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TOWARD ZERO-DEFORESTATION OIL PALM IN PERU: UNDERSTANDING ACTORS, MARKETS, AND BARRIERS

FOREST CARBON, MARKETS AND COMMUNITIES (FCMC) PROGRAM

MARCH 2015

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The U.S. Agency for International Development (USAID) launched the Forest Carbon, Markets and Communities (FCMC) Program to provide its missions, partner governments, and local and international stakeholders with assistance in developing and implementing REDD+ initiatives. FCMC services include analysis, evaluation, tools, and guidance for program design support; training materials; and meeting and workshop development and facilitation that support U.S. Government contributions to international REDD+ architecture.

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ACRONYMS AND ABBREVIATIONS

ACEPAT	Asociación Central de Palmiculltores de Tocache
ARA	Regional Environmental Authorities
ANGR	Asamblea Nacional de Gobiernos Regionales
BP	British Petroleum
CEPLAN	Centro Nacional de Planeamiento Estratégico
CGIAR	Consultative Group for International Agricultural Research
CGF	Consumer Goods Forum
CORPOICA	Corporación Colombiana de Investigación Agropecuaria
CPO	Crude Palm Oil
DERN	Dirección de Evaluación de Recursos Naturales
DGAAA	Direccion General de Asuntos Ambientales Agrarios
DGOT	General Directorate of Territorial Planning
DICC	Direccion de Informacion y Control
EIA	Environmental Impact Assessment
EMDEPALMA Anónima	Empresa para el Desarrollo y Explotación de la Palma Aceitera Sociedad
FAO	Food and Agriculture Organization
FAOSTAT	Statistics Division of the United Nations Food and Agriculture Organization
FCMC	Forest Carbon, Markets and Communities Program
FFB	Fresh Fruit Bunches
FPIC	Free, Prior and Informed Consent
FREDEPALMA-SM	Federación Regional de Palma Aceitera San Martín
GIS	Geographical Information System
HCS	High Carbon Storage
HCV	High Conservation Value
IADB	Inter-American Development Bank
IBC	Instituto del Bien Comun
IIAP	Instituto de Investigaciones de la Amazonia Peruana

IIASA	International Institute for Applied Systems Analysis
INDECOPI	Peruvian consumer defense institute
INDUPALSA	Industria de Palma Aceitera de Loreto y San Martín SA
INEI	Instituto Nacional de Estadística e Informática
INIA	Instituto Nacional de Innovacion Agraria
INRENA	Instituto Nacional de Recursos Naturales
JARPAL	Asociación de Productores Jardines de Palma
LCC	Land Capability Classification
MEF	Ministry of Finance
MINAGRI	Ministry of Agriculture
MINAM	Ministry of Environment
NAMA	Nationally Appropriate Mitigation Actions
NGO	nongovernmental organization
OLPESA	Oleaginosas del Perú S.A
ONERN	Oficina Nacional de Evaluacion de Recursos Naturales
PO	Palm Oil
POT	Land Use Plan
PNCB	National Program for Forest Conservation
REDD+	Reducing Emissions from Deforestation and Degradation
RSPO	Roundtable for Sustainable Palm Oil
SAC	Sociedad Anonima Cerrada
SERFOR	Forestry Service
SI	Suitability Index
SNIP	National Public Investment System
SPDE	Sociedad Peruana de Ecodesarrollo
TFA 2020	Tropical Forest Alliance 2020
USDA	United States Department of Agriculture
UNODC	United Nations Office on Drugs and Crime
USAID	United States Agency for International Development
WWF	World Wildlife
ZAE	Agro-ecological Zoning

