Sociedad Peruana de Ecodesarrollo

THE RISK OF INCLUDING THE CULTIVATION OF *Elaeis guineensis* IN PERUVIAN TROPICAL FOREST AND WILDLIFE REGULATIONS
-Technical and Legal Aspects-

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I. INTRODUCTION

The conservation of the Peruvian National forest and its biodiversity is a constitutional obligation of the Peruvian State as the administrative entity responsible for the policies and regulations governing forest activity. In accordance with what is established by the Political Constitution of Peru (1993), it is the duty of the State to conserve and promote the sustainable use of the natural resource base and biological diversity.[1] Thus, forest activity should be geared towards the conservation of forest wealth, of the broad diversity it contains and shelters, as well as the rational and sustainable use of forest resources and wildlife.

Traditionally, deforestation in Peru has been mainly due to the expansion of migratory agriculture, cattle farming, proliferation of illicit crops, urban expansion, and road infrastructure. However, during recent years new threats to the conservation and integrity of the Peruvian tropical forests have emerged, including the increase in the exploration and exploitation of oil and mining, road and energy infrastructure megaprojects, and expansion of monocultures of introduced species for the production of biofuels. The latter has proven to be one of the principal causes of the deforestation of primary tropical forests, causing grave environmental, social, and economic impacts.

During 2008 and 2009 a series of regulatory reforms[2] were conceived, aimed at promoting the opening of the land market of Peruvian Amazonian regions in order to establish biofuel monoculture crops. Not only were they rejected by local populations, but they also led to situations of social conflict resulting in two protest marches carried out by indigenous peoples and finally the events of Bagua on June 5, 2009.

The present analysis explains why *Elaeis guineensis* (oil palm), a biofuel-producing species spreading widely in Peru, is neither a forest species nor is its cultivation a forest plantation. To that end, we tackle the technical differences between agricultural practices and the management of natural ecosystems such as forests. Additionally, we present a brief review of the social and environmental impacts generated by the cultivation of oil palm in several countries and some which have been reported in Peru to date. Finally, we discuss the regulatory differences between the agrarian and forest regimes, which will permit us to legally clarify why the cultivation of *Elaeis guineensis* is governed by agricultural instead of forest regulations.

[1] Article 67 of the Political Constitution of Peru includes as a duty of the State the promotion of the sustainable use of the natural resource base. Likewise, Article 68 provides that the State is obligated to promote the conservation of biological diversity.
[2] Among them, Bill 840/2006-PE and Legislative Decrees 1015, 1073, 1090, 1064, 1081, among others.

II. BACKGROUND

On December 15, 2010, the Report on Bill 4141/2010-PE, *Forest and Wild Fauna Law*, was approved after a participatory process initiated in November 2009 by the Ministry of Agriculture, and the establishment of a Working Group in September 2010 by the Agrarian Commission of the Peruvian Congress in which diverse state and civil society actors came together.

Many proposals and suggestions were received and analyzed by the Peruvian Congress, among them the communication remitted by the *Confederación Nacional de Palmicultores y Empresas de Palma Aceitera del Perú* [National Confederation of Oil Palm Producers and Companies of Peru], or CONAPAL, by means of official document 0012-2010-CONAPAL which was received by the Agrarian Commission on July 9, 2010, sets out observations of the Report on Bill 4141/2010-PE, *Forest and Wild Fauna Law*, and requests the recognition of oil palm as a forest species.

The Report on Bill 4141/2010-PE, *Forest and Wild Fauna Law*, proposes the following definition of forest plantations:

> *"**Forest ecosystems** are created through human intervention **by means of the planting of one or more forest species, native or introduced,** for producing timber or different non timber forest products; protection; ecological restoration; recreation; provision of environmental services; or any combination of the above. **Neither agro-industrial nor agricultural biofuel crops are forest plantations**."*[3]

CONAPAL proposes the following language for the article related to forest plantations:

> *"They are semi-natural ecosystems created through human intervention by means of the planting of one or more forest species, introduced or native, for producing timber or different non timber forest products; protection; ecological restoration; recreation; provision of environmental services; or a combination of these. The national, regional, and local development programs should consider afforestation and reforestation as priority activities:*
>
> *a) In the Amazon with forest plantations with properties for the industrial production of species such as: **oil palm**, palmetto, Brazil nut, rubber, medicinal trees and bushes, bayberry (*camu camu*), and others.*
>
> *b) On the coast and in the mountains with plantations of suitable native and exotic forest species for current or future industrial use."*[4]

CONAPAL consists of five federations of oil palm producers: FREDEPALMA-SM (of San Martín), FEDEPAU (of Ucayali), FREDEPALMA-HCO (of Huánuco), FEDEPALMA-LNS (of Loreto), and FEDEPALMA-MDD (of Madre de Dios), and was founded with the goal of promoting and consolidating the development of oil palm throughout the Peruvian Amazon.[5]

With this proposal, CONAPAL hopes to make oil palm, a domesticated exotic species, equal to native wild species of tropical forests whose use is governed by the regulation of non-timber forest products such as palmetto, Brazil nut, rubber, medicinal trees and bushes, and bayberry (*camu camu*), among other wild species which are part of the natural biodiversity of Peru's tropical forests. Thus, the requirement CONAPAL proposes to the Agrarian Commission of the Peruvian Congress is aimed at obtaining recognition of the oil palm (*Elaeis guineensis)* as a forest species such that oil palm monocultures can be classified as forest plantations. This would promote the opening of the primary forests areas and land trafficking for the purpose of installing plantations of agro-industrial and biofuel monocultures.

[3] Underlining added.
[4] Underlining added.
[5] http://connuestroperu.com/index.php?option=com_content&task=view&id=5504&Itemid=33

III. DIFFERENCES BETWEEN AGRICULTURAL PRACTICES AND FOREST ECOSYSTEMS MANAGEMENT

III.1 Wild Species and Domestic Breeds

Dobzhansky (1935) and Mayer (1942) define a "species" as a natural population of genetically compatible individuals which are, however, isolated reproductively from other similar groups. A biological species is a reproductively isolated population, and as such constitutes a separate evolutionary lineage which is reinforced by a series of geographic or biological barriers. A biological species is free to follow its own course in response to genetic processes and environmental influences which cause evolutionary changes.

Wiley (1978), however, holds that a species is a lineage (an ancestral-descendant sequence) of populations or organisms that maintains its identity from other lineages and possesses its own historic and evolutionary trends, considering that the genetic flow among species is minimal, generating genetic divergence (cladogenesis). Other definitions of a species are based on the morphological characteristics, genetic-molecular variants, or ecological conditions of the populations to differentiate among species.

The domestication of species consists of a process of hereditary reorganization by means of genetic selection processes favoring the fixing of certain characteristics of interest or use to humans. The processes of domestication are geared towards producing species under certain unnatural conditions, thereby suppressing the evolutionary processes of genetic selection. While domesticated breeds come from wild species, they differ from the latter in their genetic structure and the loss of their evolutionary processes as well as the principal functions of the wild species such as mechanisms of dispersion; morphogenetic characteristics; changes in reproductive and establishment strategies; phenology; loss or reduction of defense mechanisms against predation, and herbivory,[6] among others.

III.2 Differences between Agriculture and Forestry

Agriculture consists of a set of cultural practices (tilling, irrigation, fertilizing, pruning, harvest, fumigation) which includes ways of manipulating environmental conditions in order to control ecological variables (light, humidity, soil, nutrients, natural competitors, etc.),[7] in order to produce domesticated crops principally for consumption and agroindustry. Over time, agriculture has produced domesticated species which have been subject to large processes of reproductive selection and management with the goal of favoring a particular genotypic and/or phenotypic characteristic of interest to humans in terms of quality and/or productivity. Too, the already-domesticated species require the development of intensive agricultural practices for their growth.

Agricultural practices originated from the cultivation of wild species which presupposes selective plant management (artificial selection) in order to adapt the original biological diversity to human needs. Plant domestication resulted from the process of artificial selection which in turn led to the appearance of morphological, physiological, and genetic changes in the species.[8]

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[6] Díaz Guillén, Fermín. Op. cit. p. 69

[7] Casas, Alejando and Caballero, Javier. *Ciencias* Nº 40 October – December. 1995. p. 46. http://www.ejournal.unam.mx/cns/no40/CNS04005.pdf

[8] Díaz Guillén, Fermín. *Casa del Tiempo* VOL. III ÉPOCA IV Number 28. p. 67 Available at: http://www.uam.mx/difusion/casadeltiempo/28_iv_feb_2010/casa_del_tiempo_eIV_num28_66_70.pdf

It is thus that agriculture, and especially intensive agriculture, depends on human intervention in aspects such as soil preparation, planting (induced reproduction), application of fertilizers, and pest control, and is likewise subject to periods of annual or semi-annual seasonal production.
In contrast to agriculture, forestry consists of a set of non-intensive silvicultural practices geared towards the conservation and sustainable use of the goods and services of the natural forest ecosystems composed of wild species: forest, scrubland, pasture, etc. Forest species are characterized by being intrinsically wild and for their capacity to reproduce naturally. They thus have a large genetic pool and a high potential for natural evolution.[9]

Thus do agricultural and forestry practices differ: as a result of agricultural species' loss of their natural conditions, they demand constant human intervention. Forestry practices, on the other hand, entail a non-intensive use of the goods and services provided by the forests and/or wild species.

