

**PERMACULTURE DESIGN COURSE 2013.**

UNIVERSITY OF ZAGREB  
FACULTY OF AGRICULTURE

Case study Croatia

Thinking globally, doing locally

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## 1. INTRODUCTION

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More than a quarter of the world population has accepted the consumer lifestyle, in developed industrial countries as well as in the countries in transition. People are continually seeking new products influenced by advertising and distribution. This is why people have been spending fourfold for their personal needs since the 1960 (source: [http://www.mzoip.hr/doc/publikacije/Odrziva\\_potrosnja\\_i\\_proizvodnja.pdf](http://www.mzoip.hr/doc/publikacije/Odrziva_potrosnja_i_proizvodnja.pdf)). If this continues, the Earth might lack materials necessary to keep up with the demands for the goods and services. Also, we will not be able to deal with the waste we produce in the same time.

Profitability has been the main principle of the consumer society which in the past several decades produces and spends more and more in order to pay less for a product. This kind of aptitude encourages the unconscionable exhaustion of resources, pollution of air and water, extinction of animal and plant species as well as waste generation. In order to stop this cycle, it is necessary to take urgent measures of using less in order to produce more. In other words, the production of waste should be limited, and unconscionable spending and pollution should be avoided. But in the same time, global demand for goods and services should be satisfied.

The process of creating ecologically sustainable design in architecture, agriculture, energetic and other spheres of production and consummation in the Republic of Croatia is still inchoate. Due to great efforts of particular enthusiasts and manufacturers some grater and some smaller projects have been initiated. These projects can be referred to as “ecologically sustainable”. One of those projects is the Recycled Estate Vukomerić, an eco-village near Zagreb built by the activists of the Green Network of Activist Groups (GNAG) in order to raise consciousness about the closed sustainable cycle of the social and natural society which can be completely self-sufficient. That is the main principle behind the permacultural design.

## 2. BACKGROUND INFORMATION

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The Green Network of Activist Groups (GNAG) association gathers organic gardeners, practitioners of environmentally friendly technologies and ecological construction, permaculture design, academic researchers dealing with the social models of organisation and equal human relations as well as eco-activists.

GNAG aspires to create a world in which people can improve their life conditions, exercise their social and human rights, and thereby not endangering the environment and the sustainability of the natural ecosystem. The main objective of the GNAG is the development and promotion of permaculture, knowledge and skills involving ecology, and applicable model and technologies, which are all important for the sustainable development and rising of the quality of life.

January 1<sup>th</sup> 2013, the GNAG Association concluded the cooperative agreement with the National Foundation for Civil Society Development. Following the agreement, GNAG functions as a health centre for the social development in the Republic of Croatia when it comes to sustainable lifestyle and the development of permaculture.

One of the main goals of the GNAG Association is to create an open educational centre called Recycled Estate in the village of Vukomerić as a demonstrative model of the ecologically sustainable and socially aware environment designed according to the permaculture principles. GNAG is one of the founders of the Balkan Ecovillage Network (BEN) through which they cooperate with the Global Ecovillage Network (GEN).

### 3. PROJECT SCALE

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The project was initiated in the village of Vukomerić in Vukomeričke Gorice, located 25 kilometres south of Zagreb, towards the river Kupa. The land for building the estate was a gift from a father of one member of the Association. The land which is 20 hectares big has been uncared of for the last twenty years and is therefore great soil for creating organic gardens because it was not polluted with agro-chemicals or degraded by agro-technical and melioration processes. The notional organiser is Matko Šišak, together with twenty three other members of the Association and all the other permacultural design fans. The team comprises a network of expert assistants which includes architects, confectioners, geodesists, graphic designers, construction workers, rangers, agricultural workers, building completion workers and interior designers.

