The ReGen Village
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ReGen Village is a project under construction, located in the Netherlands, in Almere, a city situated at less than 20 minutes from Amsterdam. It will be entirely autonomous: it will produce the energy and food its inhabitants will need. The village, which is actually more a district than a village, plans to be completely self-sufficient: food production, energy, waste recycling, every element will take place on site and will be 100% ecological. Thanks to many innovative technologies, such as renewable energies, aquaponics, water management or waste-to-resource systems, ReGen Village is a visionary and sustainable real estate development.

Regenerative Sustainability Food security Greenhouses Climate change Architectural design Renewable energies Aquaponics / Aeroponics Water and waste recycling Family
I. The Context

The location of this project in the Netherlands, and more particularly in Almere, in the Flevoland district, is interesting because of the country’s geography and particularities such as the polders and the creation of new cities, gained on the sea’s territory.

In fact, the country has had to worry for a long time now about the elevation of the sea level and the necessity of sustainable development and environmental protection.

A. The country : The Netherlands

The Netherlands is a unique country in the European Union with more than a quarter of its land at the sea level or under. A lot of dams and breakwaters are protecting the country against flooding and some parts of the territory are regularly taken by the sea.

The Netherlands are known for many things, but especially for polders which represent 17% of its territory.

Polders are artificial lands won on the sea by humans. They are made by creating enormous dikes which allow water to be retained and land to be dried out for the purpose of being built.

The project we wish to present is located on such a land, more specifically on the Flevoland district.

B. The district : Flevoland

The Flevoland district is a very young region of the Netherlands. It was entirely created by men in the late ’80s from the reunion of two polders, which were themselves created in the ’30s. The whole territory is located under the sea level : its medium altitude is -5m with a minima at -14m.

Its name, Flevoland, comes from the ancient lake Flevo which existed previously there, from the Roman era to the Middle Ages.

It is located in the metropolitan area of Amsterdam which makes it an attractive area, where you can actually notice that the medium age is slightly inferior to the country one.
Sustainability is one of the key words in the Flevoland development policy. Flevoland actively supports a number of initiatives for renewable energy or sustainable production methods. Green and sustainable production, clean energy and other aspects of responsible entrepreneurship are an essential part of the business culture.

C. The city: Almere

Almere is the newest city of the Netherlands, its first house was built in 1976, and the municipality was created in 1984. It was first planned as an agricultural area, but seeing the decreasing rentability of such a practice and the growing need in constructable sites to unclog the city of Amsterdam, its purpose was changed to welcome residential construction.

It was seen for a long time as the dormitory of Amsterdam as it is located 30km away from the city center, but lately, a lot of companies and stores have come to settle in the city.

« The city was built to incorporate the surrounding water and nature as much as possible. The intended growth of Almere will take place in an ecologically, socially and economically sustainable fashion. The aim of the national government, the provincial government of Flevoland and the municipality of Almere is to position Almere as a national demonstration site for the large-scale implementation of sustainable systems. The joint desire is to turn Almere into an icon of sustainability. »
To inspire everyone contributing to the future of the city, the Almere Principles were defined in concurrence with international sustainability expert William McDonough:

- Cultivate diversity [...]
- Connect place and context [...]
- Combine city and nature[...]
- Anticipate change [...]
- Continue innovation [...]
- Design healthy systems [...]
- Empower people to make the city [...] »

(https://english.almere.nl/the-city-of-almere/almere-principles/)

These principles, as well as the history, geography and location of Almere, make the city the perfect candidate for the ReGen project.
II. The project

A. The foundation

ReGen Villages were founded in 2015 by James Ehrlich, a Stanford University academic. The Californian development company ReGen Villages Holding, B.V., commissioned Effekt, a global architectural framework firm, based in Copenhagen, Denmark, in order to “envision a future where self-sustaining communities could grow their own food and produce their own energy”. (source: http://inhabitat.com/utopian-off-grid-village-grows-own-food-in-shared-local-eco-system/)

Indeed, the entrepreneur and developer’s idea was to offer an answer to a planet of 10 billion inhabitants by 2050. Ehrlich’s intention was to create developments that “address issues, ranging from climate change to food security through sustainable design”, according to the same source. Thus, ReGen Villages and Effekt designed a model of village in which a community is able to live in autonomy. The first realization of the American and Dutch partnership is expected in Almere and will be completed in 2018.