ZDPOF	Zero-Deforestation Palm Oil Fund
ZEE	Ecologic-Economic Zoning

EXECUTIVE SUMMARY

Oil palm is a crop with the potential to generate significant economic and social prosperity in the Peruvian Amazon (United Nations Office on Drugs and Crime [UNODC], 2013). Ensuring greater equity in participation and the distribution of this new prosperity—while avoiding the negative impacts on local populations and indigenous people that have occurred in other countries where palm oil plantations are expanding—is a key challenge for the Peruvian government and its development partners (Rival and Levang, 2014). How the palm oil sector evolves in Peru, in both scale and producer type, will depend on market forces and national policy enforcement. First and foremost on the policy front is the issue of whether the Peruvian government will continue to allocate forested Amazonian public lands for the establishment of industrial-scale palm oil plantations. This practice has been described in the press as the consequence of developers who take advantage of 'loopholes' in the current regulatory system. However, an alternative explanation is to understand it as a policy to promote the development of an industry that the Ministry of Agriculture and other sectors of government have declared as strategic. If that policy continues, large-scale producers are likely to increasingly dominate the palm oil industry because of their competitive advantage linked to economy of scale and access to credit and capital. Whether this sector is dominated by one, two, or more corporate groups is also unresolved; if the Grupo Melka, backed by Malaysian capital, succeeds in establishing successful plantation/mill complexes, then other groups might be persuaded to try as well.

If large-scale forest clearing is ended, then the growth of the palm oil industry will depend on increasing yield and plantation expansion by the small and medium-sized independent growers who own land on landscapes already affected by settlers and deforested to a significant extent. As estimated in this report, the land area available for zero-deforestation palm oil development is approximately 1 million hectares. However, corporate, medium, or smallholder growers' development of new plantations in deforested and degraded areas is highly unlikely to take place without adequate financial incentives and strengthened land use governance in Amazon regions. This obstacle is due to the fact that development of plantations on deforested and degraded lands implies higher costs than development on primary forests. At a minimum, the additional costs are estimated to be on the order of US$2,000 per hectare and are related to: (1) land purchase and aggregation; (2) land restoration/ fertilization; and (3) lost income from timber sales arising when clearing primary forest.

In 2013, Peru had 58,000 hectares of palm oil plantations, of which 38,000 had entered the production stage, producing an estimated 91,000 ton of Crude Palm Oil (CPO). Corporate plantations accounted for approximately 40 percent of planted area and 60 percent of CPO production, while small and medium-sized growers accounted for 60 percent of planted area and 40 percent of CPO production. The majority of smallholders have received development support but are now independent growers, while a minority are supported outgrowers. Corporate plantations in Peru have proven to be high yield (4-5 T/ha CPO) but have resulted in high deforestation, while smallholders to date have achieved lower yields (1-2 T/ha CPO) but resulted in lower deforestation, as their expansion has taken place on lands that previously have been degraded or deforested to a larger extent (Gutierrez-Velez et al., 2011).

All CPO is consumed domestically, with no exports at present. Despite growth in oil palm cultivation, Peru remains a significant importer of vegetable oil. Total vegetable oil imports were reported at 400,000 tons in 2013, approximately twice the levels reported for 2000, equivalent to US$300 million at current prices. Soy oil from Argentina and Brazil is the main import (approximately 80 percent of imports, equivalent to 320,000 tons) and the main competitor for locally produced palm oil. It is

important to note the average oil productivity of soy plantations is 0.6 T/ha, and so approximately 530,000 hectares of land are needed to satisfy Peruvian vegetable oil import demand. Therefore, increased CPO production in the Peruvian Amazon could not only significantly reduce Peru's vegetable oil balance-of-trade deficit; it could also reduce the country's ecological footprint on Argentinian and Brazilian chaco and forest ecosystems that are being deforested currently for soy plantations.

Specific proposed solutions to overcome barriers to zero-deforestation palm oil production in Peru are presented in the following table:

TABLE 1. SPECIFIC PROPOSED SOLUTIONS TO OVERCOME BARRIERS TO ZERO DEFORESTATION PALM OIL PRODUCTION IN PERU

Barrier	Proposed solutions
1 - Land Use Regulations and Governance	
Limited institutional and law enforcement capacity compounded by high levels of corruption in regions suitable for palm oil cultivation.	• In coordination with the relevant authorities, support a moratorium on the allocation of state or undefined tenure land to agro-industrial projects until Principal Capacity Land Use maps exist for the Amazon regions. • Invest in strengthening the operational capacity of regional land use and natural resource management institutions, including the recently created Regional Environmental Authorities (Autoridades Regionales Ambientales [ARA]). This strengthening should be synergistic with other Peruvian Government land use governance initiatives currently underway and strengthen law enforcement and provenance tracking systems at the local level. • Support transparency by making land zoning and tenure information available in Geographical Information System (GIS) format on open access web portals, like Global Forest Watch or Google Earth Engine.
Unclear land rights and land tenure	• Support land titling initiatives in the Amazon, especially in regard to indigenous people and local populations in the regions of Ucayali and Loreto, to reduce land speculation and the questionable allocation of primary forest lands by regional governments. Synergies with the recently approved Inter-American Development Bank (IADB)-funded Land Cadastre and Titling Project (PE-L1026) should be explored. This work should take place in coordination with civil society organizations, such as the Instituto del Bien Comun (IBC) and the Centro para el Desarrollo del Indigena Amazonico (CEDIA), which have long standing expertise in indigenous community and local people land titling.
Complex, contradictory regulatory framework regarding agriculture and forestry	• Support coordination between the Forestry Service (SERFOR) , the Directorate of Agricultural Competitiveness at the Ministry of Agriculture (MINAGRI) and the National Program for Forest Conservation (PNCB) at the Ministry of Environment (MINAM), specifically in regard to the agricultural landscape and palm oil Nationally Appropriate Mitigation Actions (NAMA) currently in

Barrier	Proposed solutions
	development.
Business and financial incentives	
Developing plantations on deforested and degraded lands implies higher costs than development on primary forests.	• The additional costs of developing palm oil on degraded and deforested lands should be studied in greater detail, and a financial incentives program for the restoration of these landscapes should be made available to palm oil growers. Incentives could potentially be linked to biochar and biofertilizer production programs from palm oil processing facilities. • This work should build on the Peruvian Ministry of Finance (MEF) and its development partners' ongoing activities to mainstream reforestation and ecosystem restoration projects in the National Public Investment System (SNIP).
Smallholders' limited access to credit and financial services that encourage ecological intensification and environmental stewardship	• Develop and implement a Zero-Deforestation Palm Oil Fund (ZDPOF) that would work through Intermediary Financial Institutions to achieve increased yields (from 2T/ha to 4T/ha average), ecological intensification, and environmental stewardship by small and medium size producers. ZDPOF investments would aim to: a) Procure high quality seed (an investment of US$1 per plant produces returns of US$1,000+ over plant lifetime). b) Optimize fertilizer application (which accounts for 50-60 percent of operating costs in industrial plantations). c) Implement harvest best practices to reduce FFB spoilage. • Disbursements by ZDPOF would be linked through contract to the maintenance of primary forests, especially High Conservation Value (HCV) and High Carbon Storage (HCS) forests as Killeen (2011) proposes, with third-party monitoring of compliance.
Limited smallholder-corporate producer cooperation	• Support corporate palm oil processing actors (e.g., Industrias del Espino and Industrias del Shanusi) to invest in the productive capacity and expansion of independent producers, including both small and medium-sized producers. The current association of Industrias del Espino with FREDEPALMA-SM could be a useful example from which to draw lessons.
Inter-sectorial coordination and knowledge base	
Absence of Principal Land Use Capacity maps for the Amazon regions.	• Support the development of Principal Land Use Capacity maps between the national and regional governments (possibly using one region of palm oil interest such as Ucayali or Loreto as a pilot) and encourage its integration in the Agro-ecological Zoning (ZAE) and Ecologic-Economic Zoning (ZEE) processes.

Barrier	Proposed solutions
Limited inter-sectorial and value chain actor dialogue and consensus building.	• Support engagement by different sectors of government and all palm oil value chain actors by supporting participatory fora like the Roundtable for Sustainable Palm Oil (RSPO) in Peru.
Limited pure and applied research into sustainable palm oil production and value chains.	• Strengthen collaboration between international (e.g., Consultative Group for International Agricultural Research [CGIAR]); regional (e.g., Corporación Colombiana de Investigación Agropecuaria [CORPOICA], Colombia); and national (e.g., Instituto Nacional de Innovacion Agraria [INIA]) agricultural and forestry research institutions. Emphasis should be placed on linking current research agendas and investments, including INIA's US$100-million IADB-funded agricultural innovation program, which is in initial stages of execution.

