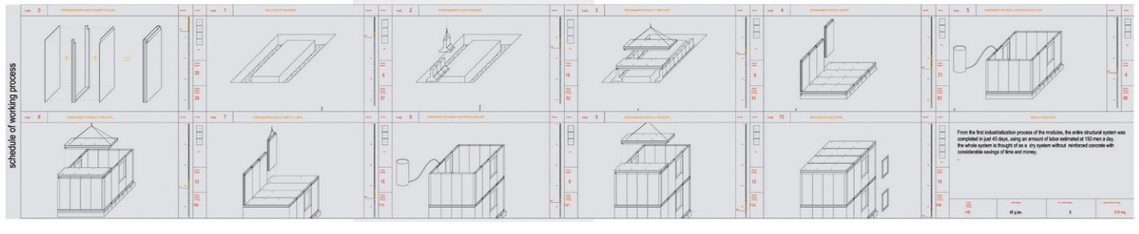
GROUND FLOOR



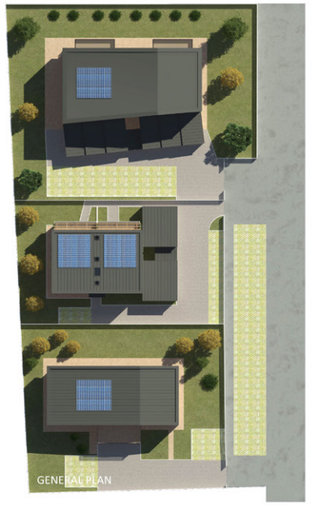
S.U. App. A1 = 61.5 mq.
S.U. App. A2 = 61.5 mq.

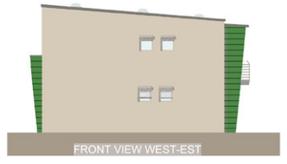
FIRST FLOOR

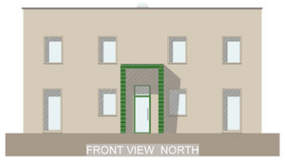
S.U. App. A3 = 61.5 mq.
S.U. App. A4 = 61.5 mq.

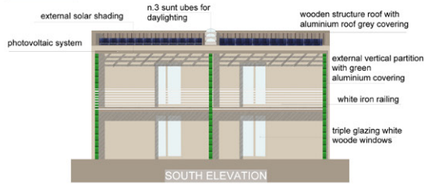


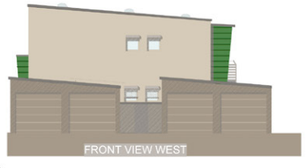
Design for Castelnuovo Rangone, Italy
Designed by arch. Gianluca Buzzelli, arch. Marianna Di Lauro, ing. Pierluigi Fecondo, ing. Emilia Simone and Claudio Angelucci

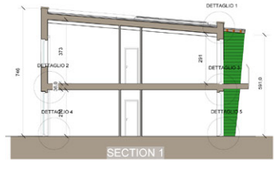


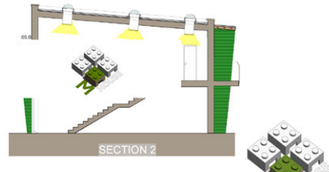










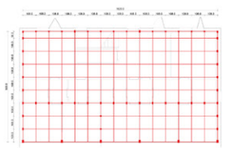


Design for Castelnuovo Rangone, Italy
Designed by arch. Anusca Roncaglia, arch. Mirco Sola, ing. Michele De Beni, ing. Simone Dalmonte, dott. Dimitrij Abram and geom. Massimo Ranieri

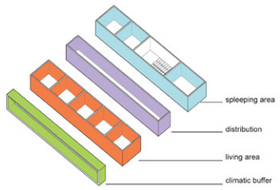
>> South-West view

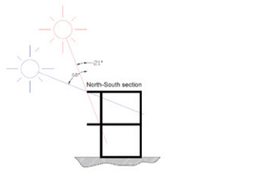
> North-East view

The grid



Functional boxes

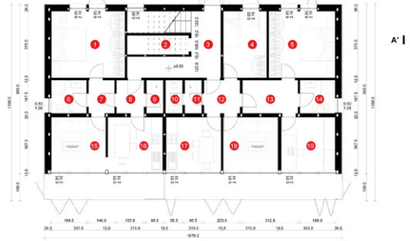




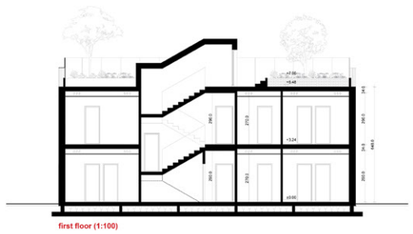
Castelnuovo Rangone latitide: 44° 33' 03'' = 44,55°
Obliquity of the ecliptic: 23° 27' = 23,38°
Angle of the sun in winter solstice: 67,53°
Angle of the sun in summer solstice: 21,17°

Check of the shades of the South facade during summer and winter time.
In the winter the building takes advantage of the free contributions of the sun.
In the summer the South glass walls are completely shaded.

first floor (1:100)



ground floor (1:100)



first floor (1:100)

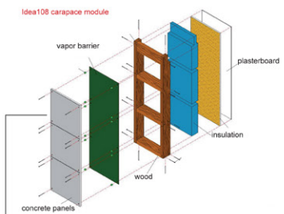
FIRST FLOOR AREAS

rooms	m²	rooms	m²
1 double room	15,50	9 wc	1,80
2 staircase	19,80	10 anti wc	1,80
3 single room	9,20	11 ingresso	3,80
4 double room	14,00	12 service space	5,80
5 bathroom	3,80	13 bathroom	3,80
6 service space	2,80	14 living room	9,50
7 entrance	3,00	15 kitchen	9,50
8 storage room	1,80	16 living room kitchen	19,30
		17 single room	9,30
Flat 3		Flat 4	
total	45,90	total	68,50

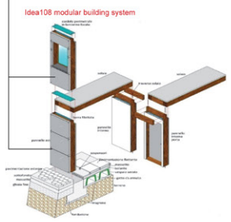
GROUND FLOOR AREAS

rooms	m²	rooms	m²
1 double room	15,50	11 anti wc	1,80
2 technical room	3,80	12 entrance	3,80
3 landing	15,00	13 service space	5,80
4 single room	9,20	14 bathroom	3,80
5 double room	14,00	15 living room	9,50
6 bathroom	3,80	16 kitchen	9,50
7 service space	2,80	17 kitchen	9,50
8 entrance	3,00	18 living room	9,50
9 storage room	2,80	19 studio	9,30
10 wc	1,80		
Flat 1		Flat 2	
total	45,90	total	68,50

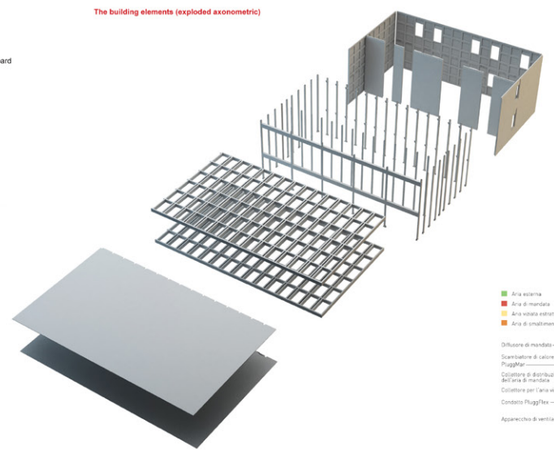
Idea108 carapace module



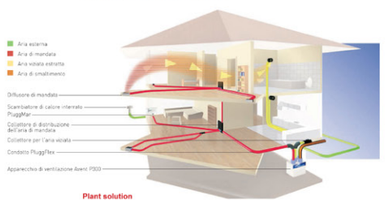
Idea108 modular building system



The building elements (exploded axonometric)



View of the concrete outer skin modules



Plant solution

Design for Castelnuovo Rangone, Italy
Designed by arch. Nicola Salviato, arch. Oscar Scomparin, arch. Ivan Del Ponte, dott. arch. Matteo Zambelli, ing. Roberto Scotta and ing. Roberto Pavoni

6.7
The competition of ideas in Feltre, Italy

Written by
Massimiliano Condotta

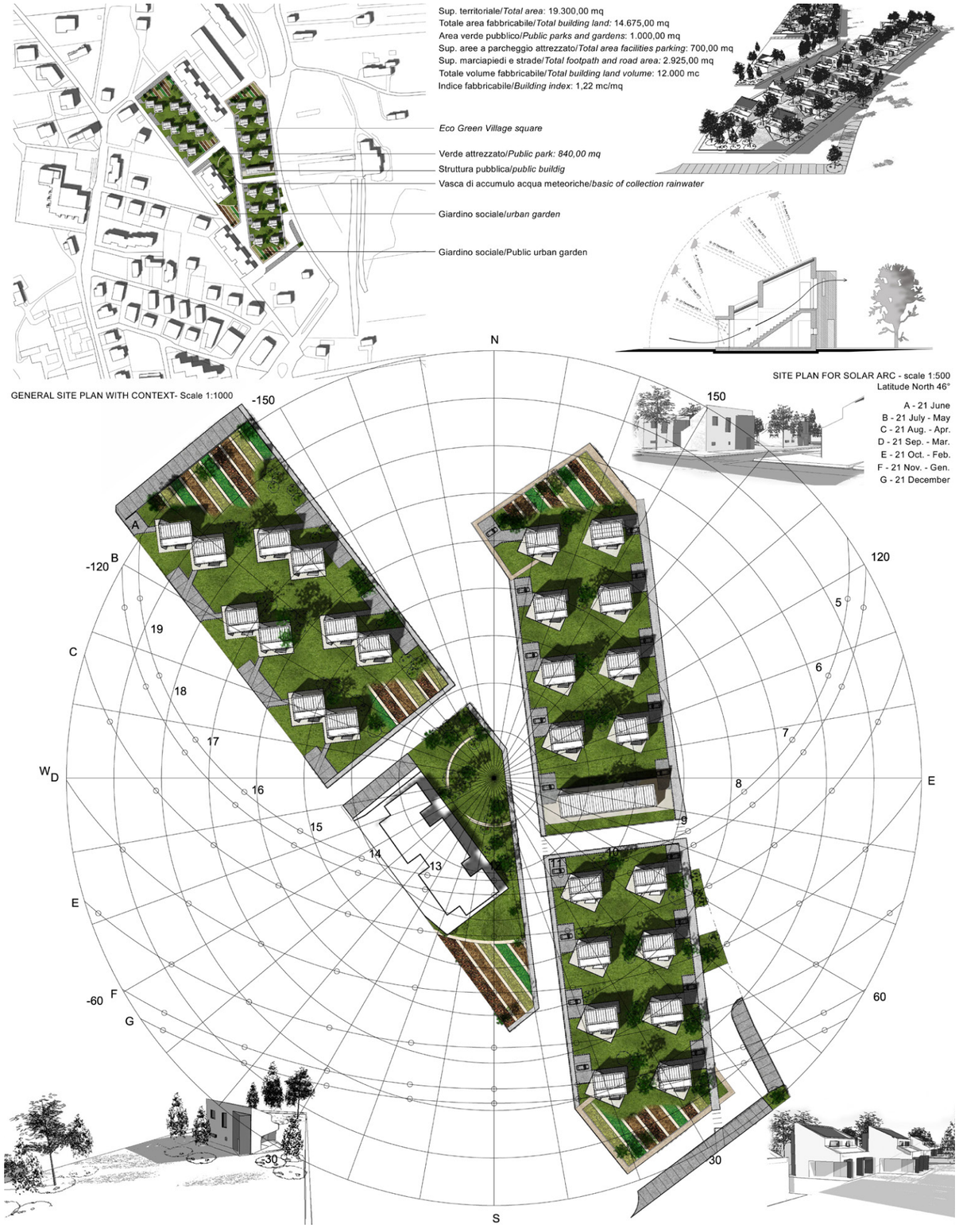
The level or urbanised territories in Italy reached levels that are nowadays no more acceptable, while, on the other hand, many areas inside cities are no more used. The sustainable policy that is going to be adopted by the smart administrations is to avoid the use of empty lands and encourage the re-use and conversion of unused areas. The competition in Feltre, a small city in the northeast part of Italy, near Alps, followed this principle. The site dedicated to the Eco Green Village is an unused and abandoned area inside the urbanized territory. The particular location adjacent to a residential area, public buildings and a road,in addition to the absence of a good viability, contributed to the keep this area unused. The challenge is to use the MILD HOME model as an "urban regeneration tool" able to solve social and urban problems within a unique coordinated process. Among all the projects of the competition, we selected three different design solutions that fit the MILD HOME vision.

In the first project, the Eco Green Village is based on an independent and autonomous MILD HOME element with internal arrangements designed to optimize solar exposition. In this way, the design of the whole village is demanded to the geographic orientation while the urban village arrangement is closely related to the energetic efficiency of each single unit. Thanks to these solutions the entire Eco Green Village can be constructed step by step in different periods, based on single houses supplies, without the need of expensive initial investments for the implementation of all the common infrastructures of the Village. The house is in fact small sized, energetically and functionally independent, easy to be built, geometrically and functionally adaptable to any environmental request. These features make it replicable in other contexts and situations. From the constructive point of view, the walls are made with mineralized wood hollow block (wood slivers and Portland cement) with a 15 cm insulating, with a total depth of 38 cm. The system is dry-laying and mortar-less. The structure is reinforced by the insertion of vertical and horizontal steel bars and finally filled with a cement casting. This building system doesn't need skilled workers and in the same time is highly insulated, fireproof and marked by highly thermal inertia. Floors and roofing are in lamellar wood. The insulating system is attached with woodscrews without using adhesives or additives. This particular construction system is a modern, ecological and biocompatible version of the traditional brick systems used in the Feltre context. In this way it meets the desire of "tradition" of users, of local workers, and is also do-it-yourself compatible.

The second selected project revises the traditional farmer house to design a modular and flexible contemporary house. Every building of the complex is part of an international sustainable project. 12 two-stores houses compose the village. The structure is made of wood, external cladding and interior finishes are made with local materials: stone, wood and brick. The upper level of the house made of wood – in opposition of the ground level made of stone - can change its internal spaces to accommodate singles or families with 3-5-6 persons. Beside the single home design, the key aspect of this project is the design of the Eco Green Village. The goal is to give value to the existing surrounding urban area, promoting and enhancing more and more the use of following services, which already exist: pedestrian/cycle ways and a big public transport network to avoid any risk of isolation and self-reference. To guarantee people to live safely, enjoying their privacy and experiencing daily the quietness in their houses plenty of parking for residents and guests have been moved far to the south east area while build a network of bicycle and pedestrian ways. The paths reserved for pedestrian circulation have different forms and areas where kids can play and people meet easily. The use of native plants will promote the use of the flora of Feltre, helping the local fauna too. Special plant essences have been specially designed according to three-dimensional levels: the tallest trees are disposed on the outer border of the neighborhood and the larger green areas; trees-shrubs are planted inside the housing areas to give a good image and a sense of well-being; small green spaces with gardens, both private and public are also planned.

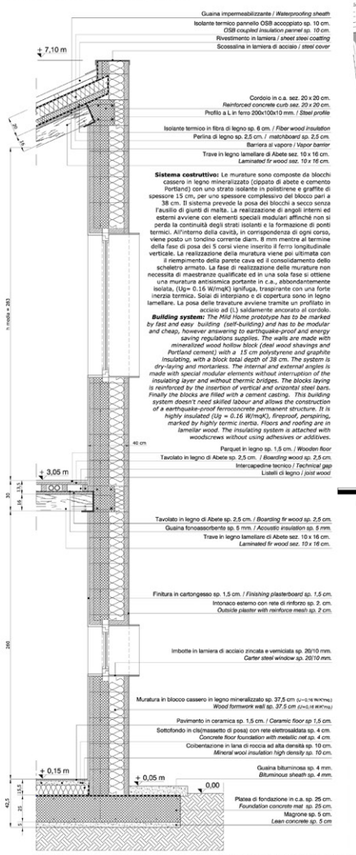
The third project has been selected for the proposed construction system that represents a simple, but extremely effective way, to give a concrete answer to today's "housing needs", including cost savings, a healthy living

environment, energy efficiency and low environmental impact. The solution is to use a natural material, the straw, which is available in abundance in Italy and throughout Europe. Considered to be a natural and by waste product, straw is extremely powerful in terms of energy saving, is "zero kilometre product" which belongs to the tradition of Italy and has excellent characteristics of thermal/acoustic insulation without requiring special treatments (chemical and mechanical). We must therefore begin to conceive this product as an enormous resource, and not as a waste, because it allows us to use less energy and produce lesspollution. The thermal properties of this material include a substantial savings in heating costs of buildings (up to 70% per year). The housing units proposed for the MILD HOME can be made very quickly in two ways: from easily transportable prefabricated straw and wood panels pre-assembled by the manufacturer on designer's project and dry mounted in the construction yard, or completely in the construction site, without prefabricated panels. By choosing to build directly on the construction site, an interesting aspect is the possibility of Do It Yourself: this allows to further reduce costs but the process of self-construction must still be followed and supervised by a professional expert in this kind of buildings to ensure success.



1 First awarded design for Feltre, Italy
Designed by arch. Michele Domeneghetti,
per. ind. Michele Romagnolli and geom. Marco De Fazio

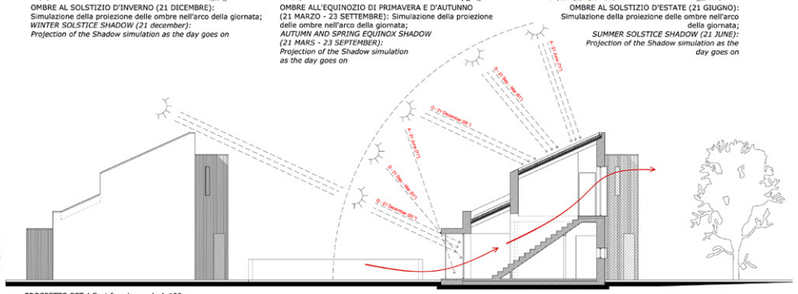
DETTAGLIO TECNICO / *Technical detail*, scale 1:20



OMBRE AL SOLSTIZIO D'INVERNO (21 DICEMBRE):
Simulazione della proiezione delle ombre nell'arco della giornata;
WINTER SOLSTICE SHADOW (21 december):
Projection of the Shadow simulation as the day goes on

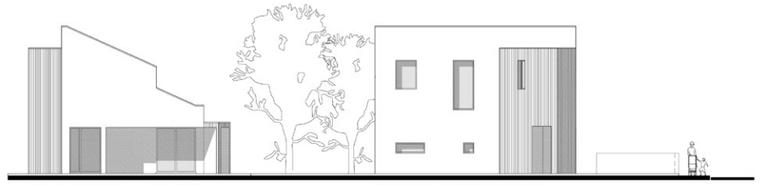
OMBRE ALL'EQUINOZIO DI PRIMAVERA E D'AUTUNNO
(21 MARZO - 23 SETTEMBRE): Simulazione della proiezione delle ombre nell'arco della giornata;
AUTUMN AND SPRING EQUINOX SHADOW
(21 MARS - 23 SEPTEMBER):
Projection of the Shadow simulation as the day goes on

OMBRE AL SOLSTIZIO D'ESTATE (21 GIUGNO):
Simulazione della proiezione delle ombre nell'arco della giornata;
SUMMER SOLSTICE SHADOW (21 JUNE):
Projection of the Shadow simulation as the day goes on



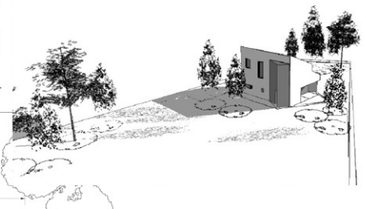
PROSPETTO EST / *East facade*, scale 1:100

SEZIONE A-A / *Cross-section A-A*, scale 1:100

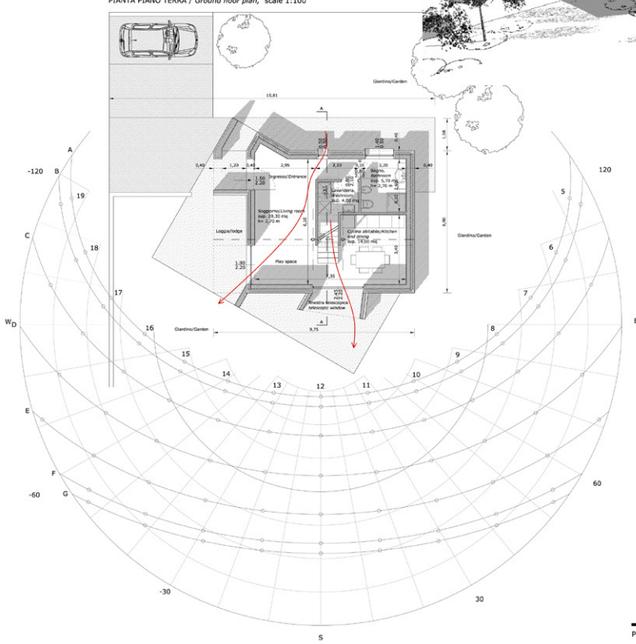


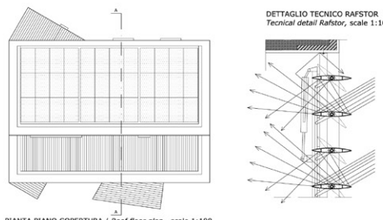
PROSPETTO OVEST / *West facade*, scale 1:100

PROSPETTO NORD / *North facade*, scale 1:100



PROTOTIPO MILD HOME - UNITA' SINGOLA/ PROTOTYPE MILD HOME - SINGLE UNIT
PIANTA PIANO TERRA / *Ground floor plan*, scale 1:100



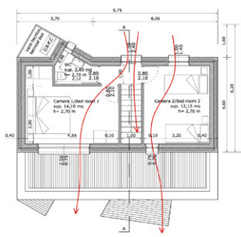


PIANTA PIANO COPERTURA / *Roof floor plan*, scale 1:100

DETTAGLIO TECNICO RAFSTOR
Tecnical detail Rafstor, scale 1:10

Ventilazione naturale
Il flusso d'aria interno di un ambiente si genera in seguito al differenziale di pressione e/o di temperatura. In ogni locale vi sono due chiusure permeabile non accostate. La loro posizione è stata studiata sia orizzontalmente che verticalmente affinché non siano di ostacolo alla ventilazione passante dovuta all'azione del vento ed ai generarsi dell'effetto camino.
Il vano scala e la porta finestra sul fronte opposto, a seconda degli equilibri termodinamici interni, fungerà da camino per l'aria calda o da catino per la brezza da nord.

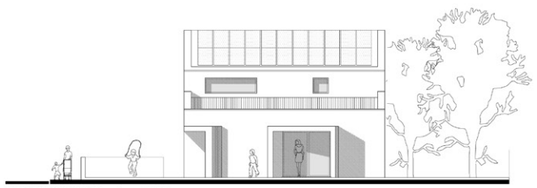
Natural ventilation
In each setting the internal flow is generated by the pressure/tomperature gap. Therefore in every room windows face each other to allowing air flow. Their position has been studied both horizontaly and vertically in order not to hinder the flowing ventilation due to wind action and the chimney effect. The stairwell and the French-door, facing each other, act as a chimney for the warm air or as a basin for the north cold wind, according to interior thermodynamic equilibrium.



PIANTA PIANO PRIMO / *First floor plan*, scale 1:100

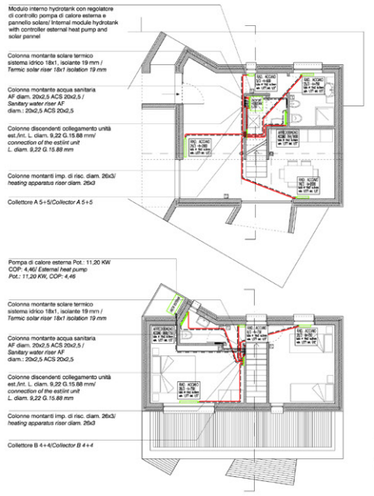
Apporti solari e schermature attive e passive
Il finestrone telescopico a sud e la loggia sul fronte Ovest sono orientati secondo le geometrie solari invernali, (inclinazione angolo azimutale). Essi permettono d'inverno un apporto solare passivo continuativo per tutto l'arco della giornata di luce e calore. Mentre d'estate la profondità delle stesse evitano l'insorgenza di fenomeni di surriscaldamento. Gli apporti solari invernali e la schermatura estiva possono essere accentuati o ridotti attraverso raffor (frangisole), manuali o automatici, capaci di regolarne il passaggio e la riflessione dei raggi. Tutte le porte e finestre dei vari fronti sono state dotate di imbotte sporgente per controllare in modo passivo l'influenza degli apporti solari.

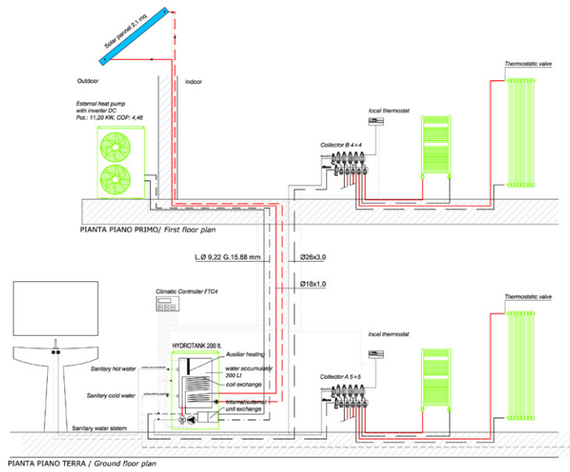
Solar contribution and passive/active shieldings
The south telescopic window and the west lodge are oriented according to the winter solar geometrics (azimuth angle 0)(). In winter they allow a passive solar share of light and heat during the entire daytime. In summer their depth prevents overheating events. The winter solar provision and the summer schielding can be increased or reduced by manual or automatic rafters (sunscreens) regulating the passage and reflection of solar rays.



PROSPETTO SUD / *South facade*, scale 1:100

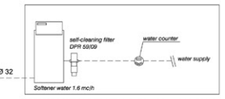
SCHEMA INPIANTO DI RISCALDAMENTO ED IDRICO SANITARIO/ *HEATING APPARATUS AND WATER SISTEM DIAGRAM*





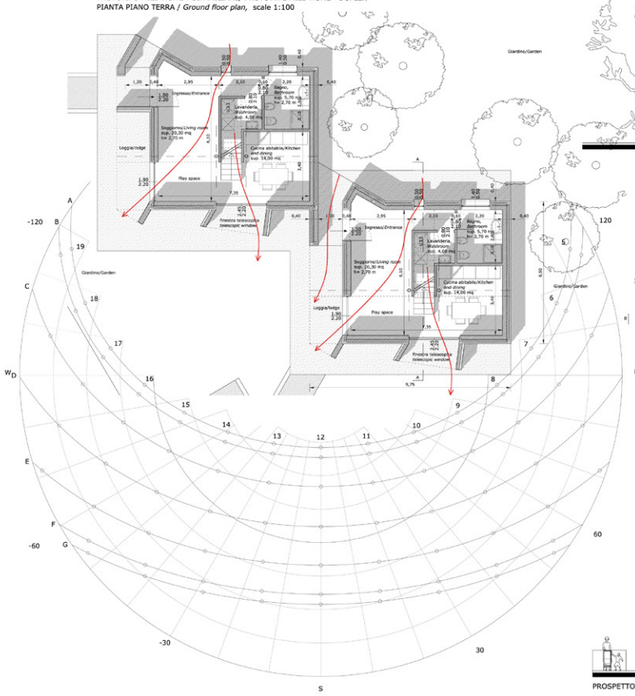
Impianto di riscaldamento e produzione di acqua calda sanitaria
Il riscaldamento e la produzione di acqua calda sanitaria è demandato al sistema in pompa di calore aria-acqua integrato con pannelli fotovoltaici e solari. Esso è costituito da una nuova generazione di pompa di calore posta all'esterno, e da un accumulo interno denominato hydrotank. Potenza in riscaldamento di 11,2 kW, (COP) 4,46 alla temp. dell'aria esterna di 7 °C e temperatura acqua 60 °C. In abbinamento al modulo idronico e senza l'ausilio di resistenze elettriche, l'unità è in grado di garantire una capacità in riscaldamento pari a quella nominale di 11,2 kW fino alla temp. esterna di -15°C.
L'impianto non necessita di allacciamento alla rete di distribuzione del gas né di camini o tubazioni di espulsione di gas da combustione. La forte coibenza dell'involucro (Ug pareti e copertura 0,20 W/(m²·K) permette all'impianto di operare a basse temperature anche con sistemi a radiatore.

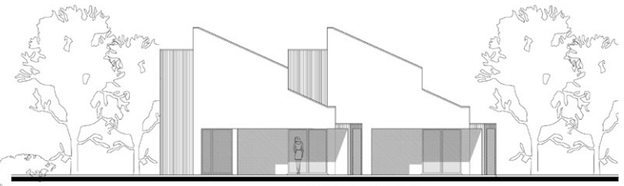
Heating system and sanitary hot water production
Heating and domestic hot water are delegated to the air-water system heat pump combined with photovoltaic and solar panels. It consists in a new generation heat pump placed outside, and an internal accumulation system called hydrotank.
The heating power is 11,2 Kw, (COP) 4.46 at outdoor air Temp. 7 ° C and water temperature 60 ° C.
Combined with the hydronic module and without an electrical resistors aid, the unit can ensure a heating capacity equal to nominal 11,2 kW until an outside temp. of -15 ° C.
The system does not require any connection to the gas network and neither it needs chimney or combustion gas expulsion pipes.
The strong insulation casing (walls and roofs Ug 0,20 W / (m² K) allows the plant operating at low temperatures even by radiator systems.