IV. CHARACTERISTICS OF FOREST PLANTATIONS

In the 2000 "Evaluation of Worldwide Forest Resources," the FAO defined forest plantations thusly:

> *" . . . those forest formations planted in the context of a process of afforestation or reforestation. They can be introduced or indigenous species that fulfill the requirements of a minimum surface area of 0.5 hectares, a crown cover of at least 10% of the ground cover, and a total height of the adult trees of over five meters."*[10]

It should be noted that the forest plantations emerge through human intervention in afforestation activities, understood as the action of "*populating a plot of land with forest plants*,"[11] as well as reforestation activities consisting of "*repopulating a plot of land with forest plants*."[12] Forest plantations can fulfill diverse, non-exclusionary functions arising from their characteristics as a wooded ecosystem, among which the following are noteworthy:

- *Protective function*.- Forest plantations are important providers of environmental services among which can be mentioned the following: thermoregulation at the local and global level; intervention in the biogeochemical carbon cycle; protection against wind-caused erosion; coastal protection; protection of hillsides and slopes; air purification; protection of the headwaters of watersheds and water sources from erosion and sedimentation; reduction of the impact of natural phenomena such as avalanches and floods; and participation in the water cycle, among others.[13]

- *Productive function*.- Forest plantations can be utilized for supplying timber and other non-timber forest products such as fruit, seeds, leaves, lianas, bark, resin, latex, and fauna, among others.[14]

While forest plantations can be considered to be *crops* in the sense that they can constitute homogenous systems in terms of species diversity, age types, or assisted planting, *forest plantations* differ from *agricultural crops* in the following ways:

[9] http://www.jardinyplantas.com/plantas/plantas-silvestres.html
[10] FAO. Evaluation of Worldwide Forest Resources 2000. FAO 2002. p. 24.
[11] Royal Spanish Language Academy. 22nd Edition. 2001.
[12] Ibid.
[13] FAO. Evaluation of Worldwide Forest Resources 2005. FAO. p. 95. ftp://ftp.fao.org/docrep/fao/009/a0400s/a0400s07.pdf; date accessed: January 14, 2010.
[14] Ídem. p. 76.

- Forest plantations are not systems of production or annual harvests, nor do they have marked seasonality; rather, they depend on the quality of the area and the species' own physiological characteristics in order to adapt themselves to the particular conditions of the quality of the area of a particular environment.
- Forest plantations do not require intensive tilling, nor do they depend on soil fertilization but rather, on species' natural adaptability to the quality of the area.
- Genetic exchange with other planted or wild specimens of the same species can occur in forest plantations, as well as natural reproduction (regeneration, crossbreeding, hybridization).
- Forest plantations fulfill diverse non-alimentary purposes (soil and slope stabilization, windbreaks, ornamental fences, and production of goods and services, among others).
- Forest wood species are not domesticated species but rather, wild; that is, even in plantations, they maintain their genetic and evolutionary capacity to be subject to processes of speciation, hybridization, and mutation, among others.

V. WHY CAN NOT OIL PALM MONOCULTURES BE CONSIDERED FOREST PLANTATIONS?

Elaeis guineensis is a domesticated introduced species. Evidence exists of its domestication in tropical Western Africa from 3000 BCE.[15] The first commercial plantations were established in 1911 in Indonesia and in 1914 in Malaysia.[16] Additionally, it is an exotic species (originally from the Gulf of Guinea) that was introduced into Malaysia, Thailand, Brazil, Central America, and South America. In contrast to other species of the Aracaceae family of the tropical Amazonian forests, *Elaeis guineensis* is neither a wild nor a native species.

Elaeis guineensis does not constitute a wild forest species, as it is an agricultural crop whose production (planting, maintenance, and harvest) requires intensive human intervention; additionally, as it is a species that is susceptible to being attacked by multiple pests in all stages of its life, it requires intensive treatments with pesticides and agrochemical products having a high rate of contamination. As a species which is planted for commercial purposes, the cultivation of *Elaeis guineensis* entails the development of cultural practices of intensive soil usage.[17] Too, its cultivation does not permit the use of the goods and services provided by natural forest ecosystems, as it does not favor the generation and continuity of ecological processes.

Simultaneously with the cultivation of oil palm on a worldwide level, an industry dedicated to the development of seeds has thrived with the goal of providing genetically-modified seeds to the market. Among these companies we can mention ADS of Costa Rica.[18] In this context, the marketing of oil palm seeds is subject to agricultural sanitation regulations. Regulations have been passed in Peru since 2004 establishing phytosanitary requirements for the importation of oil palm seeds in accordance with the provisions of Law 27322, *Law on Agricultural Sanitation*.[19] The proliferation of monocultures with

[15] Díaz Guillén, Fermín. Op. cit. p. 68

[16] Fedepalma. *La agroindustria de palma de aceite en Colombia* [The Oil Palm Agroindustry in Colombia]. Fedepalma. p. 5 http://www.fedepalma.org/documen/2007/agroindustria_palma.pdf

[17] According to what is noted by the Palma del Espino, S.A. and Industrial del Espino, S.A. companies, for small producers with well-managed plantations, the minimum that should be planted is 10 hectares of palm per producer. Palmas del Espino S.A. and Industrias del Espino, S.A. *"La Palma Aceitera en el Perú y los Biocombustibles"* [Oil Palm in Peru and Biofuels]. Workshop to promote the sustainable use of renewable energy and biofuels. 2008. http://intranet2.minem.gob.pe/web/archivos/ogp/GVEP/talleres/Exposicion_minem.pdf

[18] http://www.asd-cr.com/paginas/espanol/index.html

[19] Directorial Resolution Nº 642-2004-AG-SENASA-DGSV establishes the phytosanitary requirements for the importation of oil palm seeds from Benin. Likewise, SENASA, as the competent entity, has issued diverse Resolutions to regulate the phytosanitary aspects of the importation of oil palm seeds coming from Colombia, Malaysia, Ecuador, Costa Rica, and South Africa.

genetically-modified seeds constitutes a source of genetic contamination of the natural biodiversity of the tropical Amazonian forests.

Natural forests and even forest plantations differ from domestic species monocultures in that the former constitute functional ecosystems with floristic and age structure and composition in the intermediate canopy, high canopy, and undergrowth, with a tendency toward complexity and diversification.[20] By contrast, monocultures of species such as *Elaeis guineensis* are characterized by the need to completely remove the forest cover prior to planting it, a dependence on produced seeds, plowing and ground leveling, seasonal planning of planting and harvest, age homogeneity, control of planting density, irrigation, and other intensive agricultural practices geared towards achieving the projected production.[21]

VI. THE AGRO-INDUSTRIAL AND BIOFUEL USES OF OIL PALM

VI.1 The oil palm agroindustry

Agroindustry emerged as a result of the industrial organization of agriculture and consists of the management of diverse segments: agricultural production, transformation of raw materials, and final distribution[22] in order to obtain diverse types of goods such as foodstuffs, cleaning products, cosmetics, animal feed, etc., mostly geared towards exportation.[23] As production of raw materials is the first link in agroindustry, it is necessary to ensure a high level of production which permits the manufacture of products on a commercial scale.[24] This is the origin of the large monocultures on a worldwide scale of soybean, corn, and oil palm, among others.

The *Law on Agrarian Promotion and Development*, approved by Legislative Decree and published in November 1980, defines agroindustry as "*the primary transformation of agrarian products carried out directly by the producer him/herself or by a company different from same located in the same production area and closely related to said productive process. Agroindustry is located within the Agriculture and Alimentary Sector.*"[25]

Additionally, Supreme Decree 068-82-ITI-IND, published in January 1983, establishes the relationship between activities that are under the purview of the Ministry of Agriculture and notes that the transformation of raw materials of agricultural origin, among which can be mentioned the production of palm oil, constitutes an agro-industrial activity.[26] As has been noted, the cultivation of oil palm qualifies as an agricultural activity and its production, transformation, and marketing constitute agro-industrial activities.

