

PLANNING FORM THE AWARENESS OF A PLACE.

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Abstract

This paper deals with the presentation of a Municipal Sustainable Land Management Program in central region of Mexico.

For the development of the Program we were invited by the local government. We won the contest because the proposed work presented, however it was the most expensive of the competition.

The local government of Cuernavaca (that is the name of the place) raised the need to do this program because there was great insistence of some groups of investors to develop the West Township. To which our program said no because the most important ecological infrastructure with which has precisely this territory is located in the West.

For the preparation of the program we build the corresponding topographic map scale 1:2000 for which a specific flight was conducted to obtain an aerial photograph that once restored as a basis for the construction of the map. Should clarify that in Mexico there are official maps produced at scales 1:50000 and 1:100000

Then, we develop all maps of physical-environmental analysis and strategies for land use planning. But beyond that, we offered people a new perspective on where they live and invite the government and the people to transform the place where they live in an urban ecological region of environmental services shared with neighboring municipality. In a water supplier for the entire region viewing to the future and a city of outsourced services that benefit the poorest municipalities in their environment.



Fig 1: View of the Valley of Cuernavaca

Keywords: Planning, awareness, sustainable development, methodology, knowledge

1. METHODOLOGY.

The municipality we have studied is located in the center of the country at 85.0 km. from the city of Mexico. It has an area of 15120 hectares and a population of 340000.

Our way of working in this type of study requires us to primarily know the place and meet the people. We carry out the required charts of geographical information, issues of our interest were: Geology, Geomorphology, Topography, Pedology, Climatology, Hidrology, Land use, Open space, Conflict and Ecological evaluation (Fig 2 and 3).

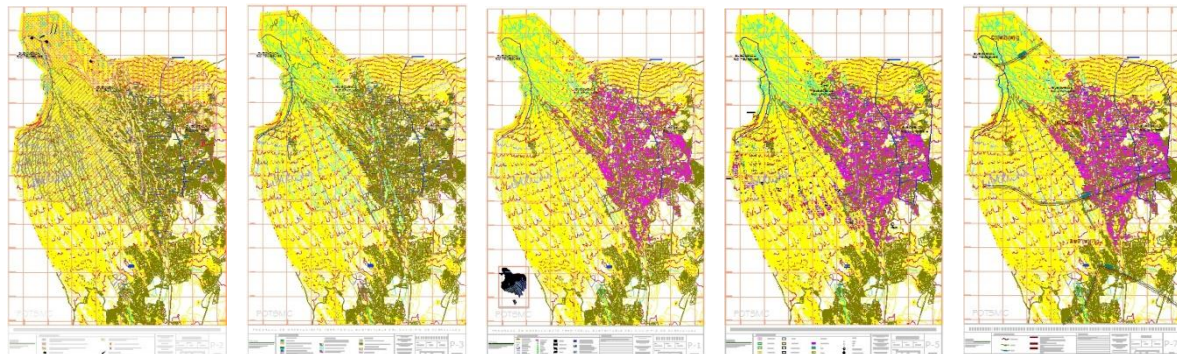


Fig. 2: Geology Geomorphology Topography Pedology Climatology

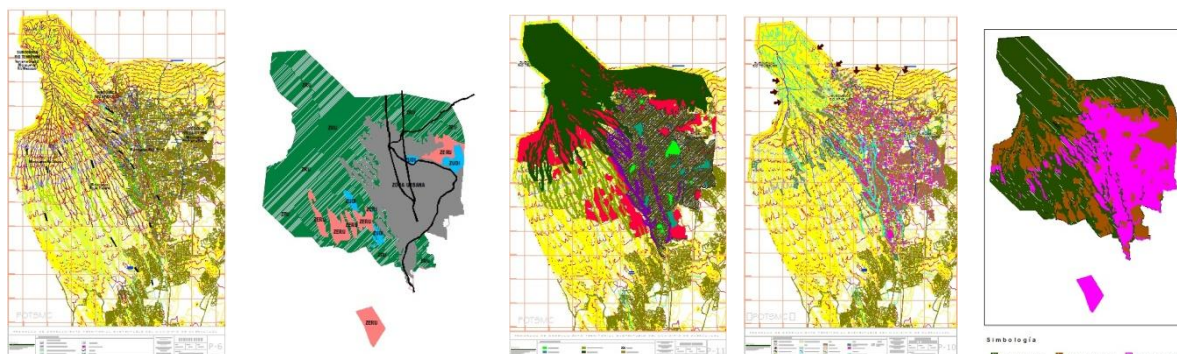


Fig. 3: Hidrology Land use Open space Conflict Ecological evaluation

Parallel to the study of the physical and environmental characteristics we did a study of environmental psychology based questionnaires and systematic assessment to meet the expectations of the population in relation to what might be the sustainable development of the municipality, and the perception that the population had of their environment.

