

## **Biodiversity as a common. A case Study in Mexico**

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### **Abstract**

Biodiversity consists of all living creatures and ecosystems. With industrial development since XVIIIth century it has been increasingly exploited and destroyed, but this has worsen in XXth Century. Specifically with the beginning of genetic engineering in the 80s and 90s, a debate started about genes and living creatures' property, as they passed from being considered human patrimony to private property and international regulations allowed patents of this resources. Although in these years there were great expectations and discussions about a new kind of bioprospection of genetic resources, in our times it seems that this was not as expected. On the contrary, biodiversity today is increasingly destroyed by accumulation by dispossession processes such as mining, oil exploitation and hydroelectric energy. In the paper we give field research results about a high biodiverse community in Cuetzalan, Mexico. In this place local and indigenous organizations are involved in a resistance movement against mining and hydroelectric projects. They have a very ancient knowledge about their biodiversity and until now they have succeeded against threats that would destroy it, together with water sources and culture. This case helps us in the reflection of biodiversity managed as a common in territorial resistance social movements.

*Keywords:* biodiversity, intellectual property rights, common property, traditional knowledge

### **Sustainability and commons**

As biodiversity as a common and its conservation is an essential part of sustainability and conservation debate, we will start by exposing briefly about these issues. Since the 1992, United Nations (U.N.) Conference on Environment and Development (UNCED, the Rio Summit) in Rio de Janeiro, Brazil, ecological crises have been at the forefront of many international agencies and forums and a concern for many civil organizations and NGO (Non-governmental organizations). A few years prior to that, Our Common Future NU document (1987) had sounded the alarm about the manner in which economic growth and development during the 20<sup>th</sup> Century had caused ecological

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degradation, in turn giving rise to a risk for the survival of future generations. The need for a new type of development was accepted, and “sustainable” development was first mentioned as a strategy for human survival that would not cause the destruction of our planet.

Although these two events led to “official” international concerns of ecological risks, the debate was not new: from the beginning of colonization, indigenous communities in Latin America and other regions had experienced the deprivation of their territories and natural resources. This long historical process initiated the destruction of ecosystems due to capitalist expansion through industrial development, which has reached its limits today. It is not an exaggeration that total destruction of life on our planet is now possible.

An intense academic and political discussion about development took place during the early 1990s (Escobar, 1995). Modern conceptions of economic development originated in the post-WWII era and expanded worldwide through the 50s and 60s. Many international institutions were involved in aiding peripheral countries to progress on the path of modernization, implying that these latter nations should make efforts to achieve development, as had occurred in central countries. Some decades later, it became clear that, despite the numerous sacrifices that development had demanded from peripheral countries, goals such as the decline of poverty were far from being achieved.

It is within this context that environmental concerns have become more important, and discussion on poverty associated with environmental degradation has now come to the fore. Present world crises have been accompanied by more questions about our ways of development, because poverty and environment degradation have increased, despite international efforts to eliminate them. The main question concerns changing present economic and market rationality as a way of solving this crisis. This is not an easy goal, although some efforts in Latin America are underway to seek a new approach, which includes respect for the environment and for nature. In these proposals, which have been termed post-neoliberal and denominated good living models, community-based projects in the hands of indigenous and local people play a significant role.

The global ecological crisis is very closely related to the asymmetric power relations among countries. Colonization was a first step in depriving peripheral countries of their territories and natural resources. Environmental degradation commenced with the advent

of a capitalistic industrial mode of production and consumption in the 18<sup>th</sup> Century. Natural resources have always been objects of dispute, and economic rationality has led to the unmeasured exploitation of both people and these resources. These two factors are identified as “conditions for accumulation” by O'Connor (2001), and their destruction comprises the second contradiction of capitalism, following the tendency for profit rates to fall.