B. The concept of the project

Sustainable

The concept of this visionary real estate project is to develop a village where the resources will be used in a closed loop. The outputs of one system will be the inputs of another. ReGen stands indeed for “regenerative”.

In this village it will be possible to recycle waste and water, to grow food and to produce energy that will be smartly redistributed in each household.

The ReGen village relies on five pillars:
- Water and waste recycling
- Door-step high-yield organic food production
- Mixed renewable energy and storage
- Energy positive homes
- Empowerment of local communities.

Ehrlich’s intention is that the ReGen system can help make agriculture more sustainable and less wasteful. He says “the ReGen villages are designed to give people an environmentally friendly alternative to urban life”, according to the Business Insider. The village adds not only environmental and financial value, but also social value, by creating a framework for empowering families and developing a sense of community, where people become part of a shared local ecosystem. Thus, the village is reconnecting people with nature and consumption with production.
Technologies

ReGen Villages is all about applied technology. ReGen Villages is a Tech-Integrated and Regenerative Residential Real Estate Development. Already existing technologies will be applied into an integrated community design, providing clean energy, water and food. All the urban agriculture technologies such as aquaponics, aeroponics or permaculture will be used in the ReGen village.

Water management

Those innovative technologies are thought to use less water and less land than the traditional agriculture and to produce more. In fact, the agricultural systems put in place in the ReGen Village, make it possible to produce 10 times more products than on a similar area with traditional agriculture, and above all, with 90% less water, thanks to the use of the urban agricultural technologies.

The word Regen does not only stand for “regenerative”; it has a double meaning. Indeed “regen” also means “rain” in Dutch and German. And actually, rainwater holds a prevalent role in this project. The ReGen system is found on the collection of the rainwater from the roofs of the homes. This collected rainwater will be stored and distributed afterward, to answer to the needs of the
community. It will be the main water resource of the village. Another source of water will come from the biogas facility, which will be supplied by the non-organic waste. Both water resources (rainwater and water produced from the biogas facility) will be stored. The clean water from the water storage will be distributed to the aquaponics system, which is a water farming technique in which fish feces serve as fertilizer for the vegetable. In addition to the aquatic ecosystem, aeroponics is another technique allowing to grow fruit and vegetable in the ReGen village. Aeroponics is a soil free culture system in which plants grow in an air or mist environment. In addition, grey water will be separated and filtered to be reused to irrigate the plants of the seasonal gardens.

**Food production**

The purpose of the ReGen Village is to offer food security. The whole ReGen system will be indeed built to grow organic food in abundance: fruit, vegetable, oleaginous, leguminous plants but also protein food, such as fish, eggs, chicken and other small animals rich in lipids and proteins. Ehrlich explained to Fast Company: “We don’t do lawns, we don’t do golf courses or tennis courts. That’s a good place to grow food, so we’re going to grow food there.” Indeed, food will be permanently produced, inside the vertical cultivations as a complement to the seasonal gardens and the farms. Moreover, families will be able to grow their own vegetable and fruit, all year long in connected greenhouses. Actually, each family's house will have an attached greenhouse for growing personal crops. Together, the ReGen houses will form a “shared local ecosystem.” According to Ehrlich’s expectations, the village will produce enough fresh food to take care of 50-100% of the needs of its residents, he said to Business Insider. He specified that if there’s any excess food or energy gathered, that could be sold, and the profits could offset residents’ fees. The village's farms and livestock will be managed and run by ReGen staff.

**Waste recycling**

The ReGen system, is based on waste-to-resource systems. The waste resulting from the households will be sorted into different categories in order to be reused for multiple purposes. - The organic waste will become food for the livestock and the soldier flies. The flies will become in their turn, food for the fish, and the fish feces will be used to fertilize the plants in the aquaponics system. Manure from the livestock will become fertilizer for the seasonal gardens. - The organic waste as well as the potential unconsumed food will be transformed into biogas or used to feed the animals.

