From Biodiversity Offsets to Ecosystem Engineering: New Threats to Communities and Territories

At a meeting in a wixárika community in Jalisco, México, with organizations and villagers from other areas, the language we used to communicate was Spanish. We discussed threats to territories, corn, transgenics, agrochemicals, “biopiracy” and the patenting of plants and indigenous knowledge. Most participants were wixáritari (called huicholes in Spanish). During the meeting, they talked amongst themselves in their language. They say words like “transgenics” and “biopiracy” in Spanish.

What struck me was that in their conversations, the wixáritari also said the words “plants” and “animals” in Spanish. I thought it was strange that those words would not exist in their language; and so I asked Lauro, one of the older community members, who confirmed that this was indeed the case. I was surprised and tried to understand why. Lauro thought for a moment and said “We do not have a word for all animals that does not include us, or all plants without us, as if everything were one and we are not included.” Every animal, every plant and every living thing, just like every mountain, river, road—and even rock and stone—has a name; because they are all subjects, part of the same continuum of beings that make up community in a territory.

How far “biodiversity,” “biocultural heritage,” and other similar concepts are from these much deeper conceptions. These concepts group together “categories” that do not exist, because they are not categories of the same thing. Every community and traditional culture has a unique way of being in their territory and of relating with the elements it comprises.

To place all living things, their systems of relationships, subsistence and mutual support, and their cultures and histories under one term that synthesizes and paradoxically standardizes everything is useful to create international laws, regulations and commercial transactions; but it is far from reality. An example of this is using the term “environmental services” to describe the vital functions of very complex and diverse systems—such as forests, rivers, soils, air, and breathing and nutritional systems of nature's elements. Yet this extreme conceptual simplification is useful for trading, selling or issuing bonds for “services,” as it eliminates all complexities and thus enables “biodiversity offsets.”

Using this definition, mining, oil or timber companies with extensive and deforesting monoculture, justify the destruction of large natural areas—which are often the basis of communities' livelihood—if the company or an allied international “conservation” NGO “protects” an equally “biodiverse” area elsewhere, even if in another part of the world. As if the destruction of a forest or community could be compensated by sparing another community's life, or by letting another forest stand elsewhere. Nonetheless, this is exactly the basis of so-called “biodiversity offsets,” one of the recent additions to the lucrative “zero net damage” market: zero net carbon emissions, zero net deforestation, zero net destruction of biodiversity.

If one sees the world as a huge market, it is necessary to level, standardize and define common measures that enable trade. In this view, anything can supposedly be “offset;” thus greenhouse gases can continue being emitted, and deforestation can go on destroying natural and biodiverse areas. It is not a matter of stopping, reducing, or avoiding; just that the sum total after offsets is zero,

according to those who have taken over the definition of measures and the system of adding and subtracting.

There are many examples that demonstrate the injustice of applying this mentality. One of WRM's most recent reports on biodiversity offsets by mining company Río Tinto in Madagascar is a clear example of how unjust the biodiversity offset system can be, even if it is presented as a model in international negotiations. (1)

Offset systems, whether biodiversity, carbon or others, offer additional benefits to the companies and NGOs involved. They allow them to continue with destructive activities, as well as to generate speculative financial market niches from the bonds and credits obtained from the “offset.” Really they do not offset anything, but rather those secondary actions are a source of business and additional profits.

In the case of REDD and biodiversity offset programs, the “protection” of forests and other areas also restricts or severely limits communities' management of their own territories, and often their sources of livelihood. This occurs by limiting or preventing their traditional uses of the forest and other areas, now subject to plans of non-intervention or management that must be adjusted to international standards, exogenous to the communities.

In this perverse dynamic, communities not only can have their territory contaminated or partially destroyed; they can also be displaced or forced to migrate due to the lack of livelihood possibilities in other territories that will be used to "offset."

Metrics, monitoring and control

Another collateral effect of these programs is the increase in quantity, precision and technology of surveillance instruments; which are used to explore various kinds of resources—from aquifers and mines, to plants that could be subject to biopiracy—as well as for other undesirable uses.

In order to get to “zero,” everything must be measured. In the case of forests and other live ecosystems, this is very difficult because of natural dynamics (for example, forests breathe: they absorb but also emit carbon dioxide), and also because all forests are inhabited. To measure accurately and with minimal uncertainties or variables—in order to “monitor, verify and report,” but mainly to sell—life gets in the way.

Instead of accepting the dynamics of life and understanding that it is impossible to subject basic cycles to market demands, REDD systems have invented expensive and sophisticated ways of measuring “carbon permanence,” in order to put a price on it for bonds and projects, etc. It is not about the permanence and wellbeing of people, communities and natural systems, but rather about reducing everything to a single measure: carbon dioxide and carbon credits equivalent, which according to the dominant mentality will be the new measure of all things. (2)

In order to measure the immeasurable (soils, water, forests—which are alive, dynamic and interacting systems and therefore not measurable), REDD promoters have developed a combination of three tools: high-resolution satellite systems; infrared photographs or videos from fixed-wing drones that can produce even three-dimensional reconstructions; and teams of individuals who go to places to corroborate and complete data on vegetation and soils, and to establish GPS reference points. These local teams, generally comprised of people from the very communities that will be affected, have unique knowledge of the area, but do not necessarily understand the implications of their participation

in these tasks. There are extreme cases, such as what happened in Chiapas, Mexico in 2011 with the Lacandona community. Members of one of the indigenous communities to be affected in the area were paid a minimum amount to guard the chosen area with guns, and make sure nobody entered, even blocking passage of members from other indigenous groups from the same place.