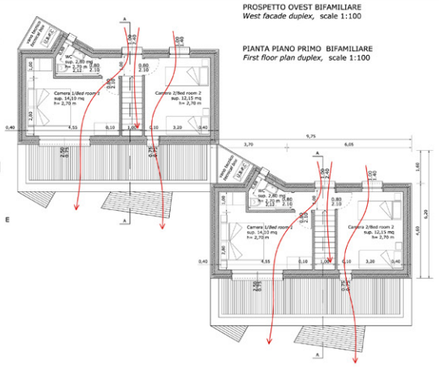
PREDISPOSIZIONE TRATTAMENTO ACQUA DPR 59/09
CON DUREZZA DELL'ACQUA MAGGIORE DI 15°F
/PREDISPOSITION WATER CONDITIONING DPR 59/09
WITH WATER HARDLESS BIGGER OF 15°F

PROTOTIPO MILD HOME - BIFAMILIARE/ PROTOTYPE MILD HOME - DUPLEX
PIANTA PIANO TERRA / *Ground floor plan*, scale 1:100

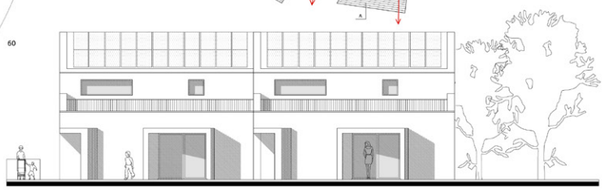




PROSPETTO OVEST BIFAMILIARE
West facade duplex, scale 1:100



PIANTA PIANO PRIMO BIFAMILIARE
First floor plan duplex, scale 1:100



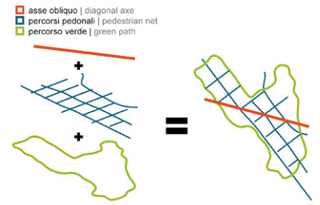
PROSPETTO SUD BIFAMILIARE / *South facade duplex*, scale 1:100

inquadramento città di Feltre | site map Municipality of Feltre

punti di interesse | value point

schema dei percorsi | path diagram

schema del verde | green diagram



forme generatrici | generating forms

edifici pubblici | public buildings

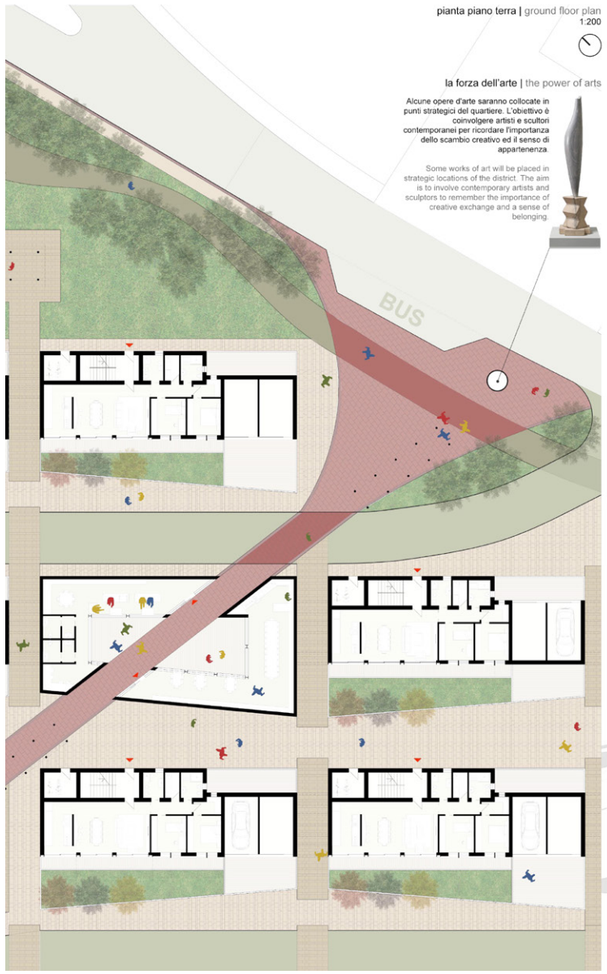
schema parcheggio-ZTL | car parking-pedestrian diagram

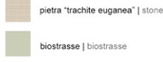
percentuali | percents

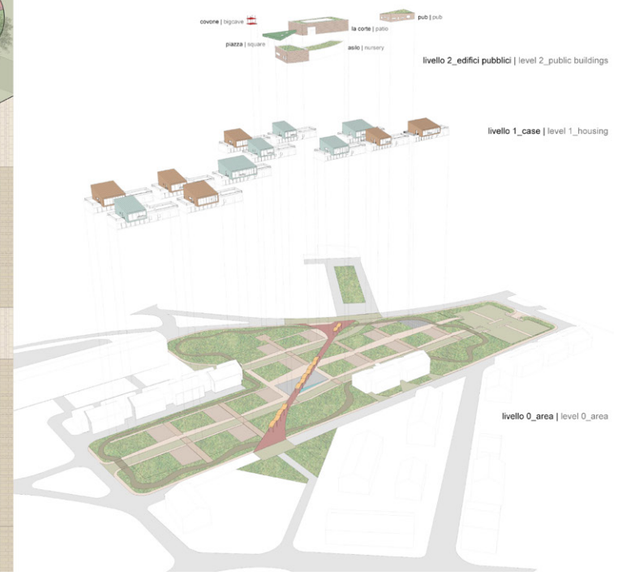
parco delle noci | nut park

viale pedonale | boulevard

mild home | mild home road



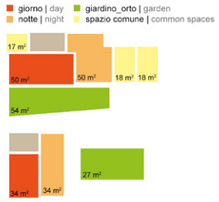




due è meglio che uno | two is better than one

numero abitazioni | dwellings number

sistema modulare | modular system

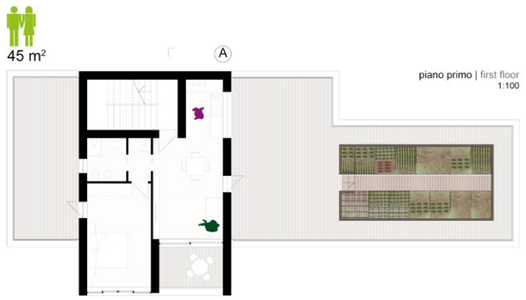


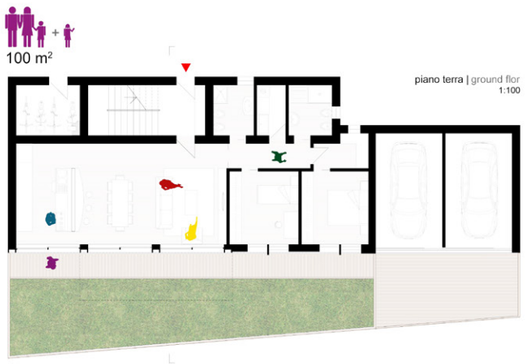
schema funzionale | functional diagram

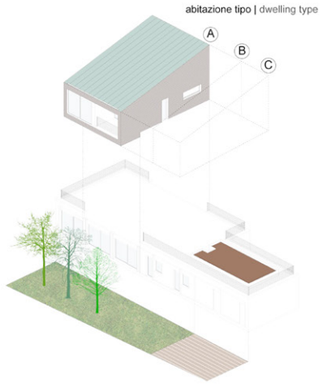
attraverso Mild Home | through Mild Home

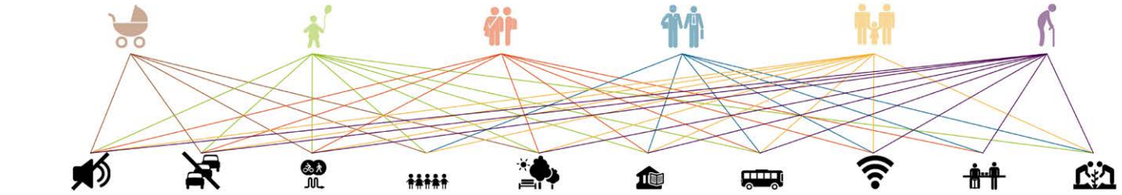
a casa in bicicletta | ride my bike

passeggiando | walking

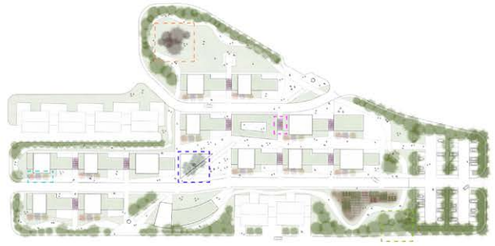




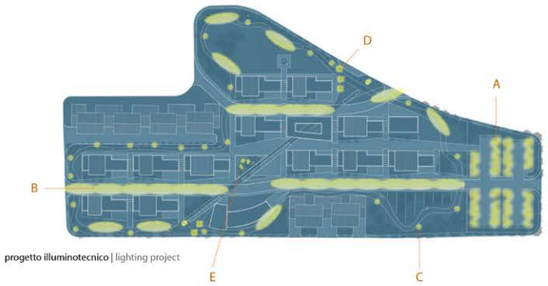




utenti - attività | users - activities



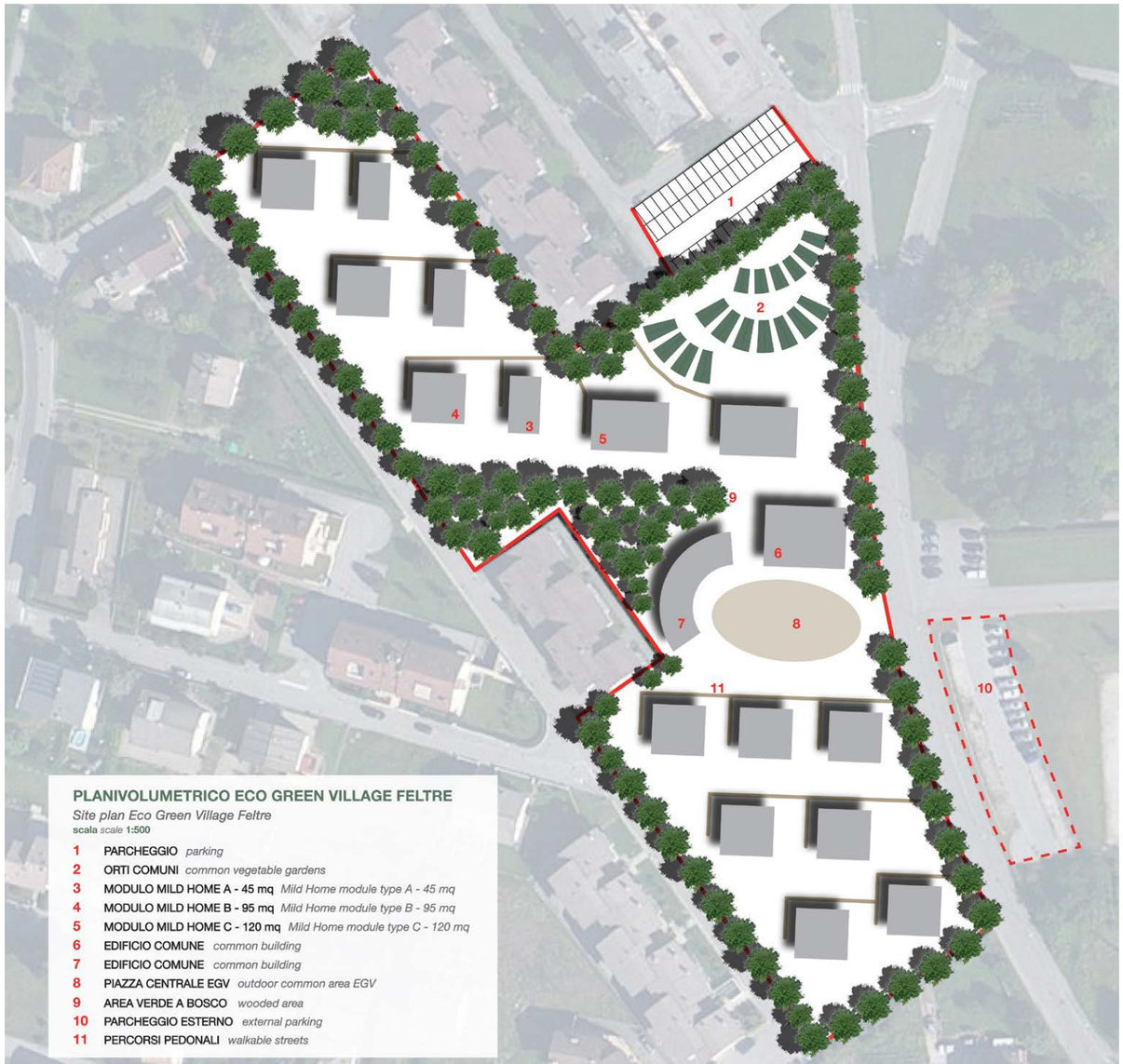
progetto del verde | green project



progetto illuminotecnico | lighting project

sfruttando le energie rinnovabili si ha l'autonomia energetica dell'abitazione che unita al riciclo, all'uso consapevole delle risorse ed a un attenzione per la natura garantice l'abitare sostenibile a misura d'uomo.

renewable energy +recycling + responsible use of resources + focus on nature guarantees' sustainable living on human scale.



PLANIVOLUMETRICO ECO GREEN VILLAGE FELTRE

Site plan Eco Green Village Feltre

scala *scale* 1:500

1 PARCHEGGIO *parking*
2 ORTI COMUNI *common vegetable gardens*
3 MODULO MILD HOME A - 45 mq *Mild Home module type A - 45 mq*
4 MODULO MILD HOME B - 95 mq *Mild Home module type B - 95 mq*
5 MODULO MILD HOME C - 120 mq *Mild Home module type C - 120 mq*
6 EDIFICIO COMUNE *common building*
7 EDIFICIO COMUNE *common building*
8 PIAZZA CENTRALE EGV *outdoor common area EGV*
9 AREA VERDE A BOSCO *wooded area*
10 PARCHEGGIO ESTERNO *external parking*
11 PERCORSI PEDONALI *walkable streets*

L'eco villaggio dell'area Boscariz di Feltre è pensato per essere un luogo quanto più naturale possibile, in cui vengano incentivati la vita all'aria aperta e il risparmio energetico nelle sue varie forme.
Si predilige una sistemazione delle abitazioni che faciliti l'interazione e la comunicazione tra vicini pur nel rispetto della privacy di ciascuno.
Uno stile di vita naturale e l'auto-produzione di cibo vengono promossi con l'inserimento negli spazi dell'EGV di orti comuni, che gli abitanti possono coltivare insieme. Al centro dello spazio dell'EGV sono predisposti due edifici che ospitano servizi comuni agli abitanti: *lavanderia*, *biblioteca*, *area gioco per bambini, nursery, aule per laboratori creativi e sala polifunzionale* (*per corsi, riunioni, feste*), *spazi di servizio per sistemi di risparmio energetico* (*centrale termica, centrale elettrica, recupero acqua piovana, etc...*). I parcheggi sono stati predisposti all'esterno dell'EGV, affinchè si possa prediligere una mobilità alternativa e più salubre.
Si prende in considerazione l'ipotesi di poter usufruire anche di un parcheggio già esistente, per la vicinanza all'EGV. Inoltre può essere possibile prevedere un ulteriore parcheggio centrale interrato, con la possibilità di disporre di alcune auto elettriche da utilizzare con la modalità di car-sharing.
Tutti gli edifici dell'eco villaggio sono progettati per essere realizzati interamente in materiali naturali, locali e riciclati, con elementi prefabbricati o in autocostruzione.
L'eco villaggio nella sua complessità sarà un luogo salubre per gli abitanti, avrà un impatto ambientale quasi zero, e tenderà all'autosufficienza energetica.

The Eco Green Village of Boscariz area in Feltre, is designed to be a place as natural as possible, where it is encouraged outdoor living and saving energy in its various forms. It prefers a housing setting that facilitates interaction and communication among neighbors, while respecting privacy of each one.
A natural lifestyle and self-production of food is promoted by inserting in the EGV spaces of community gardens, which the inhabitants can farm together.
At the center of the EGV are located two buildings that host public services to the residents: *laundry, library, children's play area, nursery, classrooms for workshops and multi-purpose hall* (*for courses, meetings, parties*), *service areas for energy saving systems* (*thermal power plant, power plant for electricity, rainwater recovery, etc ...*).
Parking lots were placed outside of the EGV, because it prefers an alternative mobility and more healthy. Probably it is also possible to take advantage of an existing parking, due to the proximity to the EGV. It may be also a solution to predict a further central parking underground, with the possibility of using some shared electric cars.
All buildings are designed to be made entirely of natural, local and recycled materials, with prefabricated components or realized with self-construction.
The EGV in its complexity will be a healthy place for the inhabitants, will have almost zero environmental impact, and tend to self-sufficiency energy.

LE PROPRIETA' DEL MATERIALE

sostenibilità

La paglia è un prodotto vegetale sostenibile, di **riciclo** e **rinnovabile**, non presenta alcun rischio per la salute ed ha un costo molto basso; inoltre essendo un materiale di produzione **locale** facilmente reperibile (sia sul territorio Italiano che Europeo) consente di eliminare quasi completamente i costi di trasporto e di abbassare notevolmente quelli di produzione. Questo sistema costruttivo riduce notevolmente l'impatto delle costruzioni sull'ambiente: utilizzando la paglia in edilizia, in alternativa ai mattoni e al cemento, per i quali è necessaria un'energia di produzione molto più alta (*Embodied Energy*), si può ottenere un enorme impatto ambientale positivo. La realizzazione delle balle di paglia richiede invece un'energia di produzione quasi nulla, pertanto questo sistema costruttivo contribuisce significativamente alla riduzione delle emissioni di gas serra e al miglioramento dell'efficienza energetica nella costruzione, rendendo possibile vivere in ambienti estremamente naturali e confortevoli.

isolamento termico e acustico

La paglia ha straordinarie proprietà di isolamento termico e acustico: in generale il valore U di Trasmittanza termica delle balle di paglia è molto più basso, e quindi migliore, di una parete composta da uno strato di mattoni o calcestruzzo associato ad isolamento in fibra minerale.
Con le pareti realizzate con balle di paglia si raggiunge un isolamento termico che è quasi tre volte quello normalmente richiesto per abitazioni costruite con materiali convenzionali: a confronto con le abitazioni moderne i costi per il riscaldamento si possono ridurre del 70% all'anno. *(Risultati dei test di conduttività termica secondo DIN 52612, Istituto di ricerca sull'isolamento termico di Monaco, DE).*
Il potere fonoassorbente degli edifici realizzati con pareti in balle di paglia compresse permette di raggiungere e superare i livelli e valori richiesti dalla legge riguardanti l'isolamento acustico (Rw > 50 dB).

resistenza al fuoco

A dispetto delle normali credenze, la paglia, quando ben pressata, presenta un basso rischio di incendio, poichè la presenza di ossigeno al suo interno è molto ridotta.
Secondo alcuni test effettuati, una parete in balle di paglia intonacata con argilla, calce o comunque con materiale compatibile e traspirante, resiste ad una temperatura di circa 1000°C per 3 ore prima di cedere. Con uno strato di intonaco di almeno 5 cm si può ottenere una dichiarazione antincendio di classe A (al pari di un muro in cemento di 25 cm).
(Prove sui materiali per ingegneria civile eseguite dal Politecnico di Braunschweig, DE).

resistenza al sisma

Un ulteriore aspetto importante, anche in relazione alle caratteristiche di sismicità dell'area di Feltre, è l'ottima resistenza ai fenomeni sismici degli edifici realizzati con questo sistema costruttivo, grazie all'elasticità dei materiali e del sistema stesso. Un edificio costruito in legno e balle di paglia è infatti estremamente più leggero di un edificio convenzionale, ha una massa minore e pertanto avrà una minor accelerazione e minori sollecitazioni durante un fenomeno sismico. Inoltre una casa di questo tipo è molto flessibile e come tale "si sottrae" al terremoto. Sono stati effettuati alcuni test specifici su edifici in paglia posizionati su tavola vibrante presso l'Università del Nevada a Reno (US), simulando un terremoto come quello avvenuto in Pakistan nel 2005 con M=7.6.
I risultati dimostrano che la casa di paglia resiste al 200% cioè il doppio della potenza del terremoto pakistano. *(PAKSBAB, test effettuati presso il laboratorio del Network for Earthquake Engineering Simulation, Università del Nevada a Reno, US).*

THE MATERIAL'S PROPERTIES

sustainability

Straw is a sustainable plant product, **recycling** and **renewable**, does not present any health risk and has a very low cost; it is "zero kilometer product" easily available (both on the Italian and European territory), which can almost completely eliminate transport costs and significantly lower those of production. This structural system greatly reduces the impact of buildings on the environment: using straw in construction, as an alternative to brick and concrete, which require an Embodied Energy (energy production) much higher, you can get a huge positive environmental impact. The realization of straw bales instead requires a very little energy to manufacture, therefore this construction system contributes significantly to the reduction of greenhouse gas emissions and to improve energy efficiency in building, and makes it possible to live in an extremely natural and comfortable.

thermal and acoustic insulation

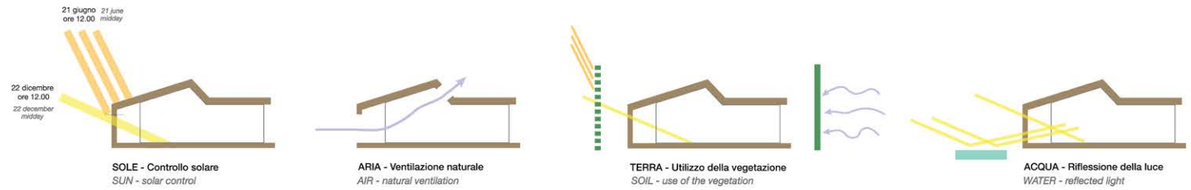
Straw bales have extraordinary properties of thermal and acoustic insulation: the U-value of Thermal transmittance of straw bales is much lower, and therefore better, of a wall composed of a layer of bricks or concrete put with mineral fiber insulation.
Straw bale walls will reach a thermal insulation which is almost three times that normally required for homes built with conventional materials: in comparison with the modern housing costs for heating can be reduced by 70% per year. *(Test results of thermal conductivity in accordance with DIN 52612, Research Institute of Thermal Insulation of Monaco, DE).*
The sound absorption in buildings with pressed straw bale walls allows you to reach and exceed the levels required by the law and values concerning acoustic insulation (Rw > 50 dB).

fire resistance

Unlike normal beliefs, well pressed straw has a low risk of fire, since the presence of oxygen to its interior is very reduced.
According to some tests carried out, a straw bales wall plastered with clay, lime or with compatible and breathable material, resist to a temperature of about 1000 ° C for about 3 hours. With a plaster layer of at least 5 cm you can get a declaration fire class A (equal to a concrete wall of 25 cm).
(Tests on materials for civil engineering carried out by the Technical University of Braunschweig, DE).

earthquake resistance

A further important aspect, also in relation to the characteristics of the seismicity of the area of Feltre, is the excellent resistance to seismic events of buildings made with this construction system, thanks to the elasticity of the materials and of the system itself.
A building made of wood and straw bales is in fact extremely lighter than a conventional building, has a smaller mass and therefore will have less acceleration and less stress during a seismic event. In addition, a house of this type is very flexible and as such "escapes" to the earthquake.
There have been some specific tests on straw bale buildings placed on a shaking table at the University of Nevada at Reno (U.S.), simulating an earthquake like the one that occurred in Pakistan in 2005 with M = 7.6. The results show that straw bale house resists at 200%, ie twice the power of the earthquake in Pakistan.
(PAKSBAB, tests carried out at the laboratory of the Network for Earthquake Engineering Simulation, University of Nevada at Reno, U.S.).



SOLE - Controllo solare
SUN - solar control

ARIA - Ventilazione naturale
AIR - natural ventilation

TERRA - Utilizzo della vegetazione
SOIL - use of the vegetation

ACQUA - Riflessione della luce
WATER - reflected light

MODULO BASE, VISTA SUD-EST *BASIC MODULE, SOUTH-EAST VIEW*

Sopra *Above*

STUDIO BIOCLIMATICO DEL MODULO BASE (TIPO A)

Progettazione del modulo base di Mild Home secondo i principi della BIOCLIMATICA, valutando l'interazione con gli elementi naturali funzionali al miglioramento delle condizioni abitative e concretizzata nell'uso intelligente delle risorse messe a disposizione dall'ambiente quali il sole, la luce, la vegetazione e l'acqua.

- Orientamento preferenziale per favorire l'illuminazione e il riscaldamento in base alla tipologia degli ambienti, e poter usufruire quanto più possibile degli apporti di luce e calore proveniente dal sole.
- Progettazione delle aperture per favorire il ricambio dell'aria e la ventilazione naturale.
- Uso degli elementi vegetali per proteggere dai venti freddi sul fronte nord (vegetazione arbustiva e arborea sempreverde) e per ombreggiare nel periodo estivo e permettere l'approvvigionamento del calore solare nel periodo invernale sul fronte sud (vegetazione a foglia caduca).
- Uso dell'acqua a sud, che agevola la penetrazione dei raggi solari all'interno della casa nel periodo invernale attraverso la riflessione della luce, e abbassa la temperatura dell'aria nel periodo estivo.

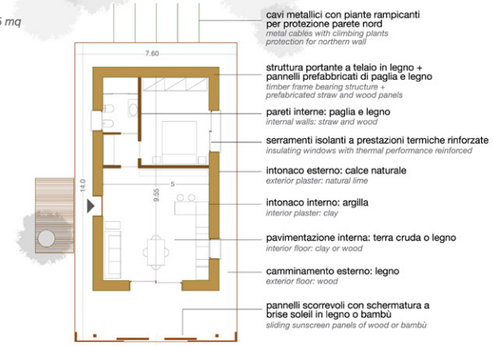
BIOCLIMATIC ANALYSIS OF BASIC MODULE (TYPE A)

BIOCLIMATIC design of the building type A of Mild Home, considering the interaction with the natural elements that improve the living conditions and achieving through the intelligent use of resources provided by the environment such as sun, light, vegetation and water.

- *Preferred orientation to facilitate lighting and heating depending on the type of environments, and to benefit as much as possible of the contributions of light and heat from the sun.*
- *Design of openings to facilitate the exchange of air and natural ventilation.*
- *Use of vegetation to protect the northern facade from cold winds (evergreen shrubs and trees) and to provide shade in summer and allow the supply of solar heat during the winter on the southern facade (deciduous vegetation).*
- *Use of water on the southern facade, which facilitates the penetration of sunlight into the house in the winter period through the reflection of light, and lowers the temperature of the air in the summer.*

MODULO BASE
ABITAZIONE TIPO A - 45 mq
planimetria, scala 1:100

Basic Module
House type A - 45 mq
plan, scale 1:100



cavi metallici con piante rampicanti per protezione parete nord
metal cables with climbing plants protection for northern wall

struttura portante a telaio in legno + pannelli prefabbricati di paglia e legno
timber frame bearing structure + prefabricated straw and wood panels

pareti interne: paglia e legno
internal walls: straw and wood

serramenti isolanti a prestazioni termiche rinforzate
insulating windows with thermal performance reinforced

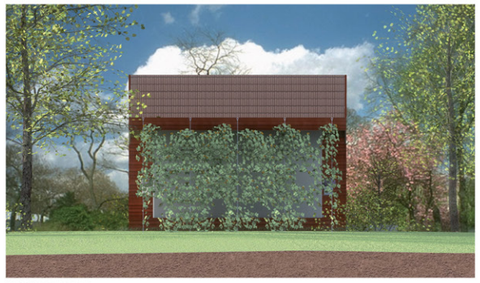
intonaco esterno: calce naturale
exterior plaster: natural lime

intonaco interno: argilla
interior plaster: clay

pavimentazione interna: terra cruda o legno
interior floor: clay or wood

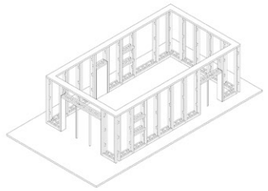
camminamento esterno: legno
exterior floor: wood

pannelli scorrevoli con schermatura a brise soleil in legno o bambù
sliding sunscreen panels of wood or bambù

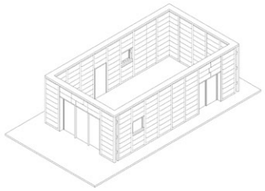


PROSPETTO NORD *NORTH FACADE*

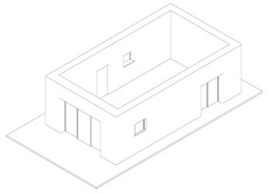
PROSPETTO EST *EAST FACADE*



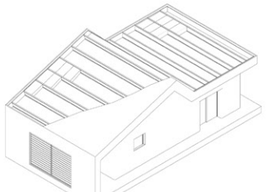
struttura portante a telaio in legno
timber frame bearing structure



isolamento in balle di paglia
straw bale insulation



intonaco naturale
natural plaster



copertura in paglia e legno
straw and wood roof

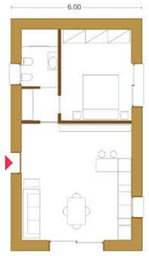
FASI COSTRUTTIVE: MODALITA' AUTO-COSTRUZIONE
SELF-CONSTRUCTION STEPS (DIY)

MODULO BASE, VISTA SUD-OVEST *BASIC MODULE, SOUTH-WEST VIEW*

PROSPETTO SUD *SOUTH FACADE*

Il modulo base di Mild Home è un'abitazione ecologica di 45 mq, realizzabile con pannelli prefabbricati di paglia e legno o in auto-costruzione (DIY). I materiali utilizzati sono naturali, non trattati chimicamente, locali e riciclati, riciclabili e a basso impatto ambientale.
Il modulo è ampliabile raddoppiandolo o triplicandolo. Si costruisce a secco sia con i pannelli prefabbricati che in autocostruzione, riducendo gli sfridi e l'energia di cantiere.
I costi di questa tipologia costruttiva realizzata in opera (in Italia) si aggirano intorno ai 900/1000 €/mq (abitazione finita), mentre in autocostruzione si può tranquillamente scendere ai 600/700 €/mq. Va sottolineato inoltre che investire in un edificio in paglia e legno garantisce, oltre ad un ambiente naturale e salubre in cui vivere, un risparmio a lungo termine sulle spese di riscaldamento nel periodo invernale fino al 70%.

The basic module of Mild Home is an ecological house of 45 sqm, built using prefabricated straw and wood panels or directly in yard with the possibility of self construction "do it yourself".
The materials used are natural, non-chemically treated, local and recycled, recyclable and with low environmental impact. The module can be expanded easily doubling or tripling.
It be built dry both with prefabricated panels that in self-construction, reducing waste and energy in the yard.
The costs of this type of construction work made (in Italy) are around 900/1000 €/sqm (house finished), while in self construction you can safely go down to 600/700 €/sqm.
It should be emphasized that investing in a straw and wood house guarantees not only a natural and healthy environment to live in, but also a long-term savings on heating costs during the winter up to 70%.



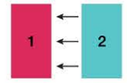
MODULO BASE TIPO A - 45 mq
planimetria, scala 1:100

Basic module type A - 45 mq
plan, scale 1:100

modulo espandibile
expandable module

ABITAZIONE TIPO B - 95 mq
planimetria, scala 1:100

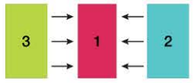
House type B - 95 mq
plan, scale 1:100



espansione con 1 modulo
expansion by adding 1 module

ABITAZIONE TIPO C - 120 mq
planimetria, scala 1:100

House type C - 120 mq
plan, scale 1:100



espansione con 2 moduli
expansion by adding 2 modules

UN SISTEMA FLESSIBILE

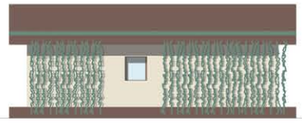
Il modulo base della Mild Home è progettato per essere ampliabile facilmente in base alle esigenze spaziali ed economiche degli abitanti.
Il modulo base di 45 mq è adatto ad ospitare una giovane coppia, ma può essere ampliato anche in un secondo momento diventando un'abitazione di 95 o di 120 mq.
Il sistema costruttivo rimane sempre lo stesso, realizzabile facilmente e rapidamente anche con l'auto-costruzione.
Le tipologie abitative proposte (A, B e C) evidenziano la grande versatilità ed elasticità del sistema e dimostrano come sia facile, accostando i moduli, trovare molteplici soluzioni per differenti esigenze.
Anche gli spazi interni sono flessibili, e grazie alle pareti interne isolate ma leggere, è possibile trasformare gli ambienti con facilità in base alle necessità.
Questo è un sistema semplice ma efficace, che risponde concretamente al "bisogno di casa", all'esigenza di risparmio economico, di salubrità degli ambienti di vita, di risparmio energetico e di basso impatto ambientale.

A FLEXIBLE SYSTEM

The basic module of Mild Home is designed to be easily expandable based on the spatial needs and economic availability of the inhabitants.
The basic module of 45 sqm is suitable for a young couple, but can be expanded at a later time becoming a house of 95 or 120 sqm.
The construction system is always the same, realizable easily and quickly even with the self-construction way.
The proposed housing types (A, B and C) show the versatility and flexibility of the system and demonstrate how easy it is, combining modules, find multiple solutions for different needs.
Also the interior spaces are flexible, and thanks to the internal walls insulated but lightweight, it is possible to transform rooms according to requirements.
This is a simple but effective way to give a concrete answer to today's "housing needs",including cost savings, a healthy living environment, energy efficiency and low environmental impact.

PROSPETTO SUD, TIPO B
SOUTH FACADE, TYPE B

PROSPETTO SUD, TIPO C
SOUTH FACADE, TYPE C



PROSPETTO NORD, TIPO B
NORTH FACADE, TYPE B

PROSPETTO OVEST, TIPO C
WEST FACADE, TYPE C

immagini esemplificative *sample images*

MODULO BASE, VISTA NORD-OVEST *BASIC MODULE, NORTH-WEST VIEW*

ABITAZIONE TIPO B - ABITAZIONE TIPO C

L'abitazione di tipo B comprende un soggiorno, una cucina abitabile, 2 camere, 2 bagni, e spazio per ripostiglio.
L'abitazione di tipo C è costituita da un soggiorno, una cucina abitabile, 3 camere, 2 bagni, ripostiglio e spazio per centrale termica. E' ricavato inoltre uno spazio a patio a sud-ovest per soggiornare all'esterno.
Sul fronte sud di entrambe ci sono due grandi aperture che permettono di usufruire dell'apporto di luce e calore proveniente dal sole.
Le schermature in facciata con pannelli scorrevoli a brise soleil garantiscono l'ombreggiamento durante il periodo estivo.
Il fronte nord è invece protetto dai venti freddi con piante rampicanti che tessono una trama naturale su cavi metallici. Sulla parte piana della copertura è previsto un tetto verde, mentre la parte inclinata a sud può ospitare un sistema fotovoltaico e/o solare termico.

HOUSE TYPE B - HOUSE TYPE C

The house type B consists of a living room, kitchen, 2 bedrooms, 2 bathrooms, and space for storage.
The house type C consists of a living room, kitchen, 3 bedrooms, 2 bathrooms, utility room and space for central heat. It has also a space with a patio area to the south-west to stay outside.
On the south side of both there are two large openings that allow to take advantage of the contribution of light and heat from the sun.
The sliding sunscreen panels on the south facade provide shading during the summer. The northern front is protected from cold winds with climbing plants that weave a natural plot on metallic cables. On the flat part of the roof there is a green roof, while the inclined southern part can accommodate a photovoltaic and/or solar thermal.

6.8
The competition of ideas in Caras-Severin, Romania

Proposals from seven countries for eight municipalities

Written by
Branda Pavel Dan

The competition of ideas organized by Caras-Severin County Council within the project MILD HOME aimed to select the best projects elaborated by students from two Romanian Architecture Universities. Sixteen proposals were received and were evaluated by a committee of experts from both architecture universities. The evaluation criteria took into account the quality of the concept in relation with subject requirements and options; compliance with the proposed surface indices and regulated, the quality of spatial relations (public / private space), intelligent use of materials, brief and clear rationale of the proposed solution; graphical presentation and accuracy of expression.

Two teams (one from Timisoara and one from Bucharest) won the 1st prize: Timisoara Group formed of Nistor Dragoş and Vingan Răzvan and Bucharest Group formed of And one Radu, Creangă Cosmina-Iuliana, Orzea Carmen and Raetchi Sonia-Iulia.