Unfortunately we found that people did not have sufficient knowledge of planning, environmental problems or sustainable development and concerned only generalized data on air pollution but most showed a particular interest in Apatlaco river pollution associating to urban growth. This finding fundamentally guided our research.

As a result of our analysis we decided to do a combination of the four qualities that characterize the territory uniquely: its physiography, topography, hydrology and climatology (the city of Cuernavaca is known as the city of eternal spring) to better understand their nature and discover its Genius Locci.

The study of the physiography of the territory led us to understand that this is composed of four main regions we call Mountain, Upper slope, Lower slope and Plain.

In the Mountain and Slopes there is deposited as natural wealth of the municipality: its pine forests, oak forests and riparian forests growing on deep canyons that descend throughout the western portion of the territory.

In the Plain there sits the city that has a history as a human settlement since the fourteenth century and are large tracts of land used for agriculture but are getting pressure from urban growth and becoming peripheral semi-rural settlements or sub-urban poor development.

Moreover, the analysis of the hydrology of the site led us to consider that the restoration and conservation of water resources planning is the key issue for future development. Not only by the amount of biomass, natural resources and environmental services that contribute runoff to the streams and place, but also because the Municipality is seated on one of the largest aquifers in the Midwest. (Fig 4 to 15).

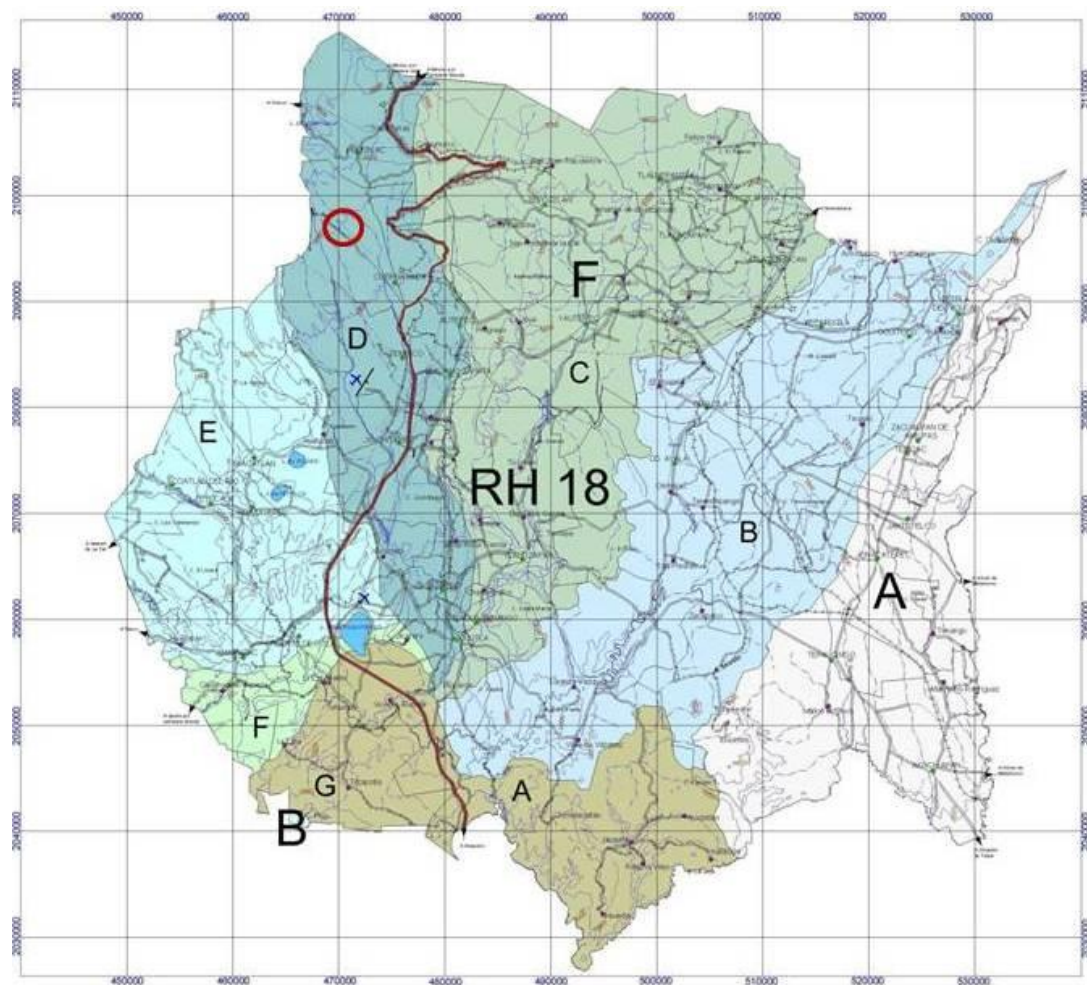


Fig 4: Aerial photography of Municipality of Cuernavaca

The municipal territory is located in the Rio Grande Amacuzac Basin and is crossed by the watersheds of three rivers: Tambembe, Apatlaco and Yautepec. This unique quality of the Municipality is due to its geographic location: the territory is part of the foothills of one of the highest mountains in the center of the country and its altitude gradient goes from 3000 to 800 meters above sea level.



Fig 5: View of highway descending from the high mountains to the valley of Cuernavaca.



Simbología

RH 18 Región Hidrológica	F Cuenca del río Grande de Amacuzac	corriente intermitente
A Cuenca del río Atoyac	A Subcuenca del río alto Amacuzac	corriente perenne
B Cuenca del río Balsas-Mexcala	B Subcuenca del río Cuautla	canal
G Subcuenca río Tepecuacuilco	C Subcuenca del río Yautepec	cuerpo de agua perenne
	D Subcuenca del río Apatlaco	
	E Subcuenca del río Tembembe	
	F Subcuenca del río bajo Amacuzac	

Fig 6: Cuernavaca Valley location in the context of the watersheds of Morelos State

Our analysis of the place made us realize that the site has a privileged location in relation to neighboring municipalities: Northbound Huitzilac Township is nestled in the mountains and its economic activity is very limited due to topographic conditions and legal protection of forests. Southbound Municipalities of Temixco, Jiutepec, Emiliano Zapata and Xochitepec hold basically agricultural activity in their economy but significantly influences the location of popular Tívolis and Spas dependent on water coming from the mountains across the valley of Cuernavaca. Also, the city of Cuernavaca is the capital of the state of Morelos and therefore has a diverse economy and a great political importance. Moreover, the city occupies only 30% of the municipal territory. It has important water resources, climate (mild climate is ideal for the development of human life and in the extreme south of the municipality is located one of the largest place basking in the country with a Solar Research Center), along with its plant and animal biodiversity.