Now we know that this kind of development has driven us to a limit at which life on our planet could be destroyed. Climate change is the most recent and visible consequence, but not the only one. Ecological destruction has worsened and includes new mining and hydroelectric projects, as well as the expansion of energy-intensive industrial and agricultural projects into biological megadiverse territories, with no concern for damage both to the humanity and nature. This process has been characterized as “accumulation by dispossession” (Harvey, 2004), and expresses the new way of capital growth. It is a process that entails the destruction of nature and the degradation of ecosystems. The early debate about the commons initiated by Ostrom (1990) is closely related to this, as natural resources' management as a common is a possible way to sustainability, instead of individual privatization

As stated by Lefevre (1976), capitalism survives through space production, this means that all of the places where resources are found, including persons, are dominated and employed for the accumulation of capital. According to Harvey (2004), since the 1970s over accumulation crises have required spatiotemporal ‘fixes’ in order to achieve a broader reproduction of capital, and there is an internal incapacity of achieving this type of accumulation in a sustainable fashion. What Harvey terms accumulation by dispossession was employed prior to the use of primitive accumulation by Luxemburg (1915), who emphasized the dual character of capitalism in which, in some places, surplus value production takes place and capitalist rules works, while in some other regions accumulation occurs to a greater degree over non-capitalistic ways of production. This is equal to dispossession and colonization, frequently by unethical means with the collusion of local governments.

According to Harvey, depredatory processes include “the commodification and privatization of land and the forceful expulsion of peasant populations; conversion of

various forms of property rights –common, collective, state, etc.– into exclusive private property rights; suppression of rights to the common; commodification of labor power and the suppression of alternative, indigenous forms of production and consumption; colonial, neo-colonial and imperial processes of appropriation of assets, including natural resources; monetization of exchange and taxation, particularly of land; slave trade, and usury, the national debt, and ultimately, the credit system” (Harvey, 2004, pg. 113). We emphasize here that dispossession means the exploitation and destruction of natural resources, biodiversity and territories, and the profits obtained this way do not remain in the place nor do they benefit local inhabitants. Novel and additional environmental depredatory forms of mining and oil and gas exploitation are the faces of accumulation by dispossession, especially in the rural areas of marginalized countries.

What Harvey calls into view is that this process has never ended and that, at times of over accumulation crises, such as at this moment, the process increases and expands in peripheral countries to benefit the central nations, because the former encounter more difficulties in reproducing accumulation in their territories. This implies mobility of investments and populations, because overaccumulation is expressed as an excess of both the central countries’ labor forces and commodities, which cannot be sold locally with profit. Thus, it is necessary to seek new markets, new productive capabilities, and new labor and natural resources in other places, in a process denominated by “spatio-temporal fixes” (Harvey, 2004, pg. 63). If over accumulated capital cannot move, there is a risk of devaluation of these assets in their own place. This way, capital creates a history and a landscape for its reproduction. Currently, capitalism combines a growing financial economy that is increasingly divorced from production, with an acute process of dispossession that moves capital and investments away from central countries to peripheral ones, where the latter are suffering from the destruction of both their capital and nature, with increase in poverty as a consequence. In this context, biodiversity is a very fragile common resource, very easily destroyed.

All of this is happening in the middle of an acute international struggle for hegemony, in which the United States of America (U.S.) is not willing to relinquish its power, despite the expanding economic power of China. Europe is not better off in this struggle. It appears that the new dynamic center of accumulation is Asia, but the U.S. is

determined to maintain its dominion through both military and economic. This is what Harvey calls the “new imperialism”, and it has strong consequences for peripheral countries’ destiny and nature. New global financial arrangements create unequal power relations between the rich and the poor countries, as the latter are subjected to international structural adjustment programs (such as the International Monetary Fund [IMF]). This implies that poor countries must frequently sacrifice their developmental goals such as achieving sustainability and reducing poverty. Of course, their natural resources (including biodiversity) are an important part of these arrangements. Complete economies have been ruined in this way, and this has led poor countries to ask for more credit under even worse conditions, in a process where nature is increasingly destroyed and development more difficult.

Harvey calls our attention to how accumulation by dispossession at present comprises the main form of accumulation in the world, and it is our objective to reflect on how this renders it more difficult to reach sustainability. We also want to point out the manner in which peripheral governments contribute to this process, while local social actors, frequently under adverse conditions, are working to reverse this trend by creating sustainable projects. Cuetzalan region is an example of this kind of resistance, where biodiversity has been managed as a common in a sustainable way, due both to ancestral and modern indigenous knowledge and culture, as well as political practice (Beaucage, 2012).