The winning project from Bucharest comprises an Eco Green Village based on wooden MILD HOMEs. The entire assembly is organized so that there can be done an effective exploitation of the energy intake derived from the solar radiation, while buildings are oriented with the long facade and the glazing façade towards the south side. At the same time the exterior envelope surface will be minimized, therefore resulting a compact volume duplex. The building is connected to one of the short sides and on the other side, considering the dwelling type, there can be built a greenhouse with multiple roles: an intermediary zone between the public and the private space; as an extension of the living room in a protected environment, or as a thermal buffer; as an equipment support for the renewable energy production. Functionally, the building is made up of two parts: a day time area, which is located on the ground floor, where there is included a room with a variable role, according to the wishes of the tenants (office, workshop, library, guest room for people who can hardly move, etc.) and an area for spending the evening, in the attic, comprising two bedrooms, a bathroom and an extra space which could be a bedroom annex could be a second living room.

The proposed building is made up of prefabricated panels systems, which are self-supporting, wooden made with cellulose insulation, placed on a metallic perimeter structure, which will be downloaded to the earth through local concrete foundations made from used truck tires. The exterior finish is made of a striated wood pattern. The goals are made of insulating wooden frames and the windows are made of triple treated glass Low-e type. The prefabricated panels of the floor slab have a system of channels for facilities' distribution. Most materials can be locally purchased and processed / prefabricated. The reduced heating requirements can be obtained by using of a soil-water heat pump or by implementing a biomass plant (CHP). In order to increase the system's efficiency and to lower the deployment costs there has been proposed the production of heat in a centralized system which could be located on each street. In order to heat the domestic water, there is described a proposal which includes solar collectors placed on the buildings. To ensure the quality of the indoor air and to minimize the energy consumption for air heating air, there is proposed a centralized ventilation system, fitted with a heat recovery system, or as a second solution, implementation of an air exchanger on the fresh air introduction circuit. During the months with average temperature above 10 °C, the use of natural ventilation is recommended. In order to avoid overheating in the summer time the project proposes planting deciduous trees in the yard next to the southern façade. Also if heat pump systems will be implemented, they can provide sufficient cooling in summer. Regarding the electricity production from renewable sources is once done through photovoltaic panels and small wind turbines (about 1 kW/h) and also through a biomass cogeneration plant when it is put into operation. Open and multipurpose spaces and prefabricated modules which gives variety in achieving the opaque areas of the glass facades provides a dual interpretation of modularity and flexibility concepts at spatial and constructive levels.

The winning project from Timisoara is based on the concept of integrating the settlement into the natural landscape, by developing a garden with tall vegetation in the living area, considering the idea that the nature provides us all we need: air, water, food. The afforestation of the settlement also represents a manifesto against the massive deforestation which is almost uncontrollable nowadays. The afforestation is also a way of creating intimacy or unique landscapes. Through the proposed afforestation it is aimed to establish a connection between the community and the lake in the western extremity of the land. The water here has a major importance for the settlement. In the frame of the settlement, the dwellings are grouped according to the housing type (1, 2 or 3 rooms), being interconnected by walkways or streets which allow the access by car nearby the dwellings. The division is not physically materialized by fencing, considering the sharing facilities and the community as the main concepts for the project. In the eastern side of the site there are located pavilions in which there are various functions or services. Amongst the solutions related to renewable energy sources in the community, there can be included photovoltaic panels, placed on the south side of the roof and also energy pumps. As for the waste, this solution aims to reduce it, the sewage and the grey water being discharged into the sewage system that is connected to the public one.

The basic concept of the project is the reinterpretation of the traditional wooden house, in Romania. This dwelling is made almost entirely of wood and the foundation is made of stone. The house will be an entirely ecological one considering using these two materials. Unlike the traditional home, the proposed model is based on modular housing, this concept being clearly described in the project schemes. The modularity is the possibility to affix areas as required, the house development being carried along a corridor, by interconnecting the enclosed courtyards and the semiprivate ones, which are determined by the living space. In the first part of the project there is described a short survey about the deforestation process in Romania, underlying the concept of this settlement, but also the dwelling concept. The wood is a renewable and recyclable material and is found in large quantities in Romania being used as a building material. In home design, wood is used both as a structural material and also as finishing material. The proposed insulation for ensuring a good transfer for the walls and for the wrapping layer, consists in hemp fiber plates. This is an organic material having a good thermal transfer. The interior ventilation will be naturally obtained and there are not provided ventilation installations. The use of wood and hemp fiber plates will enable the breathing walls and will ensure a non-polluted air.

EVERY MINUTE 26 FOREST HECTARES ARE CUT IN THE WORLD

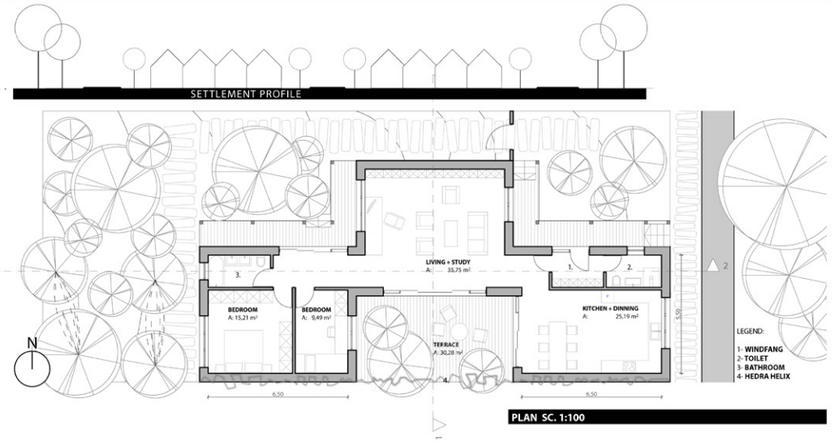
EUROPE'S FOREST COVERAGE /DEFORESTATION OVER THE LAST 14 YEARS

FIRST CENTURY:
75% FOREST COVERAGE

THE X - XVIII CENTURIES:
50% FOREST COVERAGE- DEFORESTATIONS IN ORDER TO INCREASE THE AGRICULTURAL AREA

THE XVIII - XX CENTURIES:
30% FOREST COVERAGE - DEFORESTATIONS IN ORDER TO INCREASE THE AGRICULTURAL AREA

XX CENTURY - PRESENT:
23% FOREST COVERAGE - THE STATE BEGGINS TO LOSE CONTROLE OVER ILLEGAL FOREST DEFORESTATIONS



PLAN SC. 1:100

WHY ARE TREES IMPORTANT?

THEY PRODUCE O_2 - 1TREE/3MONTHS= O_2 FOR 10 PEOPLE/YEAR

CLEAN THE SOIL OF POLLUANTS

THEY ABSORB CHEMICAL SUBSTANCES FROM THE AIR

THEY FILTER THE NOISE

THEY SLOW STORM WATER RUNOFF

SINK CARBON -> FRESH AIR -> WOOD IS PRODUCED BY CO_2 ABSORBTION

SHADE AND COOL -> ECONOMY

THEY ARE WIND BREAKERS

THEY INCREASE PROPERTY VALUE

PRESENT ISSUE

25 % OF ROMANIA'S SURFACE IS COVERED BY TREES

WE DON'T PLANT TREES

THE WOOD IS VALORIFIED ON THE BLACK MARKETS INNAPROPRIATE WOOD VALUE

VILLAGE ADVANTAGES

WHEN LIVING IN A VILLAGE WE HAVE:

NATURE

FRESH AIR

WELL DEFINED COMMUNITY

THROUGH **EDUCATION** AND BY DESIGNING A CONTEMPORARY, NATURE FRIENDLY **HOME** PEOPLE CAN LEARN TO APRECIATE MORE THEIR NATURAL SURROUNDINGS.

NATURE + FRESH AIR
WOODLAND PLANTING

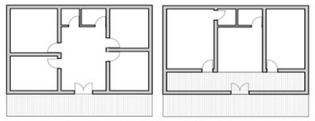
COMMUNITY
SOCIAL LIFE

TYPOLOGICAL VARIETY
DIFFERENT FAMILIES
DIFFERENT NEEDS

MILD HOME CONCEPT

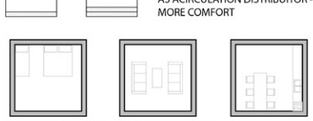
TODAY

TOMORROW



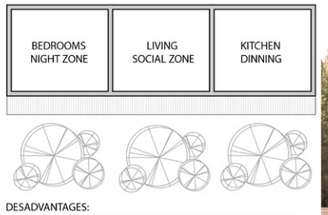
TRADITIONAL HOUSE PLAN, WITH PORCH

ADAPTATING THE TRADITIONAL HOUSE PLAN, WITH A DOUBLE PORCH - THE INTERIOR ONE SERVES AS ACIRCULATION DISTRIBUITOR - MORE COMFORT



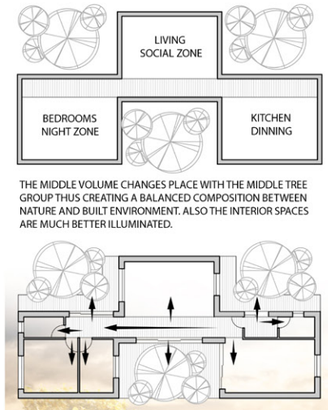
A MODERN HOUSE CONTAINS DIFFERENT ZONES:
- SOCIAL ZONE - LIVING, DINNING - KITCHEN
- WORK ZONE - STUDY , KITCHEN
- NIGHT ZONE - BEDROOMS

VOLLUME ASSEMBLY:



DESADVANTAGES:
- THE VOLUME HAS FEW SIDES (WHICH IS ANADVANTAGE FOR A COMPACT HOUSE) AND FEW ORIENTATIONS.
- IT DOESN'T HAVE A STRONG RELATIONSHIP WITH THE EXTERIOR SPACE - THE NATURE - **THE FOREST**

SOLUTION:

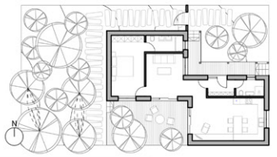


THE MIDDLE VOLUME CHANGES PLACE WITH THE MIDDLE TREE GROUP THUS CREATING A BALANCED COMPOSITION BETWEEN NATURE AND BUILT ENVIRONMENT. ALSO THE INTERIOR SPACES ARE MUCH BETTER ILLUMINATED.

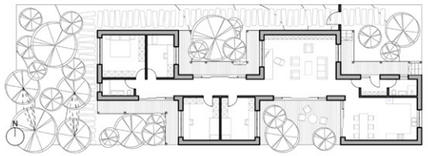
THE WOOD HOUSE IN A FOREST IS AN ONEST GESTURE OF CONTEXT INSERTION, TAKING INTO CONSIDERATION BOTH AESTETICAHL AND ECONOMICAL FACTORS.

SCHWARZ PLAN

THE PORCH IS AN ELEMENT THAT MAKES THE TRANSITION FROM THE EXTREIOR SPACE TO THE INTERIOR SPACE, JUST LIKE THE GRAY FROM THE SCHWARZ PLAN.

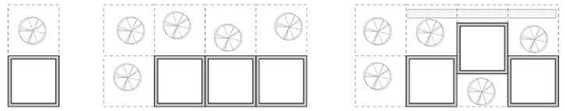


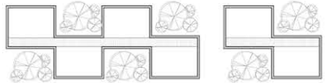
2 MODULES PLAN SC. 1:200



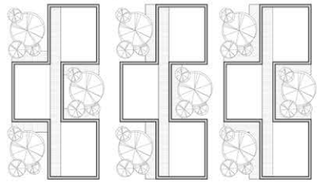
4 MODULES PLAN SC. 1:200

THE EXTERIOR SPACE IS DETERMINED BY THREE DIFFERENT COURTYARDS: THE FIRST ONE IS AN EXTERIOR RECEIPT COURTYARD WHERE NEIGHBOURS WHICH PAS BY COULD USE AS A SOCIAL SPACE WITH THE FAMILY WHICH LIVES IN THE HOUSE. THE DINNING, THE LIVING, AND THE CHILDREN'S ROOM ARE FOCUSED TOWARDS THE SECOND COURTYARD WHICH CAN BE SEEN FROM ALL THE INTERIOR SPACES. THE SOCIAL INTERIOR SPACE IS EQUALLY PRESENT IN THE LIFE OF THE FAMILY AS IS THE SECOND COURTYARD (NATURE = BUILT ENVIRONMENT). THE THIRD COURTYARD IS A PRIVATE COURTYARD WHICH CAN BE USED BY THE FAMILY AS A RETREAT SPOT.

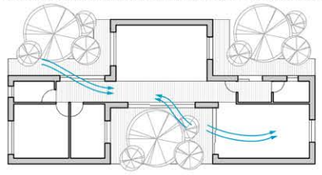




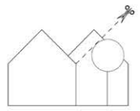
THE HOUSE IS ADAPTABLE TO DIFFERENT FAMILIES. 2 MODULES FOR A SINGLE PERSON OR A COUPLE. 4 MODULES FOR FAMILIES WHICH HAVE MORE THAN 2 CHILDREN, OR A GUEST ROOM.



AS THE INTERIOR SPACE IS ADAPTABLE TO THE FAMILY'S NEEDS, THE EXTERIOR SPACE IS ALSO ADAPTABLE, THE FAMILY CAN CHOOSE HOW MANY AND WHERE TO PUT THE EXTERIOR PORCHES, THUS BEING ABLE TO DEFINE BE THEMSELVES THE USE OF THE EXTERIOR SPACE.

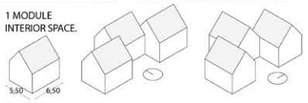


EASY NATURAL VENTILATION PROCESS

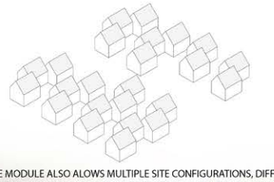


THROUGH TREE TRIMMING, BRANCHES WONT'T LET SHADE COVER THE SOLAR PANELS. IN THIS WAY THE FAMILY WILL GET USED TO TAKE CARE OF THEIR NATURAL SURROUNDINGS THUS THEIR RESPECT FOR NATURE WILL GROW.

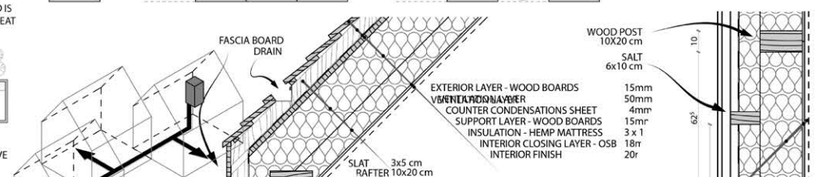
1 MODULE
INTERIOR SPACE.

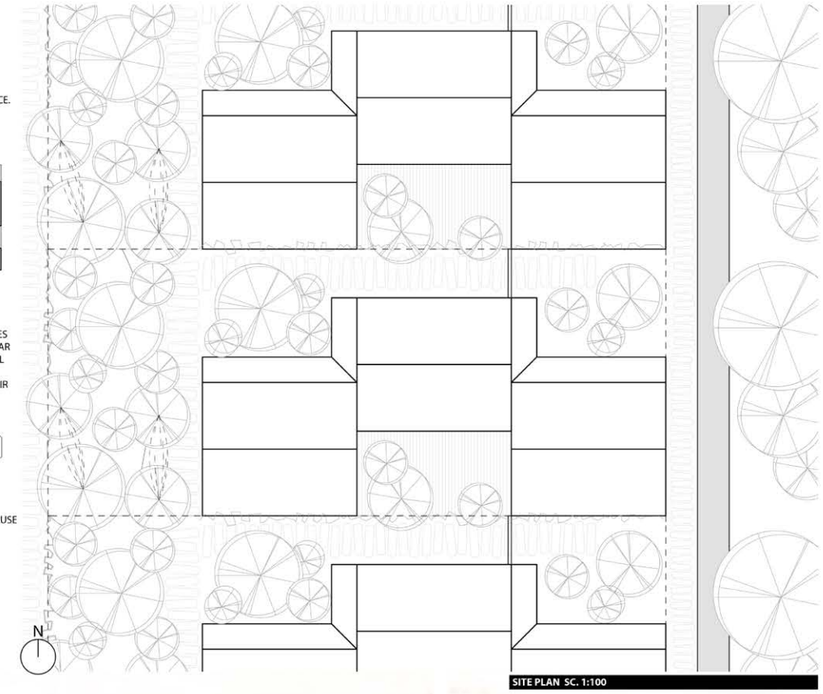


THE HOUSE IS ALSO ADAPTABLE TO ANY ORIENTATION POSSIBLE, BECAUSE EACH MODULE HAS THREE SIDES FREE. IF THE HOUSE ISN'T JOINED TO THE NEIGHBOURING PLOT, THEN ALL FOUR SIDES ARE FREE.

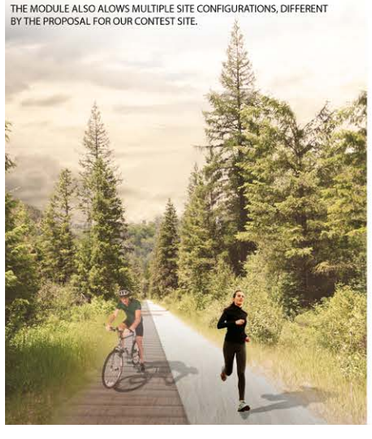


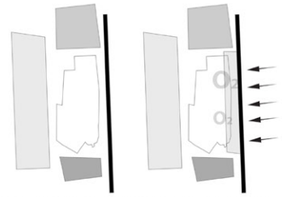
THE MODULE ALSO ALOWS MULTIPLE SITE CONFIGURATIONS, DIFFERENT BY THE PROPOSAL FOR OUR CONTEST SITE.



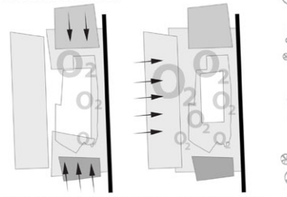


SITE PLAN SC. 1:100

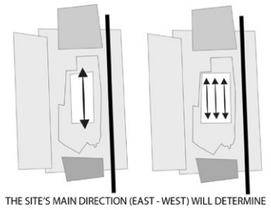




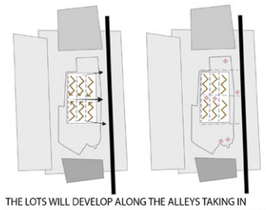
THE SITE'S BORDERS ARE: NORTH: NATIONAL ROAD TOWARDS CARANSEBES; WEST: ORCHARD; SOUTH: FOREST; EAST: LAKE IN ORDER TO PROTECT TO COMMUNITY FROM THE NOISE OF THE NATIONAL ROAD, A PIECE OF FOREST WILL DIVIDE THE HOUSES FROM THE ROAD.



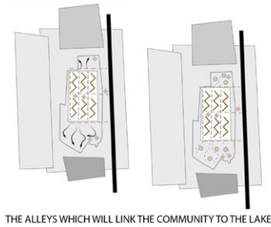
PIECES OF FOREST WILL BE PLANTED IN ORDER TO MAKE THE TRANSITION FROM THE LAKE/ ORCHARD/ FOREST TOWARDS THE COMMUNITY.



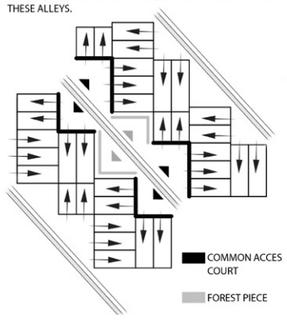
THE SITE'S MAIN DIRECTION (EAST - WEST) WILL DETERMINE THE DIRECTION OF THE ALLEYS.

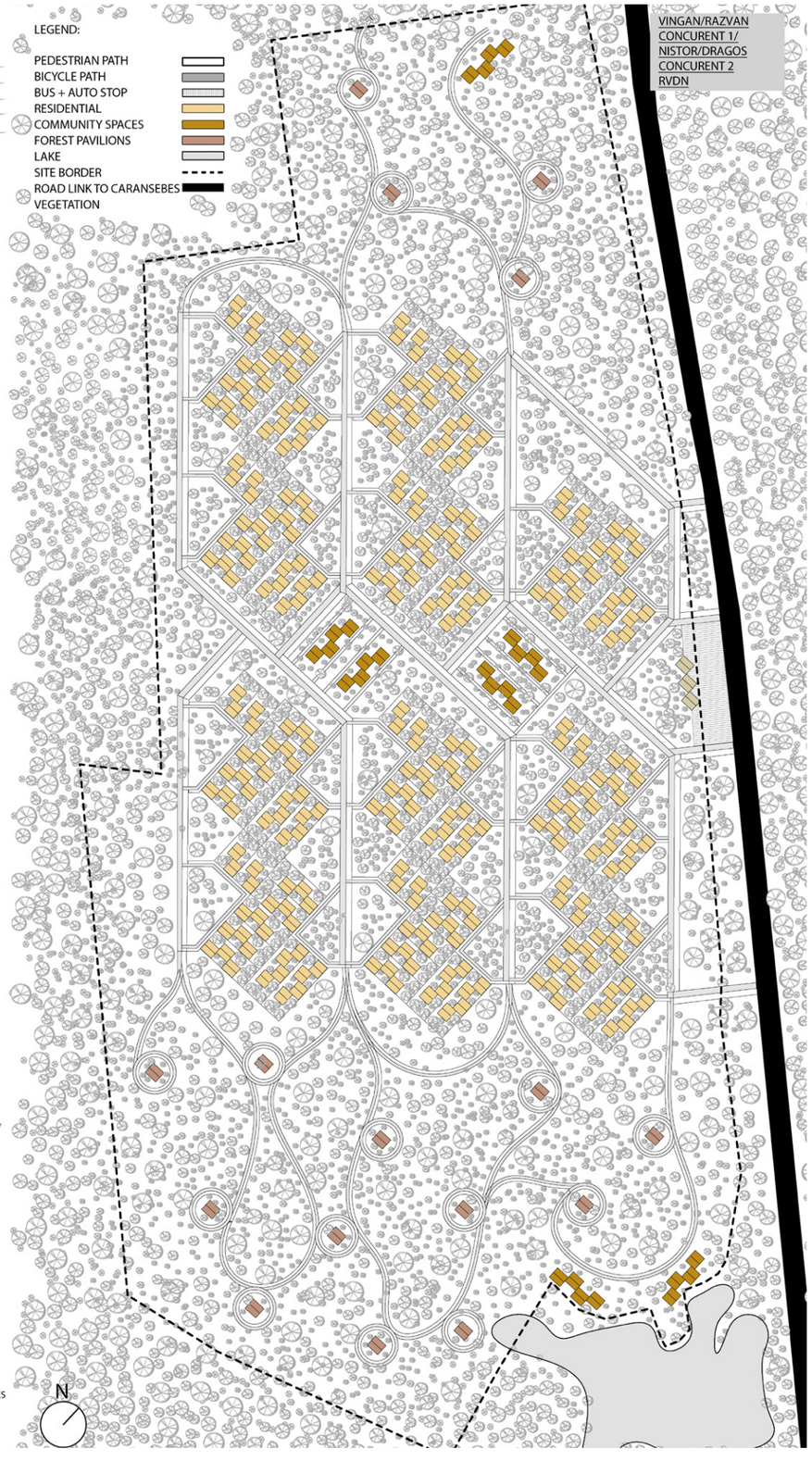


THE LOTS WILL DEVELOP ALONG THE ALLEYS TAKING IN CONSIDERATION A SOUTHERN ORIENTATION TO ALL HOUSES. ONE MAIN ALLEY WHICH CONTAINS COMMON SPACES AND A FAIR WILL LINK THE NATIONAL ROAD TO THE COMMUNITY. COMMON SPACES WILL APPEAR IN THE PROXIMITY OF THE LAKE AND THE ORCHARD.



THE ALLEYS WHICH WILL LINK THE COMMUNITY TO THE LAKE/ ORCHARD WILL HAVE A FLUID FORM IN ORDER TO BLEND IN THE FOREST. ALSO FOREST PAVILIONS CAN BE FOUND ALONG THESE ALLEYS.





Question: How can density cohabit with natural landscapes and overcome homogenization?
Answer: Thru complex homogeneity, achieved by reinterpreting the urban tissue specific to the area.
Our layout is a hybrid structure between the city Caransebes, with its squares house blocks that hide orchards and gardens in the middle, and the village Paltinis, with his linear disposition of houses. We've given the green space to the residents, for common use, and minimized he traffic area available now only for bikes and pedestrians, with the exception of loading/unloading, fire truck and ambulance access.

The project organizes a number of green structures and building structures on the basis of a homogeneous matrix of sites. They are defined either by the built frames of different housing structures (row and semi-detached) or by rows of trees and perimeter edible hedges and narrow alleys forming vegetation frames. Landscape architecture encloses architecture and vice versa. The streets run from east to vest, taking advantage of the south orientation thru the greenhouses. Urban intensity in a suburban context is created by a great variety of housing structures, pathways, garden types, private and public green spaces.

FOOD FOREST

COMMON PARKING SPACE - RESTRICTED TO LOADING/UNLOADING
SHOP
20 ARTIST
PSYCHOLOGIST
HOME OFFICE
RECYCLING BINS
GREEN FRAME
PEDESTRIAN WALKWAY/BICYCLE PATH
CARPENTER

RETENTION POND
The retention ponds are protected by a area of dense vegetation.

The whole village layout is dictated by the need to maximize south orientation.

The project takes into account the connection to the existing traffic structure, and manages to create a hierarchy: the county road, the loop road that encompasses the public spaces, the bicycle and pedestrian paths that end in the scenic bicycle path at the fringe of the site, the narrow alleys that make the house blocks permeable.

SCALE 1:2000

FOOD FOREST
COMPOSTING
FOOD FOREST
The green street doubles as a public garden but also as a flexible green infrastructure for the entire neighborhood,with rainwater retention features, tree plantations and different green clusters with edible plants that can be also used for didactic gardening..
PEDESTRIAN WALKWAY/BICYCLE PATH
STREET
RECYCLING BINS
FUTURE DEVELOPMENT
FUTURE DEVELOPMENT
COMMUNITY SPACE
COMMUNITY CENTER
PERIMETER

HOME OFFICE
PROFESSOR ROOM FOR TUTORING
PAINTER'S STUDIO
ACCOUNTANT
STREET HEAT/ ELECTRICAL GENERATION
NATURAL PLAYGROUND
RETENTION POND
PEDESTRIAN WALKWAY/BICYCLE PATH
COMMON PARKING SPACE - RESTRICTED TO LOADING/UNLOADING
DENSE VEGETATION (LAKE PROTECTION AREA)
PIER

FOOD FOREST
FOOD FOREST
COMPOSTING
Functionally the buildings differ thanks to the many public and collective activities planned for the ground floors, while various outdoor activities are spread out to the whole site (orchards, playgrounds, green and paved areas)

PROFESSOR ROOM FOR TUTORING
PAINTER'S STUDIO
ACCOUNTANT'S OFFICE
JOURNALIST'S OFFICE
HOME OFFICE
SCULPTOR'S STUDIO
MODEL HOUSE (FOR VISITORS)
SHOP
2D ARTIST
HOME OFFICE
PEDESTRIAN WALKWAY/BICYCLE PATH
RETENTION POND

LIVING FLEXIBILITY
The MILD homes dont all look the same. It is possible to adapt them to fit the tenant's taste and lifestyle.
The living flexibility is encouraged by the use of advanced design strategies at the building scale, such as the use of standardized components that allow lower construction, management and maintenance costs.
The interior flexibility allows the adaptation of spaces and demands extremely disparate. The opportunity to change with time the functional "mixes" of buildings is linked to the choice of a modular organization. A ground floor room from the house unit can be turned into an office or shop or it can become a bedroom for a disabled person. The greenhouse can become an artist's studio open to friends and neighbours.
The two types of houses, "row" and semi-detached, along with their multiple variations, share the goal of confering identity and scale distinction necessary to achieve diversity within unity.
The plan is to build between 100 and 200 housing units within that neighborhood.
Apart from the eco homes, the green village will also comprise a daycare center and afteshool for children, multifunctional facilities, space for recreation, etc.

SCALE 1:500
FOOD FORREST

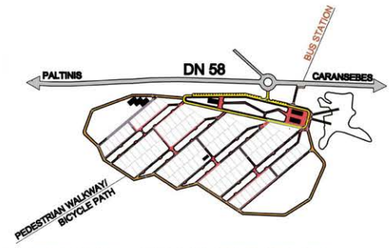
DESIGN FEATURES
• Large south facing area to maximize the solar gain and solar energy generation • South facing facades are highly perforated for achieving maximum solar gain in the winter period • North facing facade are perforated just by strict functional openings to minimize heat loss in winter • Edible deciduous trees are planted in the south oriented courtyard providing summer shading • Green house transparent PV roof panel shading the south facing openings • Utilization of existing infrastructure • Utilization/ refurbishment of existing buildings • Scenic bycicle path enveloping the residential area • Preservation and protection of sensitive areas • Consolidation of utilities • Minimal impact on site topography • Orientation for use of renewable energy • Complementary use of renewable energies • Window sizing, location and shading • Engineered lumber • Alleys covered with gravel made from recycled brick • Reusable foundation – recycled car tires filled with concrete • Products with minimal off-gas • Reduction of textiles, maximized hard floor surfaces • Harmful gas monitoring and control (Radon) • High efficiency light fixtures • Reuse of removed topsoil • Food forest – plants on site give edible produce • Natural playgrounds • Rainwater management • Space provided for future development •

DENSE VEGETATION (WIND BREAKER)

SCENIC PEDESTRIAN WALKWAY/ BICYCLE PATH
SCENIC PEDESTRIAN WALKWAY/BICYCLE PATH
0 10m 50m 100m

FOOD FOREST
COMMUNITY GARDENING, COMPOSTING
ROW HOUSES
NATURAL PLAYGROUND
PEDESTRIAN WALKWAY/ BYCICLE PATH
BRICK GRAVEL (RECYCLED)
SEMI-DETACHED HOUSES
BACKYARDS
WITH EDIBLE HEDGES ON THE PROPERTY LIMITS

First awarded design for Caraş - Severin, Romania
Designed by drd. arh. Sonia-Ilulia Raetchi, drd. arh. Radu Andone, stud. arh. Carmen Orzea and stud. arh. Cosmina- Iluiana Creanga



TRAFIC MANAGEMENT

DN 58
ROAD - SURROUNDING THE PUBLIC AREA
PARKING SPACES ON THE FRINGE OF THE SITE
BRICK GRAVEL PEDESTRIAN WALKWAY/ BYCICLE PATH
PARKING SPACES LIMITED TO LOADING/UNLOADING
SCENIC BYCICLE PATH - ON THE PERIMETER
PUBLIC TRANSPORTATION - BUS STATION

The heat demand for the residences will be provided by an earth-water heat pump, and for the ventilation sistem through a earth-air heat exchanger and a heat recovery unit.

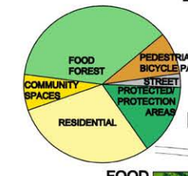
RENEWABLE ENERGY

WIND
SUN
BIOMASS
GEOTHERMAL

WIND
SUN
BIOMASS
GEOTHERMAL
ELECTRICITY
HEAT
ALTERNATIVE
OCASIONAL
CONSTANT

FOOD FOREST
The permaculture food forest is a low-input agricultural system in which trees, shrubs and perennial herbs produce fruits, nuts, berries, edible greens and medicinal herbs.
Permaculture, derived from permanent agriculture, is defined as the design of environments for food, shelter, economic security and social well-being that are locally self-sustaining.

VEGETABLE GARDEN
COMMUNITY GARDEN
ORCHARDS
EDIBLE HEDGES



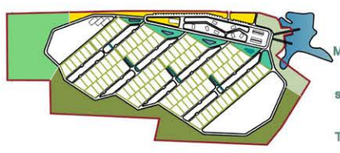
LAND USE

FUTURE ADDITIONS
COMMUNITY STORAGE SPACES
CONSTRUCTION MATERIALS/ CROPS/ TOOLS
CHAPEL (EXISTING BUILDING)
NATURAL PLAYGROUND
GREEN PUBLIC SPACE
COMMUNITY SPACE (OUTDOORS)
WEEKEND ORGANIC MARKET, SHADED MEETING PLACE
COMMUNITY CENTER (INDOORS)
WORKSHOP/ MEETING SPACE, BIKE RENTALS/ REPAIRS, GROCERY SHOP, COMMUNITY LOUNDRY, CANTEEN ROOM

FOOD FOREST
community orchards
SHOP
STUDIO
PIER
HOME OFFICE
COMMUNITY
FOOD FOREST
community vegetable garden
NURSERY + AFTERSHOOL
(33-50% OF THE POPULATION IS COMPOSED BY SMALL CHILDREN)
COMPOSTING

ORCHARDS
DN 58 PROTECTION AREA
LAKE PROTECTED AREA
WINDBREAKER - VEGETATION
BUFFER STRIP (AROUND THE RI
EDIBLE HEDGES INDIVIDUAL PRO

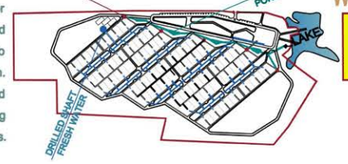
PROTECTED & PROTECTION AREAS



FRESH WATER
GREY WATER
BLACK WATER
SEPTIC TANK
RETENTION BASIN
LAKE

WATER MANAGEMENT

It is often the best solution for the treatment of grey water systems to install and maintain a system in which grey water does not need to be treated. Many substances in grey water are not harmful to plants and some even provide nutrients to help stimulate plant growth. This is only used for toilets and irrigation and washing purposes.

