**INTRODUCTION**

"Climate change" is one of the main questions for our future. For the past 30 years, we have been the passive spectators of the Earth's degradation. One of the biggest challenges of the planet today is Water. So many of our present-day phenomena display how the water level elevation has the power to destroy and damage many territories and the population. At the same time, there is the question of thirst. In an opposite evolution of ground aridification, we drain the wells dry: lakes are disappearing, rivers dry up and people in Africa die parched.

In West China, in the arid region of Gansu, for the District of Yuzhong we propose a reverse strategy for the restoration of the climate while maintaining the population within the original landscape through an extensive urbanization project.

For several years, this district, in the part of the City of Lanzhou has been engaged in a great urban territorial project. This specific site on which we have established a proposal is a torn area, an arid territory where a lot of farmlands and a large number of villages are located. Along the Nanghe river, in the high density, urbanization is pressed by urban growth in one part and by farmlands in the other. The farming villages have occupied this site, until through the urbanization process new areas have been established. The farmers, who have always been interconnected with the farmlands, have been forced to leave their land.

From the river to the hills in the south, a large agriculture territory is under pressure of urbanization. The agriculture activity has to resolve the water question to survive, offering new models of sustainable agriculture.

**AGRARIAN Enrichment in China**

Urban Planning for the county of Yuzhong, Lanzhou, China

Project in progress, 2019

Client: Chinese Society of Urban Studies, the county of Yuzhong

Jean-Pierre Pranlas-Descours Architect & Urban Planner

CSTB - Scientific and Technical Center for Building

Global LafargeHolcim Awards 2021
The main ambition of the project is to work within the human conditions and limitations of this landscape with a new form of sustainable urbanization. We want to integrate these villages and the agricultural areas in an urban proposal that does not destroy the History of the place through redeveloping a new water system of irrigation, which resolves the question and is in keeping with the earth's natural resilience. The model is like a finger plan, which begins in the hills, along the river Nanghe where large lands of alternative agriculture are in relation with housing and social programs.

To organize this strategy, we propose to use the traditional agriculture greenhouses in natural earth and light structure. The foundation of our strategy is to create a new model of 6 metropolitan villages, which will integrate all the small villages.

The urban and landscape strategy is to work directly on the quality of the ground and the water capacity. The ground is a social, economic and political question. This Climate Restoration Project want to demonstrate that with techniques and intelligence we can invert the earth degradation process.

The 6 metropolitan villages associated around a main street, a new typology of housings with commercial, on the East and the West, housing typology with green houses on the top, and terraces housing on the north of the river. On the East Part around the new railways station a mix program of offices and housings develop will be developed.

Important infrastructures of transportation are a regular urban strategy today in many projects in China. The reduction of using cars is a great ambition in China to reduce the CO2 emission. This urban development is a part of a larger territorial urbanization. Through an articulated offer of global and local mobility services, we have taken into consideration the project already deciding 2 main transport networks:

- The creation of a railway station for a high-speed train on the East border of our project
- A new metro line or tramway going from the East to the West and to the North of the City.

We propose to adjunct more local connections for the people and for the new inhabitants:

- A micro-bus network for each of the 6 metropolitan villages.
- An ambitious bicycle network connecting all the different parts of the City.
III WATER MANAGEMENT

Capturing all water resources and establish new sustainable water management.

The water question for this territory is the elementary condition to maintain the population and the agriculture activity, particularly with a densification process. In this part of West China, the evaporation of water is a very complex question.

The urban and landscape strategy is to work directly on the quality of the ground. We propose different interventions:

A. We propose to plant on the hill in the south a global forest that will reduce the temperature.
B. Clouds will be more present, and will assist in an increased rainfall.
C. We will capture the water from the hills by a series of filter blocks held in small tanks to be held in storage tanks.
D. We will cover south-nord canals by a series of long pedestrian promenade to the Nanhe river.
E. We will develop ULHS Basins to collect filtered water and store stormwater.
F. We will obtain a total stored water volume of 760733 m\(^3\) per year.
G. We propose to use complementary water by catching the rainwater on the roof of each building, and also transform domestic water consumption patterns in the water supply.