In Peru, there are at least 35,000 hectares of oil palm planted.[27] The development of this agroindustry brings together diverse associations of producers and companies which are involved at different levels

[20] World Rainforest Movement. "*Las Plantaciones no son bosques*". World Rainforest Movement. Montevideo. 2003. p. 12
[21] Raygada Zambrano, Ruperto. *Manual Técnico para el Cultivo de la Palma Aceitera* [Technical Manual for the Cultivation of Oil Palm]. DEVIDA. Lima. 2005. pp. 35 and 58. http://www.devida.gob.pe/Documentacion/documentosdisponibles/Manual%20Palma%20Aceitera.pdf
[22] Merchand, Marco Antonio. *La dinámica Transnacional de la agroindustria del limón y su hinterland agrícola en el Valle de Tecomán* [The Transnational Dynamic of the Agroindustry of Lemon and its Agricultural Hinterland in the Tecomán Valley] in *Análisis Económico* [Economic Analysis] Number 44. VOL. XX. 2005. http://www.analisiseconomico.com.mx/pdf/4408.pdf
[23] Shepherd, Andrew. *Estudio de Mercados Agroindustriales* [Study of Agroindustrial Markets]. FAO. 2003 http://econegociosforestales.com/enf/files/Estudio_de_Mercados_Agroindustriales.pdf
[24] Idem. p. 92
[25] Article 29 of Legislative Decree 2, "*Ley de promoción y desarrollo agrario*" [Law on Agrarian Promotion and Development]
[26] Article 1 of Supreme Decree 068-82-ITI-IND.
[27] http://www.palmas.com.pe/

of the chain of production. The scenario of the actors participating in the chain of oil palm production is characterized on one hand by having small and medium-size palm farmers associated in companies of extended shareholders for the production of crude palm oil; on the other are the large private companies that through their various levels of technical specialization and production close the chain of production, as they have their own plantations, plants for the extraction and production of oil, plants for the development of finished products (foodstuffs, cleaning products, and biofuels), as well as distribution and marketing systems.[28]

The production model consisting of small and medium-size oil palm farmers has approximately 20,000 hectares of palm cultivated.[29] There are various associations which group them as well as some companies of multiple shareholder ownership in which said associations participate. These associative companies have been promoted by the State and international cooperation since the 1990s. Among them is Indupalsa, S.A. in the region of San Martín, wherein the *Asociación de Palmicultores de los Valles del Shanusi y Caynarachi* [Association of Palm Cultivators of the Shanusi and Caynarachi Valleys] has 2,500 hectares of palm and an oil extraction plant.[30] Oleaginosas del Perú, S.A., also in the San Martín region, brings together the *Asociación Central de Palmicultores de Tocache* [Central Association of Palm Cultivators of Tocache, or ACEPAT] and has approximately 4,600 hectares of palm.[31] On a related note, in the region of Ucayali Oleaginosas Amazónicas, S.A (OLAMSA) has as its majority shareholder Oleaginosas Amazónicas, S.A (OLAMSA) as well as independently associated farmers.[32]

Large private companies close the oil palm chain of production and, in contrast to the associative companies, have better prospects for growth.[33] In the sector of large oil palm companies in Peru, Grupo Palmas del Espino stands out (whose focus of development is the San Martín region), belonging to the Grupo Empresarial Romero and consisting of the following projects and companies: Palmas del Espino (with approximately 15,000 hectares dedicated to the cultivation of oil palm and cacao); Industrias del Espino (transforms the fruit of the palm into byproducts such as oil, edible fats, and cleaning products, and also works on the production, storage, distribution, marketing, and transport of biofuels); Palmas de Shanusi (with approximately 8,000 hectares dedicated to the cultivation of oil pam); Palmas de Oriente (with 3,000 hectares which shall be dedicated to biofuels); Industrias del Shanusi (production plant which shall be used to transform the oil palm fruit);[34] and Palmas del Caynarachi (with 6,000 hectares projected for the cultivation of oil palm).

As noted, the Grupo Romero concentrates at least 66.54% of the hectares planted with oil palm. Additionally, it has crude oil extraction plants (Industrias del Espino and Industrias del Shanusi) which together have a capacity for production of approximately 70 MT/h as compared to the approximately 18 MT/h which can be extracted by companies of multiple shareholder ownership such as Indupalsa, S.A., Oleaginosas del Perú, S.A., and Oleaginosas Amazónicas, S.A.[35]
Grupo Romero is one of the most powerful economic groups in the country, consisting of diverse companies dedicated to various productive and service-oriented activities such as Alicorp, Ransa, Tramarsa, Tisur, Primax (Gas Stations Company), the Credit Bank of Peru (BCP), Pacífico Peruano Suiza,

[28] SNV. *"Impactos socio-económicos de la producción de biocombustibles en la Amazonía peruana"* [The Socioeconomic Impacts of the Production of Biofuels on the Peruvian Amazon]. SNV. 2009. p. 34
Available at: http://snvla.org/es/Resultados/publicacionesperu/publicacionesperu.html
[29] http://www.palmas.com.pe/
[30] Idem. p. 23.
[31] http://www.inforegion.pe/desarrollo/28281/inauguran-moderna-planta-extractora-de-palma-aceitera-en-tocache/
[32] Ibid.
[33] Idem. p. 39.
[34] http://www.palmas.com.pe/
[35] Palmas del Espino, S.A. and Industrias del Espino, S.A. *"La palma aceitera en el Perú y los biocombustibles"* [Oil Palm in Peru and Biofuels]. 2008. p. 25
http://intranet2.minem.gob.pe/web/archivos/ogp/GVEP/talleres/Exposicion_minem.pdf

Pacífico Vida, and Prima AFP (Insurance company). Additionally, within the palm industry it is a part of the *Confederación Nacional de Palmicultores y Empresas de Palma Aceitera* [National Confederation of Oil Palm Producers and Companies of Peru, or CONAPAL] and the *Asociación de Productores de Energías Renovables* [Association of Renewable Energy Producers, or APER]. Thus, we warn of the possibility that the conglomerates, whose economic interests are linked to the production of biofuels, will promote regulatory reforms aimed at opening areas of natural and primary tropical forest both on public lands as well as indigenous territories, in order to obtain ownership of forest lands and dedicate them to the cultivation of oil palm, especially considering that said species for ecological reasons does not thrive nor does it even become established in currently deforested areas in the country which correspond mainly to the areas affected by the proliferation of illicit crops of coca leaves.

VI.2 Oil palm and biofuels activities

Biofuels crops are those which permit the large-scale production of raw materials for the development of biofuels, whose use has been encouraged by the decrease in petroleum reserves and climate change concerns which were initially focused on the utilization of fossil fuels as one of the determining factors in the worldwide emissions of CO_2.[36]

Peruvian Law 28054, *Law on the Promotion of the Biofuels Market*,[37] establishes that the objective of developing the biofuels market is "*to diversify the fuel market, promote agricultural and agro-industrial development, generate employment, diminish environmental contamination, and offer an alternative market in the fight against drugs*."[38] Likewise, the cited regulation notes that all of the "*chemical products obtained from raw materials of agricultural or agro-industrial origin or other forms of biomass which fulfill the regulations of quality established by the competent authorities*"[39] are biofuels.

Additionally, Article 3 of Law 28054 provides for the Executive Branch's implementation of general policies for the promotion of the biofuels market. Among said policies are the following:

> *". . . 4. Incentivize private-sector participation in biofuels production;*
> *5. Incentivize the marketing of biofuels in order to utilize them in all sectors of the economy in their pure state or mixed with another fuel;*
> *6. Promote biofuels production in the forest within an Alternative Sustainable Development Program."*[40]

Likewise, the Complementary and Provisional Provisions of the cited regulation establish:

> *First – Create the Program for the Promotion of the Use of Biofuels (PROBIOCOM) which shall oversee PROINVERSION, whose objective shall be to promote investments for the production and marketing of biofuels and disseminate the economic, social, and environmental advantages of its use.*
>
> *Second – Constitute a Technical Commission in charge of proposing and recommending the complementary regulations and provisions for compliance with the present Law, observing the following basic guidelines:*

[36] Nonetheless, recent studies note that the factors exerting the greatest influence on climate change are linked to deforestation and changes in soil use. FAO. *El estado mundial de la agricultura y la alimentación* [The State of World Agriculture and Food]. FAO. 2008 ftp://ftp.fao.org/docrep/fao/011/i0100s/i0100s.pdf

[37] Approved by the Permanent Commission of the Congress of the Republic on July 15, 2003 and enacted by the President of the Republic and the President of the Council of Ministers on August 7, 2003.

[38] Article 1 of Law 28054, "*Ley de promoción del mercado de biocombustibles*" [Law on the Promotion of the Biofuels Market]

[39] Article 2 of Law 28054, "*Ley de promoción del mercado de biocombustibles*" [Law on the Promotion of the Biofuels Market]

[40] Underlining added.

a. *Develop a timeline for and percentages of application and use of anhydrous ethanol as a component of the oxygenation of gasoline, as well as the use of biodiesel in diesel fuel.*
b. *Propose a program of sensitization for users and public institutions regarding the use of anhydrous ethanol and biodiesel."*[41]

Complementarily, Supreme Decree 021-2007-EM, *Regulation on the Marketing of Biofuels*, sets out the types of biofuels to be marketed in the country and defines biodiesel as the *"fuel composed of mono-alkyl esters of long-chain fatty acids derived from renewable resources such as vegetable oils or animal fat for use in diesel motors"*[42] and adds that *"for the purposes of the present Regulation, it is understood as an oleaginous substance obtained from palm, castor, pine nut, soybean, rapeseed, and sunflower oil and oil from other oleaginous vegetables, as well as from animal fat and used edible oils."*[43]

Thus, we see that the cultivation of oil palm is considered to be both an agro-industrial and an agricultural biofuels crop, since Legislative Decree 2, *Law on Agrarian Promotion and Development*, and Supreme Decree 068-82-ITI-IND note the agricultural origin and agro-industrial usage of oil palm and, too, in accordance with what is established by Law 28054, *Law on the Promotion of the Biofuels Market*, and Supreme Decree 021-2007-EM, *Regulation for the Marketing of Biofuels*, biofuels are obtained from raw materials of an agricultural origin; therein, it sets out that biodiesel may be obtained from a mix of diesel and oleaginous substances such as palm oil.