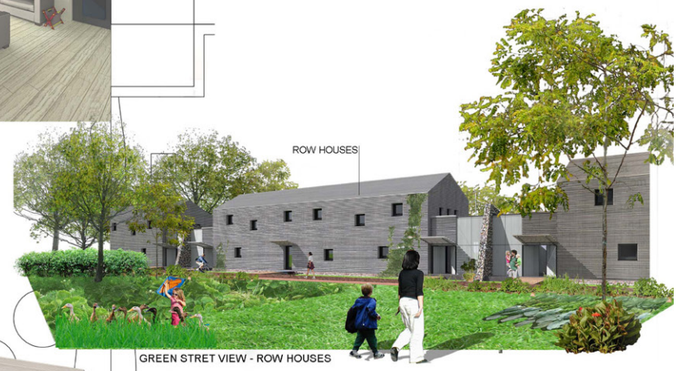


SCENIC BYCICLE PATH

COMPOSTING
RECYCLING
BIOMASS = CROPS RESIDUE
COMMUNITY STORAGE SPA
BIOMASS/CROPS/ TOOLS

The composting of organic matter is done collectively (2 areas per street).The compost materials used for crops fertilisation and biomass. The recycling bins are positioned at the intersection between pedestrian and car circulation so they can be easily emptied by garbage trucks.

WASTE MANAGEMENT



GREEN STRET VIEW - ROW HOUSES

BACKYARD VIEW - ROW HOUSES

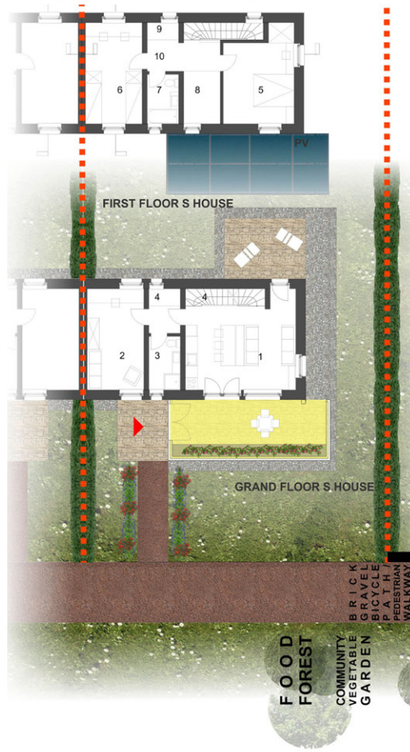
GREEN STREET VIEW - SEMIDETACHED HOUSES

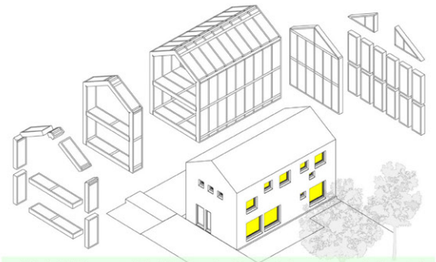
SEMI-DETACHED HOUSE - SITE LAYOUT

0 1m 5m 10m

RETENTION POND VIEW

SEMI-DETACHED HOUSE - SOUTH ELEVATION



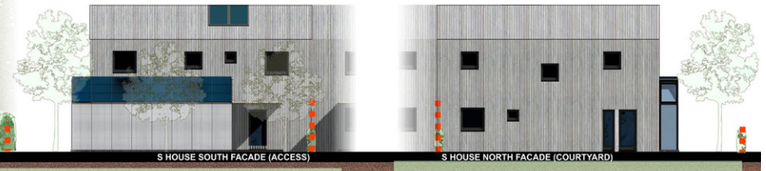


prefabricated light/easy assembling/ high thermal resistance exterior envelope panel * the exterior envelope panel it consist of a wooden frame, closed with plywood and filled with cellulose a high thermal resistance material * the high energy efficiency frame openings are embedded in the prefabricated panel * because of the small (100cm large), easy to assemble exterior envelope prefabricated panel a variety of facades can be achieved in the same volume * there are 56 exterior wall prefabricated wood panels, in 5 different types depending on the windows dimensions that are embedded or not, assembled according whit light/ventilation/protection necessities

0 1m 5m 10m

Scara 1:100

N



Energy conserving strategies
- compact/optimal envelope - semi detached house and an additional green house to reduce the exterior envelope area - large south facing area to maximize the solar gain and solar energy generation South facing facade is high perforated for achieving maximum solar gains in the winter period - - North facing facade in perforated just by strict functional openings - high thermal resistance insulation envelope - thermal bridge "free" construction" - airtight envelope - food deciduous trees in the south oriented courtyard for summer shading without obstructing the winter solar radiation (also in the resource village management) - green house transparent PV roof panel shading the south facing openings - the greenhouse has multiple use as a: windfang; exterior protected living; temperature buffer zone, thermal storage (mass) the stone finished slab and fire partition is used as a heat storage container

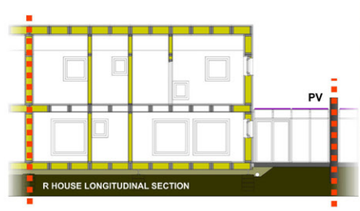
1. LIVING + DINING + KITCHEN
2. BEDROOM/ STUDY/ SHOP/ HOME OFFICE
3. SMALL BATHROOM.
4. TECHNICAL SPACE
5. MASTER BEDROOM
6. BEDROOM
7. BATHROOM
8. STORAGE AREA/ FITNESS/HOBBY/ SECOND BATHROOM
9. TECHNICAL SPACE
10. HALLWAY
11. GREENHOUSE

building elements:
- ecological plaster/ wood/stone floor interior finishing - installations gap - airtight membrane - 100x290x40cm prefabricated light/easy to mount/ high thermal insulated wall/roof panel (wood frame filled with cellulose) - 100x600x30cm prefabricated floor panel (wood frame with installations ducts, the panel on the ground are also filled with cellulose) - 100x100x40 cm prefabricated roof connection panel (wood frame filled with cellulose) - wood planking exterior finishing - high energy efficient wood frame triple-glassed windows - the foundation are local and cast in reused tires - the structural building frame sits on a metal frame trusses that is filled with gravel to stop the infiltration of the humidity from the ground - the green house is close with good thermal insulation, traslucid (privacy protection) policarbonate

Installations and Materials:
- natural ventilation using greenhouse temperature buffer zones - mechanical ventilation system whit a earth-air heat exchanger (cooling and heating) and a heat recovery unit - heat generation by heat ground heat-pump and solar collectors - electricity generated by Photovoltaic and wind turbine - water provided from the village water management system according with usage - warm water heated whit solar collectors mounted on the roof

- building Materials are renewable, reused or recycled from local sourcing, with low embedded energy, low impact waste: wood, cellulose, glass, stone, rock, concrete (low amount), reused steel trusses.

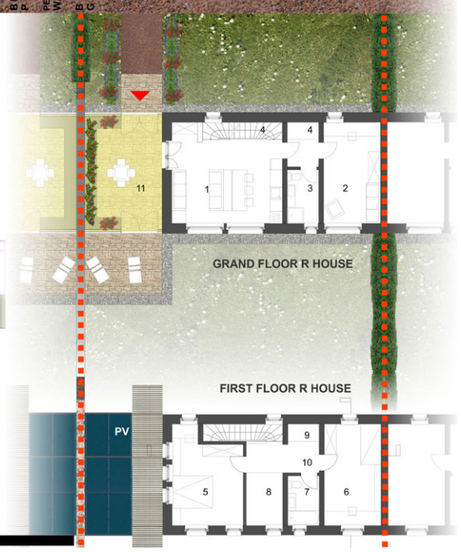
R HOUSE TRASNVERSAL SECTION



R HOUSE LONGITUDINAL SECTION

R HOUSE NORTH FACADE (ACCESS)

R HOUSE SOUTH FACADE (COURTYARD)



Site plan scale 1/1000

This project takes its inspiration from the intentional ecovillages around the world . To complement the sustainable attitude towards ecosystem preservation, water and energy management, green construction and sustainable living, we add a few elements inspired by the intentional communities:

- Common buildings: the Community Hall, a cafeteria, workshops, the Arts and Crafts Center, shops and a kindergarden.
- Common green spaces: common gardens, willow plantations.
- Common activities are encouraged: common meals, gardening, participation in the construction and development of the ecovillage, local cultural activities.
- Work inside the ecovillage is encouraged: the workshops can be rented and used for manufacturing products sold in the community shops. Jobs can be created for education in the kindergarden and the Arts and Crafts Center, for courses in ecology and permaculture, for manufacturing and commerce inside the ecovillage.
- The ecovillage is a place to spread the word of a more sustainable future: courses will be held for people outside the community interested in sustainability. The application of ecological principles can be developed further inside the ecovillage.
- Driving inside the ecovillage is restricted. There are parking lots at the edge of the ecovillage. The roads will be used for pedestrians and bicycle rides, but they are also wide enough to allow for occasional interventions.
- Local cultural activities are encouraged: the "Arts and Crafts" Center allows children and adults to develop their artistic skills, and the Community Hall hosts group activities such as dancing and singing.
- The community focuses on common values supporting a sustainable way of life.

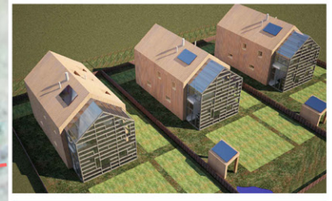
Caransebes in Harta Iosefina, 1769-72

Streetscape in Caransebes

Caransebes - a model for the streetscape and siteplanning in the ecovillage:

according to the historical plans of the city of Caransebes, houses and plots were normally arranged around a green space used for gardening. This particularity remains present in today's city plan.

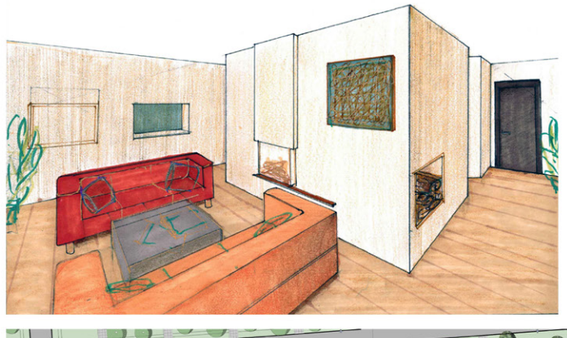
This idea of a green space surrounded by plots and houses is transposed in the ecovillage. But since the density of the project is much lower that that of the city, we decided not to keep the same housing disposition, but to adopt a more relaxed, spaced arrangement of the houses.

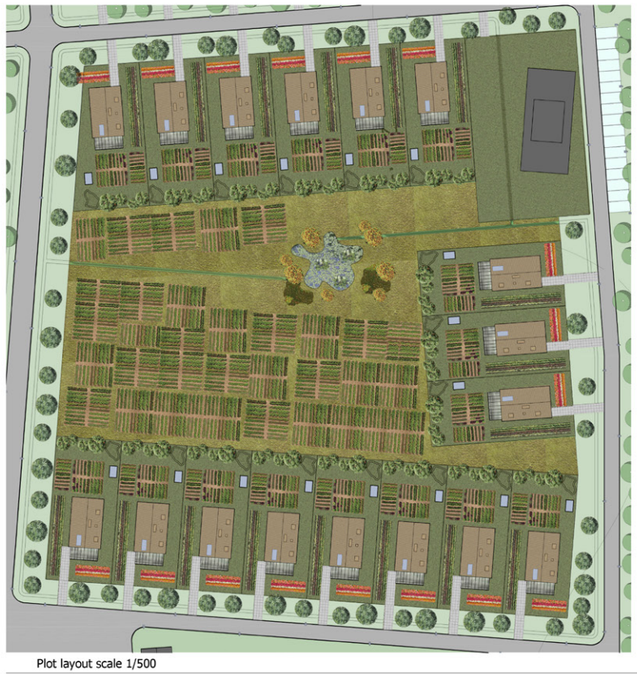


ECO GREEN VILLAGE CARAS - SEVERIN

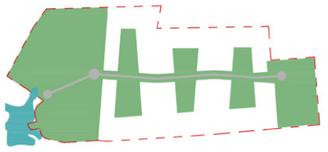
Third awarded design for Caraş - Severin, Romania
Designed by drd. arc. Alexandru Ioan Nichifor, drd. arc. Ana Mohonea and stud. arh Elena Ioana Catrina

Street profile scale 1/200





Plot layout scale 1/500



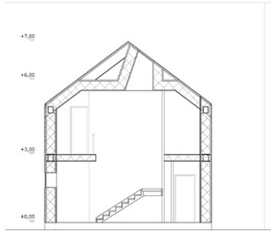
GREEN AXIS
BETWEEN TWO LARGE GREEN AREAS:CONNECTING THE LAKE SIDE, THE WILLOW PLANTATION/PARK, THE COMMON GARDENS AND THE FRUIT ORCHARD

GREEN, BUILT AND ROAD AREAS INSIDE THE ECOVILLAGE. COMMON BUILDINGS ARE LOCATED ON THE MIDDLE AXIS OF THE VILLAGE

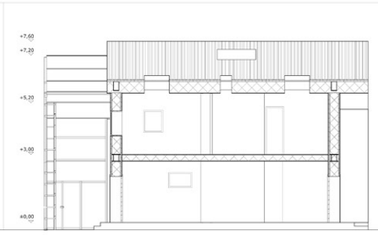
Site-plan ecological design:

- Water
  - o Grey water treatment ponds
  - o Willow plantations regulating rainwater runoffs
  - o Rainwater harvesting for gardening
  - o Permeable paving allowing rainwater infiltration in the soil
  - o Street drenches direct the excess rainwater to the garden ponds
- Materials
  - o Permeable paving
  - o Branch fences
- Energy
  - o Solar panels covering the parking lots
  - o Solar powered street lighting
- Waste
  - o Rainwater and grey water will be used on-site
- Transport
  - o Car use is restricted inside the ecovillage. Cycling and local public transportation will be encouraged - bicycle parking and 2 bus stops will be created at the edge of the ecovillage
- Land use and ecology
  - o The site-plan emphasizes mixing different types of green/natural spaces with constructions. These types of spaces are: common garden, private gardens, constructed wetland, willow plantations, fruit orchard, green streets planted with fruit and ornamental trees.
- Pollution
  - o Rainwater and grey water will be used on-site

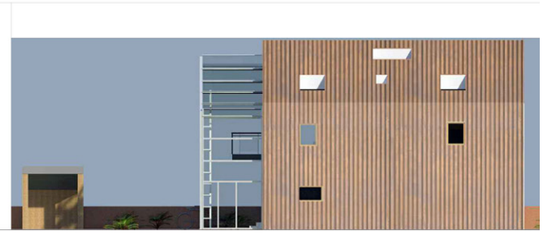
Ecovillage profile scale 1/500



A-A' section scale 1/100



B-B' section scale 1/100



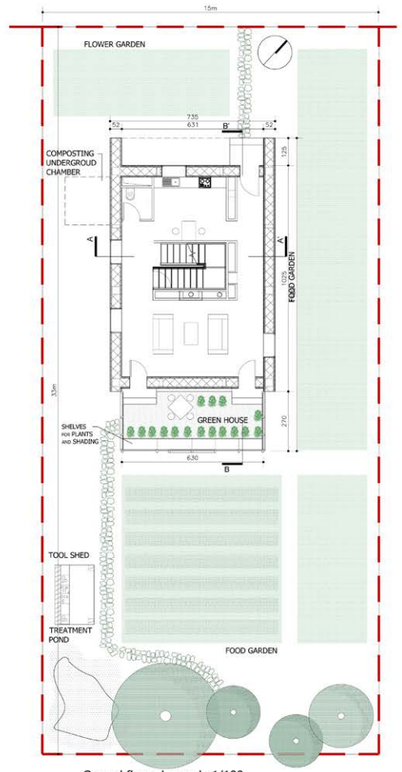
South-East facade scale 1/100

Site plan scale 1/100

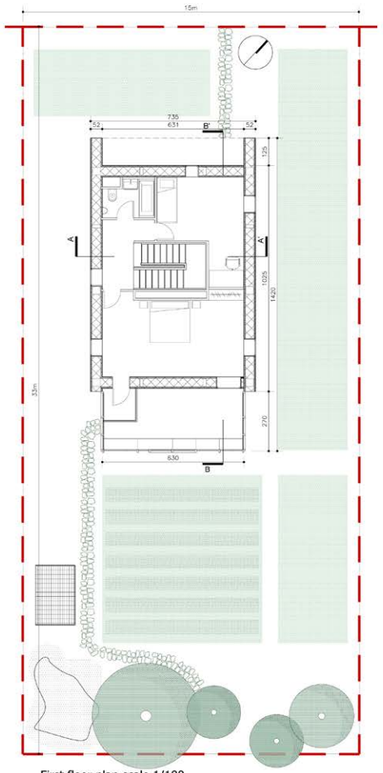
North-West facade scale 1/100

South-West facade scale 1/100

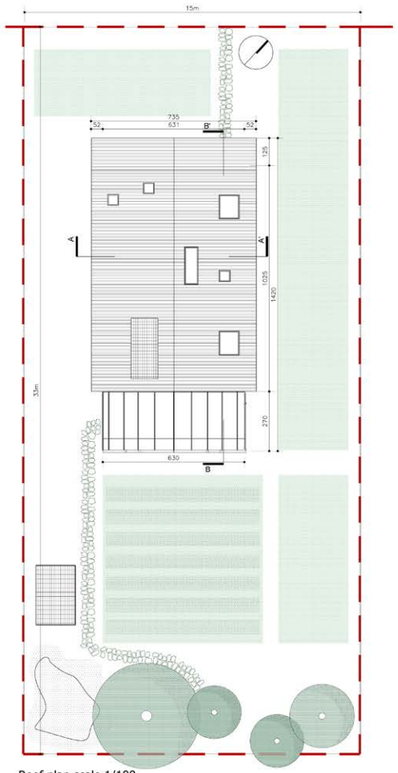
North-East facade scale 1/100



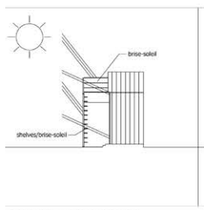
Ground floor plan scale 1/100



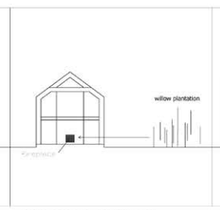
First floor plan scale 1/100



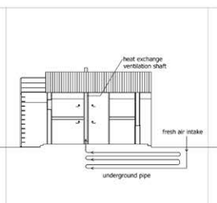
Roof plan scale 1/100



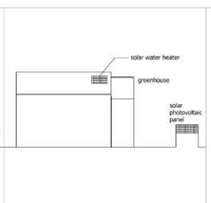
The greenhouse stores the solar heat. Excessive heating during summer is prevented using a combination of horizontal "shelves" (towards the south-west) that act as brise-soleil system and horizontal brise-soleils (at the top of the greenhouse).



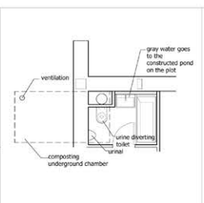
To be carbon-neutral, the houses are heated with willow wood grown at the plantation next to the lake.



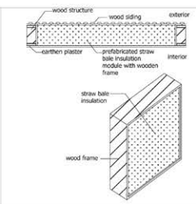
The underground heat exchange pipe cools the air entering the house during summer and heats it up during winter.



Solar energy is collected in 3 ways: using a solar photovoltaic panel for electricity, a solar water heater and a greenhouse for heating.



Human solid waste is composted to be later utilized as a fertilizer. It accumulates in an underground chamber where it is transformed by bacteria for a period up to 2 years. Urine is diverted and diluted to be used in the plot garden or the common garden also as a fertilizer.



The house is insulated with prefabricated straw bale panels made of local materials.

Green house design features:

- Water

o Grey water treatment ponds on each plot
o Rainwater harvesting for gardening
o Dry composting toilets

- Materials

o Locally produced materials
o Straw bale insulation
o Wooden structure
o Wooden roof covering
o Earthen plaster and wood panel finishes
o Interior wood-panel walls
o Recycled stone and concrete foundations

- Health and wellbeing

o The heat exchange system assures fresh air inside the house and eliminates radon gas stagnation through proper ventilation.
o The interior spaces receive natural light through optimal window openings and, where necessary, roof windows. The correct amount of natural light also helps save energy.

- Energy

o Solar energy is used for: electricity, water heating and house heating. For this we use three elements: photovoltaic panels, water heating panels and a greenhouse.
o A heat exchange system using an underground pipe and central ventilation shafts saves energy by using the underground temperature to regulate the house's interior temperature

- Waste

o Recycling is encouraged. Food waste and human solid waste are composted. Urine is used as filtered diluted fertiliser. The materials used in the building are natural and can be recycled.

- Land use and ecology

o Natural pavings are used inside the plot area. Gardening is encouraged. Systems such as composting and grey and rain water reuse provide the necessary nutrients and water for the plants.

- Pollution

o Heating the house and water, when the needs are not satisfied by th solar panel, green house and heat recovery ventilation, is done by burning willow wood. This fast growing wood is harvested from the plantation next to the lake. This system keeps the houses carbon - neutral.

6.9
The competition of ideas in Savski Venac, Serbia

Proposals from seven countries for eight municipalities

Written by
Nina Mitranić

The competition in the *City Municipality of Savski Venac* (part of the City of Belgrade) was held from D*ecember 2, 2013,* (date of the announcement of call for competition) to *February 28, 2014*, (date of publication of results). It was *open, anonymous, one-stage competition for architectural and urban design of MILD HOMES and Eco Green Village in Savski Venac.*

Main goals of the competition was to find an innovative and original solution for conceptual model of Eco Green Village with MILD HOMEs on the territory of Savski Venac Municipality – Borska street. Location "Borska" is situated in the southernmost part of the municipality Savski Venac, on the border with the other municipality of Vozdovac.

The task of the competition was to find best quality conceptual spatial solutions for Eco Green Village, which in general should offer criteria set in the framework of the terms of reference and to be appropriately applied to specific location in the municipality of Savski Venac. The competition was open to architects with acquired university degrees in architecture and to architecture students also. Competition material, were be able to download from Internet portal of the municipality of Savski Venac. To the competition contributed 20 proposals, with large varieties of ideas.

The competition Brief stated that EGV design was expected to rely on a range of passive design strategies (orientation, artificial or natural shading, settlement configuration, reduction of envelope surfaces, landscaping etc.) in order to further reduce negative impacts of the settlement on the environment. EGV was also expected to rely as much as possible on renewable sources of energy. Solutions for EGV as a collection of MILD HOMEs were supposed to demonstrate further potential for reducing the environmental impacts compared with the simple sum of benefits gained through improving the individual dwellings – the cumulative positive effect of the village was intended to amount to more than the sum of effects from the same number of buildings considered individually.

1st equal proposal
Authors team leader: Čedomir Ristić and Nataša Žugić – STELT
Team members: Ana Džokić, Ana Vilenica, Dušan Milanović, Dušica Parezanović, Jelena Tomić, Marc Neelen, Marko Aksentijević, Milica Ružičić, Nebojša Milikić, Paul Currion, Predrag Milić, Srđan Tomić, Tadej Kurepa, Uroš Maksimović, Vedran Spaić, Zoran Jovičić, Živojin Karapešić.

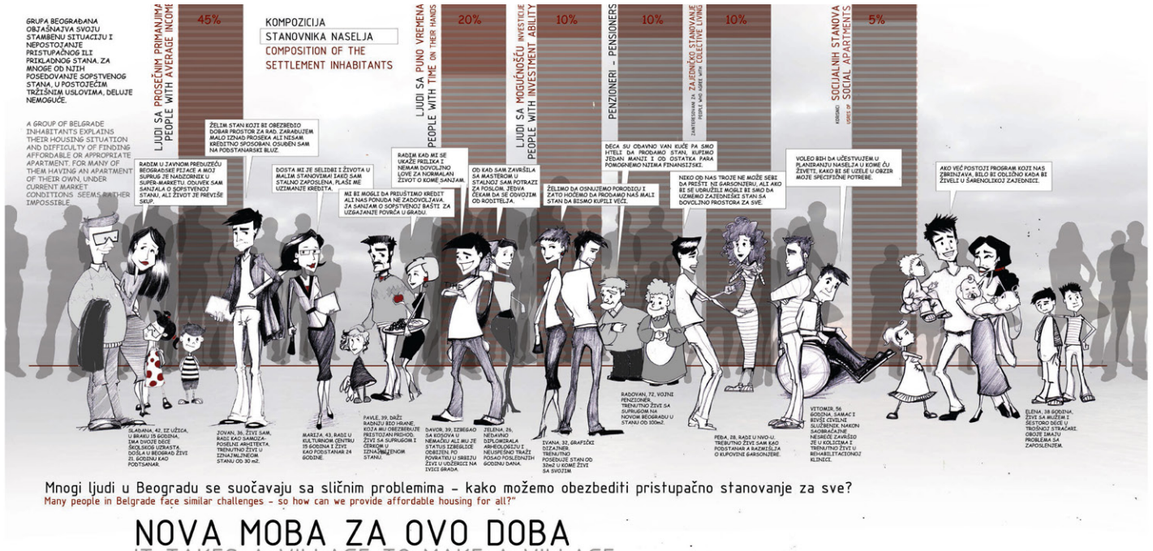
The settlement will be built on a low-risk strategy where each unit of 40 apartments is built in sequence, rather than constructed simultaneously; this is possible in financial terms because of the large percentage is made out of self-build elements. Each unit is a self-contained community and can optimise the design to its specific needs. Each housing unit contains 100 m² of shared facilities: laundry room, living room with kitchen, and a guest apartment. Each unit invests in and produces a common faculty for the entire community: starting from a production facility, a co-working space, a social centre, a restaurant, to an organic market, and open air sport facilities, including an educational path through the area. Site layout presents a sequence of common and community spaces, while individual building units benefit from optimal solar orientation to the south. By grouping apartments in co-housing units, the terrain can be kept open, allowing for a lush green environment with productive gardens, recreation areas, and sustainable drainage based around on-site rainwater infiltration via ponds. The main communication structure to enter apartments is a galvanised metal scaffold that is entirely independent from the apartments.

2nd equal proposal
Authors: Arch. Pavle Stamenović and Arch. Dušan Stojanović

The position that is represented in this project examines the issue of sustainability of architectural space using two key notions: ecology + economy. Spatial concept is based on an architectural ambition for all housing units to achieve a direct contact with the ground. Such spatial configuration enables specific programmatic resolutions, that can be determined by the residents. These solutions are not predesigned, but one could anticipate them. The logic of housing that is in the immediate link with the ground is different from living in the building. Then, part of the soil that is at our disposal is becoming an area of everyday life, and this piece of land becomes a yard, a garden, greenhouse for growing food, or a small production.

3rd equal proposal
Authors: Arch. Dalia Dukanac and Arch. Ivana Jelić

Collective housing in the form of a tract with gallery apartments is positioned in accordance with the disposition of the urban environment and oriented to the southeast. These apartments are subsidized and designed for temporary residence up to two years. During a temporary residence, residents come together and with the help of common capital established legal entity (Housing Co-working) for economically feasible to build their own individual houses designed for rely housing. Upon completion of construction and disengaging from the cooperative, the user is able to purchase an apartment at a cost of construction, but his experience is available for the following users / developers.



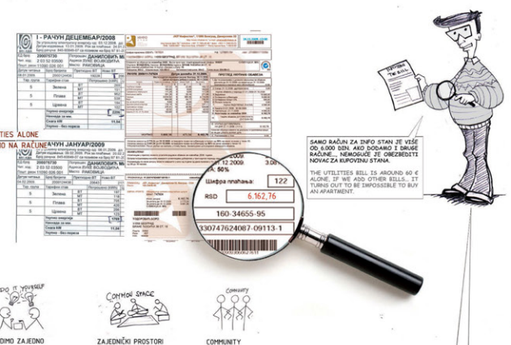
Mnogi ljudi u Beogradu se suočavaju sa sličnim problemima – kako možemo obezbediti pristupačno stanovanje za sve?
Many people in Belgrade face similar challenges – so how can we provide affordable housing for all?"

NOVA MOBA ZA OVO DOBA
IT TAKES A VILLAGE TO MAKE A VILLAGE

INVESTICIONI KAPACITET
INVESTMENT CAPACITY

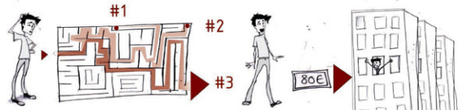
2.7 LJUDI PEOPLE — RSD 59,898 (EUR 518) — 518=100% — 15% — RSD 9,165 (EUR 80)

PROSEČNO DOMAĆINSTVO — AVERAGE HOUSEHOLD — PRIHVATI — INCOME — PROCENTAGE SPENT ON HOUSING AND UTILITIES — PROCENAT KOJI ODE NA STANOVANJE I RAČUNE — POTROŠENO SAMO NA RAČUNE — SPENT ON UTILITIES ALONE



SAMO RAČUN ZA DVFO STAN JE VEĆE OD 4.000 SDN. AKO DODAMO I SBUSE RAČUNE., NEMOGUĆE JE OBEZBEDITI NOVAC ZA KUPOVINU STANA.
THE UTILITIES BILL IS AROUND 60 € ALONE. IF WE ASD OTHER BILLS., IT TURNS OUT TO BE IMPOSSIBLE TO BUY AN APARTMENT.

IZLAZ IZ STAMBENE ZAMKE
EXIT FROM A HOUSING TRAP



#1 IZNAJMLJIVANJE. UKUPNI TROŠKOVI ZA STAN I RAČUNE LAKO MOGU DA PREĐU 50% MESEČNIH PRIMANJA, OSTAVLJAJUĆI LJUDE SA VRLO MALO NOVCA ZA DRUGE TROŠKOVE.

#2 KUPOVINA. IZNOS RATE KREDITA JE TOLIKO VISOK DA JE OVA MOGUĆNOST JOŠ ONJA. ODPLAĆANJE GLAVNICE + KAMATA + RAČUNI UKUPNO DOSTIŽE I DO 73% MESEČNIH PRIMANJA.

NUDIMO TREĆU MOGUĆNOST!

#3 NOVA MOBA. STRATEGIJA KOLEKTIVNOG STANOVANJA KOJA OMOGUĆAVA DA PROSEČNO DOMAĆINSTVO NE TROŠI VIŠE OD 15% SVOG MESEČNOG PRIHODA (80€) NA TROŠKOVE STANOVANJA I RAČUNE

#1 RENTING. THE COST OF RENT AND UTILITIES CAN BE AS MUCH AS 50% OF THE MONTHLY INCOME. LEAVING VERY LITTLE MONEY FOR OTHER COSTS.

#2 BUYING. THE COST OF MORTGAGE, HOWEVER IS EVEN MORE GRIM. PAYING OF THE INTEREST + UTILITIES CAN COST UP TO 73% OF THE MONTLEY INCOME.

WE OFFER A THIRD OPTION!

#3 NOVA MOBA. COLLECTIVE HOUSING STRATEGY THAT MAKES SURE THAT HOUSEHOLDS SPEND NO MORE THAN 15% OF THEIR MONTHLY INCOME (80€) ON HOSUING AND UTILITIES COMBINED!

ENERGETSKA EFIKASNOST
ENERGY EFFICIENCY
UMANJENJE TROŠKOVA KOMUNALIJA IZGRADNJOM STANOVA VISOKE ENERGETSKE EFIKASNOSTI (PASSIVEHAUS STANDARD ILI VIŠI).
MINIMISING UTILITIES COSTS BY BUILDING THE APARTMENTS TO EMPHASISE ENERGY EFFICIENCY (PASSIVEHAUS STANDARD OR HIGHER).

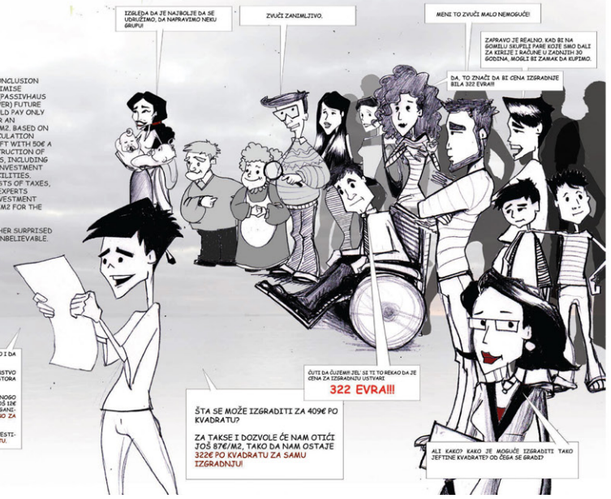
URADIMO ZAJEDNO
DO IT OURSELEVS
UMANJENJE TROŠKOVA GRAĐEVINSKOG MATERIJALA I RADA KROZ KOLEKTIVNI PRISTUP ORGANI KOJI SE OSLANJA NA SAMO-IZGRADNJU I URADIMO-ZAJEDNO TEHNIKE KAO GOD JE TO MOGUĆE.
REDUCING MATERIAL AND LABOUR COSTS BY USING A COOPERATIVE APPROACH THAT EMPHASISES SELF-BUILD / DIY TECHNIQUES WHERE POSSIBLE.