Fig 7: Plant and Animal biodiversity of Cuernavaca Municipality

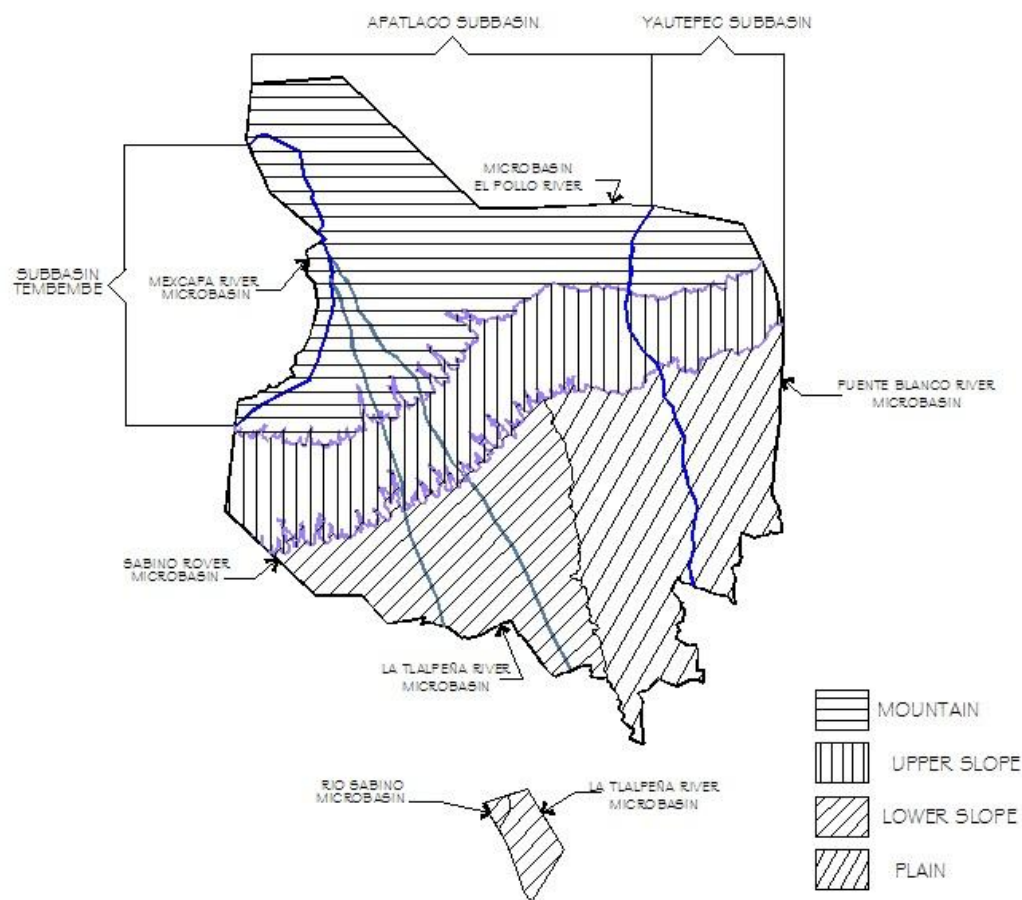


Fig 8: Physiography and Sub-basins of the territory of Cuernavaca Municipality

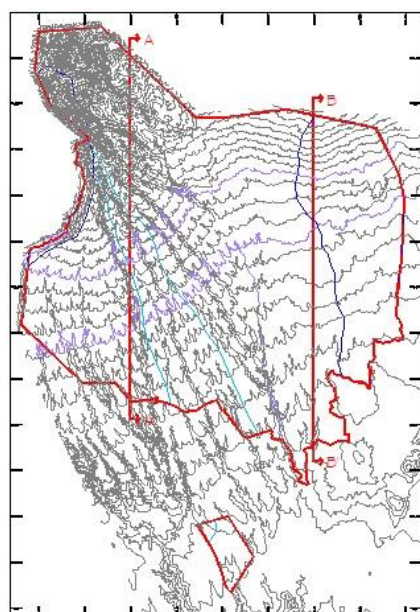