A study entitled "Baseline on Biofuels in the Amazon" carried out by the Dutch Cooperation and Development Service in 2007 determined the following:

> *" . . . With a production of four metric tons of crude oil per hectare of oil palm per year, 60,000 hectares are required to cover the deficit of the national oils and fats market for human consumption. In terms of biodiesel, it is calculated that some 75,000 hectares are needed to satisfy the demand, although in order to respond to the technical regulation which demands 2% in the mix starting in 2009, 18,000 hectares are required. After 2011, meanwhile, 5% will be required in the biodiesel mix and so 50,000 hectares would be needed (calculated based on the 2007-2016 Reference Plan on Hydrocarbons-MINEM). . . . The company Palmas del Espino of Grupo Romero currently has a biodiesel plant with an existing capacity of 50,000 MT/year which can satisfy the biodiesel demand of the Amazon. To the production reported by the company, it would have to derive 2,000 hectares of plantations in order to satisfy the market in the six Amazonian regions studied to comply with the 2% established by Law 28054 and its regulation.*[44]

On a related note, the same study estimated that the quantity of land for the cultivation of oil palm that would be necessary to satisfy the demand for biodiesel in Peru would reach 47,512 hectares in 2011 and 52,082 by 2015.[45] Keeping in mind that there are approximately 35,000 hectares of oil palm planted in Peru (for alimentary uses and for the production of biofuels) and that this crop is the one most utilized for energy purposes, it is evident that there exists a deficit in the quantity of palm needed to comply with the obligatory mixes established by Supreme Decree 021-2007-EM, *Regulation for the Marketing of Biofuels*.

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[41] Underlining added.
[42] Article 4 of Supreme Decree 021-2007-EM, "*Reglamento para la comercialización de biocombustibles*" [Regulation for the Marketing of Biofuels].
[43] Article 4 of Supreme Decree 021-2007-EM, "*Reglamento para la comercialización de biocombustibles*" [Regulation for the Marketing of Biofuels].
[44] SNV. Op Cit. pp. 23 and 24.
[45] SNV. IIAP. *Línea de Base Biocombustibles en la Amazonía Peruana* [Baseline on Biofuels in the Amazon]. 2007. p. 6. http://snvla.org/es/Resultados/publicacionesperu/publicacionesperu.html

In 2004, almost three years before the approval of Supreme Decree 021-2007-EM, *Regulation for the Marketing of Biofuels*, which generated an increase in the demand for oil palm for the production of biofuels, CONAPAL was already expressing concern about the deficit in the production of oil palm and noted that it was necessary to expand its cultivation due to the fact that the four extracting plants that existed at the time (in Pucallpa, Aguaytía, and the one belonging to the Palmas del Espino company) needed at least 70,000 hectares of planted palm so as to not underutilize its processing capacity.[46]

It is calculated that approximately US$520 million is invested in the biofuel industry in Peru,[47] of which at least US$225 million comes from Grupo Romero which apparently concentrates the largest part of its investment in this market due to the fact that it is involved in the various stages of production and utilizes advanced technology both in the field and in processing.

Faced with the imminent entry into force of the timeframe established for the obligatory marketing of biodiesel under Supreme Decree 021-2007-EM, *Regulation for the Marketing of Biofuels*, and with the insufficient production in the domestic market, biodiesel began to be imported from the U.S. in December 2008. Certainly, considering the scant production of raw materials, Peru is not an important biofuels producer, notwithstanding the hundreds of millions invested in this industry. Between January and June 2009, the domestic production of biodiesel was 43,400 barrels and was concentrated in three companies [Industrias del Espino (48.9%), Heaven Petroleum (41%), and Purebiofuels (10.1%)]; the national industry had thus been operating at 3.3% of its existing capacity.[48] **This, combined with the fact that imported biodiesel was purchased for approximately 11% less than the cost of the domestic raw material, resulted in increases in the fixed costs of production for the national companies and delays on returns on investment.**

Despite the fact that in order to protect its domestic investments INDECOPI decided to apply antidumping duties[49] and definitive countervailing duties[50] to the biofuels imported from the U.S. in 2010,[51] the national industry needs to expand its cultivation of oil palm in order to have more raw material available which will permit the companies to increase their volumes of production and thereby increase sales and recuperate their investments.

This factor has given rise since 2006 to the promotion of a series of regulatory modifications[52] aimed at promoting the opening of the land market in the Amazonian regions in order to install biofuel monocultures such as oil palm. These attempts at reform driven by the State to promote investments in the biofuels market became stronger with the approval in 2007 of Supreme Decree 021-2007-EM,

[46] *La Revista Agraria* [The Agrarian Magazine] Nº 54. Lima, Peru. 2004.
http://www.larevistaagraria.org/sites/default/files/revista/r-agra54/coyu-01d.htm#Palma aceitera, posibilidad en la selva

[47] http://www.palmas.com.pe/palma_demo/?p=87

[48] http://biodiesel.com.ar/2075/peru-biofuels

[49] The goal of antidumping duties is to neutralize dumping actions consisting of "business practices of price discrimination which occur when a foreign company or group of companies exports its products to another country for lower prices than it sells the same products for in its domestic market, or at production cost" (INDECOPI).
http://aplicaciones.indecopi.gob.pe/destacado-competencia-comisiones-dys-inforUtil.jsp

[50] The goal of countervailing duties is to neutralize subsidies which are generated when "a government or any public body carries out a direct transfer of funds, condones or does not collect public income, provides goods or services which are not related to general infrastructure, purchases goods at a higher-than-market price, or when there exists some form of income or price support" (INDECOPI).
http://aplicaciones.indecopi.gob.pe/destacado-competencia-comisiones-dys-inforUtil.jsp

[51] Resolution Nº 116-2010-CFD-INDECOP, published on June 25, 2010, provided for the application of definitive antidumping duties equivalent to US$212 per ton to the imports of pure biodiesel (B100) and to the mixes containing more than 50% of biodiesel (B50) in its composition originating in the U.S.
Also, Resolution Nº 151-2010-CFD-INDECOPI, published on August 22, 2010, applied definitive countervailing duties equivalent to US$178 per ton to the imports of pure biodiesel (B100) and to the mixes containing more than 50% biodiesel (B50) in its composition originating in the U.S.

[52] Among them Bill 840/2006-PE and Legislative Decrees 1015, 1073, 1090, 1064, and 1081, among others.

Regulation for the Marketing of Biofuels, since the establishment of periods for its obligatory marketing meant generating an artificial demand for fuels of a biological origin.

In this context, assuring access to lands for biofuel crops was and is a crucial factor in bringing to fruition the political and commercial alliance between the State (as driver of the policies encouraging investment in biofuels) and the private sector, especially on the part of those with many millions of dollars invested. The State should not forget, however, as was noted by the Constitutional Court of Peru in Ruling 0048-2004=PI/TC, in accordance with the precepts of the social democratic rule of law (in which the defense of fundamental human rights is paramount), "*economic growth should not conflict with the right to a full human life,"* which presupposes the full exercise of fundamental rights, among them the right to enjoy a balanced and adequate environment, which is understood from two perspectives: 1) the right to enjoy that environment; and 2) the right to having that environment be preserved. This second perspective, as noted by the Constitutional Court of Peru in the cited ruling, *"entails unavoidable obligations for the government"* and for private actors whose activities influence the environment; it thus bears mentioning that it constitutes a legal and moral imperative which determines that the preservation of the environment is a value of human transcendence that is put ahead of political and economic interests.

It is important to remember that in December 2006 the Executive Branch introduced Bill 00840/2006-PE which proposed substituting the concession system for forest lands without forest cover and/or uncultivated lands owned by the State with awarding them through sale, in order to carry out reforestation activities. The unease and protests of the inhabitants of the Loreto and Ucayali regions took little time to manifest themselves in the face of the perception that the sale of deforested lands in the Amazon would be favored. Adding to that was the state of legal insecurity of the residents, vis-à-vis policies promoted by the Special Program on Land Titling and later the Organization of Private Formalization (COFOPRI), which incentivized the invasion of forests in order to deforest them and thereby obtain possession titles which could later be used to justify the sale of those lands.[53]

Along this line, the context of the existence of regulations for the economic-fiscal promotion of biofuels, along with the obligatory periods to fulfill for their marketing, led in 2008 and 2009 to renewed attempts to pass a series of regulatory reforms aimed at promoting the opening up of lands in the Amazon to the market, such as Legislative Decrees 1015, 1073, 1064, and 1081. Of particular importance among them was Legislative Decree 1090, which proposed the facilitation of forest land conversion in order to favor projects that (such as the cultivation of oil palm) would be declared in the national interest.[54] This decree's repeal was demanded by the indigenous peoples and unleashed the deplorable events which occurred in Bagua on June 5, 2009.