ZAJEDNIČKI PROSTORI
COMMON SPACES
OPTIMIZACIJU VELIČINE STANOVA, TAKO ŠTO ĆE NEKE FUNKCIJE POSTATI DEO ZAJEDNIČKOG ŽIVOTA (POPUT ZAJEDNIČKE VEŠERNICE, SOBA ZA GOSTE, ALI I DRUŠTVENOG CENTRA ITD.)
OPTIMISING THE SIZE OF THE APARTMENTS BY MAKING SOME FUNCTIONS PART OF THE COMMUNAL LIFE (SUCH AS LAUNDRY AREA, GUEST ROOMS, OR SOCIAL CENTER ETC.).

COMMUNITY
ZAJEDNICA
UMANJENJE TROŠKOVA INSTALACIJA (SANITARNA I KUHINJSKA OPREMA) KROZ ZAJEDNIČKU KUPOVINU.
MINIMISING INSTALLATION COSTS (SUCH AS KITCHEN AND BATHROOM FITTINGS AND FIXTURES), BY TAKING A COLLECTIVE APPROACH TO PURCHASING.

TAKO ZVUČI KAO SAN, POSTOJE NAČINI DA SE OVA ZAMISAO SPROVEDE U DELO.

CENA PRISTUPAČNOG KVADRATA
PRICE OF AN AFFORDABLE SQUARE METER

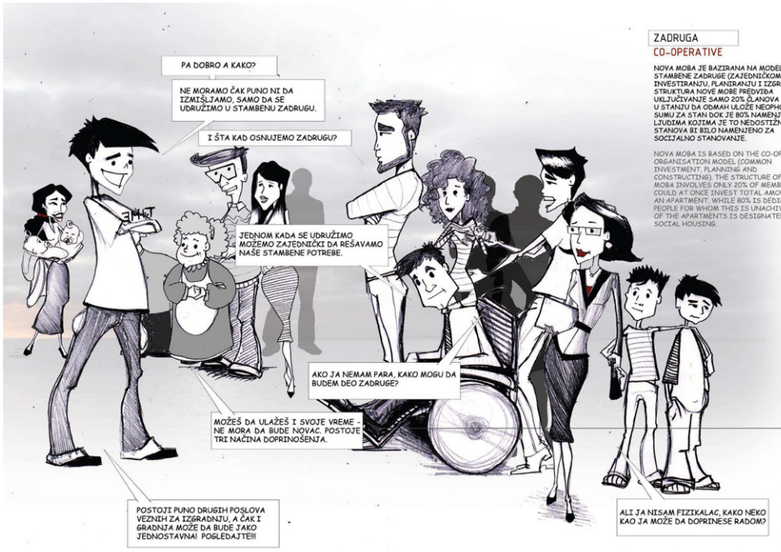


COMING TO THE CONCLUSION THAT IF THEY MINIMISE UTILITIES COSTS (PASSIVHAUS STANDARD OR LOWER) FUTURE INHABITANTS COULD PAY ONLY 18€ PER MONTH FOR AN APARTMENT OF 40 M2. BASED ON AN EXTENDED CALCULATION THEY WOULD BE LEFT WITH 80€ A MONTH FOR CONSTRUCTION OF THEIR APARTMENTS, INCLUDING ADDITIONAL 10% INVESTMENT INTO COMMON FACILITIES. DEDUCTION OF COSTS OF TAXES, PERMITIONS AND EXPERTS RESULTS IN AN INVESTMENT CAPACITY OF 322€/M2 FOR THE CONSTRUCTION.

THE GROUP IS RATHER SURPRISED AND FINDS THIS UNBELIEVABLE

LJUBE, EVO, AKO SE UDRUŽIMO - MOŽEMO NEŠTO I DA URADIMO!!!
PRETPOSTAVIMO DA U PROSEKU DOMAĆINSTVO TREBA DA DOBIJE NEKIH 40m2 STAMBENOG PROSTORA I ULOŽI 20$ 4m2 U ZAJEDNIČKI PROSTOR.
KADA BI NAŠA ENERGETSKA POTROŠNJA BILA MNOGO MANJA, RAČUNI BI NAM BILI SAMO 18€. AKO 20$ 10€ MESEČNO SAMO ZA DRUGE TROŠKOVE I VEĆI ONAJ ZAJEDNIČKE IZGRADNJE, OSTAJE NAM 50€ MESEČNO ZA ULAGANJE U STAN.
NA ROK OD 30 GODINA IMALI BI PROSEČAN INVESTICIONI KAPACITET ZA STAN OD 40M2 PO KVADRATU.

KOLIKO ZA PARA POTROŠIM SVAKOG MESECA NA RAČUNE...
KADA BIH NA NJIMA UŠTEDEO, MOGAO BIH NA DUGE STAZE NEŠTO I DA NAPRAVIM... SAMO KAKO?



ZADRUGA
CO-OPERATIVE

NOVA MOBA JE BAZIRANA NA MODELU STAMBENE ZADRUGE (ZAJEDNIČKOM INVESTIRANJU, PLANIRANJU I IZGRADNJI). STRUKTURA NOVE MORE PREDVIĐA ULRJUČIVANJE SAMO 20% ČLANOVA KOJI SU U STANJU DA ODMAH ULOŽE NEOPHODNU SUMU ZA STAN DOK JE 80% NAMENJENO LJUDIMA KOJIMA JE TO NEDOSTIŽNO. 5 % STANOVA BI BILO NAMENJENO ZA SOCIJALNO STANOVANJE.

NOVA MOBA IS BASED ON THE CO-OPERATIVE ORGANISATION MODEL (COMMON INVESTMENT, PLANNING AND CONSTRUCTING). THE STRUCTURE OF NOVA MOBA INVOLVES ONLY 20% OF MEMBERS WHO COULD AT ONCE INVEST TOTAL AMOUNT FOR AN APARTMENT. WHILE 80% IS DEDICATED TO PEOPLE FOR WHOM THIS IS UNACHIEVABLE. 5% OF THE APARTMENTS IS DESIGNATED FOR SOCIAL HOUSING.

SOLIDARNA EKONOMIJA
SOLIDARITY ECONOMY

I AVANSNO PLAĆANJE / IMMEDIATE PAYMENT

PRODAJOM NEODGOVARAJUĆEG STANA, UŠTEDEVINOM ILI ULAGANJEM OPŠTINE ILI GRADA.

BY SELLING AN INADEQUATE APARTMENT, THROUGH SAVINGS OR INVESTEMENT BY THE MUNICIPALITY OR THE CITY.

II MESEČNO UČEŠĆE - MONTHLY PAYMENT

UGLAVNOM INTERESANTNO ZA LJUDE SA PROSEČNIM ILI NISKIM PRIMANJIMA, PLAĆANJEM NA DUGI ROK, DO 30 GODINA.

MAINLY SUITABLE FOR PEOPLE WITH AVERAGE OR LOWER INCOME, THROUGH LONG-TERM PAYMENT, UP TO 30 YEARS.

III SOPSTVENIM RADOM - THROUGH LABOUR

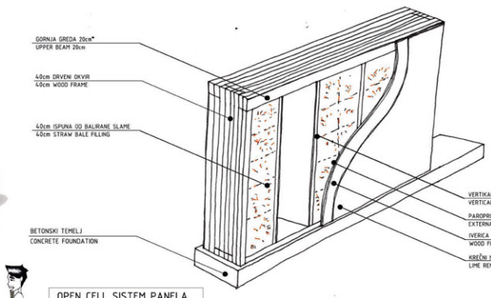
NA OVAJ NAČIN, RADOM NA GRAĐEVINI, ADMINISTRACIJI, PROIZVODNJI KONSTRUKTIVNIH PANELA, ČLANOVI ZADRUGE MOGU ZARADITI KVARDARTNE METRE STAMBENOG PROSTORA - ZA MESEC RADA 1 M2.

IN THIS WAY, THROUGH CONSTRUCTION WORK, ADMINISTRATION, PRODUCTION OF CONSTRUCTION PANELS, COOPERATIVE MEMBERS CAN EARN SQUARE METERS OF HOSUING SPACE - FOR A MONTH OF WORK 1 M2.

URADIMO ZAJEDNO
DO IT OURSELVES

NOVA MOBA KORISTI MODULARNI SISTEM IZGRAĐNJE KOJI SE ZASNIVA NA MONTAŽNIM OPENSELL PANELIMA SASTAVLJENIM OD BALIRANE SLAME I DRVENOG NOSEĆEG OKVIRA. OVAJ SISTEM PANELA JE NOSIV, A POREĐ TOGA I FLEKSIBILAN, PREMA LITU U RAZLIČITIM RAZMERAMA I PROIZVODIO BI SE NA LICU MESTA OD STRANE RELATIVNO NEKVALIFIKOVANIH VOLONTERA, SMANJUJUĆI CENU RADA I TRANSPORTA, KAO I UGLJENIČNE OTISAK IZGRADNJE.

NOVA MOBA USES A MODULAR CONSTRUCTION SYSTEM WITH PREFABRICATED STRUCTURAL PANELS COMPOSED OF A STRAW BALE CORE AND WOOD FRAME. THIS SYSTEM OF PANELS IS LOAD BARING, ADDITIONALLY PANELS ARE FLEXIBLE AND SCALEABLE, AND WOULD BE MANUFACTURED ON SITE BY RELATIVELY UNSKILLED VOLUNTEERS, LOWERING LABOUR AND TRANSPORT COSTS AND CARBON FOOTPRINT OF CONSTRUCTION.

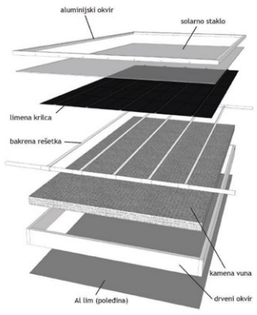


OPEN CELL SISTEM PANELA
OPEN CELL PANELLING SYSTEM

OVAKVA GRADNJA ZAISTA NIJE SKUPA - 56€/M2 NOSEĆEG ZIDA. ZA KOJI NIJE POTREBNA DODATNA IZLOGACIJA! ALI ŠTA JOŠ MOŽEMO DA PRAVIMO SAMI?

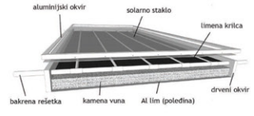
MOŽEMO JEDNOSTAVNO DA PRAVIMO SOLARNE KOLEKTORE ZA ZAGREVANJE VODE! JESTE LI ČULI DA ZELENA AKCIJA ORGANIZUJE KURSEVE?

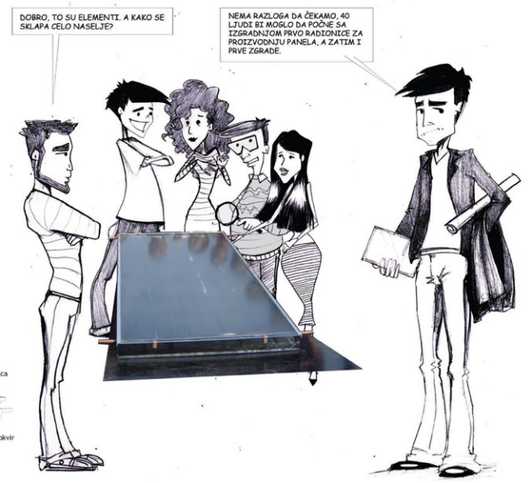
OPEN SUNCE SOLARNI PANELI
OPEN SUNCE SOLAR PANELS



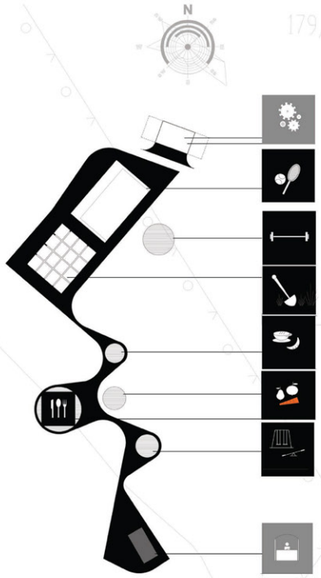
NOVA MOBA KOMBINUJE RAZLIČITE STRATEGIJE ZA SAMOSTALNU PROIZVODNJU ENERGIJE, KAO I ZA POVEĆANJE ENERGETSKIH KARAKTERISTIKA NASELJA, UDEO OD 70% OBNOVLJIVIH IZVORA ENEGIJE U UKUPNOM ENERGETSKOM SNABDEVANJU POSTIŽE SE KROZ UPOTREBU GEOTERMALNE PUMPE, UNAPREĐENJE VENTILACIJE SA TOPLOTNIM IZMENJIVAČEM, KAO I UPOTREBOM "OPEN SUNCE" SOLARNIH PANELA ZA ZAGREVANJE VODE. PANELI SE PRAVE PO PRINCIPU URADI SAM, SISTEM JE OPEN SOURCE.

NOVA MOBA COMBINES DIFFERENT STRATEGIES TO PRODUCE ITS OWN ENERGY OR ENHANCE THE ENERGETIC PERFORMANCE OF THE SETTLEMENT. A PERFORMANCE LEVEL OF 70% ENERGY FROM RENEWABLE SOURCES IS THUS BEING REALISED THROUGH USAGE OF GROUND SOURCE (GEOTHERMAL) HEAT PUMPS, BALANCED VENTILATION WITH HEAT RECUPERATION AND "OPEN SUNCE" SOLAR HOT WATER PANELS. THE PANELS ARE MADE ACCORDING TO DO-IT-YOURSLEF PRINCIPLES, THE SYSTEM IS OPEN SOURCE.





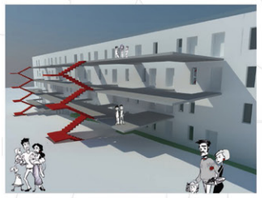
SISTEM PANELA JE DOVOLJNO JEDNOSTAVAN DA I DECA MOGU DA UČESTVUJU U SKLAPANJU. MOGLE BI I DRUGE DA PODUČAVAMO KAKO SE PRAVE I KOJE SU IM PREDNOSTI.



EDUKATIVNA STAZA
EDUCATIONAL PATH

KROZ SREDIŠNJI DEO NASELJA SE PROVLAČI EDUKATIVNA STAZA, KOJA MEANDRIRA IZMEĐU OBJEKATA I POVEZUJE RAZLIČITE ZAJEDNIČKE SADRŽAJE. POČEVŠI OD ORGANSKE FIJACE PREKO DRUŠTVENOG CENTRA, RESTORANA, BAŠTE, KOŠARKAŠKIH TERENA I ZAVRŠAVA SE KOD PROIZVODNE RADIONICE ZA PANELE KOJA SE NALAZI NA NAJNIŽOJ, SEVERNOJ TAČKI LOKACIJE.

THROUGH CENTRAL PART OF THE SETTLEMENT MEANDERS EDUCATIONAL PATH BETWEEN THE BUILDINGS AND CONNECTS DIFFERENT COMMON PROGRAMS, STARTING FROM THE ORGANIC GARDEN ON THE HIGHEST POINT OF THE SITE, VIA SOCIAL CENTER, RESTAURANT, VEGETABLE GARDENS, BASKETBALL COART - FINISHING AT THE PRODUCTION WORKSHOP WHICH IS LOCATED ON THE LOWEST, NORTHERN POINT OF THE LOCATION.



KOMPLETIRANO NASELJE
COMPLETED SETTLEMENT

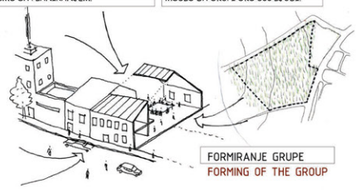
SITUACIJA 1:500
SITE PLAN 1:500

KADA SE SVE SKLOPI
WHEN EVERYTHING COMES TOGETHER

POVREMENA PIJACA ORGANSKE HRANE
OCCASIONAL ORGANIC MARKET

NAKON ŠTO SMO SE OKUPILI I DOGOVORILI DA OSNUJEMO STAMBENU ZADRUGU KAKO BI REŠILI SVOJE STAMBENO PITANJE, POČELI SMO SA PLANIRANJEM.

ČULI SMO ZA LOKACIJU U BORSKOJ ULICI, OBIŠLI JE I ZAKLJUČILI DA BI NA NJOJ MOGLO DA SE NAPRAVI JEDNO VEĆE NASELJE, KOJE BI MOGLO DA OKUPI OKO 500 LJUDI

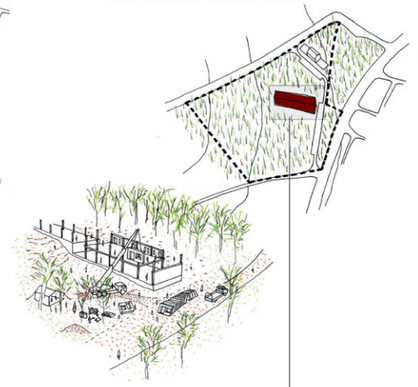


FORMIRANJE GRUPE
FORMING OF THE GROUP

PROIZVODNI POGON
PRODUCTION UNIT

REZERVIŠITE SLEDEĆI VIKEND - GRADIMO!

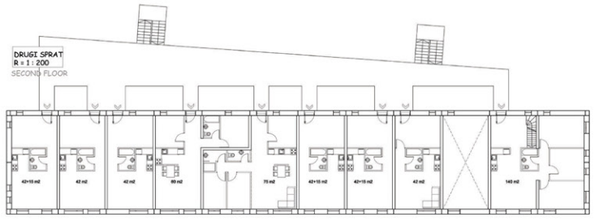
IZGRADNJA PRVE ZGRADE
CONSTRUCTION OF THE FIRST BUILDING



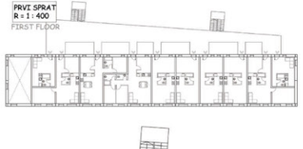
PRVA ZGRADA (40 STANOVA)
THE FIRST BUILDING (40 APARTMENTS)

TREĆI SPRAT
R = 1 : 400
THIRD FLOOR

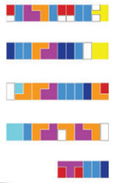
DRUGI SPRAT
R = 1 : 200
SECOND FLOOR



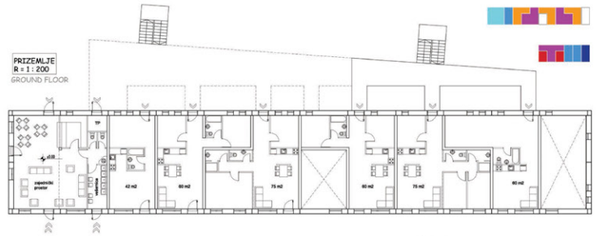
PRVI SPRAT
R = 1 : 400
FIRST FLOOR



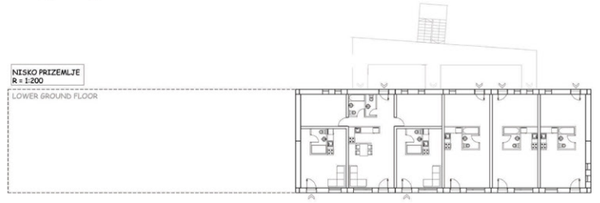
SHEME STANOVA
SHEMES OF THE APARTMANTS



PRIZEMLJE
R = 1 : 200
GROUND FLOOR



NISKO PRIZEMLJE
R = 1:200
LOWER GROUND FLOOR



JUŽNA FASADA
R = 1:200
SOUTH FACADE

NA LOKACIJI SE OVIM REŠENJEM PREDVIĐA 188 STANOVA, KOJI BI SE GRADILI U 5 ETAPA.

GRADNJA ZAPOČINJE INICIJALNA GRUPA OD 40 DOMAĆINSTAVA, KOJA BI PRINCIPOM MOBE IZGRADILA ZAJEDNIČKE PROIZVODNE POGON ("OPENRADIONICA") ZA PRODUKCIJU OPENCELL PANELA. KADA SE PROIZVEDE DOVOLJAN BROJ PANELA MOŽE DA OTPOČNE IZGRADNJA PRVE ZGRADA KOLEKTIVNOG STANOVANJA, OD 40 STANOVA. U IZGRADNJI ĆE UČESTVOVATI ONE ČLANOVI ZADRUGE KOJI ULAŽU SVOJ RAD ZAJEDNO SA PROFESIONALNIM RADNICIMA.

THE FIRST GROUP OF 40 PARTICIPATING HOUSEHOLDS WILL STRAT BY VOLUNTEERLY BUILDING TOGETHER A COLLECTIVE PRODUCTION FACILITY FOR THE OPENCELL PANELS. AS SOON AS A SUBSTANTIAL NUMBER OF OPENCELL PANELS IS PREFABRICATED, THE ACTUAL CONSTRUCTION OF THE FIRST COLLECTIVE APARTMENT BUILDING WILL TAKE PLACE, CONSISTING OF 40 APARTMENTS. THE WORK IS DONE BY COOPERATIVE MEMBERS WHO ARE CONTRIBUTING THROUGH LABOR, SUPPLEMENTED BY PROFESSIONAL WORKERS.

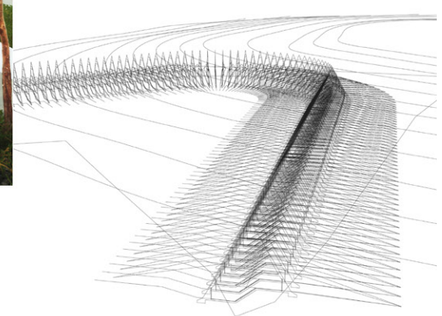
FAZE NASTANKA NASELJA
PHASES OF THE SETTLEMENT EMERGENCE

NOVA MOBA PREDVIĐA STANOVE PRILAGOĐENE PROSTORNIM POTREBAMA RAZNOVRSNIH STANARA (OD GARSONJERE DO PROŠIRENE PORODICE I KOLEKTIVNOG STANOVANJA). POVRŠINA STANOVA VARIRA OD 27 DO 90M2, A U NEKIMA JE VEĆ PREDVIĐENA I MOGUĆNOST JEFTINOG (VERTIKALNOG) PROŠIRENJA OD 15 DO 30M2.

KONAČNA KOMPOZICIJA STANOVA ISKLJUČIVO ZAVISI OD OKUPLJENE GRUPE, A U NAŠEM SLUČAJU TO SU: 3 STANA OD 27M2, 3 STANA OD 27+15 M2, 13 STANOVA OD 42M2, 5 STANOVA OD 42+15 ILI 30 M2, 8 STANOVA OD 60M2, 6 STANOVA OD 75M2 (OD KOJIH SU NEKI KOLEKTIVNI), DOK JE JEDAN, NAJVEĆI STAN, OD 140M2 GRADI ZADRUGA I ON JE NAMENJEN POVOLJNOM IZDAVANJU STUDENTIMA.

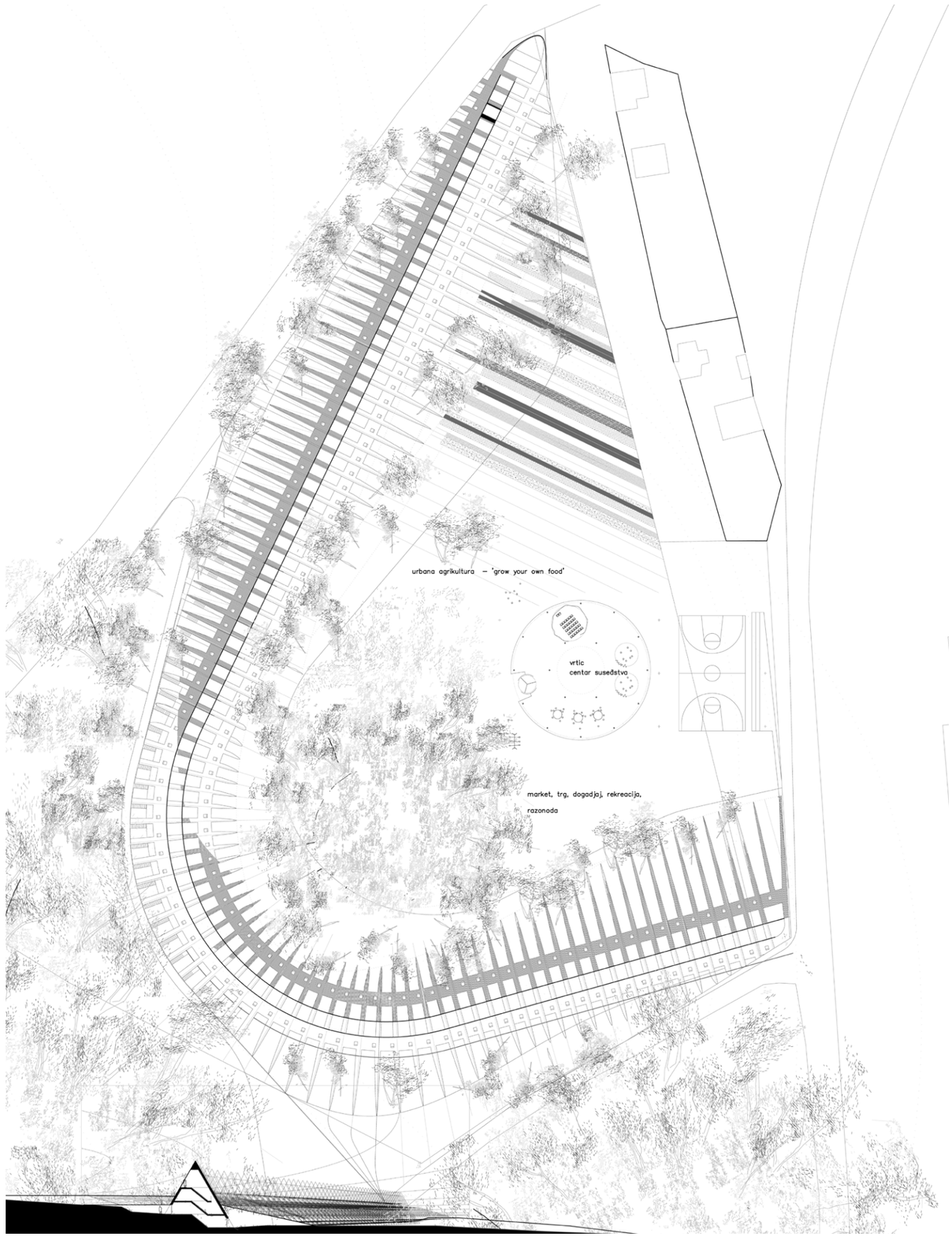
NOVA MOBA FORSEES APARTMENTS ADJUSTED TO SPATIAL NEEDS OF VARIOUS INHABITANTS (FROM A STUDIO TO EXTENDED FAMILY AND COLLECTIVE LIVING). THE SURFACE VARIES FROM 27 TO 90M2, AND SOME APARTMENTS HAVE OPTINAL EXTENTION FROM 15-30M2.

THE FINAL COMPOSITION OF THE APARTMENTS SOLELY DEPENDS ON THE FORMED GROUP, AND IN OUR CASE THESE ARE: 3 APARTMENTS OF 27M2, 3 APARATMENTS OF 27+15M2, 13 APARTMENTS OF 42M2, 5 APARTMENTS OF 42+15 OR 30M2, 8 APARTMENTS OF 60M2, 6 APARTMENTS OF 75M2 (SOME OF WHICH ARE COLLECTIVE), WHILE THE BIGGEST ONE OF 140M2 IS FINANCED BY COOPERATIVE, DEDICATED FOR AFFORDABLE STUDENT RENTAL.



1

Awarded design for Savski Venac, Serbia
Designed by Arch. Pavle Stamenović and Arch. Dušan Stojanović