A new environmental rationality is required (Leff, 2004), together with a new way of development with respect to nature, and not through the promotion of ecological destruction. In order to achieve this objective, we can turn to the ancestral knowledge that has survived in many indigenous and local groups. In Latin America, there are a myriad of experiences in this respect. However, we must be careful not to conceive of our indigenous and local people and their knowledge as frozen in the past, only able to bring to our present times their ancient wisdom. To the contrary, these individuals have survived through centuries and are now as modern as those of any other culture, although in many cases, they certainly have acquired more knowledge about how to live from nature without destroying it, as well as managing their resources as commons. In Mexico, the majority of preserved natural ecosystems are the property of indigenous peoples, despite the

difficulties they have encountered to survive (Boege, 2008).

Porto-Gonçalves and Betancourt (2014) characterize this process as “social re appropriation of nature”, proposing it as a way to overcome the space-time dichotomy. These authors identify space-time dynamics, instead of constructing only periodical chronologies, in which nature and territories comprise the main actors and define the manner in which capital expands. We think that this proposal can be related to the concept of accumulation by dispossession, as both identify the complex space-time relationship involved in the way nature is dominated by capital and the forms that local social actors.

Concerning knowledge about biodiversity as a common and its uses, we find that this knowledge has frequently been despised by science despite it considers a vast collection of plants and living creatures assembled by international corporations. A new mechanism of accumulation by dispossession is currently underway. As Harvey notes: “The emphasis upon intellectual property rights in the WTO negotiations (the so-called TRIPS agreement) points to ways in which the patenting and licensing of genetic materials, seed plasmas, and all manner of other products, can now be used against whole populations whose environmental management practices have played a crucial role in the development of those materials. Biopiracy is rampant and the pillaging of the world’s stockpile of genetic resources is well underway, to the benefit of a few large multinational companies. The escalating depletion of the global environmental commons (land, air, water) and proliferating habitat degradations that preclude anything but capital-intensive modes of agricultural production have likewise resulted from the wholesale commodification of nature in all its forms” (2004, pg. 75). There is hardly a need to insist that this new type of dispossession means more destruction of nature. Natural resources and biodiversity have been managed as common goods for many centuries, and intellectual property rights, together with GMOs (genetically modified organisms) production, are new threats to both their conservation and collective property.

### **Biodiversity as a common**

Since human being appeared has depended on other living creatures and geographical conditions to survive. It is amazing how we have arrived to a moment when we can completely destroy nature, if we compare this with our beginning living in caves

threatened by wild animals and climate. Now that most humans live in cities, we see nature far away, and believe that we can completely control it. This started with modern positive science beginning, when it became an obsession to dissect nature and know all its secrets. As we can see in Sir Francis Bacon thinking, as a pioneer of this kind of scientific knowledge: “to penetrate in Nature’s secrets and intimacy it is necessary that both notions and principles must be taken away from reality by a most certain and secure method, and spirit must use better procedures” (Bacon, 1620). This helps us to understand how capitalist modernity brought a scientific attitude in which nature is seen only as a resources provider and should not be feared.

Biodiversity is a recent word, and it includes all living creatures in the planet. As “Nature” is a concept made by western modern science, biodiversity means an artificial separation between society and nature. In this way, all economic, political and social issues are apart from living creatures and natural resources. The term “biodiversity” started internationally at the mentioned 1992 Rio de Janeiro meeting, when Biological Diversity Convention (BDC) is approved. In this document it is understood as all living organisms in land, sea, air and water ecosystems, and it also implies an intangible part, meaning individual and collective knowledge and innovation and traditional practice, with real or potential value concerning biochemical and genetic resources. It also can be seen as the result of “an evolution process expressed in different ways of life in all living creatures scale” (Donato, 2011:1). We want to remember that human beings are included in planet biodiversity, although we are the greatest predators of natural and biological resources.

In recent years in western social sciences, it is widely recognized that nature’s conservation is not only about the better ways, but how local human communities who own natural resources (including biodiversity), can manage and use them in a sustainable way (Vaccaro et al, 2015). In this issue, rural peasant and indigenous people have a lot to say, and are not any more considered as underdeveloped and predators, but as owners of knowledge and life models that can be more harmonic towards nature. External intervention’s role, especially if we think in government and NGOs related to conservation and sustainability, is very important in local communities’ future.