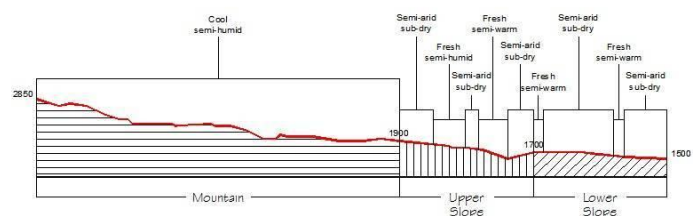
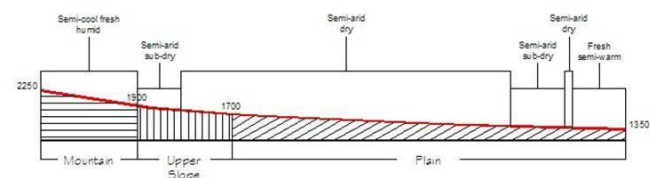


Fig 9: Polygonal and sections

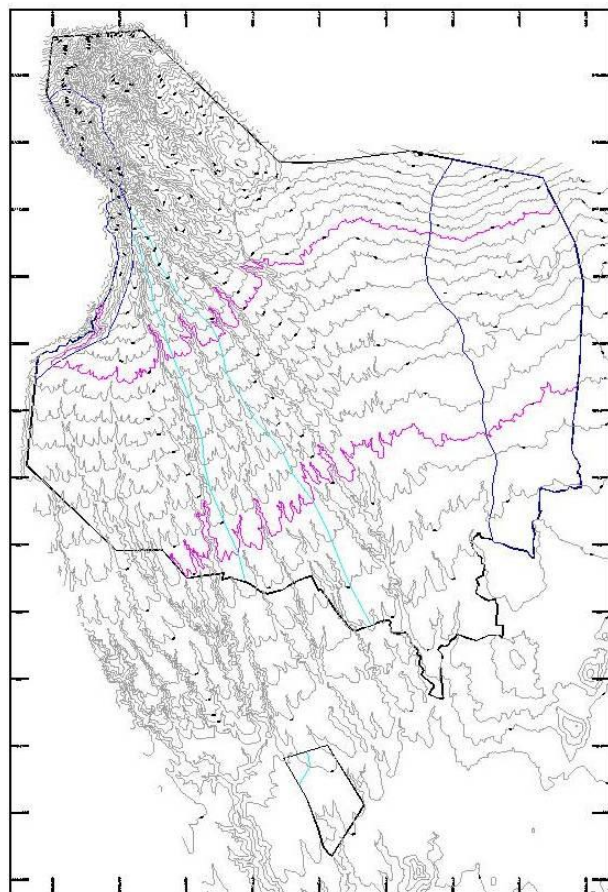


Longitudinal section and meso-environments
transect A - A'