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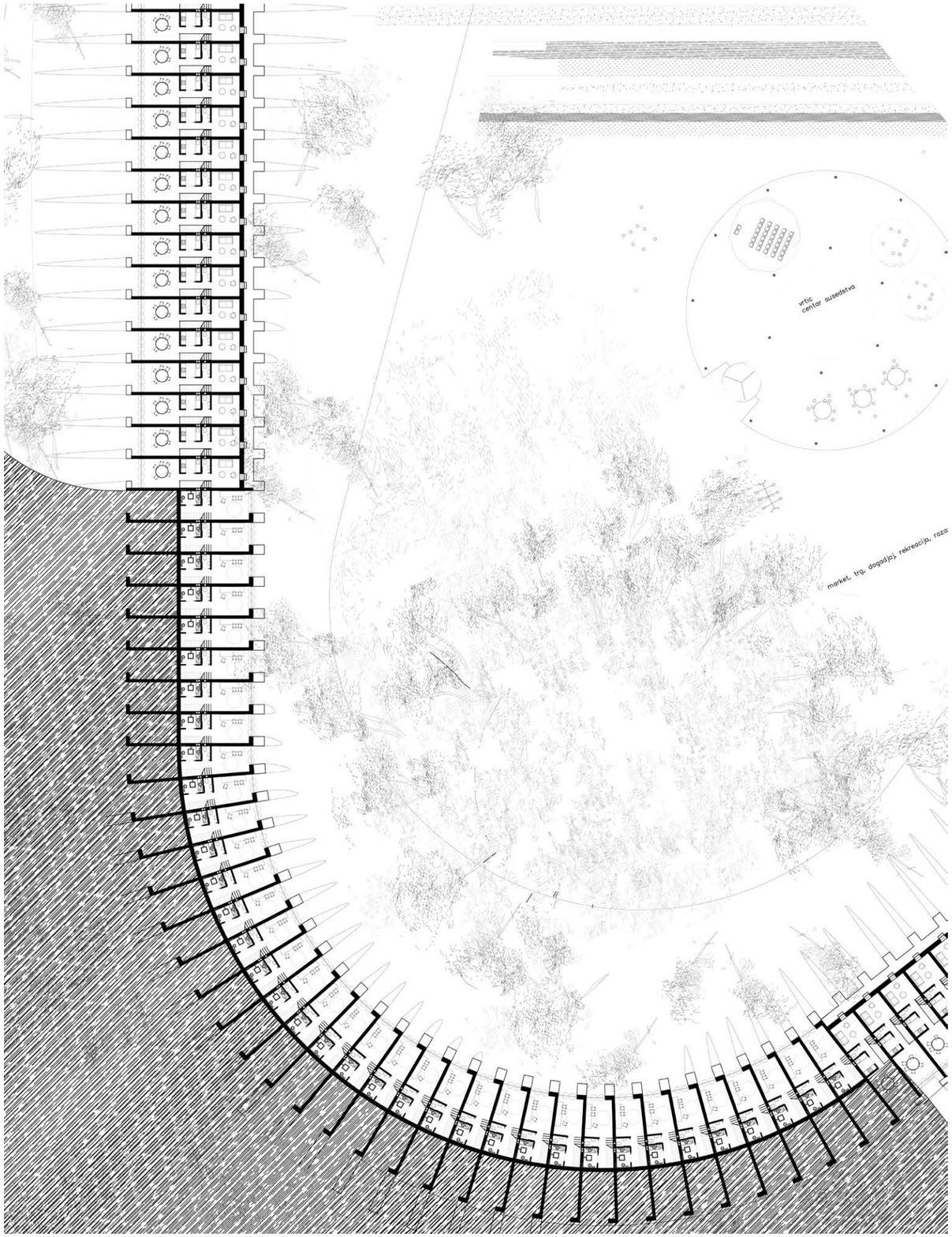
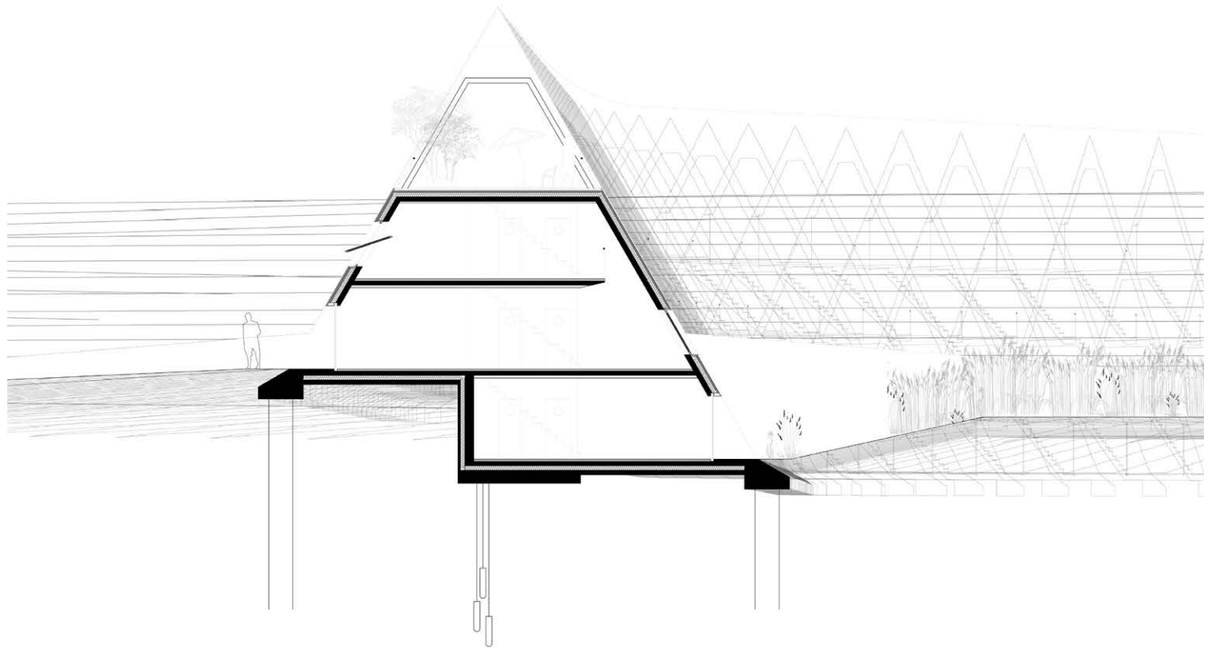
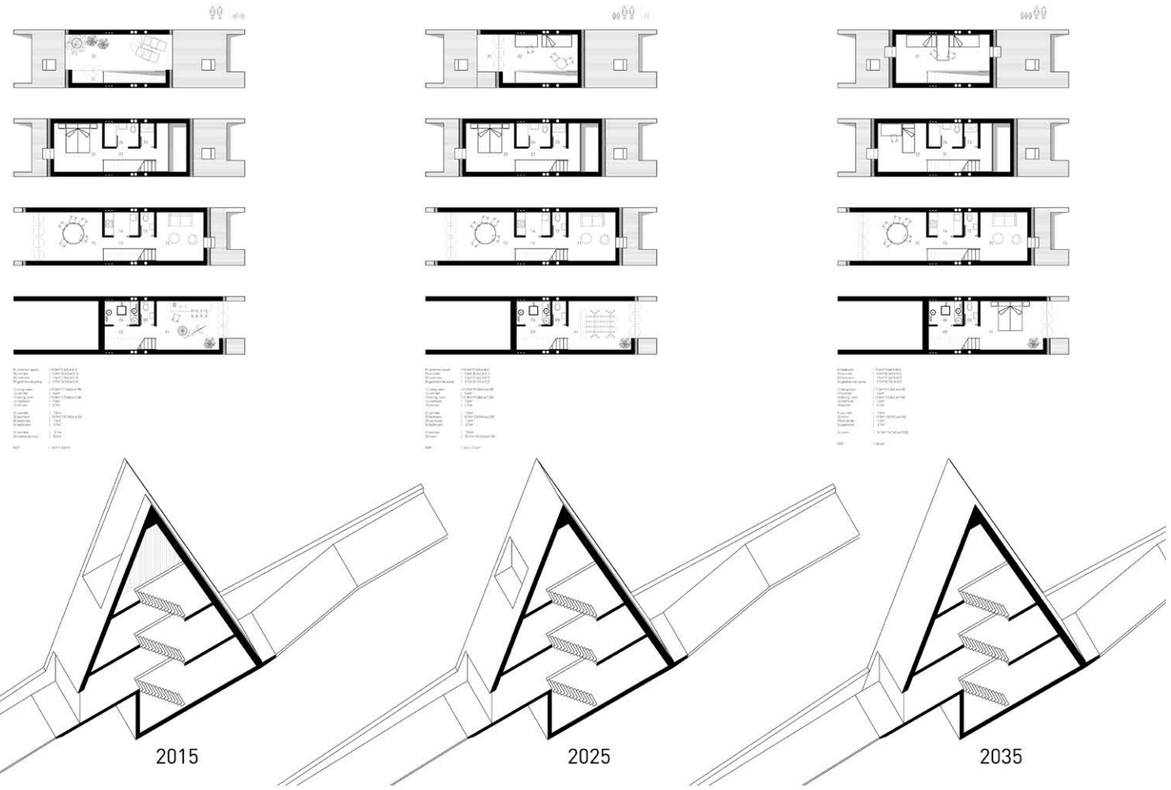

vrtic
center susedstva
market, trg, dogodjaj, rekreacija, raza

3




2015
2025
2035

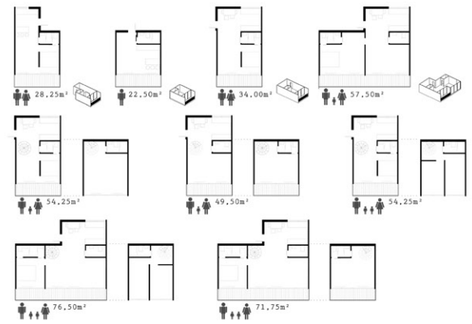
4

situacija i pozicija garaže R = 1:500

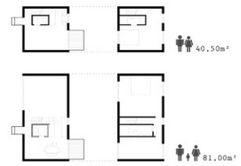
poprečni presek kroz naselje R = 1:200

trodimenzionalni prikaz ambijenta na skveru

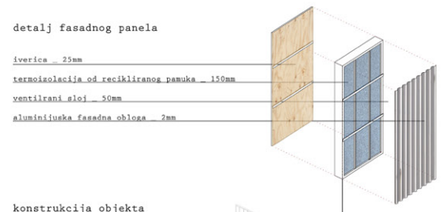
tipologija stambenih jedinica kolketivnog stanovanja



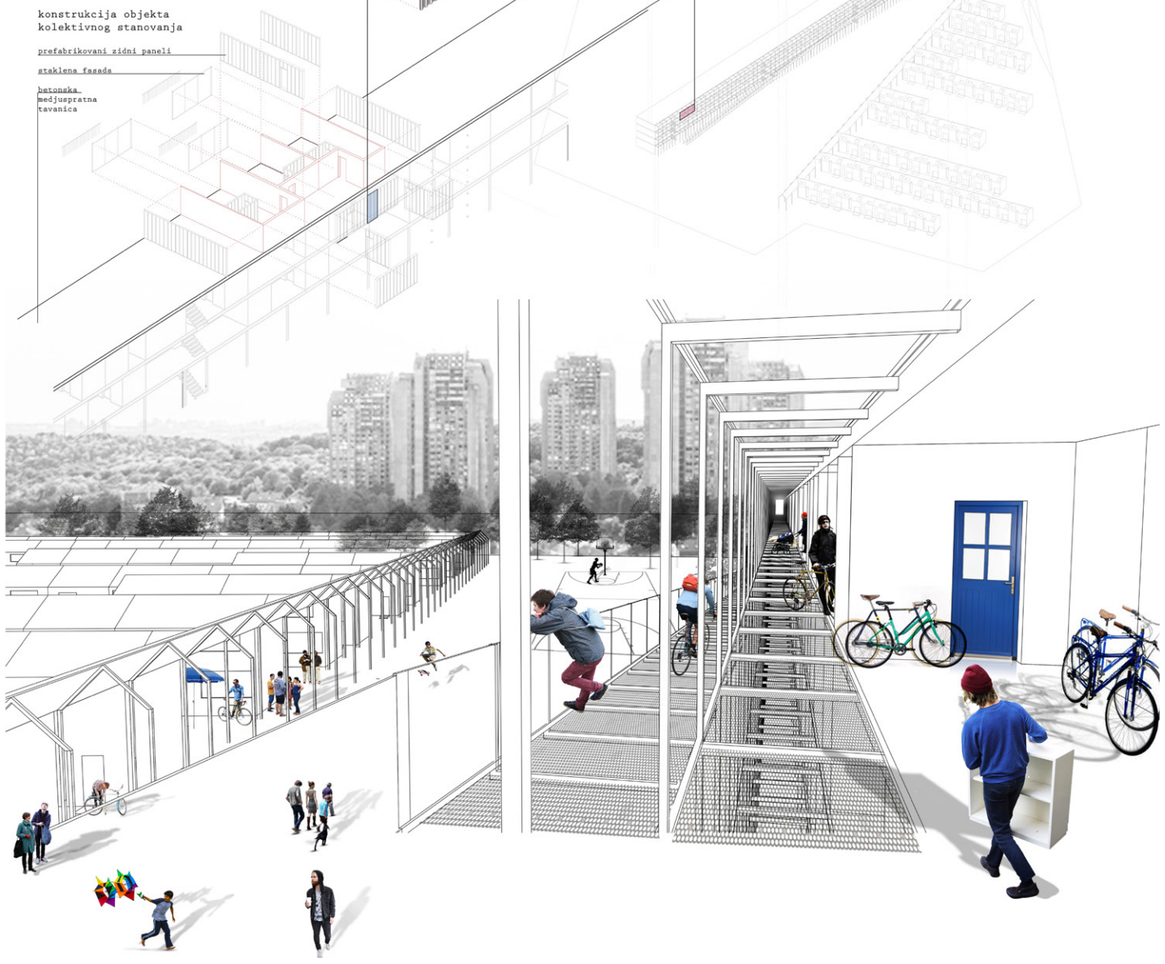
tipologija stambenih jedinica individualnog stanovanja



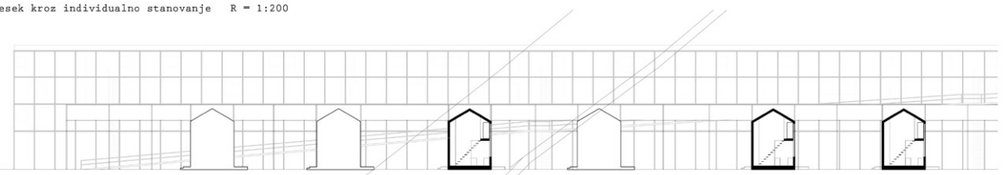
detalj fasadnog panela



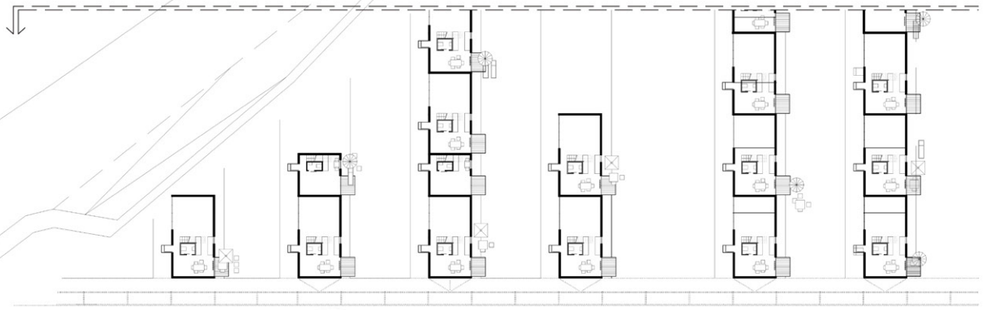
konstrukcija objekta
kolektivnog stanovanja



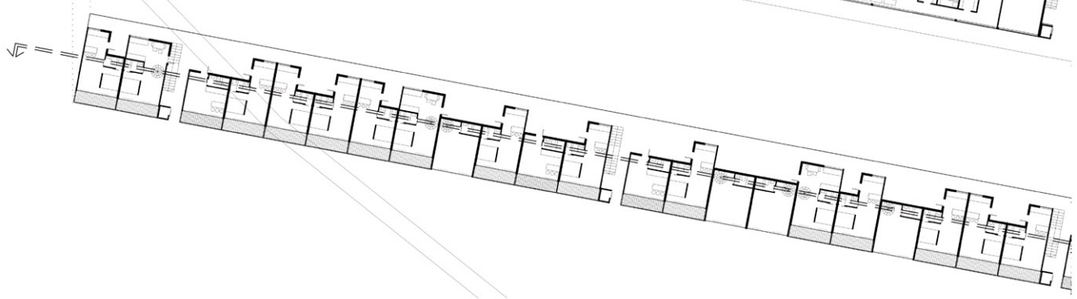
poprecni presek kroz individualno stanovanje R = 1:200



parter R = 1:200



osnova tipske etaže R = 1:200



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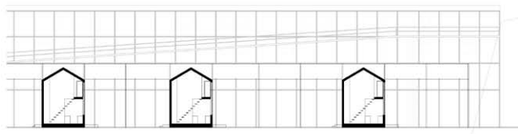
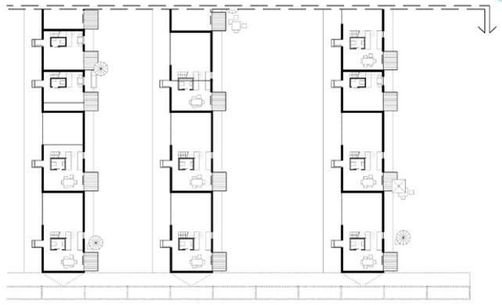
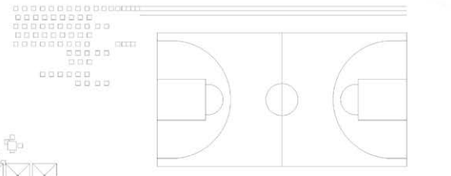
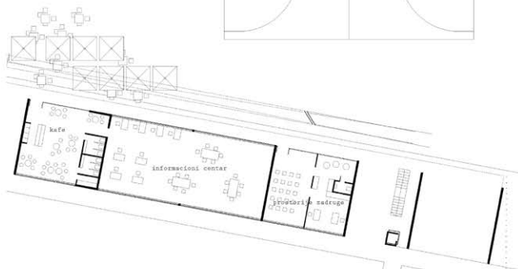
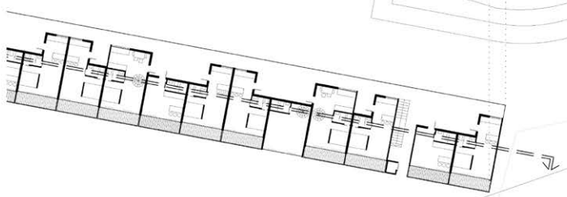
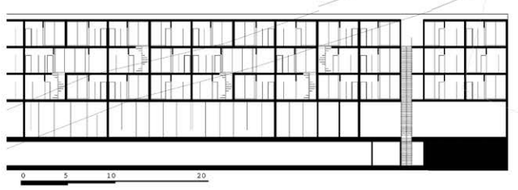




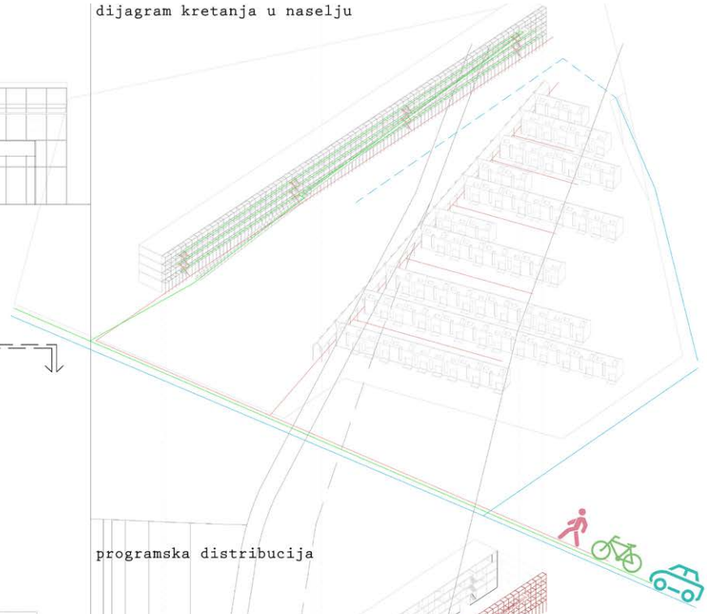




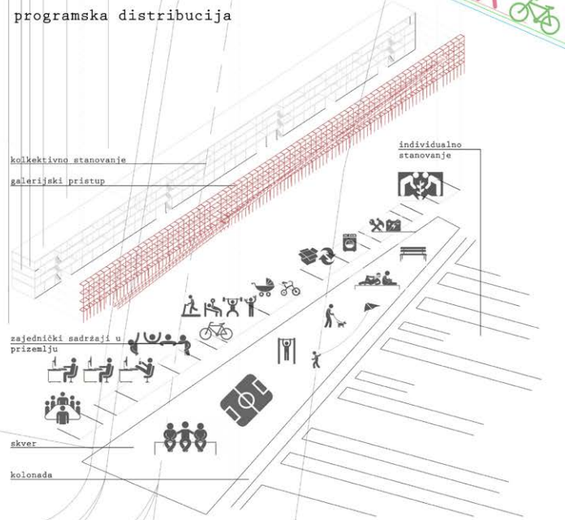




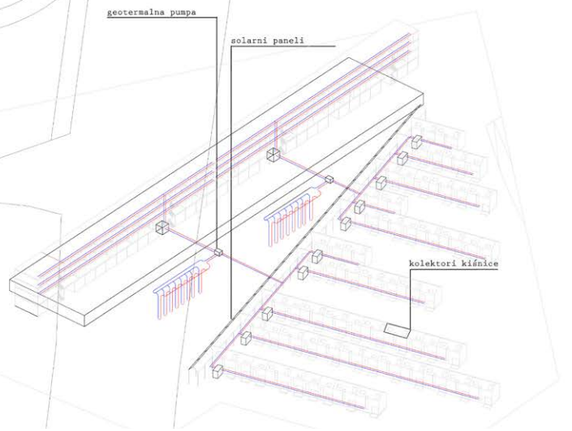
dijagram kretanja u naselju



programska distribucija



obnovljivi izvori energije



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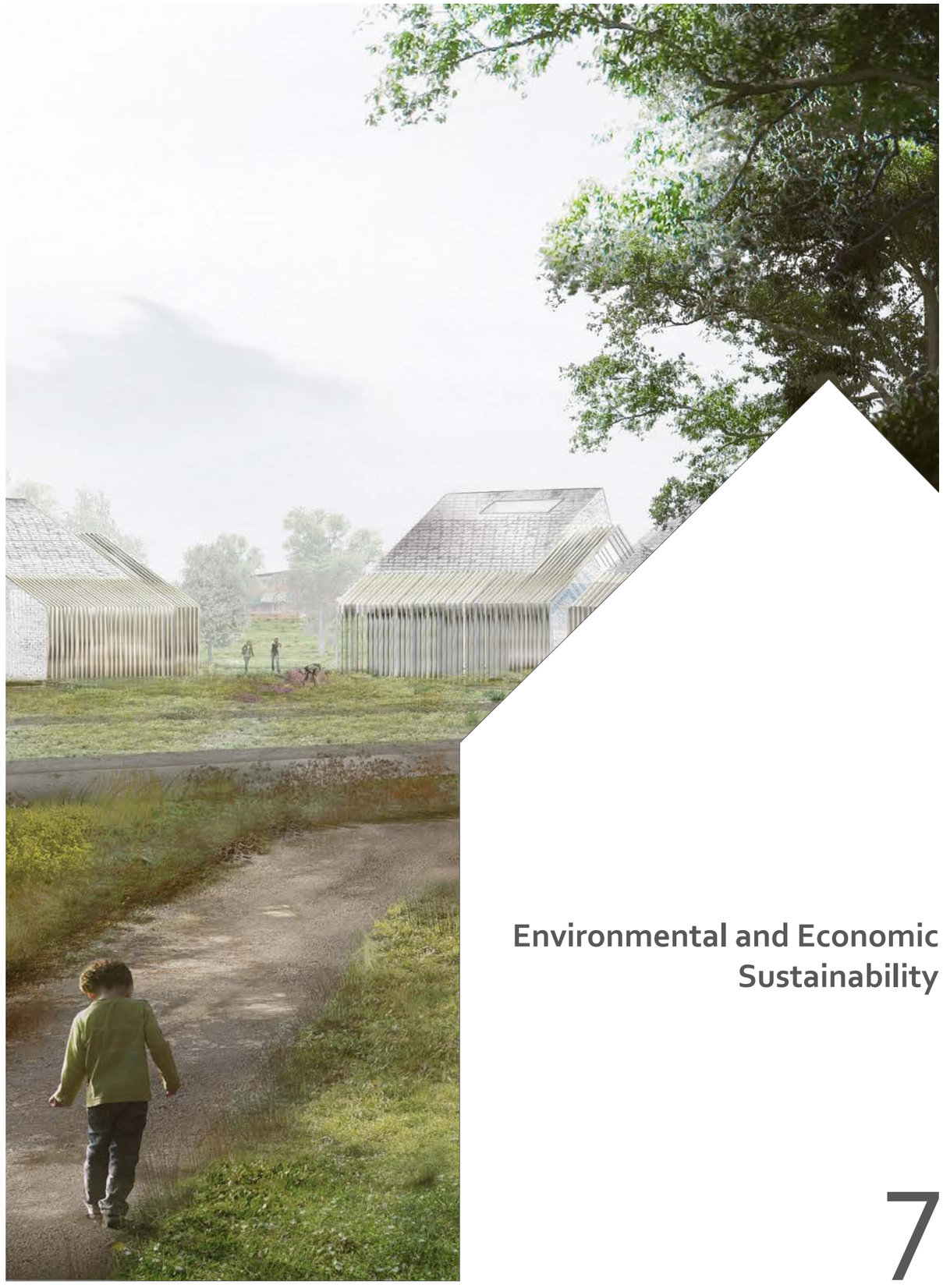


Environmental and Economic Sustainability

7

7.1
How sustainable is the MILD HOME?

Written by
Nemanja Petrović and
Nina Mitranić

Buildings are at the core of sustainable energy policy as they account for 40% of the energy demand in the EU, and even more in the rest of the world. The building sector is therefore a key in addressing the challenges of reducing energy consumption and curl down CO_2 emissions, in a context of worldwide growth in energy demand which can no longer be satisfied by an increased resource extraction and production.

The benefits of energy use are as profound as they are obvious — human comfort, health, and commerce depends upon it. But the true costs, from worker exploitation to pollution, are not measured by electricity meters. Above all, there is the specter of global climate change, as carbon dioxide (CO_2) and other greenhouse gases from burning fossil fuels turn Earth's atmosphere into a too-thick blanket on a warm summer day. Carbon dioxide emissions from energy use are projected to increase 55 percent between 2004 and 2030. Energy conservation and increased efficiency are essential, as are halting deforestation and planting more trees — growing plants pulls CO_2 out of the air.

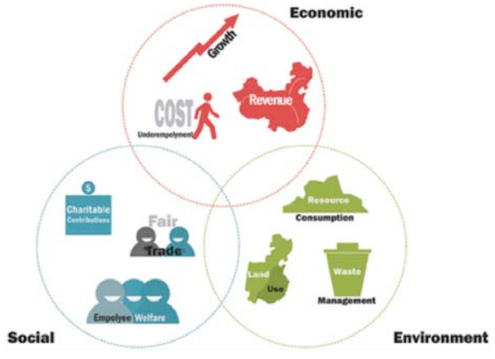
With cities accounting for half the world's population today, and two-third of global energy demand, urbanization is exacting a serious toll on the environment. As rapid urban growth continues, energy use in cities and associated levels of greenhouse gas (GHG) emissions are projected to continue unabated; current projections indicate that approximately 70 percent of the world's population will live in cities by 2050, producing some 80 percent of the world's GHG emissions.

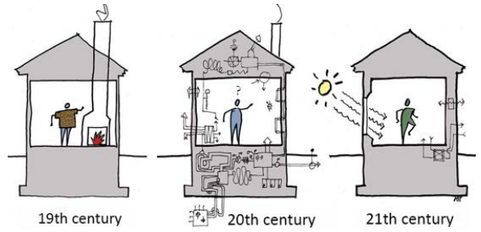
All national and regional governments of the EU countries and the countries accessing the union are committed to embrace renewable energy by providing guidance on how local planning authorities should incorporate relevant policies in their development plans but there is the lack of clear vision how to direct the effort to unify the approach to the common goal. Energy balance will be the important factor of the national strategy and redefinition of progress itself.

Why Eco Green Villages?

The cheapest energy is primarily the one that is not consumed; the one that should not be manufactured, imported, or paid, and of course, the one that should be without consequences for people and the environment. This is the fundamental premise of Eco Green Villages and MILD HOMEs.

Eco Green Villages are, by the definition, communities whose goals are social, economic and environmental sustainability. The residents of these villages gather around these principles and respect their environment, which provides them conditions of survival and independence of the system. (Energy Independence, and other forms of independence such as food supply, organization of joint production, etc.) Because of that, MILD HOME in Eco Green Village not only exceeds concept of energy sustainability, but it is also infused with the basic concepts: economic and environmental, as well as social, which can be seen in some proposals of the partners. These villages will primarily use local materials for the construction of their facilities, their residents will join together in the construction process in order to reduce the costs of building, respecting biodiversity and seasonal vegetation, protecting local water sources, soil and air, and producing food by themselves (mostly organic).





Eco Green Villages represent a unique economic dimension because while residents trying to save money, they produce energy and other products that exchange primarily within the community and then beyond. The realization of income is usually generated through the sale of their own products and services and recycling, all in order to improve life in the community. These are the reasons why we, less frequently talking about individual passive and low energy houses, but more often about the low-energy districts, cities, and even regions.

Why MILD HOME?

Reasons why you should build a house of zero emissions, lie primarily in the preservation of nature, then reduction of energy consumption and reduction of CO_2 emissions, and for the individual who decides to build this type of building, reasons are: drastically lower costs of heating, cooling and electricity consumption.

For the construction of this type of houses we undertake regulation of the European Union that adopted the resolution by which all buildings that are renovated or built in the European Union must be energy efficient. England willingly went one step further, and from the year 2016 will introduce directive by which all new buildings that are being built, must have zero emissions. At the level of the European Union new stricter laws are coming in the year 2018. This means that soon all new buildings will have to produce enough energy for their own needs, and the goal is to reduce energy consumption and gas emissions by 20 % and to also increase the use of renewable sources by 20 % until the year 2020.

Until recently it was thought that the zero emission houses was estimated at least 30% more expensive in terms of cost of construction, but in practice there are many examples that prove that it is possible to build a passive house less expensive than classic. Market analysis show that passive houses should not cost more than 20% compared to conventional designed and built house, a heating and cooling costs are lower by up to 100%. "Do it yourself" approach to passive house would affect the price reduction, but requires high-quality supervision of construction. This estimation varies depending on whether the house can be built in phases, from the cost of services of the contractor, from "do it your self" possibilities of construction. Cost effectiveness of funds invested in zero-emission house will be visible for 10 to 15 years.

7.2
Main results

MILD HOME Project demostrated several different sizes and vision Eco Green Villages in countries of South East Europe. Eco Green Villages are seen as small communities within large cities or independent of them in rural areas, with minimal environmental impact as an alternative. Such communities, in the world often build networks for the exchange of experience, resources, and commitment to a common goal. For this reason regional component of the MILD HOME project is very important in terms of further development such settlements in the region (see Global Ecovillage Network).

In all, the proposed models, technical systems are limited and nearly zero energy standards are reached as well as high living comfort factors. Within MILD HOME project, are offered technical innovations, that can also reduced costs of construction and exploitation of the building.

MILD HOME competitions collected a lot of very interesting and high-quality architectural proposals that can accelerate sustainable development and can be good examples to MILD architecture in the region. Award-winning proposals are innovative in many cases, because they offered good individual solutions for complex problems. Proposals are share with us, which is the most important problem in the countries of SEE region and what solution is given for them. MILD HOME project initiated discussion among experts od SEE region and their solutions can help us to build a clear picture of the problem in topic of Eco Green Villages and MILD HOME, our current opportunities to create common sustainable future.

Economic indicators

The economic indicators point out the economic benefit that the planning of an Eco Green neighborhood can entail towards inhabitants; they are measures directed to cluster the energetic saving, which, besides the environmental effect, produces a direct economic advantage and other measures which permit to the Eco Village inhabitant to save time and money.

Moreover, the building of a new settlement has to consider the impact that it will have on the ground during its entire life cycle, trying not to leave an indelible sign on the land, through the selection of low environment impact materials, the reduction of domestic and construction waste and the climate-changing emissions produced by humans through the mobility systems.

Economic aspects of the project:

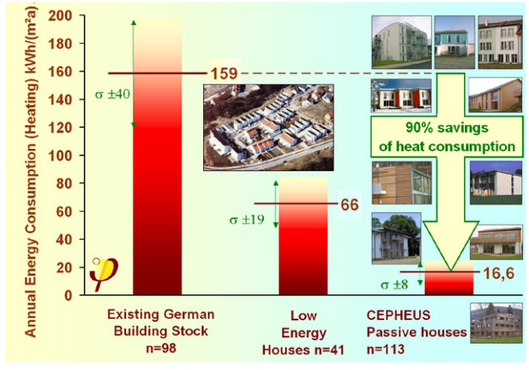
- accessibility to people with middle and low income;
- low cost of construction (through the creation of local supply chains, the modularity of the building elements and the standardization of the raw materials);
- low cost of maintenance.

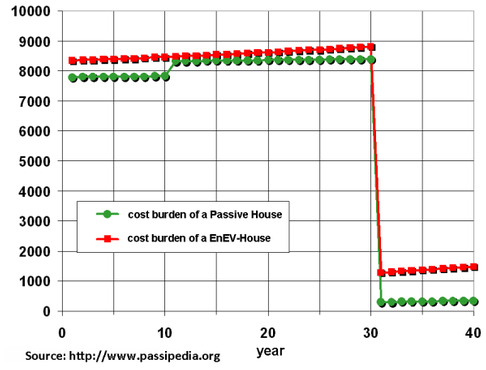
Oil prices will determine the price level for a long time to come. Even today, crude oil is still the most important source of energy in the world. It will remain dominant and will continue to define the energy prices for a long time to come. This is apparent from the work carried out by the International Energy Agency [IEA 2001] .

What course of action should be taken?

The prospects wouldn't actually be very favourable if we had to rely on constant energy imports from the international market. Fortunately, MILD HOME project offered proof we don't have to rely on them: regionally generated energy substitutes are available at prices which are economically competitive even when compared with today's energy prices (energy from wood and biomass, wind power and hydropower for heat pumps). Even that is cost-effective in relation to future energy prices. The MILD HOME is an example of a particularly energy-efficient solution. MILD HOME (nearly zero emission houses) necessitate somewhat higher investment costs when compared with ordinary new buildings, which is why well thought out financing is important.

By all indications MILD HOME (nearly zero emission houses) is more expensive than the classic house from 15 to 20%, and the cost of heating and cooling is less for the whole 100 percent. From this framework should look for cost-effectiveness calculations. However, hardly anyone are aware of the fact that the average cost of heating the building through a 40-year period, equal to the cost of construction of the building. For comparison, the cost of heating a passive house in the same period of 40 years, barely cover the costs of executive project [source: Passivhaus Institut]. In terms of fuel consumption, a MILD HOME (nearly zero emission houses) needs less than 1.5 liters of heating oil or 1.5 m^3 of natural gas per square meter in a year. Cost effectiveness of invested funds is in 10 to 15 years.





Subventions of state

Can people with average incomes afford can build nearly zero emission houses?
In many countries of European Union is quite feasible and cost-effective solution for people with average incomes to build nearly zero emission houses, because something greater expenditures for quality windows, ventilation system and high-quality thermal insulation are co-financed by the state and its loans or incentives. And without such financial incentives from the state, to build nearly zero emission houses would be more cost effective than build a conventional house - in the long term, energy savings makes it incomparably better and more acceptable solution.

Nearly zero emission houses encourages more and more cities and municipalities through reduction or exemption from utility contributions. So, it can have a significant impact on reducing of the low-emission buildings costs. If you build or renovate a house or apartment in Vienna, you will receive incentives from the local community 201 € per square meter, but only if you built or renovated according to the principles of passive house. If, for example, reconstruction or construction do in the areas of Vorarlberg, you will receive incentives from 149 € per square meter, 50 in the Tyrol, and Salzburg, at least 15 € per square meter. In most cases, this additional investment for the construction of passive houses, which in Austria is around 10%, citizens are covered from these subsidies.

This greatly encourages the construction of nearly zero emission houses because they live in a healthier environment of significantly less polluting and consumes energy and have a drastically lower overheads for heating and cooling. Through various examples shown it can be concluded that nearly zero emission houses or reconstruction of existing, cost 120-223 € per square meter more than conventional building.

Conclusion

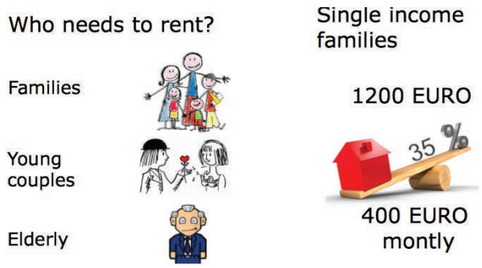
In contrast with a "normal house", the cost burden is considerably less for the construction of a MILD HOME, even if energy costs do not increase in the future. MILD HOME Nearly zero emission house is economically attractive – even though the profits are not as enormously high as sometimes promised. But the house builder does benefit from a few more things.