Anyway, even when this discussion continues in academic world, we cannot deny that present capitalism is more environmentally depredator than ever. This is dramatically true concerning biodiversity: WWF 2014 Inform reports that 52% of vertebrate species have disappeared in 1970-2014 period (WWF, 2014). It is also clear that sometimes external's intervention and market's pressures lead local communities to depredate their resources. In Cuetzalan case, rather local people have resisted through centuries to preserve their biodiversity and territory against external threats, in a complex process of negotiation and violence (Beaucage, 2012).

Similar situations of successful local people biodiversity's management as a common and resistance to external threats can be found in other parts of the world. Frequently conservation goals represented by national governments, international ONGs and agencies confront local management. BDC meant a change concerning biodiversity, as before it was considered as human patrimony and with the Convention it became a resource under national governments' policies, which is rather curious in neoliberal privatization times. Rodríguez (2012) gives a possible explanation, as she states, after a meticulous research of biodiversity's international regulations, that this meant opening biodiversity to market.

Biodiversity's protection debate questions if highly biodiverse areas must be protected without allowing any human activity. This concept is originated in the Unites States of America and has caused many conflicts, because of its strong influence in international policies (Massieu and Chapela, 2006). In contrast, in Cuetzalan we find a local sustainable management of biodiversity, which has been present for a long time, without being a protected area. In fact, here threats to biodiversity and natural resources come from outside, mainly mining, hydroelectric and touristic mega-projects. In Latin America is rather common to find social movements who defend local natural resources, they are ecological movements of the commons, although may times their actors do not declare themselves as "environmental" (Porto Gonçalves and Betancourt, 2015).

We must not forget that biodiversity is essential to food production and health, and provides valuable environmental services such as air cleaning and soils fertility's preservation. Capitalist way of exploiting nature means that living creatures are meant to be machines which can be controlled to produce different commodities and services and,



in spite that biological cycles resists to this, genetic engineering represents an important step in this direction. Nevertheless, biodiversity's conservation is still strategic in order to protect ecosystem's stability. International debate concerning biodiversity's protection shows three paradoxes: a) Its fragility, as it is very easy that living creatures disappear when economic activities grow in biodiverse territories. b) That national governments are recognized actors to protect it, although in neoliberal times all resources tend to be privatized and that maybe this has meant that national governments can make it easy to commercialize them, as we said before. c) While central countries own and generate technology to exploit biodiversity, most of it is located in peripheral countries, who lack necessary technology to use and protect it. In this sense, we find that our case study in Cuetzalan can help to make clear how this fragile resource can be used and respected at the same time, in spite of external threats.

### **Cuetzalan. A biodiverse territory, people, resistance commons and culture**

Cuetzalan is a highly biodiverse territory in the Eastern mountains of Mexico. It is rich in natural resources such as biodiversity, minerals, and water. It has been inhabited since ancient times by the Nahuatl and Totonaca indigenous peoples. It is a municipality that pertains to the Northern Sierra of the State of Puebla, and a region of "high marginality" in which, according to data of the Instituto Nacional Indigenista, 75% of the population belongs to the Nahuatl ethnic group (INI, 1994). This is a region exceedingly rich in customs and traditions, and as well had a long history of land struggles.

It is a magic place of resistance and social movements, at present local people, in a wide alliance among different classes and ethnic groups, has succeeded in planning and negotiating their own territorial ordering document. This was made in order to defend themselves of different threats which appeared since 2007: massive tourism projects, Walmart, and more recently mining and hydroelectric projects. Their territorial planning has been a valuable tool against these threats, and represent a successful common management in Ostrom's sense .