This form of “monitoring” to comply with REDD project requirements, also facilitates new forms of biopiracy—since vegetation can now be detected in detail, and paired with local knowledge on its uses and exact location. (3) Combined with the information in gene banks and genetic sequencing databases—which contain data on tens of thousands of plant varieties and species—and coupled with the possibility to reconstruct genes through synthetic biology, this allows for kinds of biopiracy not even considered in international standards, like the Nagoya Protocol of the Convention on Biological Diversity (CBD). This UN Convention, with the pompous name, “Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization,” is a legally binding instrument established after many years of negotiations. It is supposedly meant to regulate access to genetic resources and ensure the sharing of benefits obtained from their use. Even before the appearance of these new technologies, the Protocol was already unable to prevent true biopiracy, which is the privatization of resources wherein the State or communities do not receive a percentage.

Furthermore, it does not take into account new forms of digital biopiracy that are replacing the conventional ones.

Digital Biopiracy, Synthetic Biology and New Threats

Until a few years ago, companies needed a physical sample of a plant, insect or microorganism in order to analyze and patent it. Now, with the lowering costs of genetic sequencing, and the fact that the vast majority of information exists in easily accessible databases; companies, researches and even “biohackers” can download this information online and reconstruct genetic sequences of interest in a laboratory. People have already and repeatedly built entire organisms, such as viruses. It is increasingly easy to do so, and increasingly harder to know who is doing what. Bacterias, yeasts and more complex organisms have also been built synthetically, but this is still a slow process with uncertainties. This does not stop the development from continuing at a dizzying speed, and there is even an initiative to construct a synthetic human genome in the next decade. (4)

Gene banks related to food and agriculture, most of them public or semi-public, have initiated a global collaboration (DivSeek) to share all the information from the different banks. Their main intention seems to be to facilitate or sell access to the private sector and transnational companies; as well as to avoid even minimum regulations to publish and state the origin of samples, or to “share benefits;” as required by the FAO's International Seed Treaty (5) and the CBD. La Vía Campesina (6), the Third World Network and other organizations warned against this initiative. (7)

This kind of digital biopiracy is not even considered in the CBD's Nagoya Protocol on Access to Genetic Resources—an agreement which nonetheless seems designed more to give companies legal certainty over their patents and investments, than to enforce and recognize the rights of indigenous and farming communities, and their enormous historical and present contribution to the sustenance of the whole world. (see article in the bulletin on the Constitutional Court ruling in Guatemala) This can only occur by respecting all their rights and supporting them to remain in their territories, not through bilateral contracts between a community and a company.

Synthetic biology also encompasses many other threats

“Genome editing” is now the main instrument that transnational pharmaceutical, agribusiness and timber companies use, thus named in an attempt to dissociate new biotechnologies from the generalized resistance to transgenics. However, all synthetic biology techniques are forms of genetic engineering; some make even more disturbing interventions than previous transgenics.

One of these applications, the construction of “gene drives,” is potentially more devastating than everything we have seen until now. It could be used to extinguish entire species or manipulate ecosystems, which is why it is called “ecosystem engineering.” This system ensures that a manipulated wild organism's offspring go against the natural laws of heredity (wherein each parent contributes 50% of genetic information), and instead transmits only the manipulated gene or genes to all its descendants. This would be a way to genetically manipulate wild (uncultivated) organisms and let them reproduce indefinitely. Technically, this technology has already been successfully applied in laboratories, and some of its developers have called for it not to be released. In nature, there will surely be many factors, mutations and other interactions that could keep this technology from thriving. However, it is extremely worrisome that its designers' intention is explicitly to wipe out species they consider to be “pests," which is highly risky and could throw species and entire ecosystems out of balance. (8) Furthermore, the potential to use this technology for warfare or hostile ends, to inoculate pests or even human diseases, is very high. (9) For these reasons, the Convention on Biological and Toxin Weapons already has this technology on its agenda.

The ETC Group and other organizations believe that this technology should be banned or at least placed under international moratorium. This issue will be discussed at the 13th Conference of the Parties of the Convention on Biological Diversity in Cancun, Mexico, in December 2016.

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(1) http://wrm.org.uy/wp-content/uploads/2016/04/RioTintoBiodivOffsetMadagascar_report_EN_web.pdf
(2) On this topic, it is very useful to read the essay La métrica del carbono: ¿el CO2 como medida de todas las cosas? de Camila Moreno, Lili Fuhr, Daniel Speich. https://mx.boell.org/sites/default/files/carbon_metrics-impresion.pdf
(3) Silvia Ribeiro, 2011. REDD, satélites y biopiratería. La Jornada, México, Mayo 2011. http://www.jornada.unam.mx/2011/05/07/opinion/027a1eco
(4) Silvia Ribeiro, 2016. ¿Seres humanos sintéticos? La Jornada, 28/5/16. México. http://www.jornada.unam.mx/2016/05/28/opinion/021a1eco
(5) The FAO Seed Treaty: http://www.fao.org/plant-treaty/en/
(6) Press release from La Vía Campesina: https://viacampesina.org/en/index.php/main-issues-mainmenu-27/biodiversity-and-genetic-resources-mainmenu-37/1877-peasants-rights-belong-to-peasants-don-t-take-a-single-one-away
(7) The Third World Network (TWN) has published a series of critical documents about the DivSeek initiative http://www.divseek.org/, available at www.twn.my/DivSeek.htm
(8) Summary of gene drives and their implications http://www.etcgroup.org/es/content/impulsos-temerarios-los-impulsores-geneticos-y-el-fin-de-la-naturaleza