- Reduced reliance on outside power independence of the price, imports and energy markets, energy saving.
- Tax incentives. Some states, municipalities and utility companies also offer grants, rebates or low-interest loans to help you cover the cost of construction.
- Positive impact on human health: termal comfort, ventilation, better indoor air quality, peace and quiet
- Benefit in CO_2 savings (reduction of harmful gases)

- Cumulative shared value: as more people build a passive house, will be less negative impact on the environment.
- Lower utility costs, even after 30 years can continue to benefit from reduced energy costs.
- Value.
- Almost no maintenance, very simple mechanical systems compared to normal construction.

There's no question that the upfront cost to build a MILD HOME nearly zero emission houses is higher than the cost to build a conventional home, but over time, the higher initial price of materials, design and construction will be offset by savings on utility bills and home maintenance.

From view of the MILD HOME project and nearly zero emission houses quality is not static but a dynamic concept. High quality of planning and workmanship brings housing comfort primarily up-to-date and durable products to the building user with lowest current energy costs. The solution of technical requirements behind it and the creation of a good price-performance ratio is task of the product manufacturers of passive houses. In this sense demandsfor the advancement of concepts, components and of nearly zero emission houses architecture are to be made.



Today, economics rules supreme as the 'master discipline' with all other subjects and values sub- ordinated to it. Critically, the environment is seen as a sub-system of economy rather than vice versa. Consequently, the environment is seen primarily as a bank of resources for the undertaking of human activities. Our task in MILD HOME SEE experts partnership, as we move towards sustainability is to reverse this equation, with economy properly understood as a sub-system of ecology. Within this new paradigm, the scale and nature of economic activities will be limited by the carrying capacity of the Earth's ecosystem.

Potential
MILD HOME Development, Opportunities and Risks

8

Written by Vanya Maneva, Irina Terzyiska and Maya Guevska

8.1.1 Potential MILD HOME and Eco Green Village development in Mramor, Sofia

Introduction

The performance indicators of the MILD HOME grid are the same for all municipalities including: Low energy consumption and low CO_2 emission; Recyclable materials; Health and comfort living area; Materials and components manufactured with a low use of fossil energy; Prefabrication features; Do it yourself (DIY) approach; Optimal construction costs – more people in MILD HOME buildings. As per the BG specific conditions (climate, geographic location, etc.) within the project MILD HOME, six specific and four general criteria were defined concerning the nature of the competition (urban & architectural concept).

Background – MILD HOME in Mramor village, Sofia Municipality

In the 18-19 century, in Bulgaria there were developed traditional settlements built up with ecological materials. Nowadays these settlements make part of the Bulgarian cultural and architectural inheritance. From technical point of view different thematic workshops for ecological housing construction are held in Bulgaria. From social point of view a lot of people wish to live in ecological and healthy environment.

Preliminary business concept: The financial model was a subject of broad consideration and discussion as a project to be developed on a public-private partnership basis. The detailed definition of the concrete partnership conditions are to be defined in the frames of the so called "investment process" of the Bulgarian legislation. The MILD HOME project will be completed at a conceptual stage. According to the Bulgarian regulations, at this stage, concrete terms of partnership between the owner of the property (Sofia Municipality) and the stakeholders (future investors and inhabitants) cannot be established. Thus, at the conceptual stage of the MILD HOME project, the results of the Marketing analysis and the characteristics of the Performance grid could be considered only as a starting point for an EGV financial model definition.

The public (social) housing is considered to be in the range of 20%, the private housing 80%. Analogical characteristics are: same building materials, use of integrated RES technologies. The main differences are: public housing normally is owned by the Municipality. The inhabitants rent them. The municipality is responsible for the maintenance. Private houses are maintained by their owners.

EGV financial model as per the Performance grid of the Sofia Municipality: Alternative options for funding the realization of EGV with MILD HOME buildings are divided in two main groups – European financial instruments, national and/or private investments. For example:

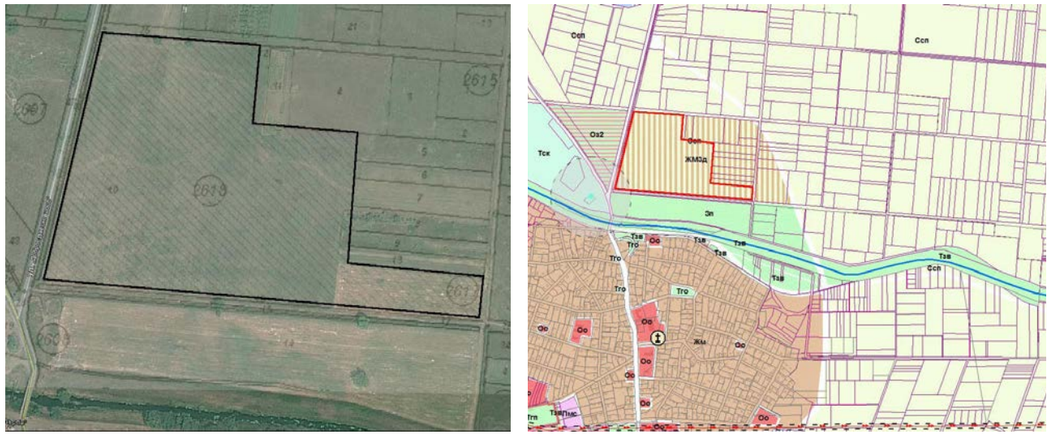
- Operational programmes (depending on the target users and the functions of EGV);
- Preferential credits and subsidies.

Economic framework and future trend, Mramor village: At the present, there are a post office, a kindergarten, primary school, community center and 40 operating companies. An industrial zone exists in the village containing 14 companies in the building sector. The main part of the companies is producing building materials. There are opportunities as well for development of climbing and riding tourism, sport tourism and fishing. Soils in the area are very fertile, which is a prerequisite for successful agricultural development.

Procedure and modalities to support the property purchase: The property purchase depends on the: Law for public property; Law for urban planning; Law for public procurements; Law for local self-governance and local administration; Sofia Municipality Council Ordinances: Ordinance for municipal property, Ordinance for concessions. Most of them are under re-construction or are subject to forthcoming amendments.

Characteristics of the area, Mramor village, Sofia Municipality

The village is situated in the North-Western part of the Sofia field. It is set in the old river terrace of Blato River. The climate of region is moderate continental. The chosen territory is defined as a low-rise residential district according to the Master Plan of Sofia Municipality. It is located near to Mramor village and at 10-11 kilometres from the center of the Sofia city. There are good connections to the city and the city center.



View of the property and mater plan of the zone. The territory- displayed in red.

The local "Eco Green Village" of "MILD HOMEs" in Mramor, Sofia

The main function of the EGV model is residential with integrated additional uses (labor, public services, recreation, sport etc). The EGV model has to present an idea for future urban development of the area which is an organically growing community complied with the principles of sustainable development.

Achieved urban planning parameters:

Parameters	*Master Plan of Sofia*	*Competition results (Green Art Team)*
Density of construction	15%	10%
Coefficient – building intensity	0.3	0.3
Building height	up to 2 floors	8,5 m
Planting	80%	80%

According to the first place winners the calculated costs are as follows:

MILD HOME type	*Building cost*		
	Primary	*Secondary*	*Tertiary*
Gross floor area [m²]	317	167	134
Building costs [BGN/m²]	134,091	75,150	65,660
RES costs [BGN]	88,000	32,000	24,000

** 1 Euro = 1.95583 BGN*

The realization

Results from the training workshop for financial resources: The public-private partnership law in Bulgaria is under revision at this moment and it is not possible to objectify the business model of the EGV realisation. The most feasible mechanism for EVG realization is still a public-private partnership model and the financial contributions could be the following:

- Costs for transport and technical infrastructure – Sofia Municipality;
- Cost for new transport mobility (public transport, electro-mobiles, and bikes) – public-private investments;
- Costs for construction of the buildings, RES, green and other eco urban systems – private investor.

Summarized the realization of Eco Green Village with MILD HOME buildings in Sofia, Bulgaria could be divided into the following phases:

- Promotion of a new way of environmental responsible way of life;
- Impact on the public attitudes and demonstrate them the advantages for living in EGV;
- Teaching the youngest to the new manner of living;
- Creating work groups and civil structures supporting and promoting EGV concept;
- Defining new adapted national laws and ordinances according to the EU legislation;
- Defining regional and local strategies and action plans for creating EGVs;
- Provision of support from the local authorities;
- Financial support and instruments from the local authorities;
- Concrete ordinance or local reports for building materials and certification of buildings;
- Encourage local SMEs to develop and manufacture eco materials and eco building structures;
- Construction of a pilot EGV (not so big) in order to raise the people awareness and willingness;
- Defining target users according the local conditions and society preferences;
- Construction of specific technical infrastructure consistent with the advanced technologies;
- Realization of successful model for partnership between the local authorities, NGOs and scientific organisations for sustainable urban and housing development;
- Creation of successful model for partnership between the local authorities and the private sector.

8.1.2 Urban plan of the Municipality of Savski Venac

Written by Jelena Pejković, Jasmina Djokić Pavlov

General economic and territorial development programs

The city Municipality of Savski Venac, where the EGV site is located, is one of the three central municipalities of Belgrade that stretches along the right bank of the Sava River. Its territory is consists of three characteristic zones:

The EGV site is close to a number of public facilities and "social nodes" – a school, town square, community center etc. North from the location is the hospital complex named "Military Medical Academy" (700 m). The center for sports "Banjica" with sports courts and swimming pools, is also nearby (500 m), and across Borska Street is the residential neighborhood "Banjica", where the following facilities and services are situated: market place (200 m), school (300 m), kindergarten and shopping center. Direct distance (by air) of the site to the city center is 6.5 km, and location proposed for the architectural competition is located in the zone of large green areas.

The area where the EGV site is located is currently covered by the General Urban Plan of Belgrade (GUP 2021). The site is not covered by other, more detailed urban plans, although a Plan of General Regulation (PGR) that covers the site area is under development. The site in Borska Street is public land, a brownfield territory formally part of a military complex. It is situated in a residential area with family houses and urban villas. The above mentioned Plan of General Regulation defines this area as a future housing complex. A model of MILD HOME and EGV that would be developed for this type of site would be applicable to a large number of residential areas in the Municipality of Savski Venac, and could be applicable in other Belgrade municipalities as well as in other cities in Serbia.

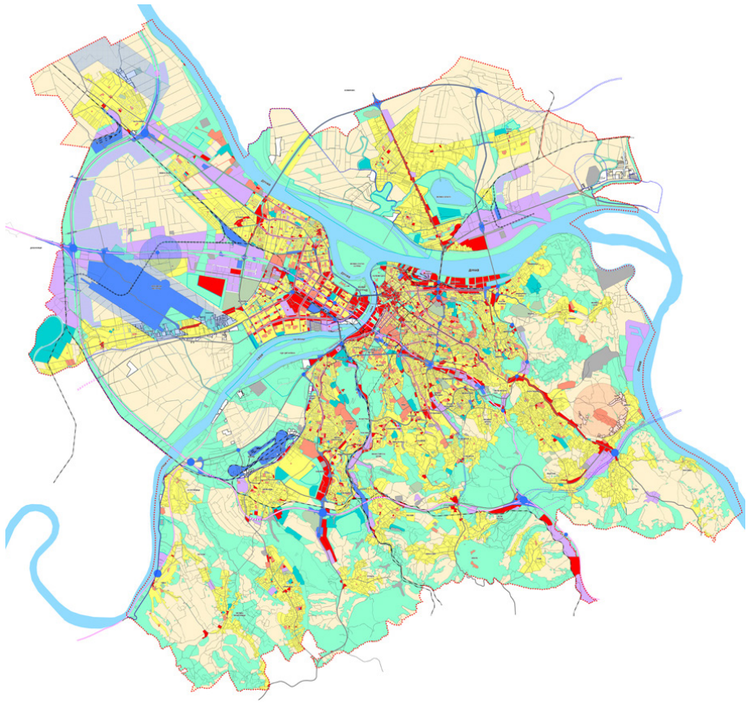
The Strategic Plan for Development of the Municipality of Savski Venac 2011-2015 predicts that there will be little need for massive construction of dwellings on the Municipal territory since the number of residents will not increase. Instead, the focus of construction works will be on renovation of older buildings, construction of new business centers and

smaller dwelling blocks according to demand. The same document states that in 2007 there were 380 new dwellings on the Municipal territory, while 297 were in construction. In comparison, in 2008, 418 dwellings were completed while 223 started construction). The need for improvement of existing compact blocks and their infrastructure is recognized in this strategic document, including the need for introducing alternative energy sources. An additional goal listed in the Strategic Plan is to allow for more commercial spaces, including through reconstructions and change of use, although with certain limitations.

Municipality urban development plan and MILD HOME potential building areas

It is important to note that the city of Municipality of Savski Venac, being in the central zone of the Serbian capital, is one of the most built-up areas of the city. Consequently, suitable land lots for development of larger residential settlements, such as an Eco Green Village, are few. For this reason, the Project team in Savski venac initially intended to develop an EGV model for two infill locations on its territory.

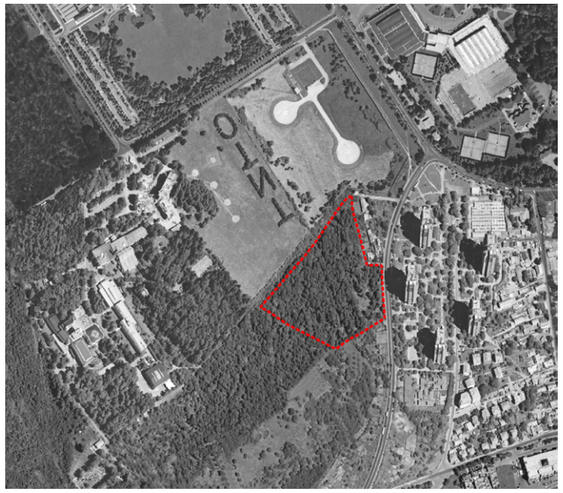
However, considering that the EGV model for such locations would be significantly different from the models in other partnering countries, and due to the fact that there would be a number of difficulties regarding planning regulations and current land ownership in the two initially chosen sites, the Municipality decided to switch to a previously undeveloped land lot. The chosen location in Borska Street has one owner only – the Ministry of Defense, and it is designated for residential use by the General Urban Plan of the City of Belgrade (GUP 2021).



Areas of Belgrade designated as residential in the GUP 2021

The site in Borska Street is public land, a brownfield territory formally part of a military complex. It is situated in a residential area of the municipality.

As mentioned earlier, a model of MILD HOME and EGV that would be developed for this type of site would be applicable to a number of other residential areas in the Municipality of Savski Venac, and could be applicable in other Belgrade municipalities as well as in other cities in Serbia.



Left: Site location in Municipality of Savski Venac Image
Right: Site location in Borska Street

How to reconcile sustainability with the initial costs of construction

Several outputs of the MILD HOME project reflect the fact that the initial cost of MILD HOMEs will depend on two major factors:

- The actual construction cost (materials, equipment and works);
- Other associated costs, mainly land price, taxes and the cost of financing the project.

Considering that the second category of costs is largely beyond the architectural design scope, the target prices set as the competition criterion were based only on category 1: the actual construction cost. The Brief also encouraged the participants to also speculate about the possibilities to reduce the costs of the second category, but no calculation in this regard was required.

Finance availability and forms of bank credit

A number of commercial banks operate in Serbia, and most of them offer housing loans. As mentioned earlier, the conditions can vary considerably on individual circumstances, but the initial investment is typically at least 10% (for state subsidized loans, otherwise it is almost universally 20%) and the interest rates normally do not fall under 4-4.5% before other costs. Three common types of housing loans are available in Serbia:

- housing loans issued by the bank;
- housing loans with state subsidies (typically this means that the state loans a part of the initial investment at a lower interest rate than the bank – in many banks this type of loan is not available for 2014);
- refinancing of housing credits.

Since the conditions regarding housing loans can vary significantly due to a number of factors, the most reliable information can be obtained at the actual banks issuing the loans. It should be noted that the state subventions exist only for property purchase, and not for other forms of welling, such as rent. The only exception is housing for vulnerable social groups, which can be rented with substantial reduction of the rent price. Allocation of these dwellings is typically controlled by the local administrations that can offer this type of housing.

8.1.3 Preliminary study of MILD HOME and Eco Green Village in the Municipality of Larissa

Written by
Mata Papadimopoulou,
Nestoras Kanellos,
George Papadellis and
Pinelopi Stavraki

Introduction

The situation in Greece during the last seven years, due to the worst economic crisis ever and the increased cost of living of the previous years, turned the obtaining of a family home into a distant dream, particularly for young couples, and also led to setting the environmental protection at a much lower priority in comparison with the previous years. The question, therefore, arises to whether new technologies can provide solutions to reduce the cost of house construction and operation and to decrease housing environmental impacts. On the basis of the above conditions, the Region of Thessaly saw a huge opportunity in the scope and objectives of the MILD HOME project, taking also into account the intensive growth of the eco-living trend which began taking shape with high growth rates globally and with a north-to-south direction.

Background

Larissa is one of the most dynamic urban centres of Greece, with its population gradually increasing. It is the capital of the homonymous Regional Unit of Larissa (one of the four Regional Units of the Region of Thessaly) and it concentrates numerous administrative, social and other services. The city is an A level urban centre (regional centre) providing the corresponding urban functions in the wider area and having a privileged connection with the development networks of local and supra-local significance. Its advantageous position, in relation with these networks, enables its connection with the metropolitan and other regional centres of the country. The "growing cohesion of the regional and international space" is expected to create new needs mainly in air transport (freight and passenger) and combined transport. At local level, the Main Regional Road Network (MRRN) and the railway links ensure accessibility that covers most of the region. The landscape is the result of long-term anthropogenic intervention and similar pattern of land use. The flat topography and various obstructions (e.g. buildings) do not allow the view to a large extent. The area is dominated by buildings without special aesthetic value and common areas of intensive agriculture, and it is characterized by sparse – scattered vegetation, mainly near the river Pinios. The climate of Larissa has elements of the continental climate of the plains of Thessaly with annual differences between maximum and minimum temperature above 22 °C. The annual average temperature is 15.7 °C and the annual average rainfall in the city is around 425 mm. The area hosts illegal buildings in its western part and almost no building in its eastern part. There is mild residential development with repeated asymmetrical elements. Many buildings are arbitrarily constructed and illegal. The predominant use of buildings is "residence". Buildings are mostly single-floor without basement in a percentage of 88%, two-floor buildings follow by 7% and there are even three-floor buildings occupying only 3% of the area and ground-level basements occupying 2%. In their majority, buildings were constructed in the period between 1950 and 1980 (64%). At the same time, a significant percentage of these buildings belongs in the period from 1980 to today, and only 2.6% of the buildings were constructed in the decades from 1920 to 1950, showing the continued residential development of the area from the 60's-70's to today.

The area

Seeking the ideal area – host to study the possibility of the first "Eco Green Village with MILD HOMEs", the Region of Thessaly (in cooperation with the Municipality of Larissa) ended up with the area of Mezourlo (close to the main city of Larissa), an area intended to create the Mediterranean village in Greece's efforts to organize the 2013 Mediterranean Games. The choice of this area falls into the broader strategy of the Region of Thessaly to utilize public property for the improvement of its social services and the quality of life of its citizens.

The project proposal

The proposal in Thessaly, given the technical specifications in terms of bioclimatic design of the building (A+ energy class), tried to meet the local requirements for maximizing the space but also the life span of the building while finding solutions that would reduce the construction cost. Thus, the idea proposed included a gradual development of the village in both construction and operational level over the years, depending on the several needs. The project team felt that, after the alignment of the blocks and the construction of the roads, a metal skeleton of photovoltaic panels could be fitted in each plot, creating essentially an energy park. The purpose of this move, without losing any usable space, could be a way of financing and depreciating the entire investment. So, in each plot, at the beginning, the Municipality of Larissa could construct the foundation, the queues of existing networks and the energy roof. Then, each owner could buy the plot that desires having only to pay a small cost for the completion of the house. In the same sense, the proposal included that the living conditions of the owners could change over the years, so there should be some possibility of space extensibility according to specific functional needs. Thus, at the beginning, the house relates to a bachelor or a young couple, then to some family and then to an elderly couple. At the basic unit of the building, which is the core of the house, either two extra children's rooms or a laboratory-office, or a greenhouse, or a guest house could be added. Increasing the functionality and versatility of the house, its ecological character rises as the period of use is growing, too. In essence, the proposed project is an ecological village having an active approach, while achieving sustainability and an interesting architectural effect. The versatility of the building and the space of the energy panel shelter escaped the standard form that usually the corresponding buildings of bioclimatic character have.

The realization

The Region of Thessaly decided that during MILD HOME project implementation, considering the limited time left until the project's end, it is possible - with intensive efforts – only to achieve a preliminary study for the Eco Green Village and the MILD HOME, following the awarded proposal of the team of students. In this framework, the Region of Thessaly announced on 25th June 2014 a call for proposals for conducting the preliminary studies on the Eco Green Village based on the MILD HOME. The call ended on 15th July 2014, the best offer was selected and the contract was signed to deliver the preliminary studies within the project's duration. The submission of the final studies will be followed by their presentation to the Region of Thessaly and the Municipality of Larissa, so that the authorities decide on the future perspectives of the model village, taking into account the possibilities to secure financing from Municipal/ Regional public funds or funds from the next National Strategic Reference Framework or private funds or funds on a Public Private Partnership scheme.

8.1.4 The Pilot case of Municipality of Castelnuovo Rangone

Written by
Davide Fava,
Chiara Pederzini,
Ornella Restani and
Alessandro Bellentani

Applications of the MILD HOME

MILD HOME project, with its economic sustainability, reveals extremely interesting for the Municipality of Castelnuovo Rangone: the overall aim of the project is indeed designing accessible buildings for low-middle income people who aspire to have a new house at affordable costs and Municipality of Castenuovo Rangone is looking for a business model of social housing sustainability.

Social housing is defined by Ministerial Decree (DM) 22th April 2008 n°22: social housing is a residential unit with an everlasting rent addressed to improve social conditions, social cohesion, the quality of low income families and families with social difficulties who aren't able to take part into free market. They can be built by private or public authorities and they must be rent for almost 8 years or sold.

Regional law n°20/2000 Emilia Romagna ("Regulations about use and protection of land") and its modifications has introduced a building requirement for new areas: in new residential areas, 20% of building surface has to be done to municipality and becomes social housing. Pros are that municipalities don't pay for building; cons are that management costs are on municipalities.

Low-middle income people aspire for private houses but the real estate market is difficult to achieve. Italian present social housing and low-income model are briefly described below:

1_Public properties managed by ACER (social housing agencies): people who have low economic capacity can obtain buildings by municipalies at a low rent. ACER manages these buildings and municipalities give the rent to ACER.
Critical point: municipalities don't have money to buy new buildings or to pay for renovations.

2_PEEP (social housing plan): public areas assigned to social housing buildings. Citizens who want to live in these areas pay a lower price than the market one but they must fulfill specific requirements:

- only families with low income are allowed to use these buildings;
- citizens can't rent or sell the house during the first five years, except for particular reasons (i.e: work move, economic reasons, health reasons, death);
- possibility of selling only at fixed prices during the first 15 years.

Critical points: in the first years municipalities are the owners, so they can decide to take possession again of buildings; families with medium income (young families, elderlies and families with social difficulties) are kept out but they are not able to buy at market prices.

3_Public regional supports for young families or families with economic or social difficulties: during the first months of year 2013, government gave a contribution from 20000 € to 35000 € to young families who wanted to buy a private house.
Critical point: a few citizens involved; economic contribution is for all, not only for low income families; low-income families can't buy a private house at market prices.

4_Special rent prices for private houses: in bigger municipalities an owner can decide to rent his building at an established price and obtains economic convenience. The tenant pays for the rent a price that is included in a fixed gap, depending on the extension and the location.
Critical point: rent price is always a market price, too high for low-income families

5_Examples of private cooperative companies: a local cooperative company, Unicapi, has developed a business model to allow its members to buy a house built by the same cooperative company. The only requirement is to be member. The cooperative company usually builds on public land and obtains the land at a lower price than the market one with the warranty of selling at a fixed price.
Critical point: cooperative company works only with its members.

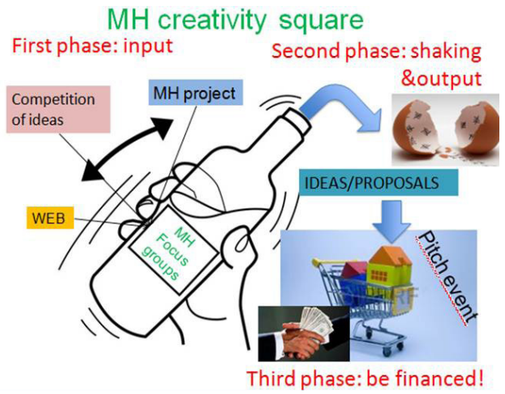
With an agreement between municipality and a private citizen, a new social housing village will be built with MILD HOME construction criteria, addressed to low-income people who will find new houses at lower prices than present estate market. Village design will be realised by winners of competition of ideas as developed by MILD HOME project who proposed the better sustainable solution and the better business model for the Municipality.

For the Municipality of Castelnuovo Rangone it was a target to find an economic model of social housing characterized by sustainability over 16 years. Economic model took into account all the necessary solutions to ensure long-term sustainability including: hypothesis on the ownership of the area (ownership of the buildings at the end of the 16 years of reduced loan), or other innovative management approaches.

The goals to set up a creative competition driven to harvest some innovative or alternative proposal on the general issue of the housing was achieved more than expected: 25 proposals are indeed collected. The target now can be of a twofold order: wider dissemination of the results achieved and spread the proposals to a larger number of stakeholders. In other words trying to support the designers in improve the proposals and at the same time in finding buyers for the implemented projects.

The next challenge can be set up a creative environment where the produced ideas and proposals could be "incubated", "raised" and shared. Next steps are:

- Mix and elaborate the ideas.
- Involve more stakeholders (municipalities, researchers, builders....) in the innovative process...
- Facilitate the interaction between "ideas producers" and "developers" or buyers.



8.2
Scenarios: opportunities and risks

Opportunities

The main opportunity to grasp with the MILD HOME model could be double, environmental and social: the green and economic sustainability of buildings and the livability of the urban spaces. But what do we mean with MH model? The perspective of the model comprise the building environmental and energetic performances, the interaction between the different buildings and the urban spaces with the aim to set up more than a green village a green and integrated urban tissue but also the cost and the affordability of the new buildings.

The target to reduce and optimize the costs could be achieved only affecting the several component determining the costs: land price, construction costs, loan costs and management costs. Facing all this aspects was set up a panel of action with several "operators": policies to reduce the land costs must be implemented by the local governments (perequative models); innovation and technology are the keys action to be used by enterprises and builders; management and financial costs 'reduction could be obtained by several approach but the main tool are mainly due to a mixed economy model.

The interpretation of the MILD HOME model has been set up tackling a very ambitious goal: find a new product to answer the housing need of the citizens and at the same time capable to be realized by the builders. Such a product could be synthetized in a 100 m² apartment to be rent at 400 euro per month considering the actual rent value is around 800 to 1100.

Who will be the main beneficiary of the MILD HOME product: The citizen looking for an adequate housing or the builder trying to answer the market's need?

The technological proposal obtained with the competition of ideas was targeting the building cost's reduction thorough innovation and construction criteria:

- modularity;
- use of local materials;
- energy efficiency that implies low management costs;
- good management of the surrounding Village.

The application MILD HOME model to social housing buildings will drive to a positive business solution for all the involved stakeholders:

- for municipalities, who don't have to pay for building construction or management;
- for builders, because of the efficiency of the business model;
- for citizens, who obtain buildings with low rent and low management costs.

Economic models must take into account all the necessary solutions to ensure long-term sustainability including: hypothesis on the ownership of the areas or other innovative management approaches.

For sustainable villages, studies of the most efficient management of the area is necessary: builders and future buyers must be informed and must discuss about common necessities and required services.

Risks

The exponential implementation of the MH model as illustrated above could be achieved only if the regulatory framework will be upgraded. At least two main innovative perspective must be understood and applied to the land&urban planning procedures:

- The urban planning approach must be reviewed and shifted by the "compulsory" to the "facilitator" approach. Just as an examples: stating by regional law of Emilia Romagna (Italy) the perequation of the 20% of the new urbanization in social housing mean implement the building's cost abruptly of the 20% in a real estate situation "frozen". An innovative political approach could be focused on the set up of a set of condition to support the implementation of a "win to win" approach as the MILD HOME model. The complex and "open ended" problems faced by the urban planners must be faced involving all the stakeholders and creating solutions more than rules.
- Mixed economy approach: the age when municipalities were able to intervene with structured public funds to realize and manage big and complex public intervention (as the ones needed in the social housing or urban regeneration just to share two examples) are gone. The modern approach that has to be developed could be defined as "light" but is basically structured on several models of mixed economy.

The mix of the point 1 & 2 mean a deep mind's turn in the political approach to the urban planning and more generically in the interaction between rules and society. But it seems to be the challenge of today.

The Importance of Thinking an "Urban Code for Sustainable MILD HOME and Eco Green Village"

9

9.1
About a possible future code for a sustainable MILD HOME

The importance of thinking an "Urban Code for sustainable MILD HOME and Eco Green Village"

Written by Flavia Di Noto, Donato Bedin and Sara Momi

Efficiency is the core of the "Europe 2020" European strategy for an intelligent, sustainable and inclusive growth and of the transition towards an economy based on an efficient use of the resources.

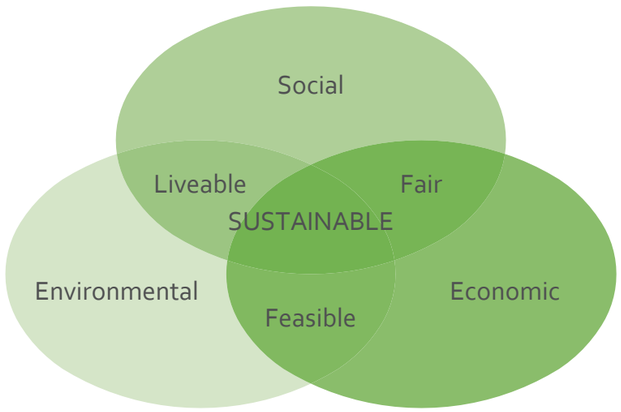
The declaration of Toledo subscribed by the Ministers of the European Union on the 22nd of June 2010, referring to the Europe 2020 strategy of the European Council, gives to Urban regeneration integrated programs and to Eco districts a fundamental role for the future of our cities and metropolitan areas and therefore, also to tackle those big economic, social and environmental challenges which distinguish the contemporary age.

In Europe, the vast majority of the population lives and works in rural areas and so cities can become the key actors of a global sustainable project, to tackle climate changes, to boost social inclusion and in order that the end of the current crisis could be turned into the starting point for a new economy achievement based on a more efficient use of the resources, on an increasing employment rate, on knowledge and innovation.

These are the reasons why urban generation and new urbanization (that nowadays is marginal in an economical standstill phase such as the European one) have to be developed according to sustainability criteria as:

- Environmental sustainability – Environmental sustainability means the ability to preserve in the right time the three environment functions: resources supplier's function, waste receptor's function and the direct utility source's function. Within a territorial system the expression "environmental sustainability" is used to intend the ability to value the environment as "distinctive element" of the territory, guaranteeing at the same time the protection and the renewal of natural resources and heritage.
- Economic sustainability – The economic sustainability can be defined as the ability of an economic system to generate a long-lasting growth of the economic indicators. In particular, the ability to generate incomes and job occupation for the inhabitants sustenance. Within a territorial system, the expression economic sustainability is used to intend the ability to produce and maintain the most of the value added inwards the territory, combining the resources efficiently, in order to value products and territorial service peculiarities.
- Social sustainability – Social sustainability can be defined as the ability to guarantee human wealth conditions (safety, health, education) equally distributed in classes and categories. Within a territorial system the expression "social sustainability" is used to intend the ability of the subjects to intervene together, efficiently, according to the same project concept, supported by a various institutional levels concerted action.

Therefore, it appears essential, to guarantee an economic development compatible with social equity and ecosystems, operating in an environmental balanced system, following the so called balance rule of the three "E": Ecology, Equity, Economy. Hence, it can be deduced that the sustainable development prosecution depends on the ability of the governance to guarantee a complete interconnection between economy, society and environment.



Therefore, it seems important to point out how such dimensions are strictly related one another by a variety of connections and, since they cannot be considered as independent elements, instead they have to be analysed in a systemic vision, as elements which contribute together to achieve a common goal. This means that each planning intervention has to take into account the reciprocal connections. In case that the planning choices preferred only one or two of its dimension, there will not be a sustainable development.

In the light of this triple environmental, social and economic dimension, sustainable development needs substantial changes in individual behaviours and decision-makers choices working in different political and administrative government levels (international – national – territorial)[1]. Public Administrations, represented by local authorities, and project designers of urban development have to contribute together to enhance rules on one hand and proposals on the other, which go to the direction of a practicable sustainability and convincing results. In order to make this project practicable, it is necessary to define some indicators related to the three areas pertinent to sustainability, or rather environmental , economic, social aspects, often very demanding and sometimes onerous.