To sum up, despite the fact that Law 28054, *Law on the Promotion of the Biofuels Market*, establishes that the development of the biofuels market has among its objectives *" . . . to diminish environmental contamination and offer an alternative market in the fight against drugs,"*[55] the sowing of biofuels crops not only generates the loss of forests and biodiversity and environmental contamination through the use of agrochemicals, but also promotes the use of lands other than those that are degraded or affected by illicit crops, thereby increasing the total deforestation and in some cases putting at risk the territories of indigenous peoples. The increase in the demand for lands in the Peruvian Amazon with good drainage

[53] DAR. *Hechos y aspectos vulneratorios de los Decretos Legislativos Nº 1090 y 1064* [Facts and Aspects of Legislative Decrees 1090 and 1064 which Violate Rights]. DAR. 2009. pp. 2 and 3.
[54] Article 6 of Legislative Decree 1090, modified by Article 1 of Law 29317.
[55] Article 1 of Law 28054, "*Ley de promoción del mercado de biocombustibles*" [Law on the Promotion of the Biofuels Market]

for the cultivation of oil palm for biofuels production promotes the invasion and deforestation of the primary forests and entails a constant risk of changes in the use of the Amazonian forest soil.[56]

Notwithstanding that, intentions persist in the private sector to expand the cultivation of oil palm, this time attempting to access forest lands by declaring this biofuel monoculture to be a forest plantation, when strictly speaking these lands should be exclusively allocated for the development of activities of forest use, protection, restoration, recreation, and maintenance of environmental services.

VII. ENVIRONMENTAL IMPACTS OF THE CULTIVATION OF OIL PALM

Monocultures of agro-industrial and/or biofuels species can generate grave environmental impacts, given that they have the potential to encourage deforestation, generate soil and water contamination, loss of forest cover and biodiversity, and increase greenhouse gas emissions, among others. It has been noted in the specific case of oil palm that the principal environmental impacts can be linked to *"the conversion of the habitat, threats to the critical habitats of endangered species, burning and air contamination, soil erosion, and pesticide and fertilizer use."*[57]

The following are some of the principal negative environmental impacts produced by the cultivation of oil palm which have been detected by the Human Rights Ombudsman's Office of the Republic of Colombia in the department of El Chocó:[58]

- Migration or extinction of species of fauna as a result of the loss of their natural habitat brought on by impacts on their ecosystems leading to a marked decrease in biodiversity.[59] The Alexander Von Humboldt Institute for Research on Biological Resources concluded, based on the Indicator of Biodiversity macroeconomic model, that the increase in palm cultivation would entail a loss of biodiversity of between 21.8% and 30.15% in the western region of Colombia.[60]
- Widespread felling of forests which increases erosion and river sedimentation, making it more difficult to navigate the rivers (producing simultaneous economic repercussions).[61]
- Modification of the watersheds of natural drainages and water courses produced by palm plantation drainage systems.[62]
- Alteration of sustainable forest use as a source of livelihood for the population due to the substitution of the forests with cultivations of oil palm.[63]
- Changes in soil use which become irreversible.[64]
- The density of palm planting is high and as such its roots, which grow horizontally, form a network which obstructs the physical and ecological processes of the soil.[65]

[56] SNVP. Op. Cit. p. 64
[57] Hai Teoh, Cheng. *"Temas esenciales de sostenibilidad en el sector del aceite de palma"* [Essential Issues of Sustainability in the Palm Oil Sector]. World Bank. p. 33
http://www.ifc.org/ifcext/agriconsultation.nsf/AttachmentsByTitle/Discussion+Paper_Spanish+/$FILE/Discussion+Paper_Spanish.pdf
[58] Human Rights Ombudsman's Office of the Republic of Colombia. Ombudsman's Resolution Nº 39 "*Violación de los Derechos Humanos por Siembra de Palma Africana en Territorios Colectivos de Jiguamiandó y Curvaradó – Chocó*" [Violation of Human Rights Resulting from the Planting of African Palm on Collective Territories of Jiguamiandó and Curvaradó, Chocó]. Bogotá.2005. p.21
Disponible en: http://www.defensoria.org.co/pdf/resoluciones/defensorial/defensorial39.pdf
[59] Ibid.
[60] Ibid.
[61] Idem. p. 20
[62] Idem. p. 21
[63] Ibid.
[64] Ibid.
[65] Ibid.

- Increase in deforestation, land trafficking, and illegal extraction of lumber, among other reasons due to the fact that palm producers took advantage of the economic incentives and installed themselves in wooded areas to which they later received title and deforested in order to plant palm. This policy of encouraging agriculture gave rise to the illegal exploitation of lumber, given that the forests were devastated in order to make way for cultivation fields.[66]

On a related note, there are documented cases in other countries which shed light on the negative impacts of oil palm monoculture on the environment and given that these impacts have their raison d'être in the intensified agricultural production methods of the large monocultures themselves, we find that the standard of negative impacts is recurrent in terms of deforestation (with its effects on climate change at the local, regional, and global levels, as well as the hydrologic effects due to the alteration in the retention of precipitation and rate of rain), loss of biodiversity, illegal logging, and increase in erosion and river sedimentation, among others.

To cite other cases, in Sumatra, Indonesia it is estimated that just the cultivation of oil palm contributed 29% to the loss of primary forests in the period 1982-2007. Likewise, the loss of natural forests directly resulted in the loss of biodiversity, due to the fact that biodiversity in the cultivation of oil palm is much lower than in natural forests and because the reduction in natural habitats leaves fewer niches for flora and fauna. In Malaysia and Indonesia, threatened species of singular value such as the Asian elephant, orangutan, and Sumatran tiger find themselves in a greater state of vulnerability due to the fact that clear-cutting of forests generates more hunting pressure and opens the habitat of said species to human settlements. A clear example of the conflicts between humans and these species is that in Malaysia the natural forest corridor for pygmy elephants has been broken up by plantations of oil palm.[67]

Particular mention should be made of the impact on the environment produced by the use of chemical pesticides and fertilizers for the cultivation of oil palm, given that if they are used improperly they can contaminate surface water and groundwater.[68]

Finally, we should note that there are factors which place Peru and its citizenry in a state of environmental and social uncertainty in the face of the expansion of the agricultural frontier, among which the following are noteworthy: there is no cadaster of forested lands which can guide the expansion of agricultural and agro-industrial plantations in these zones, nor have the forest zones with the greatest carbon concentration been mapped which should be exempt from changes in soil use in order to prevent the emission of large quantities of CO_2.

VIII. SOCIAL AND POLITICAL CONFLICTS SURROUNDING THE EXPANSION OF THE INDUSTRIAL CULTIVATION OF OIL PALM FOR BIOFUEL

Since 2003 when Law 28054, *Law on the Promotion of the Biofuels Market*, was approved with the goal of diversifying the fuel market, promoting agricultural and agro-industrial development, generating employment, reducing environmental contamination, and offering an alternative market in the War Against Drugs, our country has experienced a constant state of conflict due to political pressures whose objective was the approval of regulations facilitating the opening of Amazonian land markets which are attractive for the establishment of large cultivations of biofuel crops.

[66] Ibid.
[67] Hai Teoh, Cheng. *Op. cit*. p. 33
[68] Idem. p. 26

As a complement to Law 28054, *Law on the Promotion of the Biofuels Market*, Supreme Decree 021-2007-EM was approved in 2007 which defined the types of biofuels which would be marketed domestically, established requirements for their marketing, and set time periods for the obligatory use of gasohol and biodiesel. Given that since 2000 the cultivation of oil palm had been declared to be in the national interest, the context proved to be favorable for investments in monocultures of industrial and biofuel crops (considering that the obligatory nature of the use of biofuels generated an artificial demand for biofuel crops). The only thing that was missing was creating the mechanisms for accessing large extensions of land on which to develop the projects.

Among the regulations which favored the opening of the Amazonian land market was Bill 840/2006-PE (known as the "Law of the Forest") as well as Legislative Decrees 1090, 1015, 1064, and 1073 which generated significant controversy and protests, given that they dealt with the possibility of making indigenous peoples' lands available to the market. After a series of protests on the part of various communities starting in mid-2008, the conflict became critical as a result of the events that occurred in Bagua on June 5, 2009.

Other countries in the region have not escaped conflicts surrounding oil palm, as demonstrated by Colombia, where in 2005, Human Rights Ombudsman's Resolution 39 entitled *"The Violation of Human Rights Resulting from the Planting of African Palm on Collective Territories of Jiguamiandó and Curvaradó, Chocó"* was issued, noting that the planting of oil palm on large extensions of land has generated conflicts related to collective territories, cultural and ethnic identify, environmental harm, and forced displacement as a result of the violence. Human Rights Ombudsman's Resolution 39 concluded that given the characteristics of Colombia's own reality, where indigenous and Afro-Colombian communities are affected by domestic violence, their situation has become even more critical as the circumstances have made them prone to selling their lands to palm businesspersons, who are constantly seeking to expand their cultivations and increase their production.