Longitudinal section and meso-environments
transect B - B'

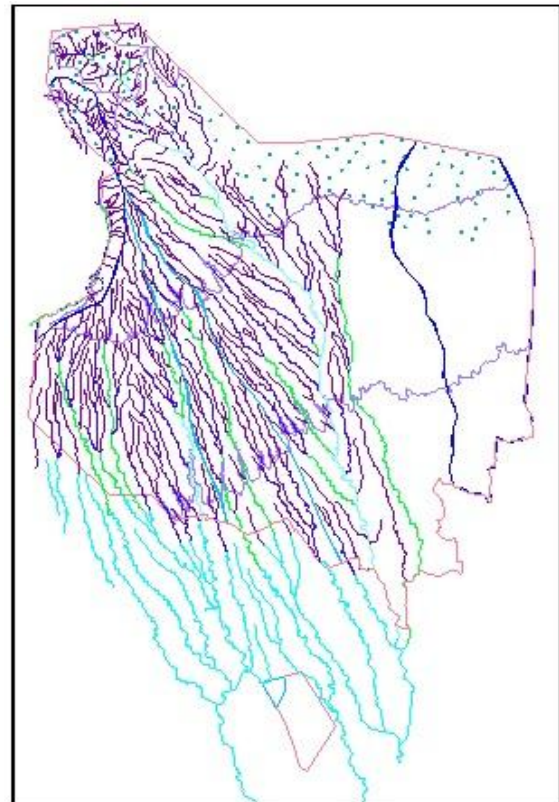
Physiography and meso-environments



SIMBOLOGÍA

- | | | | | | |
|---------|-----------------|---|------------|---|--------------|
| —1300— | Curvas maestras | — | Polígono | — | Microcuencas |
| 2104000 | Coordenadas | — | Subcuencas | — | Fisiografía |

Fig 10: Topography of the Municipality



Simbología

TIPOS DE ESCURRIMIENTOS

- | | | | |
|---|---|---|--------------------------|
| — | Primer orden. De carácter intermitente | ● | Áreas de recarga |
| — | Segundo orden. De carácter intermitente | — | Microcuencas de cabecera |
| — | Tercer orden. De carácter semipermanente y permanente | — | Subcuencas |
| — | Cuarto orden. De carácter permanente | — | Microcuencas |

Chart of water runoff



Fig 11: Vegetation of the Mountain region



Fig 12: Vegetation of the Upper and Lower slopes and agricultural areas at the Plain



