

THE SUSTAINABLE CITY

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Abstract

We are all part of the economic mechanism that actually rules the entire world, and we all know that this is a burning fire that can't be stopped. As a result, the sustainable development has a goal to put a limit or to point out what we can not affect and what will cost our planet too much just for the sake of making money. According to statistics, it is estimated that approximately 50% of the world's population now lives in cities and urban areas. Essentially these large communities are unsustainable, but they provide both challenges and opportunities for environmentally conscious developers. In order to make them more sustainable, building design and practice, as well as perception and lifestyle must adopt sustainability thinking. There are some good examples of countries taking in consideration sustainable development, and they are building new cities or suburbs, entirely sustainable. (Australia: Surrounding Moreland and Melbourne. Brazil: Porto Alegre, Curitiba. China: Sino-Singapore Tianjin Eco-city, Dongtan, Huangbaiyu biggest in China, Nanjing, Shanghai, Rizhao. Denmark: Kalundborg). Coming back to Romania, in 2008 the authorities came o the conclusion that urban population is at 54% of the total population and not just Romania came to the conclusion that unfortunately, urban population is growing too fast for nature to keep up with the urban growth.

Key words: *sustainability, development, urban, Green, ERP.*

JEL Classification: R 11-Regional Economic Activity: Growth, Development, Environmental Issues and Changes.

INTRODUCTION

Every human being is supposed to choose, based on this elementary life aspect, we can start to talk about sustainable development. I choose not to litter, but to place the dirt in the right collecting tank. Just like the authorities have chosen to consider the environment in danger, in 1985 when a ozone hole was discovered in the atmosphere above Antarctica. Through the Convention from Viena humanity officially started to choose to care about our environment. One year later, 1986 the Report of Brundtland (WCED) entitled "Our Common Future" made relevant the definition of "sustainable development" stating that we need to satisfy our needs without affecting the future needs of our generations to come. (*EU-Environmental-Policy-or-Green-Economy*) In my opinion, the definition is like a remainder of the freedom principle towards the nature and the environment. Yes, all humans are free as long as they do not infringe the rights of another human being. The sustainable development makes us aware that we need to think of the same rights that our legacy is supposed to have. In other words our generations to come need to breathe a clean air, drink healthy water and so on, so we can not take nature and the environment for granted.

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too much just for the sake of making money. In 1992 at Rio de Janeiro and then again in 2002 at Johannesburg 170 states (The 2005 Review of the EU Sustainable Development Strategy, 2005) put their effort together trying to find the best approach regarding the climate changes we are experiencing, the gas emission that pollutes our environment and the massive forest destruction that take place all over the world. The concept of Sustainable Development is characterized by the three pillars that stand at its base: **the economic pillar, the social pillar and the ecologic pillar.**

The main objective of the sustainable development is to find the perfect balance between the three components mentioned above and aggregate all the aspects in a dynamic and flexible system so that we will have the best outcome for the long term.(Chesler,1991, p.55) Taking into consideration the premises of the three pillars considered, we can name the sub aspects that may derive, such as: energy, agriculture, industry, investments, human habitats, and biodiversity.(Griffin, 1999, p.134)

Coming back in present we can say out loud that the sustainable development is a phenomena that is taken into consideration in most of the aspects of our life and this is not something that just the authorities is part of, but is something that all of us started to consider and so, we protect more our environment and we are more aware of the fact that our children will need this same environment to live in.

To bring a solid proof of the fact that we are all more aware of the fact that we need to protect our planet, the world Expos on the theme of sustainability, environment, alternative resources, are, with every edition, closer to positive change towards environmental sustainability and development. In 2008 The International Exhibition has been hosted by Zaragoza, Spain considering the theme "Water and the Sustainable Development". In 2010, the Shanghai Expo on the theme "Better city, Better life". Expo 2012 was held in Yeosu, South Korea, with the theme "The Living Ocean and Coast: Diversity of Resources and Sustainable Activities". In 2015, Milan, Italy will do the ceremonies on the theme "Feeding the planet, energy for life", and in 2016 "A green life for future generations" will be held in the sunny Antalya, Turkey.

It is an extremely positive thing that so many people are interested in the international Expos. In Zaragoza 5,6 million people have visited the Expo, and at Shanghai, the organizers were expecting over 70 million visitors which is a great boost.

Romania was the only country in Eastern Europe to have its own pavilion at the Shanghai Expo 2010.(<http://en.expo2010.cn/a/20090627/000001.htm>)

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I started to consider the theme of this article thinking of the most frequent questions you can hear this days when the sustainable development is mentioned. So we all focus on the lines below:

- Nuclear energy? Why not wind power?
- Car on diesel or petrol? But why not a hybrid?
- Gas or electric heating? Why not solar?
- Hot water from electric boiler or gas? But why not from the sun?