All of this, combined with the fact that the environmental regulations have not been respected, the Environmental Management Plans have not been put into practice, and the agricultural frontier has not been respected, has resulted in the cultivation of oil palm not representing an option for the economic development for the production zones' neighboring communities, but rather, they have been evacuated and harmed by the destruction of other crops, demolishing of their homes, and withdrawal of their roads and means of communication.[69]

In countries such as Indonesia, the world's principal oil palm producer, the development of this industry, initiated in the 1970s, is associated with assassinations, human rights violations, the destruction of communities and local cultures, labor disputes, and corruption in the various spheres of the government, principally in the awarding of lands. The indigenous communities have been affected not only by having been removed from their lands but also because the expansion of palm has brought with it an increase in poverty by limiting access to resources such as foodstuffs and lumber.[70]

On a related note, the labor situation in the oil palm industry in contexts such as Indonesia has never been favorable for communities. In general, the work on the plantations is badly remunerated, generates great dependency on the employer (given that the traditional forms of cultivation are lost, access to forest resources diminishes, and the communities' economy is left exposed to the fluctuations

[69]Human Rights Ombudsman's Office of the Republic of Colombia. Op. Cit. pp. 38-39
[70]World Rainforest Movement. *"Oil Palm."* World Rainforest Movement. Montevideo. 2006. p. 62 http://www.wrm.org.uy/plantations/material/Palm2.pdf

of the market), and in general is unhealthy (due to the use of chemical inputs such as pesticides and fertilizers without due protection).[71]

In Peru the conflicts surrounding the cultivation of oil palm for access to land have taken little time in emerging, for example in the communities of Loreto and San Martín that are demanding their rights to ownership of the lands awarded to agricultural companies dedicated to oil palm cultivation.[72] In this sense, the Human Rights Ombudsman's Office already informed in February 2010 in its Report Number 72 on Social Conflicts that the population of Barranquita in the region of San Martín opposes the activities of the Agropecuaria Caynarchi company, denouncing the latter's deforestation of the forests in the zone in order to expand its crops and noting that in an inspection of the "*Palmas de Oriente*" project carried out by authorities of the hamlet of Leoncio Prado, it was affirmed that the company continued deforesting the zone, not complying with the provisions of Resolution 023-2010-GRSM/DRASAM of the Regional Agrarian Office of San Martín which suspended changes in soil use.

On a related note, with respect to the development of our country's energy sector, it should be mentioned that on November 24, 2010, by means of Supreme Decree 064-2010-EM, the National Energy Policy of Peru was approved for the period 2010-2040, which highlights the importance of ensuring universal access to energy as well as having a diversified power grid which incentivizes the use of renewable energy, among other guidelines, within the framework of sustainable development.[73]

The National Energy Policy of Peru for the period 2010-2040 establishes among its policy guidelines having a diversified power grid based on renewable energy (conventional and unconventional), including biofuels. Likewise, it prioritizes the construction of hydropower plants and promotes the development of and investments in hydrocarbon (oil and gas) projects, among others.[74]

While the 2010-2040 National Energy Policy of Peru establishes development guidelines with general reach, it is clear that these have the potential to directly influence the lands, territories, and habitats occupied by indigenous peoples, given that compliance with these objectives and guidelines can entail the use or disposal of indigenous lands and territories, or generate impacts on them or on the natural resources which are vital to the survival of these peoples. Thus, in accordance with what is established by ILO Convention 169, signed by the State of Peru, this regulation should have been subject to a process of Free, Prior, and Informed Consent, which would have permitted the incorporation of the opinions and perspectives of the indigenous citizens in decision-making that can affect their rights, interests and territories.

Nonetheless, despite the provisions of ILO Convention 169 and the Constitutional Court of Peru's broad development of the obligatory nature of undertaking consultation processes with indigenous peoples regarding the measures that might affect them,[75] the approval of Supreme Decree 064-2010-EM, the 2010-2040 National Energy Policy of Peru, did not envisage the realization of a Free, Prior, and Informed Consultation process with indigenous peoples. This proves that the indigenous peoples do not yet occupy a preferential place on the State's agenda or in the institutional vision of the Ministry of Energy and Mine and additionally distorts the commitment of the Peruvian State to the defense of the collective rights of the indigenous peoples emanating from ILO Convention 169.

[71] Idem. p. 71
[72] http://www.sanmartinenlinea.com/notas/noticias.php?id=1393
[73] Objectives of Policy Nºs 1, 5, and 6 of the National Energy Policy approved by Supreme Decree 064-2010-EM
[74] Objectives of Policy Nº 1 of the National Energy Policy approved by Supreme Decree 064-2010-EM
[75] For more information, one can review the rulings entered in Files Nº 0022-2009-PI/TCA, Nº 06316-2008-PA/TC, and 05427-2009-PC/TC.

IX. BIOFUELS: THE MYTH OF ENERGY EFFICIENCY AND REDUCTION OF GREENHOUSE GASES

Oil palm has diverse uses, of particular mention among them being the development of foodstuffs, cleaning products, cosmetics, and biofuels. The cultivation of oleaginous seeds such as oil palm for their utilization in the agro-industrial and biofuel sector has good expectations for growth and economic profitability. Also, the search for cleaner substitutes for petroleum has made the biofuels market an attractive option due to its profitability and its apparent contribution to climate change mitigation.

While initial concerns surrounding climate change were focused on the importance of diversifying the power grid in order to reduce CO_2 emissions from the consumption of fossil fuels, later it was determined that there are various anthropogenic activities which produce CO_2 emissions, among which deforestation is one of the most significant, given that it contributes approximately 18% of global greenhouse gas emissions.[76]

As such, we must pay greater attention to the environmental and social implications of the promotion of biofuel crop and agroforestry monocultures which can generate changes in forest soil use. This assumes that the strategies for promoting biofuels should be accompanied by policies which prevent the substitution of primary and/or secondary forests with biofuel monocultures, among which we can mention the development of cadasters of deforested lands at the national level and land demarcation through ecological-economic zoning.

The issue in question is if the utilization of fuel produced from biomass will generate a significant reduction in the emission of greenhouse gases. In this sense, it should be kept in mind that the cultivation of biofuel crops releases greenhouse gases during its various stages; for example, during the production of agricultural inputs, application of fertilizers, chemical production, and transport of biofuels[77] and, as the case may be, during the clear-cutting of the forest to open paths to agricultural camps.

Consequently, the analysis of energy efficiency and the contribution to reducing biofuels' greenhouse gases should not only consider the combustion phase, but rather all previous processes and their social implications.

On the other hand, as we have already noted, the need to have extensive fields for cultivation predisposes changes in land use: when forest lands are converted to cultivation areas, greenhouse gases stored therein are released. A study has determined that in countries such as the United States of America, Brazil, Indonesia, or Malaysia, *"the conversion of tropical rainforests, peat bogs, savannas, or pastures in order to produce ethanol would release at least 17 times more carbon dioxide than the biofuels would save annually through the replacement of fossil fuels.*[78]

Regarding the issue in question, the FAO has drafted a report in which it points out the importance of analyzing the lifecycle of each type of biofuel, given that the assessments of greenhouse gases are not positive for all raw materials and depend on the productive practices, location of the crops, and crucially, the manner in which the change in land use is managed, given that the conversion of tropical

[76] Hai Teoh, Cheng. Op. Cit. *35*
[77] Unasylva 230, Vol. 59, 2008.
ftp:/ftp.fao.org/docrep/fao/011/i0440s/i0440s06.pdf
[78] Ibid.

forests to the production of any kind of biofuel crop can release large quantities of greenhouse gases far exceeding the possible annual savings obtained from the use of biofuels.[79]

Consequently, it is a myth that the use of biofuels is per se more energy-efficient and environmentally sustainable than the use of fossil fuels; rather, there are many determining factors among which one of the most risky is the change in the use of forest soil. One study carried out in Peru in 2000 on the CO_2 emitted into the atmosphere revealed that all economic activities contributed 119,550 Gg equivalents of CO_2, of which 110,312 Gg (92.3%) resulted from the change in land use in forests to agriculture and pasture. In one optimistic scenario, those who carried out the study reduced that contribution by half, assuming that 53,541 Gg were removed by the growth of vegetation, particularly in the '*purmas*' (disturbed secondary forests). Even so, deforestation contributed 47% of Peru's emissions that year.[80]

In this context, it is urgent to reflect on and take action in the face of insufficient environmental safeguards on the part of the State for its policies of biofuel promotion – in which the principal threat arises from the lack of a cadaster of the deforested areas of the country, which could become a threat to natural forests (*El Comercio* newspaper, June 5,2007and August 5,2007)[81] as it is not possible to identify and quantify the areas without forest cover which are suitable for agricultural activities or, as the case may be, for afforestation and reforestation – so that the development of policies encouraging forest and agricultural activities does not generate perverse incentives to destroy areas with forest cover and the diversity they contain.

To sum up, a policy of incentives that is suitable to the use of biofuels should take into account the economic, social, and environmental costs that its entry into the market entails. Likewise, biofuels investment projects should hold as basic precepts not deforesting, not burning down the forests, acting within the legal framework, and respecting the rights of local communities.[82]

X. LEGAL DIFFERENCES BETWEEN THE FOREST AND AGRARIAN SYSTEMS

Similar to the differences that distinguish forest activities from agrarian activities on the technical level, there exists a different legal treatment for each system. The Political Constitution of Peru provides in Article 66 that the renewable and nonrenewable natural resources constitute the nation's heritage, that the State is sovereign in its use of them, and that Organic Law establishes the conditions for their utilization. In a complementary fashion, Law 26821, *Organic Law on the Use of Natural Resources*, notes that water, hydrocarbons, minerals, biological diversity (species of flora, fauna, and microorganisms), and lands with the larger capacity for agriculture, cattle, forestry, and protection, among others, are considered natural resources.[83] Likewise, the cited regulation establishes that concessions constitute empowering titles for the use of natural resources: *"the concession, approved by special laws, grants to the concessionaire the right to sustainably use the natural resource awarded . . . The concession grants to its holder the right to use and enjoy the natural resource awarded and consequently, the ownership of the fruits and products extracted."*[84]

[79] FAO. *"El Estado Mundial de la Agricultura y la Alimentación"* [The State of the World's Agriculture and Diet]. FAO. Rome. 2008.
[80] Dourojeanni, Marc. et. al. "*Amazonía Peruana en el 2021"* [The Peruvian Amazon in 2021]. Pronaturaleza. 2009. p. 114.
[81] Castro Pareja, Paula. *"Estudio sobre la situación de los biocombustibles en el Perú"* [Study on the State of Biofuels in Peru]. Soluciones Prácticas ITGD [Practical Solutions ITGD]. p. 38.
Available at: http://www.cedecap.org.pe/uploads/biblioteca/48bib_arch.pdf
[82] World Rainforest Movement. Op. Cit. 2006. p. 63
[83] Article 3 of Law 26821, *Organic Law on the Use of Natural Resources*.
[84] Article 23 of Law 26821, *Organic Law on the Use of Natural Resources*.