The latest infers that these very ancient cultures have known how to employ their territory for centuries. As we mentioned previously, this knowledge is not strictly traditional. In fact, there is a modern indigenous concept: Kuojtakiloyan, "the mountain

where we produce”, an interesting agroecological indigenous practice related to particular Nahua and Totonaca ways of producing shade-grown coffee. It has been demonstrated by recent research that this way of producing coffee generates high biodiversity, includes endemic fruits such as the mamey (*Mammea americana*), and has introduced new ones, such as lemons and oranges, and other plants used for food and spices such as pepper. This is different from the original rainforest, which has nearly disappeared in Cuetzalan (Beaucage, 2012). Organic coffee produced this way is competitive and is exported to Japan by the Tosepan Titataniske Cooperative. Thus, Kuojtakiloyan comprises truly modern indigenous knowledge that preserves biodiversity and natural resources, such as water, because this sustainable agriculture contributes to maintaining water sources. The region is very rich in water, with a 4,000-cm annual precipitation.

This rich territory has recently become the subject of threats, first by a tourist project in 2007, promoted by government agencies and private corporate hotels. The project site was placed where main water sources, used by local inhabitants were located, who organized themselves and succeeded in stopping the project. Later, these people were able, together with local authorities, to halt the construction of a Wal-Mart store. Similarly, Cuetzalan and other villages of the region are today defending their territory against mining and hydroelectric projects (Meza, 2014).

To understand how is it possible that nahua and totonaca people from Cuetzalan have resisted and can use their biodiversity and natural resources as a common in a sustainable way until now, we must remember a few of their history. Following Beaucage (2012), there were two moments in this region that had as a result present ecosystem: the first one when the village began as a “republic of Indians”, with a collective land tenure named “natural’s common”. Second moment stars middle XIX Century, when collective land tenure was abolished by Reform laws and was replaced by private property. It is at this second moment when present ecosystem was produced, as “indigenous people succeeded on adapting their livelihood to private land tenure radical transformation in a period of demographic growth” (Beaucage, 2012:3). This change meant establishing in individual traditional indigenous coffee plots which, in contrast with coffee plantations, is not an environment destructive monoculture, but developed as a diverse tree production adapted to the region’s tropical climate.

This knowledge and Kuojtakiloyan concept is one of the most outstanding examples of sustainable common management of biodiversity and natural resources in Mexico. We want to emphasize that this has occurred without any government policy that determines a natural protected area, but is a product of social actor's practices. As we said, Kuojtakiloyan is a tangible proof of modern indigenous knowledge created by nahua and totonaca people, far away from "traditional" knowledge concept, although it is certainly rooted in very ancient practices. Original forests just remain in very small plots of the territory: Benemérita Universidad Autónoma de Puebla (Puebla's public university) informs that original fog high mountain forest, which originally was in 50% of the area, in 2009 only was found in 14%. Middle forest could have occupied 40% of the territory and in 2009 only 0.81%. Maize production decreased between 1970 and 2009, but coffee production nearly was double in the same period (Beaucage, 2012:3).

The place is between 500 and 1000 meters high and it has got great humidity, with 2000 to 4000 mm precipitation per year. Natural vegetation includes mahogany tree (*ayakachkuoit* in nahuat local language, *Swietenia macrophylla* King)<sup>3</sup>, cedar (*tiokuoit*, *Cedrela Odorata* L), different sapodilla tree varieties, which give fruits and are useful as other plants support; many fern varieties, including trees; herbal plants, such as chamaqui heliconia (*chamakisuat*, *Heliconia biahí* L.). In ravines there are palm trees and bamboo and in 1000 mt high there are typical high mountain trees, like "ocote" (*okot*, *Pinus patula* Schlect et Cham), oak (*ahuat*, *Quercus* spp) and "ilites" (*ilit*, *Alnus acuminata* subsp. *Alguta Achlecht* Furlow). Today only in some areas difficult to access there are original species.

There is a high population rate: 275 people per km<sup>2</sup>, most of them indigenous, nahua in West, South and East and totonaca in center. They are peasants and produce maize, beans, coffee, pepper and some sugar cane to sell in their small plots. Tropical climate and humidity allow two crops in some areas. Some people also have vanilla and cinnamon. It is this way, with diverse small plots, they practice kuojtakiloyan and preserve biodiversity. There is also an important present of herb medicine, and some women have an important knowledge about these plants. There exist some forestry areas to obtain wood, fishery in rivers and a limited hunting to get "mountain meat".