Well, at least regarding the last question: Why be dependent on suppliers of gas / electricity / water, you can be independent of all these contracts? Gradually, it is possible, and there is a very high number of houses that already use hot water from the sun.

So yes, this is a way of proving that all you need is initiative, motivation, desire and commitment.

Based on the question above I started to think about the small neighborhoods that in the last years appeared next to the big cites of Romania. So, in the last 10 years, each of the main towns of Romania gained small neighborhoods that are linked to the city trough a 15 minute

driveway. The problem is that, in Romania, a country that needed this boom, the real estate boom from 2008 brought good and bad aspects. We have small residential zones that were not planned on the long term, we have chaotic structures of this neighborhoods that put together blocks of flat next to duplex areas or next to houses areas.

In my opinion all this happened because the three pillars were not considered, it was just the economic pillar that ruled the social and the ecologic ones.

What I want to point out right from the beginning is the fact that this paper is built on the sustainability premises of the ideal eco-city concept. (Simons, 1993, p.98)

I will stress out the most important aspects of an eco-city just to avoid any confusion. A sustainable city, or eco-city is an ecologically healthy city. We can see hints of the eco-city in today's solar, wind, and recycling technologies. An eco-city is built with consideration of environmental impact and reaction, inhabited by people dedicated to minimization of required inputs of energy, water and food, and waste output of heat, air pollution - CO₂, methane, and water pollution.

According to statistics, it is estimated that approximately 50% of the world's population now lives in cities and urban areas. Essentially these large communities are unsustainable, but they provide both challenges and opportunities for environmentally conscious developers. In order to make them more sustainable, building design and practice, as well as perception and lifestyle must adopt sustainability thinking.

There are some good examples of countries taking in consideration sustainable development, and they are building new cities or suburbs, entirely sustainable: Australia: Surrounding Moreland and Melbourne. Brazil: Porto Alegre, Curitiba. China: Sino-Singapore Tianjin Eco-city, Dongtan, Huangbaiyu biggest in China, Nanjing, Shanghai, Rizhao. Denmark: Kalundborg. (http://en.wikipedia.org/wiki/Sino-Singapore_Tianjin_Eco-city)

Coming back to Romania, in 2008 the authorities came to the conclusion that urban population is at 54% of the total population and not just Romania came to the conclusion that unfortunately, urban population is growing too fast for nature to keep up with the urban growth. (Annual report, 2008)

This paper will try to present a plan of how we can build a sustainable city that can feed itself with minimal reliance on the surrounding countryside, and power itself with renewable sources of energy. (<http://www.goethe.de/kue/arc/oba/enindex.htm>) The essence of this is to create the smallest possible ecological footprint, and to produce the lowest quantity of pollution possible. Also, another positive effect will have to do with the efficiency of the land used; compost used materials, recycle it or convert waste-to-energy, and thus the city's overall contribution to climate change will be minimal.

In order to reach such a high efficiency level when it comes to building residential city we need the help of two main components: IT and economics. We can find the two components together and willing to help us in any regular ERP property management system. **So now that I have the ERP system introduced I can state the theme of this paper: building and maintaining a sustainable city using an ERP solution.**

What is an ERP?

Enterprise Resource Planning – an ERP is basically a management platform, or a software solution that seeks to integrate the complete range of a business's processes and functions in order to present a holistic view of the business from a single information and IT architecture. (Chan, 1999, p. 60)

So in other words, the ERP system hosts all the main departments of a regular organization: sales, inventory, customers, accounting, payroll, purchasing, etc.

Just like in any ordinary production factory where the ERP system leads the activity in the best parameters, the ERP platform has already been designed for property managers.

Such systems and services have created a market in Romania.

The main aspects that we need to consider when it comes to building a sustainable city are:

- *Where*: a small village near a big city. The place is a key aspect of the future infrastructure we need to develop and link to the big city we will be next to. Coming back to the three pillars of the sustainability, a small village is a zone that will have the chance to develop, is an important target for the investors that will finance the project, due to low costs in this area, less bureaucracy regarding the legal papers to have such a residential project approved. Another important aspect is the fact that, using the ERP system the outcome reports that the investors will have access to will show with no doubt all the costs, the revenue and also the predictions in both costs and revenues.
- *Who*: as the coordination of this process will be done through the ERP software we need a specialized Property Manager to deal the system and to keep track of any costs and maintenance involved. The holistic view that the ERP system can reflect will help the property manager to optimize all costs and concentrate on the environmental aspects of the sustainable city.
- *Where we want to get?* This is the part where the sustainable city gets alive. The sustainable city I have projected will host approximately 270 families (medium 3 members) occupying almost 300.000 sqm. The city will be divided into 3 main zones: the duplex houses zone with total of 50 duplex houses, a flats zones that is formed out of 4 floors blocks and a closed house residential zone. The sustainable city will borrow the features of any regular city: the city hall, a hospital, schools, kindergartens, mall, activity centers for children, sports places etc.