Additionally, Law 27308, *Forest and Wild Fauna Law*, defines forest resources as being composed of *"the natural forests, forest plantations and lands whose principal capacity is for forest production and protection, and the other wild components of emergent terrestrial and aquatic flora."*[85]

The use of forest resources is subject to the system of concessions and in accordance with what is noted by the Constitutional Court of Peru in the Exp. Nº 0003-2006-PI/TC LIMA, the sustainable use of forest resources, by being natural resources and the nation's heritage, cannot be separated from the national interest and the common good, and it is thus forbidden to own them as private property.[86]

While agricultural diversity and lands whose principal capacity is for agriculture are considered to be natural resources, they are not subject to a concession system but rather, the Political Constitution of Peru designates a different legal treatment for them. To that end, Article 88 establishes that *"the State preferentially supports agrarian development. It guarantees the right to ownership of the land, privately or communally . . ."* Thus, the individual or communal ownership schema is reserved for agriculture as a way to promote and support private investment in the agrarian sector. Complementarily, the First Final Provision of Law 26821, *Law on the Sustainable Use of Natural Resources*, establishes that *"cultivated or domesticated species of flora and fauna are governed by an ownership system in accordance with the Law and within the limitations which it imposes."*

Consequently, as *Elaeis guineensis* is an agricultural species, it is cultivated on lands whose principal capacity is for agriculture and which are awarded in private ownership. Thus, we find that small producers of palm must have ownership titles in order to access technical and financial assistance programs promoted by the State and international cooperation, above all when it involves the granting of credit.[87] Thus, to date in Peru there are approximately 20,000 hectares planted with palm that are owned by small and medium-size farmers.[88]

In terms of large palm cultivation companies, in 1982, by means of Supreme Decree 047-82-AG, the Palmas del Espino, S.A. company was awarded 8,486 hectares 8,700 m² of lands in the district of Tocache and Uchiza, province of Mariscal Cáceres, department of San Martín, for the production of oil palm.[89] Likewise, the General Office on Agrarian Reform and Rural Settlements was authorized to grant the respective Ownership Title.[90] Currently, Grupo Palmas del Espino has approximately 15,000 hectares planted with oil palm,[91] of which 7,000 hectares were acquired from the Peruvian State in 2006 through its subsidiary Agropecuaria del Shanusi, another 3,000 hectares were acquired in the Caynarachi Valley in 2003 to develop the Palmas del Oriente project; likewise, another 6,000 hectares for the Palmas de Caynarachi project are in the process of being legalized.[92] These acquisitions were carried out under the protection of Legislative Decree 653, *Law on the Promotion of Investments in the Agrarian Sector*, in August 1991 and its regulation, approved by Supreme Decree 048-91-AG.[93]

[85] Article 2 of Law 27308, *Forest and Wild Fauna Law*. It should be noted that the Ruling on Bill 4141/2009-PE, *Forest and Wild Fauna Law*, establishes a definition similar to "forest resources," differing in that it specifies that lands whose principal capacity is for forest use or protection, with or without wooded cover, are also forest resources. It adds that the genetic diversity of emergent terrestrial and aquatic flora is also considered a forest resource.

[86] DAR. *Hechos y aspectos vulneratorios de los Decretos Legislativos Nºs 1090 y 1064* [Facts and Aspects of Legislative Decrees 1090 and 1064 which Violate Rights]. DAR. 2009. p. 5

[87] Castro Pareja, Paula. Op. cit. pp.73 and 74.

[88] http://www.palmas.com.pe/preguntas-frecuentes

[89] Article 1 of Supreme Decree 047-82-AG.

[90] Article 2 of Supreme Decree 047-82-AG.

[91] http://www.palmas.com.pe/preguntas-frecuentes

[92] http://www.palmas.com.pe/preguntas-frecuentes

[93] http://www.palmas.com.pe/preguntas-frecuentes

In view of the legal framework for the agricultural system, as well as the current panorama of land tenure in oil palm cultivation, we would like to highlight that classifying the cultivation of oil palm as forest plantations would be unconstitutional, given that it would permit changes in the use of lands suitable for forestry and protection in order to introduce the cultivation of oil palm.

XI. APPLICABLE LEGAL SYSTEM FOR THE CULTIVATION OF *Elaeis guineensis*

The First Final Provision of Law 26821, *Law on the Sustainable Use of Natural Resources*, establishes that *"cultivated or domesticated species of flora and fauna are governed by an ownership system in accordance with the Law and within the limitations which it imposes."* This regulatory precept highlights the legal separation that exists between the applicable systems for forestry and agrarian activities, respectively, given that, as we have pointed out, agricultural resources are subject to private ownership while the use of forest resources is subject to the concession system.

In that context, a systematic interpretation of Law 26821, *Law on the Sustainable Use of Natural Resources*, and Law 27308, *Forest and Wild Fauna Law*, permit us to determine that forest plantations are those developed by means of establishing an arboreal and bushy cover in areas primarily suitable for forestry through the utilization of forest species.

Consequently, **given that *Elaeis guineensis* is a domesticated species, it should not be governed by forest regulations; it does not qualify as a forest species and cannot be considered for the purposes of determining the establishment of forest plantations through afforestation and/or reforestation activities on forest lands or those meant for protection. Likewise, the deforestation of natural forests should not be promoted in order to establish oil palm.**

As such, Article 11 of the Ruling of Bill 4141/2009-PE should not be modified in terms of where it establishes that *"Neither agro-industrial nor biofuels crops are forest plantations,"* excluding oil palm from the classification of forest species.

Consequently, given that *Elaeis guineensis* is an agricultural species and its cultivation constitutes it as an agro-industrial crop (intended for the production of foodstuffs, cleaning products, and cosmetics) and also as a biofuel crop (utilized in the production of biodiesel), it cannot be classified as a forest species while its cultivation is not considered to be an ecosystem or a forest plantation.

XI. POLICIES PROMOTING FORESTRY ACTIVITIES AND INTERNATIONAL COMMITMENTS

The country's current regulatory framework for the promotion of afforestation, reforestation, and agroforestry activities sets out the management of forest resources as an alternative to sustainable development, diversity conservation, and watershed protection, and presents the following development:

- In January 2005, Supreme Decree 003-2005-AG was published, declaring the reforestation of lands primarily suitable for forestry use and for protection having no vegetative cover or very little arboreal cover to be in the national interest.

- In December 2005, the National Reforestation Plan was published; among its objectives was to contribute to sustainable development in priority areas with potential for afforestation or reforestation, and to that end it established a classification of three priority programs: Program 1 – Forest Plantations with Commercial and/or Industrial Purposes; Program 2 – Forest Plantations for Environmental Protection and Watershed Management Purposes; and Program 3 – Strategic Management for Competitiveness.

- In July 2006, Law 28852, *Law on the Promotion of Private Investment in Reforestation and Agroforestry*, was published. It declared private investment in reforestation activities with forest plantations to be in the national interest, as well as agroforestry activities and environmental services. This regulation regulates the awarding of 60-year concessions through public auction lands of up to 10,000 hectares whose primary use is forestry and have no forest cover and/or uncultivated lands owned by the State.

This group of regulations seeks to reinforce afforestation and reforestation activities which are clearly independent of agricultural activity, being fundamental forest actions for the conservation and recuperation of the national forest wealth. Thus, the policies supporting forestry and agriculture, respectively, are officially excluded. This legal distinction is sustained by the existing technical differences between both systems.

Thus, it is important to mention that given that oil palm is not a forest species, it is not benefitted by the regulations promoting afforestation and reforestation. As such, it is not legally viable to provide concessions of lands principally suited for forestry and having no forest cover and/or uncultivated State-owned lands for planting oil palm, in accordance with what is provided by Law 28852, *Law on the Promotion of Private Investment in Reforestation and Agroforestry*, and the related regulations.