The ground is a social, economic and political question.

The ‘Climate Restoration Project’ wants to demonstrate that with techniques and intelligence we can control the soil degradation process.

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### Contribution Zone (Estimated)

Hillside Zone

- Stormwater Inlet
- Manhole with a screen basket
- Sedimentation
- Inlet
- Geomembrane
- Geotextile
- Outlet
- Outlet (extreme events)
- Ultra-light Alveolar Structure (pond)
- Manhole (outlet)
- Flow regulator
- Retention pond outlet
- Media soil + sand + geogrid + gravel + forebay (pond inlet)
- Ventilation

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### Rainwater collection/storage

1. Rainwater collection
2. Greywater collection
3. Drainage Pipe
4. Filtrant vegetation band
5. Canal
6. Wooden pier
7. Agricultural land

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HYDROSYSTEM

A Tale of Water
IV AGRO-URBANSCAPE

These ambitions require articulating produce on ecosystem services, leading to a sustainable evolution of civilization and activity. By creating a reserve of energy assets and new moves, recycling, decarbonization, recycling, etc., one aims at a new system that demonstrates how our diets can be sustainable and resilient to climate change.

This productive agricultural strategy is directly implemented in the urban context. The complementary mechanism of agriculture is to create a stable and generative ecosystem.

Each of these cultivating methods make it possible to offer a wide range of natural, traditional, organic, or vegetable gardens linked to health.

Different cultivating methods are available: natural soil, traditional greenhouse, new culture, or vegetable gardens linked to health.

This global project has the ambition to fortify the traditional, social, and cultural history of the Chinese society.

1. Cereal Crops:
   - Grains: rice, wheat, barley, oat, corn, sorghum, millet, buckwheat
   - Beans: soybean, broad bean, pea, lentil, chickpea, mung bean
   - Potatoes: potato, sweet potato

2. Cash Crops:
   - Oilseeds: sesame, rapeseed, mustard, sunflower, castor
   - Vegetables: cabbages, green-leaves, tomatoes, eggplants, melons, root vegetables, onion, garlic, special vegetables, mushrooms
   - Medical Plants: licorice, astragalus, angelica, bupleurum, fritillaria

3. Ornamental Plants:
   - Flowers: chrysanthemum, peony, violet, rose...

4. Forage Crops:
   - By cultivation: alfalfa, red bean grass, green wheat, other grass
   - Wild: alkaline grass, needle grass, ice grass, wild alfalfa, wild chrysanthemum*
   - Bushes: Caragana, sea buckthorn, Salix psammophila

5. Trees and Fruits:
   - Natural forest: Pinus sylvestris, willow, poplar, salix matsudana...
   - Fruit trees: jujube, Zanthoxylum, apples, pears, apricot, prune...
   - Tobacco
   - Green fertilizer

6. Others:
   - Tobacco
   - Green fertilizer

This global project has the ambition to fortify as well as has the capacity to renew the traditional, social, and cultural history of the Chinese society.

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For many years, the Chinese urbanization has destroyed many old villages in a global densification process. This project, however, involves a specific analysis of the human installation. The process began with a specific analysis of the human installation. The model of the project which results from this analysis is a series of constraints which have been superimposed on the Yuzhong project. It is a process of revaluation which begins with a specific analysis of the human installation. The model is a finger plan which begins on the river Nanghe and ends in the hills with large land segments of alternative agriculture in relation to housing and urbanization. This superimposition of constraints on the new project is a specific analysis of the human installation. These new constraints are represented by the new green housing, with more classic housing on the ground floor and a green house on the top floor.

These new type, associate dwellings on the ground floor, with a basement for agricultural storage, and a green house on the top floor are developments for the peasant family who are directly working on the fields. Three residential buildings will use traditional earth construction and brick around the courtyards. The green houses are using the same traditional technique of the green houses that we find in the fields: earth walls for heat conservation during the night.

With the green house residential building, we reduce the energy consumption by 60%. By a coverage of 39% of solar panels on the roof, we can estimate a production of 25 kWh/m²SHAB by year, which can cover all the need of electricity of the building and export it to the others.