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<sup>3</sup> In following mentioned plants, first name is in nahuat and second is scientific one

Since XVII Century territory's resources attracted external people's greed, and there are reports of defense processes against this. When Reforma laws imposed private individual property, although many nahua and totonaca could keep their territory by their small plots register, and preserving collective management, there were also some external people who could buy bigger areas (Meza, 2014).

With Mexican Revolution agrarian processes, in the beginning of XX Century, Meza (2012, 172) states that there was no land distribution, and indigenous small private plots remained, together with mixed and white people bigger properties. Thus, we find at present a mixture made by a great number of small properties and bigger farms, in a multiethnic society.

It is also necessary to mention some of the indigenous movements that arose in the 1970s and 80s as a consequence of the neoliberal politics in Mexico. Among these organizations are the Indigenous Peasants Union (UCI), which is the one that has had the greatest achievements, and the Independent Peasant Central (CCI), which sprouted into the Independent Peasant Agrarian Organization and which continues to have a certain presence, although now a greatly debilitated one. In the 80s, peasant organizations revolved around productive organizations, such as the "Tosepan Titataniske" Cooperative in 1977, as part of the Indigenous Cooperative Movement, now consolidated into the "Tosepan" Union of Cooperatives, composed of 290 communities in 22 municipalities, this effort involves 22,000 families. They are focused on diverse activities, among which the supply and commercialization of agricultural raising products, especially coffee and pepper, are prominent.

The Nahua women in this region fashion splendid textile crafts, in which their sensitive perception of nature is expressed as birds, flowers, and figures that are embroidered in their pieces. One of their leaders, Rufina Villa, is a central figure of the current territorial defense struggles. During our interview with her, she noted that in Nahua culture, people are part of nature and are not allowed to exploit natural resources in a predatory way. She also declared that animals and plants have the same right to exist as humans.

In 1989, after a period of constant tension between the female artisans and the Tosepan management, a conflict ensued that resulted in the firing of the women from the

Tosepan Cooperative. In 1992, this group of dissenting women formed a regional organization that is registered under the name of the Maseualsiamej Mosenyolchicauanij Social Solidarity Society (*Maseual* is how the Nahuas refer to themselves, and *siamej* means “woman”. The name of the society means: Indigenous Women Who Work Together ). It is an organization that boasts a membership of 100 Nahua indigenous women from six communities of the Cuetzalan Municipality. They have reinforced their gender-focused work and have conducted several training activities, including a program of reflection on the rights of indigenous women; a reproductive health promotion program; regional meetings of women, and the sale of crafts at fair prices. With the purpose of improving their quality of life, generating employment for the families of the members, and avoiding migration to the city to the degree possible, the women organized productive activities focused on sustainable rural development, such as pig and chicken farming, environmental clean-up, dignified homes, small village stores, *nixtamal* (corn-grinding) mills, and community stores for the production and sale of tortillas.

The organization had been like a school for the members, because some have learned to read and write, to make their own clothing on traditional waist-hung weaving apparatuses, to embroider by hand, and to weave baskets with *jonote* (*Trema micrantha*, Jamaican nettletree). They have also learned to reevaluate their customs and practices as an indigenous population and their respect for Mother Earth.

It is very interesting that all these inhabitants participated in recent territorial defense movements, beginning with the first threat: a massive tourism government project promoted by Puebla’s government in 2007. Puebla’s investors were acquiring land to build big hotels and use water sources which provided near 18,000 people. Social response was wide and active, 8 social organizations and 10 social entrepreneurs, 2 tourism and culture local institutions and municipal tourism council integrated a Regional Identity Development Coordination. The latest organized a Regional Sustainable Tourism Forum, which convoked massive assistance and generated the Territorial Ordering Proposal we have mentioned before, that was supported by local government.

This document’s elaboration had BUAP’s support and has been an important tool by which local people have re-appropriated and manage their territory since 2009 until now, in a sustainable way that is also building an own space by local actors, where biodiversity,

water and natural resources are managed as commons, in spite of mega-projects threats. This allows local people to reinforce their identity and affective links to their territory and natural resources, as well as having their own rules to access and manage their richness. In the latest biodiversity and water are outstanding, as well as indigenous livelihoods based in sustainable mountain coffee production. Autonomy is generated in the territory, based in a common resources management, more interesting because new organizations have born recently, as a reaction to external threats.