**Renewable energies**

In addition to the production of food, the Regen Village will produce its own energy, thanks to solar cells on the roofs of the homes. The latter will be linked to a smart grid, which will provide
energy for the homes and allow the inhabitants to feed stored electricity back onto the grid when not needed. This surplus of energy in the smart grid will be used to charge electric cars. Furthermore, the energy produced by the biogas facility will be added to the smart grid. So the ReGen Village is found on the renewable energies production and storage.

Homes

So the ReGen village relates not only to the construction of housings, but to the achievement of a whole system including waste, food, water and energy organization. In this complete system, homes will obviously be totally designed for sustainable living. They will be energy positive homes. They will be powered by photovoltaic solar panels, and passive heating and cooling systems will take pressure off the electrical use of each house. In fact, the houses will be adjustable. Homes will be extendable in order to take advantage of the sunny weather in the summer and to preheat the air in winter. Thanks to these techniques along with the system of water collection and solar energy, homes will produce more energy than they will consume.
Thus, the ReGen village would be regenerative and as a result, will lead to autonomy.
C. The application or the technical aspect

The residents

The ReGen Village will house 100 families on about 50 acres. Between 300 to 400 residents are expected to live in the community (which means about 3 to 4 persons per house) and more than 1,000 people are on the waiting list.

The financial aspect

A budget of 25 million euros will come from private investors and sovereign wealth funds (who will be promised a return). No price has been given by the ReGen Village, but in accordance with prices applied in other similar concepts, such as The Cannery in California, homes were sold about $700,000. In addition to this estimated selling price, fees have to be paid each month, for food and services (about €500 a month). However, individuals can participate in the community labor as a way to lower their monthly fees, paid on top of their mortgages. Any volunteer effort inside the ReGen Village, either in the garden areas or other aspects of the community, will be deducted from the monthly fees.
III. Our opinion on the project

We chose the ReGen Village because we show an interest in the environment protection and think personally, that we need to change our way of living and consuming in order to preserve the planet. The ReGen Village, based on a complete system working on a closed loop, is therefore an interesting alternative. It has a holistic approach and combines a variety of innovative technologies. We like the food and energy production, the water and waste recycling, to be all gathered in one place, making the village self-sufficient. Moreover, it is also aesthetically pleasant.

The ReGen Village gives us high hopes regarding our future. It shows that change is possible. We think that this autonomous community holds a potential in changing some of the challenges of a growing population, increasing urbanization, scarcity of resources, the growing global food crisis as well as reducing the global CO2 emission.

More specifically, we appreciate the effort made on food. First, the innovative agriculture put in place in ReGen will certainly produce better quality products than the traditional and intensive agriculture which usually sprays fertilizers. Fruit and vegetable will surely be better in term of taste but also in term of nutritional intake.

Second, the fact that food is produced on site implies an easy access to everybody and fresher products. No transport also has economic and ecological consequences such as less costs and less pollution.

Regarding the pollution, we can notice that the project can reduce pollution on several levels: water (thanks to the closed loop system), air (because it uses less transport and offers a system of electrical car) and soil (no chemical fertilizers). More generally, this project has a global approach which also includes renewable energies and recycling.

However, we raise questions about multiple subjects:
- *The sufficiency of the water supply.* Although the Netherlands is a rainy country we wonder if rainwater will be enough to answer all the inhabitants' needs.
- *The social mix.* Because of the expected expensive prices, we are worried about a concentration of the same social category of persons in the village (rich people).
- *Isolation.* As the village is 100% autonomous, we wonder if it will not be excluded from the city.
- *Boredom.* As the project is entirely designed to answer the primary needs (food, house) we wonder if it will offer enough leisure to its inhabitants.
- *Closeness.* We wonder if the proximity of the houses and the fact that the village will be built in a vacuum, will insure enough intimacy and comfort to its inhabitants.

Furthermore, we also wonder if that kind of project will work in France. By the way, the company plans to develop four other eco-villages in Sweden, Norway, Denmark and Germany, but is also searching how to develop the concept in less rainy countries.
IV. References

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