### 4. PROJECT DESCRIPTION

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Picture 1: Sign of the estate (source: personal photograph)

By creating the open Recycled Estate education centre in the village of Vukomerić, people want to create a model of ecologically sustainable and socially aware space designed according to the principles of permaculture. Many members of GNAG association are building their own houses in the village of Vukomerić (4 houses are in process of realization).

One of many definitions describes permaculture as a way of creating balanced human environment, and providing the knowledge, information and experiences of the application of different ecological technologies to different groups of users: local self-government and community, environmental associations and the rest of the society, as well as networking with similar initiatives and organizations in Croatia, region and the world.

## 5. LOCATION AND CONDITIONS

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Picture 2: location of the estate of Vukomerić

The village of Vukomerić is an inhabited village in the Zagrebačka County in the Republic of Croatia. It is situated in Turopolje, and it is the administrative part of the town of Velika Gorica. It extends over an area of 3.83 km<sup>2</sup>

Turopolje is a geographic area of lowland which extends over a 45 km in length and 23 km in width. It occupies an area of around 600 km<sup>2</sup> with an average

elevation of 110 metres above the sea level. The alluvial soil of Turopolje is located in between Posavina the north and Vukomeričke gorice hills in the south.

The area of Turopolje is a region bordering Velika Gorica, the river Odra, Lekenik, and Vukomeričke Gorice hills (source: <http://turopolje.hr/>). The population of Vukomerić according to the 2011 census stands at about 137, who all live in 47 households (source: <http://www.dzs.hr/>).

## 6. DESCRIPTION OF ECOSYSTEM

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Turopolje is an area with a mild continental climate including warm summers and moderately cold winters with occasional snowfalls. There are no extremely dry or extremely moist periods, while the mean annual precipitation lowers going from the west to the east. The mean annual precipitation is 900 mm.

The soil value is of average quality. Mountain regions and those regions with few inhabitants are the areas where most of the preserved woods can be found.

A great part of Turpoplje and Odra field is today an agricultural region, which means that its primary (forestry) vegetation is highly suppressed. People turn woods into plough land, or into grassland if the land is not appropriate for plough land due to adverse water regime (source: <http://www.ptice.hr/iba12.htm>).

## 7. DESCRIPTION OF THE PROJECT

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Picture 3: GNAG-s places for education (source: personal photograph; [www.zmag.hr](http://www.zmag.hr))

The members of the GNAG Association have popularised the use of natural and recycled construction materials and different construction techniques following the example of the Recycled Estate of Vukomerić. Sustainable construction is based on the use of the materials which protect people and the environment. The GNAN construction team offers a comprehensive service of building eco-friendly buildings for all sorts of purposes, including summerhouses, bungalows and family homes. The team also restores pieces of traditional wooden architecture, builds objects using car tires, produces earthen plaster and natural paint, and insulates buildings using sheep wool. While doing that they use renewable energy sources. Structural elements of buildings are made of wood, while bricks and stones are used instead of concrete. Some of the traditional construction principles are adjusted to the modern needs, which makes them applicable in the present. Those traditional ways include construction with the use of clay, straw roofs and some other natural elements. The use of these materials greatly reduces the amount of waste produced during the process of construction, and when the building is no longer in use, all of the materials can be reused or they are biodegradable so they do not increase the amount of the waste.

The reuse of used material has is an important part in this kind of construction. Massive walls made of used car tires filled with the soil represent strong bearing walls, while all cans or glass bottles can be used for the construction of the partition wall. When those walls are plastered, they fulfil all of the functional and aesthetic needs of the user.

Great attention is given to energy and water saving, so this kind of building usually has passive solar properties (huge glass windows on the sunny part of the house, thicker isolation,

and thermal mass), rainwater harvesting systems, sewage purifying and the use of renewable energy sources. Total costs for energy, energetic and ecological footprint are very low in this type of houses, but require more physical work than the conventional houses.

The Recycled Estate also has a common garden which is maintained according to permacultural principles, and its goal is not only food production but also education about permaculture and the genetic diversity of the cultivated sorts. They also possess their own seed collection and they tend to promote the preservation of the traditional seed production and of the traditional cultivated sorts through different workshops.