The project MILD HOME, as happened partially in some Italian municipalities, did not mean to create a new sustainability certification protocol of the Eco Green Village, but to evaluate which parameters are the most pertinent to specific territories and to define concrete instruments with project designers, in order to develop qualitative and quantitative references to evaluate the sustainability level of Eco Village's projects.

Environmental indicators

They refer to environmental topics and especially to the definition of clear standards in order to evaluate the environmental impacts, linked to the following sub-categories:

- site sustainability;
- management and supervision of the hydro-resources;
- garbage management;
- renewable energy sources;
- energetic efficiency;
- mobility.

Social indicators

The social indicators point out the characteristics of accessibility and attention to all social brackets which can be interested in the project and have the purpose to foster spaces for sociality and for ethical communities:

- participated planning;
- accommodations for different user categories;
- production of local products/urban vegetable gardens;
- elimination of architectural barriers in the whole neighborhood;
- existence of social spaces.

Economic indicators

The economic indicators point out the economic benefit that the planning of an Eco Green neighborhood can entail towards inhabitants; they are measures directed to cluster the energetic saving, which, besides the environmental effect, produces a direct economic advantage and other measures which permit to the Eco Village inhabitant to save time and money.

Both the Eco Green neighborhood projects, which have been developed also thanks to the contribution of the MILD HOME project, described below, show how the pyramid of the environmental, social and economic sustainability represented the main focus of the planning, on the same wavelength of the municipalities interested in their position.

[1]/ source: SOGESID Spa, in-house instrument of the Ministry of Environment and Territory and Sea Protection MATTM and of the Ministry of Infrastructures MIT.

9.2
Eco Green Village proposals developed during the MILD HOME project

9.2.1 "Granaio" an eco-life habitat

Written by Paola Montagner

Introduction

It is well established that the development model we should tend towards cannot be the one we were accustomed to. It is now a fact that "sustainability" is not just an abstract concept, but it refers to a series of actions that are now emerging more and more precisely, and moreover the essence of this new "feeling" should be the basis of what we are supposed to do. However, what still appears unclear is "how to do and reach this target". We need to understand which instruments are better to be used and how we may use them. It is necessary to fill up the tool box. For those who are concerned about territorial development, tools are not only seen as new construction technologies, but they are new rules, new "instructions of use", that require research and innovation to become new models.

This double project arises from the clear willingness to contribute at the construction of a new "tool box" for the designers of the territory and from the intentional meeting between Paola Montagner[2], Laura Mascino[3] and Carlo Neidhardt[4].

The issue was: how to transform abstract ideas into concrete spaces and locations.

Paola Montagner was working on a "sustainable" district design in a concrete area and with a tangible commission. Laura Mascino was trying to gather and write the "best practise" for the construction of the territory. Carlo Neidhardt had already tackled those operations. This research was born thanks to Norbert Lantschner, who knew their individual intentions and decided to bring them together into the working table of the ClimAbita Foundation , of which he is the President.

The experimentation occurred through two projects built one another: a concrete project for a village, with a defined location and a concrete client; a writing project for a best practices handbook: the Granaio, the idea of a newly constructed sustainable residential district in Musile di Piave (VE); the Protocol Ecolife Habitat for the ClimAbita Foundation[5], a best practice handbook for the realization of sustainable districts.

The two projects (that have been brought forward in parallel), have built a great synergy, increasing their importance: the district became part of the "virtuous" city and the protocol has a certain feasibility value because its rules have already been tested through a concrete project.

The sustainable neighbourhood

The wheat, the most precious fruit that comes from the earth, has always lighten up men and women's minds and souls. It is said that wheat is the element on which the civilization is established. Our ancient italic ancestry were used to see in the sheaf of wheat a sign of kindness of the goddess "Cèrere", which etymology is connected to the verb "create". Around this gold there is a world of instruments, tools, ideas and inventions. The granary was the place where this gold was conserved waiting for its later transformations. From these considerations a project of a sustainable village called "Granaio" (the Italian word for "granary") has started.

2/ She graduated in Architecture in 1997 at the University Institute of Architecture in Venice. Since 1997 she has worked as architect in the architecture design field, and she specialized in low energy consumption projects. Since 2009 she has hold an expert consultant position in CasaClima and since 2013 she has been supervisor of ClimAbita Foundation. Since 2011 firstly she has been President of CasaClima network Venezia Association and after of Clima Network Association, with the aim of spreading the concept of sustainability in architecture.

3/ She studied in Venezia (IUAV) and in Tokyo. She is an architect and has a Doctoral Degree in City Planning at IUAV University in Venice. Since 2008 she has worked as a teacher at the Politecnico in Milan for the City Planning Design and City and Territory Analysis courses. In 2000 she set up her architecture studio, dealing with projects "from the spoon to the City" and participating in several international design competitions both in urban and architectural scale, working in Italy, Japan, Albania, England. Since 2013 she has been member of the ClimAbita Foundation.

The importance of thinking an "Urban Code for sustainable MILD HOME and Eco Green Village"

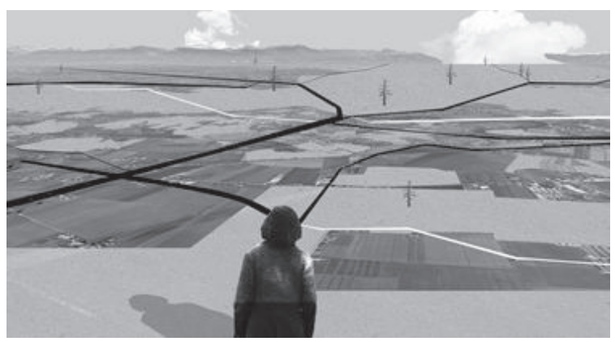
The location is a plot, located next to an historical building that worked as a granary, and inside the designed settlement has maintained the vocation whereby it is born; a box where all the goals to promote new initiatives in the environmental field, the energy development, the use of renewal resources, the education of new generations in the sustainability (even through the knowledge of the traditions) are contained.

The project area is located along the route from city to city, from centre to centre, a way that now can be walked through quickly, indifferent to the valuable natural elements existing, once distinctive of the rural settlement system: the "Granary", the Villa, the Colonic House.

From the city to the rural area

The Granaio's area is a strategic location for the potential connections with public and private transport routes. The project, before concerning on residences, concentrates mainly on the mobility and on the possible connections with the principal arterial roads, as the motorway and the railway, which connected Venice with the east part of the province, and make the area reachable "on foot from every part of the world and vice versa".

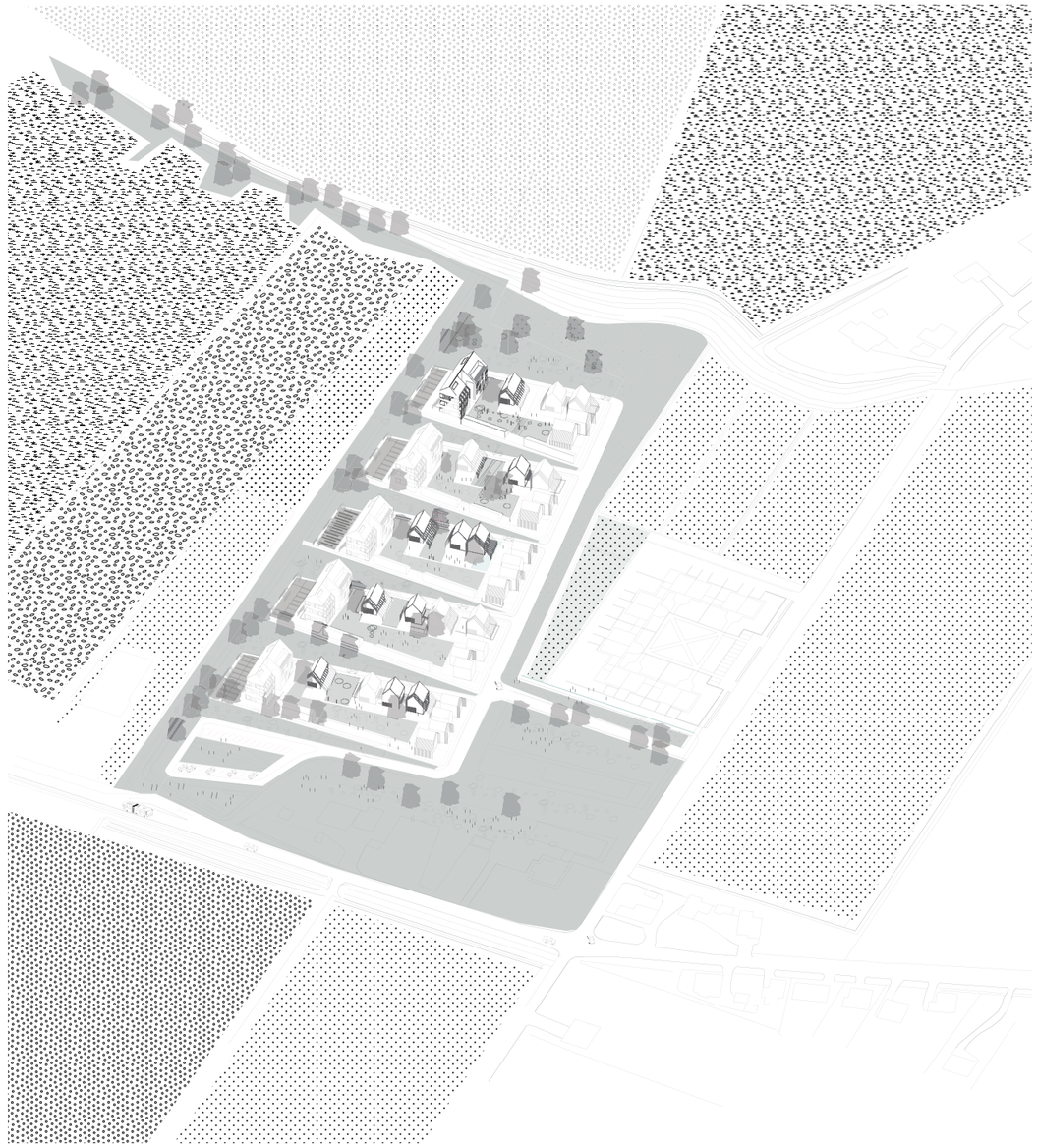
The idea of the project starts from the requalification and reutilization of valuable existing building which become a doorway towards the rural environment, the engine of the new residential settlement, creating new ways and reactivating others: the granary that contained the wheat, the precious gold which moved the economy of the territory, becomes an incubator; the existing natural elements as moats and canals, important draining tools of the land waters, emerge and become constitutive elements of the project; the connections with the external public mobility become, in the settlement, a dense network for bicycles and pedestrians; the residences are joined with the greenery and the land, nevertheless each one maintains its peculiarities.



4/ He studied architecture in Venice (IUAV) and in Bolzano (LUB) and he obtained the CasaClima Second Level master Degree. Since 2007 he has worked as an architect, and he established the Azzero Studio with Marco Fontanive and Andrea Zausa, that, since 2010, has been working in Italy and in Europe in the low environmental impact design, both in urban and architectural scale.

5/ ClimAbita Foundation is a non-profit organization that aims to promote and realize a new sustainable culture in the construction of buildings, in the economy and in the way of life. It focuses its attention on the awareness that the environmental renewal does not depend only on new techniques and materials, but, above all, on a new way of thinking.

Axonometric of the project area



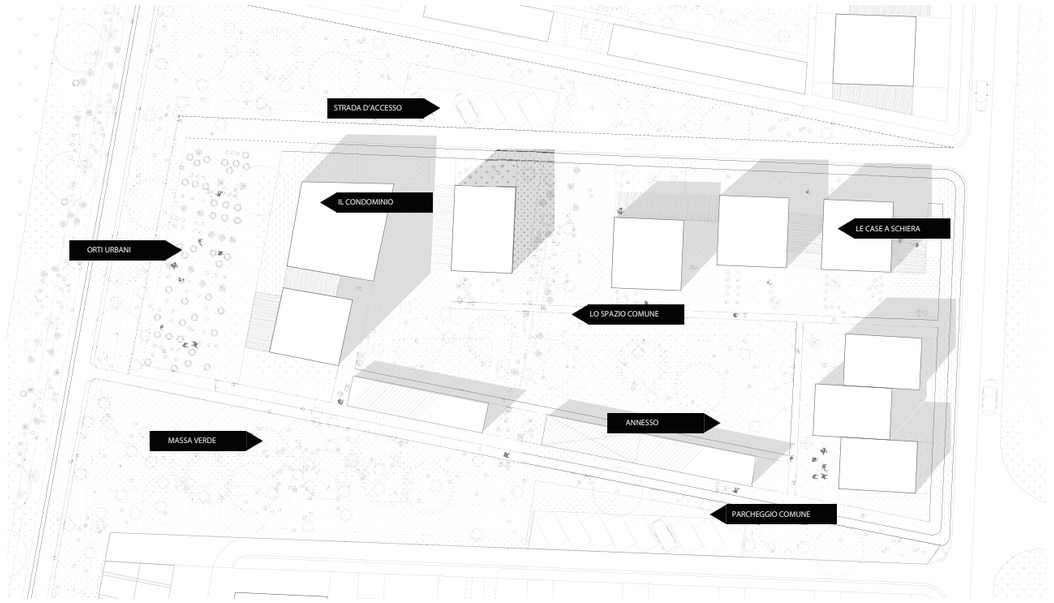
The view of the project shows the connection between buildings and private and semi-private greenery, a settlement that reshapes a rural landscape in form and type: the fusion between the city and the rural area, between buildings and land, between built elements and natural elements, houses and vegetable gardens, connected one to another by the network of routes.

Thinking about how to build this settlement, we started from studying the settlement rules of the rural areas, where the residences represented a core which used to have inside everything the resident could need for the quality of his life: the so called "yard space courtyard".

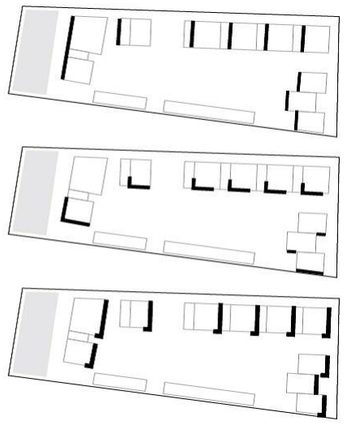
The importance of thinking an "Urban Code for sustainable MILD HOME and Eco Green Village"

The buildings are thought for different residential types: starting from the unit for the single to the one for the family with one or more unities, and all around they developed a semi private space, which becomes a space for the sociality, with the aim of living the external environment in common. From the residences you can see the horizon, always natural and green, with wide distances from other nucleus. These sections are divided in two ranges in order to facilitate the management of the common things. The yard disposition follows the principles of the correct orientation, with the intent that the principles views are turned towards the south-east, shaded both from the natural elements or the buildings.

Plan card



Sun exposure



The project proposes a settlement where there could be the possibility, beyond living there, also to work and create jobs opportunities.

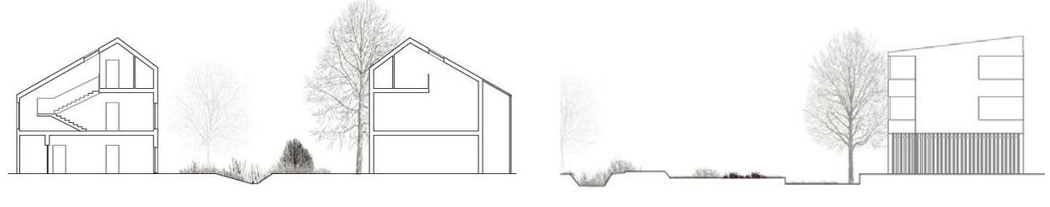
On the west side indeed, more connected with the rural area, there is a zone of vegetable gardens for residents and non-residents, which separates the cycle-pedestrian way of the residence.

The existing buildings, instead, offer the occasion to "work at km zero", and where it is possible to sell the products that have been cultivate or find a place for those who offer a social service to the inhabitants such as assistance to children and elders, or those who manage the common things. The building that was used as granary instead, becomes a container of services, ideas and the location of a research and experimentation laboratory of the settlement.

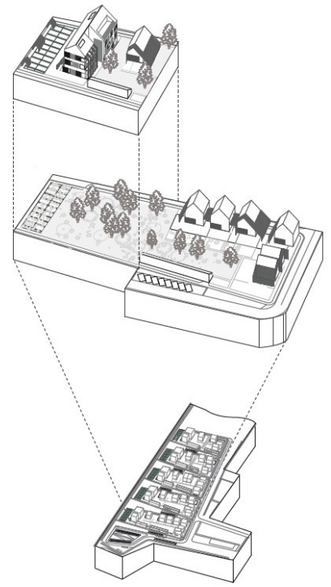
An important part of the project is the use of the ground and of the water as a natural resource. The choice was to respect the natural slopes of the plot and its draining system, maintaining the moats as the most characteristic element of the spaces. Taking advantage of this system we supposed to use a part of the plot for an installation of phyto-purification, for the domestic drain, that could provide water and a small lake places in the green zone at the entrance of the district. In the residential islands, in the common spaces, the collections of waters both rain waters for domestic and non-domestic use or sanitary hot water is included.

Finally another peculiarity of the settlement is the strong connection with the stations or the transport stops: a thick network of cycle-pedestrian routes, that does not intersect with the cars mobility, but that connects the residences with the extra urban traffic hubs.

Natural drainage system of the rainwater



Construction phases Hypothesis



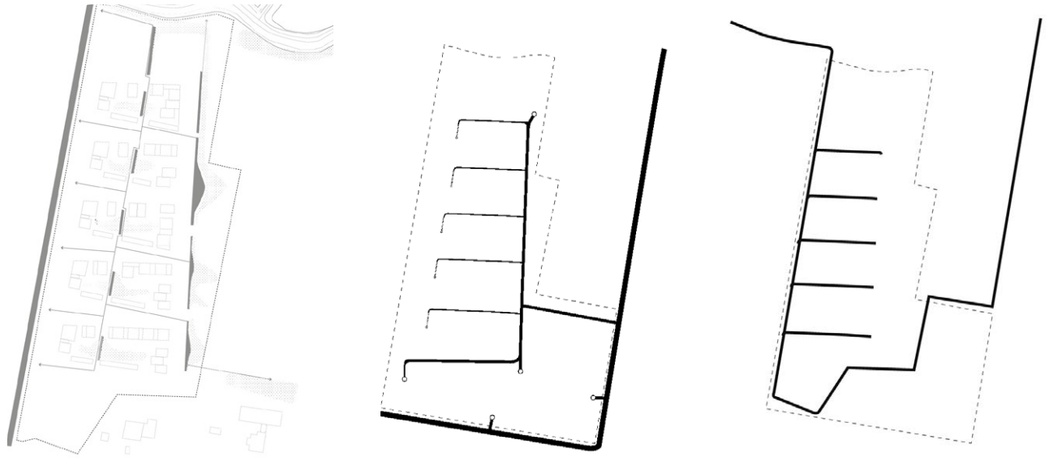
The residences will be constructed with the prefabrication method and with high and certified energetic services. The principles that will be followed for its constructions are: good insulation; use of good mass materials; controlled ventilation and energy from renewal sources.

Eco-life Habitat: the best practices

The best practice handbook, through which the planning of the "Granaio" has been developed, is the protocol ClimAbita® ecolife Habitat: a simple but efficient instrument which describes what is essential in order to define a settlement as sustainable. The standards taken into account are grouped in a "clover" of sustainability, around three macro areas Ecology, Social and Economy, in order to evaluate the environmental sustainability during the planning and building phases of the standards of comfort and healthiness regarding the inner and external spaces, as well as the economic sustainability of entire residential areas, starting with a single building.

Ecology, Social, Economy

As regards the Ecology field, the objective is to define and promote planning criteria which permit to decrease the environmental and energetic costs of a new settlement, appealing to the massive potentialities and effectiveness which permit to apply the environmental protection strategies on the urban scale, even before the architectural one. Indeed, it is in the functioning of the urban system that it is possible to plan the main saving of resources in respect to the current consumption standards. Essential prerequisite is the adequate planning of buildings in order to obtain a reduction of the energetic needs and the usage of renewable resources, as well as a careful valuation of the orientation and position of the buildings within the settlement, permitting to limit the CO_2 emissions. The building, settlement and environment efficiency is valuated. Moreover, the building of a new district has to consider the impact that it will have on the ground during its entire life cycle, trying not to leave an indelible sign on the land, through the selection of low environment impact materials, the reduction of domestic and construction waste and the climate-changing emissions produced by humans through the mobility systems.



Left: Phyto-remediation scheme;
Center:Road network;
Right: Bicycle and pedestrian path

A new settlement can be considered as sustainable on the base of how the natural resources, like water, are safeguarded and the protection can be assured only thanks to actions undertaken on a local scale, by the single communities and in the single houses. First of all, it is necessary to decrease the demand of drinking water, introducing efficient usage ways, which can consequently limit also the use of water drains. Secondly, it is appropriate to exploit alternative sources like the rainwater. Furthermore, it is necessary to focus on the disposal of black, gray and rain waters, using purification systems, which environmental impact and high energetic needs can be reduced through treatment strategies in loco and adopting sustainable urban drainage systems.

In the social field, the reference is to the principle of well being, of feeling as integral part of a society, a place and a lifestyle, in order to obtain a quality relationship between settlement and wellness of the inhabitants. The quality of a settlement can be verified also through the life quality and well being of its inhabitants, both within the building and in the external spaces. This comfort is intended as a physical wellness, connected with a sensorial perception, through its declinations: inner and external spaces of peace, healthy places with a pleasant microclimate and a good relationship between light and darkness.

The settlement is a quality one if it eases the community building and provides for spaces where socialization and personal growth occurs. It should also guarantee the accessibility to all the individuals, through the quality building, the diversification of spaces and their functions. The quality of residential buildings needs also a service equipment, which guarantees a variegated usage of the settlement; a residential place is not only a place where to rest, but also a place where there are services and job opportunities for the ones who lives there; a common place where the possibility to reside is guaranteed, with suitable accommodation types for all kinds of households. The quality passes also through the traditions, from one side, and the new collective conscience and social values, from the other.

The objective is to develop a belonging feeling through the relationship with the historical and cultural background, to confront with the existing cultural heritage, the morphology and the configuration of the territory and the promotion of the landscape. The aim is also feeling part of the project, especially as regards the social development and innovation, with a respectful attitude towards the landscape, contributing to a requalification, renovation and appropriation of it.

Regarding the Economy field, the criteria which characterize a sustainable settlement have the purpose to protect the interests of all actors involved in the project, through the transparency of all the processes and costs and through the participation of the future residents.

The quality of the project's process identifies from the beginning the quality of the settlement, because in this phase the decisions about the construction and the management are made: the duration of the whole settlement depends also on the selection of the materials according to their long-lasting quality, especially for the most stimulated parts of the building, that can extend the buildings' life. The settlement's duration depends on the smart management of the materials' disposal, on its flexibility in the course of time, which refers to the possibility to change the spatial, structural and usage characteristics, in case the necessities of the residents would change, without using too many resources and energies.

The sustainability of the intervention is evaluated considering also the building and management costs: the investment costs must be clear already from the beginning, as well as the amortization schedule of the entire investment, also considering the energetic choices; the executive phase has to be complete as much as possible regarding the definition of real costs; the management and maintenance costs of the whole settlement or of the single buildings must be clear to the future residents.

The information of the inhabitants of a sustainable district is an important instrument in order to help them to take aware decisions. The same counts for the training about the usage of the systems, as well as the spaces and behaviors regarding the mobility and the garbage collection. Finally, a district is sustainable when the real needs of inhabitants are taken into account though a participation process.

The importance of thinking an "Urban Code for sustainable MILD HOME and Eco Green Village"

Planning the future

People, context, social relationships, habits and personal convictions are key factors in order to build residential models with a low environmental impact. The technology, which is, in the collective imagination, the first mean to reach this objective, is not enough alone in itself if it is not used by aware inhabitants.

The project "Granaio", powered by the best practices handbook for building a sustainable village, becomes a pilot project for the territory which represents its real context: a track for action lines and application methodologies to be developed in the processes of municipal planning; inputs for a greater awareness of all actors involved in the building, both in the architectonic/urban scale, and in the decisions and processes designed to improve the social, economic and environmental standards of the territory.

The protocol at the base of the project represents at first a guide and then a check system for the designers which are involved in the planning of inhabited territory. Consequently it becomes a starting point also for who decides the rules regarding the urban building, such as the municipalities (the case of the municipality of Musile di Piave), on which it is possible to evaluate which are the most relevant standards for the territory and to define an instrument which considers the qualitative and quantitative objectives in order to appreciate the sustainability level of the projects.

9.2.2 „Borgo Verde" village

Preface

Written by
Lucia Poloniato

The idea and synergies to build an Eco Green Village in Crocetta del Montello are the result of the lucky combination of several elements:

- the environmental sensitivity of a team of local designers led by architect Lucia Poloniato;
- the social responsibility demonstrated by the buildings' owners, brothers GianMaria, Giulio and Mario Nicoletti, who, with their experience as plant engineers in the construction sector, were able to see the potentiality of sustainable building;
- the will of the City Council to promote a construction project with a value of good practice, experiencing the exceptional qualities of a new way of building;
- the relations occurred between these individuals and the promoters of the projects MILD HOME "My Modular, Intelligent, Low cost, Do it Yourself, nearly zero energy house for our Eco Green Village " funded under the South East Europe (SEE) program;

All this has led to the birth of the 'Borgo Verde', hope of a better living.

Characteristics of the project area

The location of the area:

- City of Crocetta del Montello, province of Treviso (6.000 inhabitants, 3 boroughs), in the heart of the countryside known as "the Furlane";
- Overlooking the old road "via Apollonia" where there is a large plot with a built up volume destined to residence and crafts not far from another abandoned building (to be demolished) facing the road;
- 150 m above sea level in the middle of a vast plain;
- Municipal Office (150 m), School site (250 m), Library (250 m), Rest Home (100 m);
- Natural History Museum "Earth and Man" (250 m), Museum of the "1900 and the Great War" (200 m), Museum of Typography and Typefaces (350 m), Palladian Villa Sandi (250 m);
- Pedestrian and cycling paths between the river Piave and the Montello hills.

The environment aspects of the projest location:

- at the foot of the Venetian Pre-Alps;
- at the foot of the hills of Montello and Asolo;
- near the "Piave Riviera";
- far from main traffic arteries;
- crossed by a trail in the Venetian countryside;
- wide perspectives at 360 degrees.

The cultural aspects of the project location:

- half way through Belluno and Treviso (30 minutes);
- half way through Venice and the Dolomites (60 minutes);
- 15 minutes from the fortresses of Asolo and Feltre;
- on the bank of the river Piave, place of the long battles of the Great War;
- not far from the remains of the Abbey of Nervesa della Battaglia, where Monsignor Della Casa wrote "Il Galateo";
- place of excellent food and wine, at 15 minutes from Valdobbiadene, Prosecco hills and at variety of typical wineries.

Nature around the project location

- in the green of the river Piave, Montello hills and high plains of Treviso;
- the proximity of the Piave and Montello attract animals typical of the countryside such as pheasants, hares, amphibians (frogs and toads), hedgehogs, moles, etc.;
- in recent years also deer and wild boars;
- crossed by lines of migration (ducks, herons, ...);
- very fertile drained ground (gravelled subsoil);
- mild climate, excellent sun exposure, ventilated area (rare foggy conditions).

Project characteristics

Sustainability of intervention. The objectives of the project are:

- Demolishing buildings no longer usable and worthless in terms of cultural and / or environmental value, with recovery and re-composition of their volume, in order to stop the consumption of soil or to improve its use also in terms of reduction of vision pollution;
- Improving the environment (rearranging it) and the quality of life, by promoting the construction of buildings that possess characteristics of good living;
- Using resources (both energetic and financial) "of the place and suitable for that place", encouraging new investments, promoting the "good investment";
- Encouraging stakeholders' involvement in the proposed actions with special attention to social, institutional and economic aspects;
- Acting in terms of environmental sustainability, by preventing the impoverishment of future generations. The areas in which we act are, therefore, of environmental, social and economic types.

Environmental aspects of the project:

- Use of eco-technologies that lead to low power consumption and low operating costs;
- Autonomy and high energetic performance;
- Sustainable waste management and water conservation;
- Nature trails (walking and cycling) away from major traffic arteries.

Social aspects of the project

- Aimed at people who wish to live in a new house;
- Attentive to promote more aware and responsible lifestyles;
- Fostering the personal interrelationships within the village.

Economic aspects of the project

- Accessibility to people with middle and low income;
- Low cost of construction (through the creation of local supply chains, the modularity of the building elements and the standardization of the raw materials);
- Low cost of maintenance.

Characters of intervention

The project aims at:

- building a core settlement consisting of houses with eco-friendly characters;
- ensuring the operation of building certifications in accordance with protocols approved at national or international levels;
- drawing up and adopting a buyer guide for the conduct, management and maintenance of the village over the years;
- involving the families who join the initiative buying a house to live in or to rent the same. They will have the ability to tailor their home private spaces according to their financial resources.

And also:

- use of natural materials with high performance;
- choice of building materials "km o";
- use of materials with reduced maintenance requirements;
- low soil sealing;
- use of recycled materials for the construction of floors, plaster / pigment, etc;
- reduction of water consumption for domestic use, water recovery and recycling;
- choice as to "subsurface wastewater dispersion";
- home composting;
- correct exposure to sunlight of domestic spaces - south facing south-west;
- installation of solar panels, preferably in public areas;
- electricity production, consumption and sale;

- reduction of energy consumption (high isolation "Class A-A+" and appliances at low power);
- reduction of visual impact in the context of the area;
- reduced height of buildings;
- use of non-impact colourings (neutral);
- availability of common parking spaces to accommodate guests' cars.

Contents and solutions of project

Urban solutions:

- set of building aggregates to form a village;
- provision of the entrance to the village in a central location with common parking places, concentrating and reducing the use of common ground and paved area;
- definition of a single access with placement of a barrier to entry to improve the residents' safety;
- height of buildings: a maximum of 2 floors;
- jetties or porches to keep window shutters open even in rain;
- naturalization of open spaces by planting trees and climbing plants in the gardens behind building structures;
- simplification / naturalization of fences;

Strategies for the life of the individual and of the community:

- open porches spaces to enjoy the garden;
- minimizing architectural barriers aiming at their total elimination within each unit.

Economic choices:

- standardization of building and decorating types;
- use of locally produced building materials as much as possible;
- sale of surplus power to guest's cars;
- costs for building slightly above the average of the new homes built in the area;
- very low close to zero costs for operating home;
- agreements with leading banks for the access to subsidized loans.

Living in "Borgo Verde"

- Appreciating the view of the surrounding landscape on a daily basis;
- living close to nature;
- living in the gardens;
- being able to keep the window shutters open even in rain or using both roof extensions and porches spaces;
- interacting with neighbors;
- running or walking;
- cycling along nature trails;
- going to school by bike;
- reaching the sea and the mountains in less than 60 minutes;
- reaching the major cities in Veneto in less than 60 minutes.

9.4 Conclusions

Written by Flavia Di Noto, Donato Bedin and Sara Momi

The main aspect of a project of urban regeneration is represented by the capacity to combine and integrate the different aspects of sustainability: ecological, social and economic ones. Therefore, the project should be necessarily multidisciplinary, it has to act at the same time on the urban hardware (infrastructures, public spaces, landscape and environmental aspects, construction industry, physical transformations) and on the urban software (changes of the lifestyles and of the consumption habits, education and health services, sustainable mobility, participation, new employment, information and communication networks, etc).

The project should always have at its core the inhabitants, their issues and their sensitivities and should be the expression of a wider strategic view about transformations which must involve the urban system as a whole.

It is from this prerequisite that the experiences generated about the above illustrated project MILD HOME arise. Therefore, the capacity of the local entities to clearly define a view of the city of the future is essential, as well as the priorities and the strategic objectives. It is also important to make all the single programs meet with one another, in order to trigger wider requalification processes of significant sections of the city and the territory.

As regards the relationships with the private operators, it is meanwhile appropriate to operate with procedures of public evidence, through the preventive definition of quantitative and economic standards to refer to and for both sides of clear and transparent codes of conduct, remembering that in the European Union's documents it is always required that a significant part of the real estate increase, deriving from interventions of urban transformation, is transferred to the public stakeholders or to the community (Declaration of Toledo, 2010).

Italy

1. Regional Union of Veneto's Chambers of Commerce
2. Municipality of Castelnuovo Rangone
3. Emilia-Romagna Region

Austria

4. European Centre for Renewable Energy
5. Building Biology Institute

Bulgaria

6. Bulgarian Chamber of Commerce and Industry
7. European Labour Institute
8. Municipality of Sofia

Greece

9. Region of Thessaly

Hungary

10. Széchenyi István University, Department of Architectural Design

Romania

11. Centre for Promotion of Clean and Efficient Energy in Romania
12. Caras-Severin County Council

Serbia

13. City Municipality of Savski Venac