On a related note, it is important to remember that the Peruvian State is a signatory to a series of international conventions and treaties containing specific commitments aimed at conserving natural biological diversity, as well as the integrity and function of natural ecosystems, principally tropical forests.[94]

[94] Among them, we can mention the following: United Nations Framework Convention on Climate Change, approved by Legislative Resolution 26185 and the Kyoto Protocol to the United Nations Framework Convention on Climate Change, approved by Legislative Resolution 27824; International Convention to Combat Desertification in Countries Affected by Severe Drought or Desertification, Particularly in Africa, approved by Legislative Resolution 26536; Convention Concerning the Protection of the World Cultural and Natural Heritage, approved by Legislative Resolution 23349; Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, approved by Supreme Resolution 938; Convention on Biological Diversity (CBD), approved by Legislative Resolution 26181; Decision V/6 of the Conference of the Parties to the Convention on Biological Diversity in the Fifth Meeting Held at Nairobi, Kenya May 15-26, 2000; Regional Biodiversity Strategy for the Tropical Andean States, approved by Decision 523-CAN, and the Regional Biodiversity Program of the Andean-Amazon Regions of the Member Countries of the Andean Community (BioCAN), approved by Decision 729-CAN; Cartagena Protocol on Biosafety to the Convention on Biological Diversity, approved by Legislative Resolution 28170; World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures,

Among said obligations, Article 18.3.2 of the Protocol Amendment to the Peru-United States Free Trade Promotion Agreement[95] determines:

> *"2. The Parties recognize that it is inappropriate to promote commerce or investment by means of debilitating or reducing the protections contained in their respective environmental legislation. Consequently, one Party shall not render ineffective or repeal, nor offer to render ineffective or repeal, said legislation in such a manner as to debilitate or reduce the protection granted by that legislation such that it affects commerce or investment between the Parties."*[96]

According to what has been declared, the plan to incorporate the cultivation of *Elaeis guineensis* into forest legislation not only constitutes a threat to the conservation and integrity of tropical forests, but also a weakening of forestry legislation which leads to the lack of compliance with international environmental and trade agreements and treaties to which the Peruvian State is a party.

CONCLUSIONS AND RECOMMENDATIONS

- Agriculture consists of a series of cultural practices entailing ways of manipulating environmental conditions for the purpose of controlling ecological variables[97] in order to produce domesticated crops primarily for alimentary and/or agro-industrial purposes. Because they are domesticated, agricultural varieties require special care in terms of shade, humidity control, soil preparation, provision of nutrients, elimination of natural competitors, etc.

- Agriculture consists of a set of non-intensive silvicultural practices aimed at conserving and sustainably using the goods and services provided by the natural forest ecosystems: forests, scrubland, pasture, etc. Forest species are characterized by being intrinsically wild and by their capacity to naturally reproduce.

- *Elaeis guineensis* (Arecaceae) is a domesticated species. The first commercial plantations were established in 1911 in Indonesia and 1914 in Malaysia.[98] In contrast to other wild species of the Aracaceae family and natives of Amazonian tropical forests, *Elaeis guineensis* is an exotic domesticated species, and as such it is an agricultural crop and not a forest resource.

- Natural forests, including forest plantations, differ from the monocultures of domestic species in that the former constitute functional ecosystems with a diverse floristic and age structure and composition in the medium and upper canopies as well as in the undergrowth and a tendency toward complexity and diversification.[99] By contrast, the monocultures of species such as *Elaeis*

approved by Legislative Resolution 26407 and the International Plant Protection Convention, approved by Law Decree 21175 and its amendments approved by Legislative Resolution 27198 and ratified by Supreme Decree 063-99-RE; ILO Convention 169 on Indigenous and Tribal Peoples in Independent States, approved by Legislative Resolution 26253; Cooperation Agreement Regarding the Conservation and Sustainable Use of the Wild Flora and Fauna in the Amazonian Territories of the Republic of Peru and the Federative Republic of Brazil, approved by Supreme Decree 112-2003-RE and the Agreement on the Conservation of the Flora and Fauna of the Amazonian Territories of the Republic of Peru and the Federative Republic of Brazil, approved by Law 21670; Agreement on the Conservation of the Flora and Fauna of the Amazonian Territories of Peru and Colombia, approved by Law Decree 23081; Chapter 18 and Annex 18.3.4 of the Peru-United States Trade Promotion Agreement, approved by Legislative Resolution 28766 and ratified by Supreme Decree 030-2006-RE and amended by the Amendment Protocol approved by Legislative Resolution 29054 and ratified by Supreme Decree 040-2007-RE, among others.

[95] Signed in the city of Washington, DC on June 24, 2007.

[96] Underlining added.

[97] Casas, Alejando and Caballero, Javier. *Ciencias* [Science]. Nº 40 October-December. 1995. p. 46. http://www.ejournal.unam.mx/cns/no40/CNS04005.pdf

[98] Fedepalma. *La agroindustria de palma de aceite en Colombia* [The Agroindustry of Oil Palm in Colombia]. Fedepalma. p. 5 http://www.fedepalma.org/documen/2007/agroindustria_palma.pdf

[99] World Rainforest Movement. Montevideo. 2003. p. 12

guineensis are characterized by the need to completely remove the forest cover prior to its planting, its dependence on produced seeds, plowing and leveling of the soil, seasonal programming of sowing and harvesting, age homogeneity, controlling the planting density, irrigation, and other intensive agricultural practices for achieving the projected production.[100]

- Since 1982, the cultivation of oil palm was classified as an agro-industrial activity in accordance with Supreme Decree 068-82-ITI-IND and the provisions of Legislative Decree 2 of 1980.

- The cultivation of oil palm is considered to be an agro-industrial and biofuels crop, given that Legislative Decree 2, *Law on Agrarian Promotion and Development*, and Supreme Decree 068-82-ITI-IND note the agricultural origins and agro-industrial use of oil palm. Additionally, according to what is established by Law 28054, *Law on the Promotion of the Biofuels Market*, and Supreme Decree 021-2007-EM, *Regulation on the Marketing of Biofuels*, biofuels are obtained from raw materials of agricultural origin; among them, they define biodiesel as being able to be obtained by mixing diesel with oleaginous substances such as palm oil.

- The promotion and development of economic activities, such as the marketing of biofuels, should not be in opposition to the exercise of fundamental rights, such as the right to an adequate, balanced environment. This entails a special duty on the part of the State as it promotes policies and executes actions of economic promotion, given that these should not contravene its obligation to preserve the environment.

- The monoculture of agro-industrial and/or biofuel crop species can generate profound environmental impacts as well as social conflict. It is important to note cases in countries such as Colombia, where in the department of Chocó, various Afro-descendant communities have been suffering forced displacements, the contamination of their territories, and detriments to their livelihoods.

- In Indonesia, the development of the palm industry is associated with assassinations, human rights violations, the destruction of communities and local cultures, labor disputes, corruption in the various spheres of government, principally as related to the awarding of lands, as well as an increase in poverty in indigenous communities arising from their decreasing access to resources such as foodstuffs and lumber.[101]

- In Peru the communities of Loreto and San Martín are demanding their rights to ownership of the lands awarded to agricultural companies dedicated to oil palm cultivation.[102] In its Report on Social Conflicts Number 72 (February 2010), the Human Rights Ombudsman's Office reported that the population of Barranquita in the region of San Martín opposes the activities of the Agropecuaria Caynarchi company, denouncing the latter's deforestation of the forests in the zone as it is not complying with the provisions of Resolution 023-2010-GRSM/DRASAM of the Regional Agrarian Office of San Martín which suspended changes in soil use.

- One of the principal uses of oil palm is biofuels production, given the oft-stated hypothesis that biofuels are a better alternative to the use of fossil fuels. Nonetheless, it is a myth that the use

[100] Raygada Zambrano, Ruperto. *Manual Técnico para el Cultivo de la Palma Aceitera* [Tecnical Manual for the Cultivation of Oil Palm]. DEVIDA. Lima. 2005. pp. 35 and 58
http://www.devida.gob.pe/Documentacion/documentosdisponibles/Manual%20Palma%20Aceitera.pdf

[101] World Rainforest Movement. *"Oil Palm"*. World Rainforest Movement. Montevideo. 2006. p. 62
Available at: http://www.wrm.org.uy/plantations/material/Palm2.pdf

[102] http://www.sanmartinenlinea.com/notas/noticias.php?id=1393

of biofuels is per se energy-efficient and environmentally sustainable; rather, there are many determining factors among which one of the most risky is the change in the use of forest soil. One study carried out in Peru concluded that deforestation contributed 47% of Peru's emissions in 2007[103] and that one of the principal causes of deforestation is the opening of agricultural lands.

- Agricultural activities and lands suitable for agricultural use are governed by the provisions of Article 88 of the Political Constitution of Peru. On the other hand, the use of forest resources is subject to the provisions of Article 66 of the Political Constitution of Peru and related regulations. Given that *Elaeis guineensis* is an agricultural species, its cultivation is governed by the regulations for agricultural production. Despite this, continuous irregularities in the technical determination of the principal suitability of forest areas' soil facilitates the destruction of natural forests and the trafficking of lands that are suitable for forestry in order to convert them to agricultural uses.

- Given that *Elaeis guineensis* is an agricultural species and its cultivation constitutes it as an agro-industrial crop (intended for the production of foodstuffs, cleaning products, and cosmetics) and also as a biofuel crop (utilized in the production of biodiesel), it cannot be classified as a forest species nor can its monocultures be considered forest plantations.

- Consequently, Article 11 of the Ruling of Bill 4141/2009-PE correctly specifies and distinguishes that ***"neither agro-industrial nor biofuels crops are forest plantations,"*** among them, oil palm.

[103] Dourojeanni, Marc. et. al. "*Amazonía Peruana en el 2021"* [The Peruvian Amazon in 2021]. Pronaturaleza.2009. p.114.