In the last several years many workshops and courses have taken place in the Estate. The self-construction of the solar collectors is a long-term programme which is a product of the cooperation between the Green Action and the GNAG.



Pictures 4: building the estate of Vukomerić (source: personal photographs; [www.zmag.hr](http://www.zmag.hr))

## 8. SUSTAINABILITY

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Picture5: solar- panels built by members of association  
(source: personal photograph)

Sustainability is usually perceived through three dimensions – sociocultural, environmental and economic. The concepts these three concepts present are social sustainability where there is emancipation among the members and directionality towards transmission of practical ecological solutions into the local community and wider environment part of everyday life.

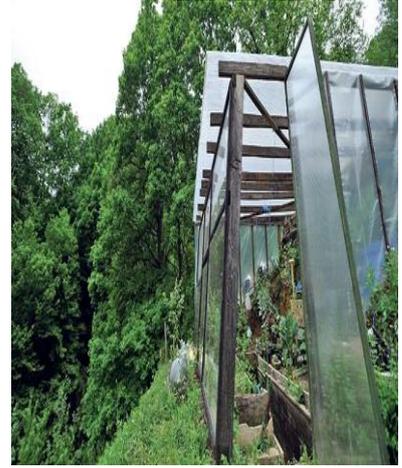
Ecological sustainability has its basics in the Estate itself, where renewable energy sources



picture 6: green roof (source personal photograph)

are used, ecological construction is being taught, permacultural gardens are created in a way that maintains biodiversity, water is reasonably used and waste is turned into valuable resources. Economical sustainability is one of the specific goals of the Association, whose long-term goal to establish a foundation which would gather associations oriented on the production/profit (organic food, solar collectors, and biodiesel).

Long term plans for the future are: creating a good example of permacultural design in Croatia, establish cooperative group for farming and trading goods (food, spices, building materials etc.), to build a forest garden (perennial plants), expanding solitary exchange of plant seeds throughout all country.



Picture 7: permacultural garden ( source: personal photograph; [www.zmag.hr](http://www.zmag.hr))

## 9. CONCLUSION

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Permaculture is a term made of two words – permanent agriculture. Permaculture includes many fields of classic sciences oriented towards the care about the Earth, the care about people, wise control of the population expansion and the control of the material goods consumption. Permaculture is a conscious organization and maintenance of the productive agro ecosystems which are distinguished by biodiversity, stability and the strength of the natural ecosystems.

Approximately 30% of greenhouse gas emissions (GHG) come from land use and land use change. Sustainable land management projects have the potential to not only reduce GHG emissions by reducing emissions from biomass burning, biomass decomposition and the decomposition of soil organic matter, but also to sequester carbon (C) through practices that increase biomass production and promote the build up of soil organic matter thereby providing global environmental benefits (source: <http://www.unep.org/climatechange/carbon-benefits/>)

Merging the knowledge, innovations, awareness, work and boldness new ideas are created under the term of permacultural design. Effective realization of these ideas would create solutions which could at least partially reduce human ecological footprint.

More and more individuals recognize the problem of global pollution and nature degradation, but to most of the people it is only news they occasionally hear. Certain individuals have taken full responsibility and are actively trying to find a solution in order to reduce and/or moderate the mistakes made by the whole humanity.

The Republic of Croatia is still getting acquainted with the possibilities of permacultural design. Even though our agricultural land is less deteriorated than in other countries, it is still important to raise awareness about land, air and water preservation as well as bio-degradation. Farmers should be informed about farming and plant cultivation according to the principles of sustainable agriculture, while people in the cities should be included in education about urban gardens, bee gardens, energy efficiency, etc. Our time is running out, and ecological footprint is getting bigger. What will happen when we cross the line is something we most certainly do not want to know.

## 10. REFERENCES

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