Territorial Ordering Document took 14 months work, with consulting mechanisms to all Cuetzalan communities and organizations, and was presented and approved in local government building in October 2010. It was decided to start a local Ecological Ordering Committee (EOC), with a wide social representation and government institutions, but in an autonomous way. Next step was rejecting Walmart in 2010, as this supermarket will destroy local stores and employments, as well as Sunday market (Meza, 2012:180-181).

More recently in near places (as Cuetzalan Territorial Ordering Document and EOC do not allow it), Puebla's government has tried to start mining and hydroelectric projects. In 2012 there have been authorized and promoted by Puebla government and national and international corporations 25 mining projects, 19 hydroelectric ones (necessary to open mining) and Wal Mart insists. All this will affect negatively 600 thousands inhabitants of the mountain region. Besides, there are plans to build 48 so called "rural cities", another government project to place all the people who will have to move from their places because of mines and hydroelectrics (Albores, 2014).

Social answer has been quick and determined: in San Miguel Tenextatiloyan, from Zautla municipality, the first rural city building was stopped by local people and in Tetela de Ocampo local NGO "Tetela to the future" has opposed to mining works from Frisco, a firm owned by Carlos Slim (one of the richest man in the world and Mexican business man). In this place, very near to Cuetzalan, local government has denied permits for mining and declared Tetela de Ocampo "mining free territory". Another mine of Chinese property has been banned by local people in Tlamanca in Zautla municipality. A hydroelectric building was stopped in nearby Olintla by local people, who did not allow machinery to pass through a path. In Cuetzalan new local municipal president committed

with EOC in April 2014, with only 49 days of his 3 year period, to deny permits to hydroelectric and mining projects (Fernández, 2014).

In all Mexican territory national government and ministries supposedly dedicated to preserve environment and promote human development have acted more as big national and transnational corporations personnel, against local collective interests. Local people are by themselves defending their territories and natural resources, such as biodiversity and water in Cuetzalan region and its neighbours. Paradoxically, while predatory capitalism forces, as the ones we described in the first part following Harvey's proposal of capitalism by dispossession, expand and try to deprive people from their resources, the latest in this region have learned to defend themselves and create new organization forms. They have not succeeded, but have grown as citizens and are stopping depredatory processes in their land, as they want to leave their children and grandchildren the natural richness nature has given them, "not misery, contamination, diseases and death" (Albores, 2014).

### **Some final reflections**

After stating a theoretical perspective based in accumulation by dispossession and biodiversity as a common, and describing briefly Cuetzalan case as a threatened biodiverse region managed successfully by indigenous people, we could emphasize some elements necessary to understand how managed biodiversity and natural resources as a common can be successfully preserved:

When rich biodiverse territories have been inhabited for long periods by indigenous people, they can preserve their biological and natural resources and at the same time give their inhabitants a way of living, by practicing both ancient and modern local knowledge and organization.

Power relations are never absent through history, especially when there are natural resources, such as landscape, culture, biodiversity, minerals and water, that can be exploited with profits by external interests, but local organizations who promote identity and sustainable ways of using local richness while having income, are essential to stop predatory dispossession processes.

Gender conflicts are not absent when we talk about indigenous people organizations, as it is shown in Tosepan Titataniske's conflict with some of their women. Here we can say that indigenous people must not be seen as "pure" and idealized, and that in this case they managed to learn and advance, as now both Tosepan and women's organization fight together with other local actors to defend their territory.

Local knowledge owned by indigenous people must not be seen as coming from the past, rather it is permanently re-elaborated through time, and can be as modern as Western science, but it certainly has a more respectful approach to nature. This is particularly clear with Kuojtakiloyan concept in Cuetzalan.

Local authorities and own territorial ordering documents, made and practiced in a democratic way, and promoting natural resources use as commons (such as biodiversity in Cuetzalan) are powerful tools against external threats. At the same time, these tool is not a forever solution, as it has to be discussed and known by most people in a permanent process. When national government, as in Mexican case, is determined to promote and expand predatory dispossession projects, such as massive tourism, mining and hydroelectrics, even against local people's welfare, organization experience and negotiation with local actors are very important to resist.

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