Fig 13: Water Runoff during the rainy and dry

Environmental function of ravine

River pollution

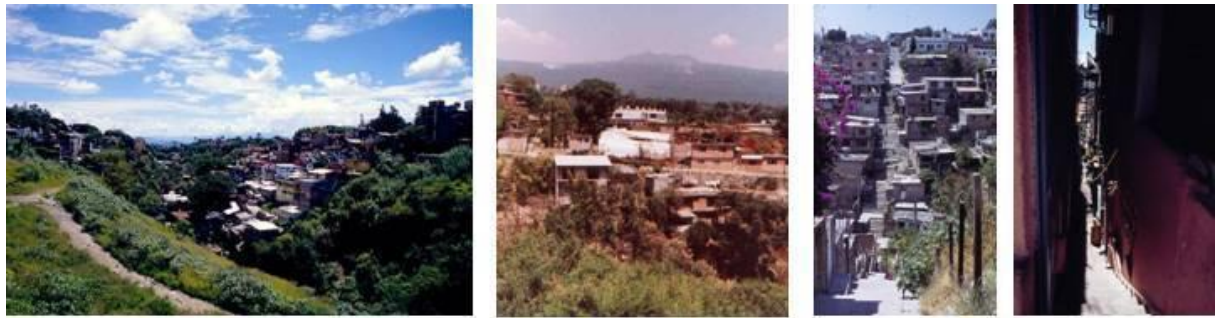


Fig 14: Peripheral urban settlements



Fig 15: Views of Cuernavaca City

2. CONCEPTUAL PLANNING FROM DE AWARNESS OF SITE AND PEOPLE.

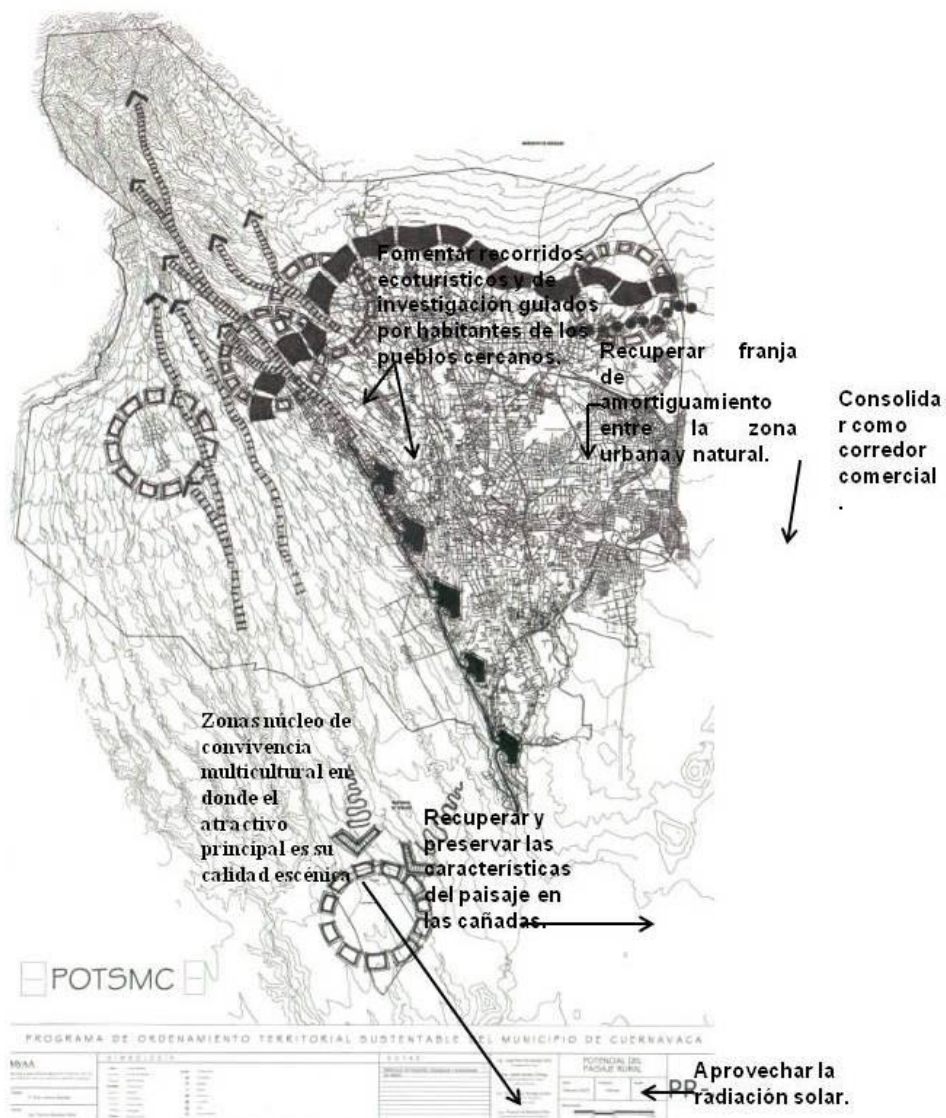


Fig 16: Conceptual Plan for sustainable development of Cuernavaca Municipality.

In Medina Architects we think that what we call sustainable development is not a goal or the result of a project, but the promotion of socio-environmental, economic-environmental and political-environmental processes that in time determine the establish and sustainability of different bio-geographic regions.

Therefore, to promote sustainable development of the municipality produced a document which set out the following aspects:

We define a physical division of the territory based on the four physiographic areas: Mountain, Upper slope, Lower slope and Plain. And the three hydrological basins mentioned above. Within this division proposed a zoning legally called Local Environmental Management Units (ULGA'S).

Determined in each ULGA conflicts concerning: natural hazards by seismicity, volcanism, weathering and erosion, and anthropogenic threats. Conflicts over political and administrative division, with the structure of land use, housing, commerce, industry, the classification of the territory, with the road structure, urban transport. Conflicts over mountain system, with the water system, defragmentation of forests, deforestation, urban growth and the expansion of the agricultural area, with fire, introduction of exotic species and the opening of roads.