Once the key aspects presented above became real the sustainable city was built we can start using all the economic and social elements towards the sustainability of the city.

Because we are using an ERP system to track down all costs and other things of this city, all inhabitants agreed to be a part of the system and let the administrative trouble such as bills to be paid and tracked, maintenance services to the property manager, paying him a certain amount of money for this services.

As a result, the property manager using the ERP system pays all the bills to each inhabitant that has a record in the system. Based on the high reporting tools that an ERP can provide, the inhabitants will receive a monthly report with all the costs involved. Why is this different compared to any other big city or regular residential zone? Because, all the inhabitants of the sustainable city will not receive the paper bill for all the services they are using, all this data and notification are run through the ERP platform. Each house and block from the city will have on the roof solar devices that will provide hot water from the sun. This is translated into less gas consumption.

In order to point out the differences between the sustainable city and regular city I will refer to the points below:

- **Energy Efficiency and Use of Clean, Renewable Energy**
The use of clean fuel and *renewable energy* such as *solar energy* and *geothermal energy* will be explored.
- **Green Buildings**
All the buildings in the Eco-city are conform to *green building standards* to ensure efficient energy usage. The use of clean and renewable energy, such as wind and solar energy is promoted in the Eco-city. An energy-conservation and environment-friendly mindset will also be cultivated in its residents via the school programs and the activity clubs.
- **Green Transportation - Pro Bicycle!**
All inhabitants of the city will be encouraged to use the public transportation and not the personal car. An efficient and easily accessible public transport system is available,

which reduces the level of carbon emission within the Eco-city. Green trips, which include public transportation, cycling and walking, are promoted in the Eco-city. The target is for at least 90 percent of the trips within the Eco-city to be via walking, cycling or use of public transport. (Babcock, 1990, p.33)

- Ecologically friendly
The development of the Eco-city is proceed in harmony with the natural environment. Existing wetlands and biodiversity is preserved. Extensive greenery is a distinctive feature of the Eco-city, with lush green spaces and recreational spaces sensitively interspersed throughout the city.
- Water Management
Water recycling and more efficient use of water resources will be one of the key features in the Eco-city. The Eco-city is located in an area of high rainfall. Water from rivers flowing through the region will not be able to meet the needs of the Eco-city. (<http://www.ecocitybuilders.org/>) To overcome this constraint and to reduce its reliance on external water sources, the Eco-City will draw a significant part of its water supply from non-traditional sources such as big tanks of rainfall water that is preserved inside the eco city. To provide a quality living environment for residents, tap water will be potable and in line with PRC and international standards.
- Waste Management
Integrated waste management was implemented in the Eco-city, with particular emphasis on the "3Rs" of waste management - *Reduce, Reuse and Recycle*. The conservation of resources and reduction of waste generation will be encouraged through public education programs. (http://en.wikipedia.org/wiki/Green_building)Where possible, non-organic waste will be recycled and reused, while organic waste will be used as *biomass for energy*.
- Economic Vibrancy
The Eco-city aims to achieve economic vibrancy, by specializing in tertiary and service industries, being a educational and R&D centre for environment-related technologies, as well as being a destination for *eco-themed recreational tours*. It will also provide good *employment opportunities* for its residents, ensuring that the Eco-city remains economically viable. (Determined to be the biggest and best, 2010)
- Social Harmony
The Eco-city places emphasis on the development and strengthening of social harmony among the residents. There is subsidized public housing, so that people of different income and social strata can live near to and interact with one another. Communal amenities/advantages and facilities will be widely accessible. The Eco-City will also be barrier-free to cater to the needs of the elderly and the mobility-impaired.

CONCLUSIONS

The paper I presented is intended to create a prospective of the future we are to build.

Why not considering building sustainable cities? The economic aspect is proven to be more efficient, the environmental aspects are protected, so there is no argument in starting to consider viable this win-win situation.

The urban development issue is an actuality worldwide problem with different approaches and gravity level specific to the country we consider, and above all it should be treated very seriously.

Every citizen has to be aware of his footprint and try to make it more environmentally friendly. We have to keep in mind that this planet takes all our actions and this will have a future impact on our children environment. We should just remember that we are free as long as we do not affect the freedom of someone else, we can treat our planet as a human being

and start to respect more it's liberty, and this will allow us to pass to the future generations the biggest legacy, a healthy environment.

A good way of concluding the main idea of this paper is simply by asking this:

Why not riding a bike to school/work?

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