We made a strategic plan whose main objective was to design a possible future project, able to face the risks of local environmental decline in its full extent, and to combine integrated actions aimed at preserving the natural heritage, modernize tourism, economy, and improve the quality of life of the population of the municipality (Fig 17).

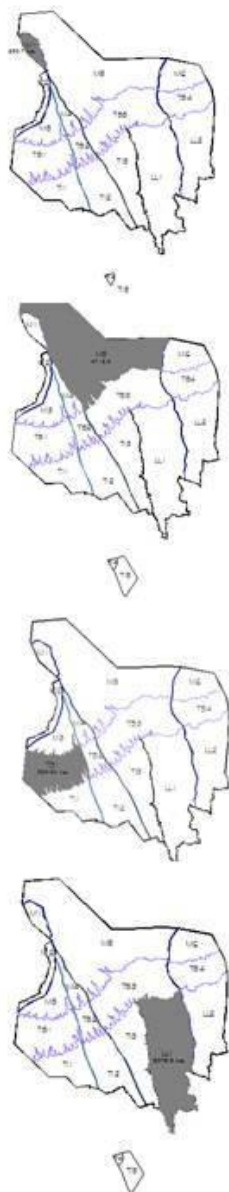
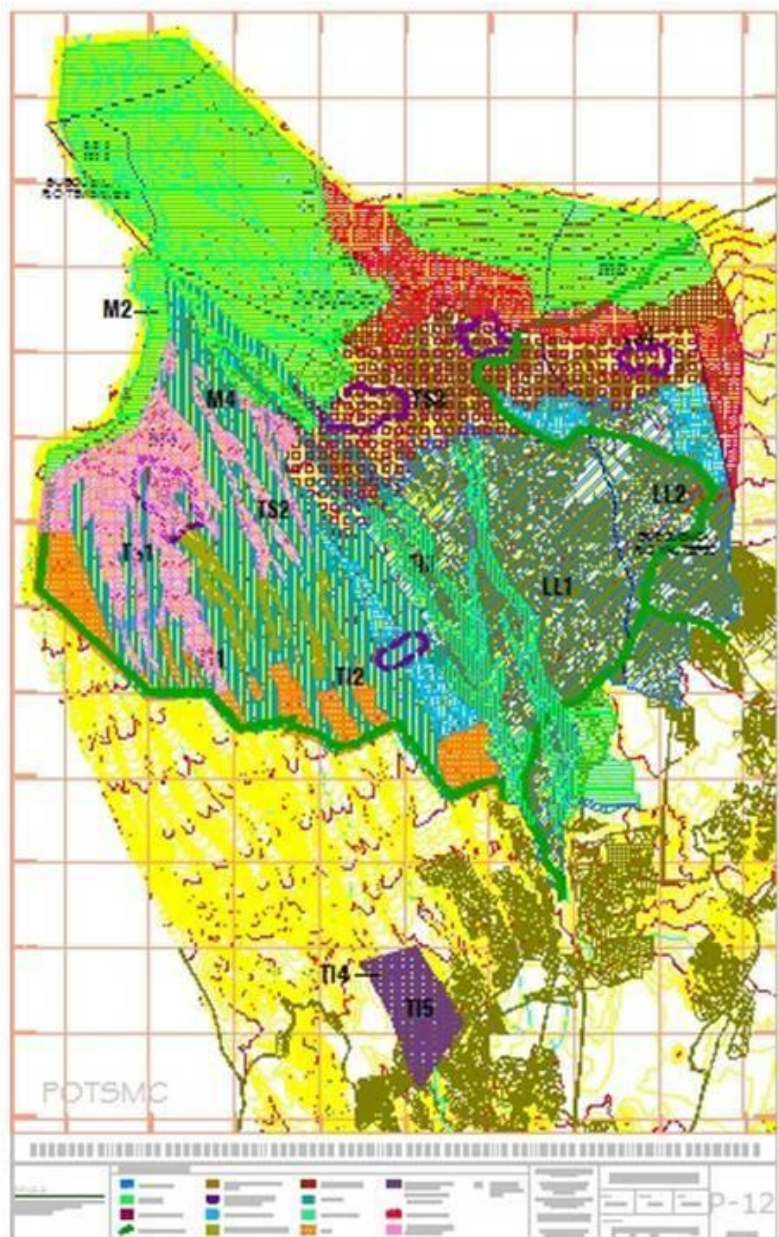


Fig 17: ULGA's examples



Strategic Plan for the Cuernavaca Municipality Sustainable Development

In our strategic plan include guidelines for what we call a preventive planning to avoid late solutions to environmental problems. We established conditions to access a local Agenda 21 based on strategic potential advantage of the Municipality in terms of ecological infrastructure, regional central city, multimodal

communications, multimodal tourism, targeted on management and conservation of natural resources, social and economic dimensions and strengthening the role social groups.

To achieve these objectives we established 10 lines of action including 40 strategic projects:

Line1. Contain human pressure, limit growth and promote rehabilitation of the Territory.

1. New municipal urban development plan
2. New urban development in areas of immediate growth
3. Norms of urban eco-responsibility

Line 2 Encourage integration, coexistence and quality of life of the resident population.

Living in Cuernavaca, new urban and rural

4. Social integration, training and employment in Cuernavaca
5. Volunteers Cuernavaca
6. Coexistence, cultural integration and quality of life in Cuernavaca
7. Cuernavaca, sustainable city
8. Cuernavaca, Clean Water Town

Line3. Preserving the natural heritage and promoting the creation of a regional tourist ecotax environmental fate.

9. Preserving the natural water in Cuernavaca
10. Protect soil and forest systems in Cuernavaca
11. Recovering mesoclimatic quality of Cuernavaca
12. Restore the main environmental impacts and landscape in Cuernavaca

Line 4. Rescue the historical, cultural and natural heritage of Municipality.

13. Knowing and caring heritage of Cuernavaca
14. Historic downtown of Cuernavaca
15. The Parks and Gardens of Cuernavaca
16. Chichinautzin Range biological corridor
17. The Canyons of Cuernavaca
18. Constitution of a public natural history in Cuernavaca

Line 5. Promote the rehabilitation of population towns and middle-income residential and popular.

19. Rehabilitate and strengthen cores Cuernavaca
20. Development of a plan to expand urban eco-
21. Pilot programs "Environmental Rehabilitation Areas"

Line 6. Improve Cuernavaca as a tourist destination: replace sustainable quality growth, seeking the lifting of spending per visitor and tend to balance the season.

22. Cuernavaca, multimodal tourist destination
23. Cuernavaca, American Spring
24. Modernize the existing tourist park
25. Development of new ecotourism products
26. Promoting the ecological quality in Cuernavaca

Line 7. Improve public transport and encourage pedestrian and bicycle travel within population towns.

27. Improve existing public transport in Cuernavaca
28. Promotion multimodal forms of transportation
29. Plan for ecological conversion of mobility in Cuernavaca

Line 8. Introduction of sustainable management in key environmental sectors: water, energy and waste

30. Water Year Plan
31. Local program management to stabilize energy demand, reduce consumption
32. Promotion of renewable energy production
33. Year plan of waste in Cuernavaca

Line 9. Investing in human resources and knowledge, stimulate and diversify the economic system

34. Creating a sustainable development agency in Cuernavaca
35. Investment in human resources in Cuernavaca
36. Development of new business projects in Cuernavaca
37. Stimulation of "rural" in Cuernavaca

Line 10. Innovating into the Municipal Government and expanding the capacity of concerted public-private investment.

38. Modernization of Municipal organization in Cuernavaca
39. Expanding the investment capacity of the Municipality of Cuernavaca
40. Knowing and caring environmental heritage of Cuernavaca



Fig 18: *Bombax ellipticum* the representative tree of Cuernavaca

Our plan is fully explained about the meaning behind the lines of action we propose and how strategic projects should be agreed and implemented with the population as the basis of the acquisition of sustainable practices in the municipality.

I think the most significant contribution of our plan to the municipality is to offer its inhabitants a new vision of the territory in which we consider the Municipality of Cuernavaca as the heart of an eco-region and the precursor of the establishment of a virtuous circle of Municipal interaction in which the villages located in the upper conserve ecosystem services which benefit the peoples of the lower basin by remuneration which covers not only a green tax but also the exchange of goods and services.

We propose, among other things, that the City of Cuernavaca stop urban growth expansion offering investors in real estate facilities for reinvestment in decaying or abandoned areas of the city re-densifying built space and upgrading the services and infrastructure.

We also propose that the City of Cuernavaca specializes in tertiary activities so it can offer a menu of advanced technology in communications, financial operations and management to its neighboring municipalities

Similarly, we propose to create a multimodal and inter-municipal transportation network that serves to facilitate the flow of people and goods in the region.

Finally, we propose that the City preserved itself as a water reservoir that in future times could offer the use of this resource to other parts of the country, considering that 60% of the country is semi-arid areas that definitely will have great needs to solve.