Based on the analysis and the barriers for deforestation-free oil palm expansion detailed in this report, we suggest a step-wise, concerted approach for USAID's and its Tropical Forest Alliance 2020 (TFA 2020) partners' potential investment in the palm oil sector in Peru:

1. Support a moratorium on the allocation of forested lands to agro-industrial projects, including palm oil, until Principal Land Use Capacity maps have been updated for all Amazon regions of Peru and invest in strengthening land use regulations and governance within the context of the ongoing national decentralization process in order to help resolve current conflicts arising from palm oil expansion in San Martin, Loreto, and Ucayali regions.
2. Develop and implement a ZDPOF to incentivize increased yield and clustering by smallholder and independent medium-sized producers and encourage expansion of their plantations on suitable deforested and degraded landscapes in coordination with associative or corporate palm oil processing facilities that have committed to buy increased production from ZDPOF investments.
3. Accompany the above measures with increased inter-sectorial dialogue between all palm oil value chain actors through the RSPO and strengthened technical assistance and research in order to build the local knowledge base upon which a sustainable and climate resilient palm oil industry depends.

In order to ensure success, it would be necessary to convene broad political and societal support of the above approach and, with this backing, to secure a long-term commitment (10-20 years) from the Peruvian government and its development partners.

1.0 INTRODUCTION

The Forest Carbon, Markets and Communities (FCMC) Program is designed as a strategic global United States Agency for International Development (USAID) program that supports the U.S. Government's National Reducing Emissions from Deforestation and Degradation (REDD+) Strategy by working on issues of forestry and climate change, specifically focusing on assistance in the design and implementation of activities related to international efforts for REDD+. Large, commercial agriculture and timber enterprises are the principal agents of tropical deforestation in a number of countries, with four key commodities of soy, beef, palm oil, and pulp and paper being key drivers of tropical deforestation globally. TFA 2020 is a public-private partnership with the goal of reducing tropical deforestation associated with these key global commodities. TFA 2020 was born out of discussions between the U.S. Government and the Consumer Goods Forum, a network of more than 400 companies with annual sales exceeding US$3 trillion.

Reducing deforestation associated with oil palm will require a change in the production practices of small-, medium-, and large-scale growers, increased demand for sustainably produced products, improved land tenure and governance, and appropriate monitoring and accounting to ensure that greenhouse gas emissions from forests have been reduced. Reducing deforestation from palm oil supply chains will require producers to shift to intensifying production on existing land and/or expanding production to degraded or non-forest land. Changing production practices requires upfront costs to farmers and/or lower returns during the period of transition from the old practice to the new. For example, new cultivars of oil palm can achieve higher yields, but it takes several years for a new plantation to reach full production. For this reason, technical assistance, adequate enabling conditions, and interim financing from loans or grants are often a prerequisite for catalyzing change.

1.1 BACKGROUND

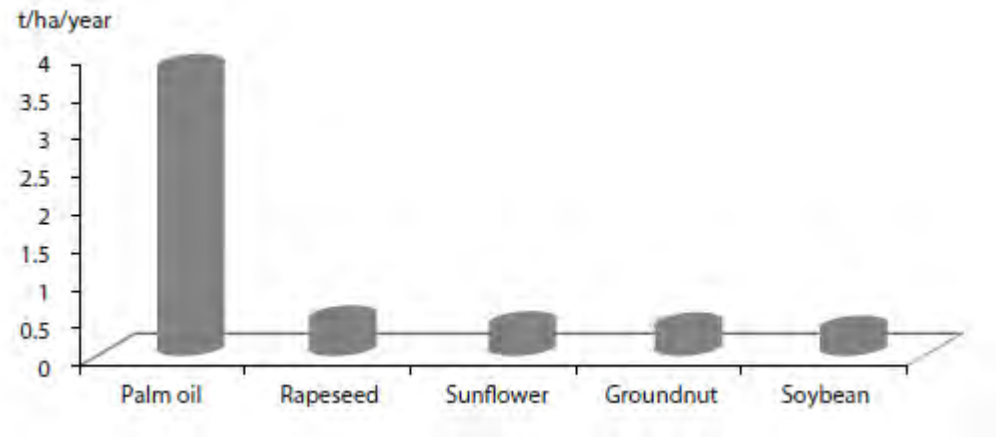
Oil palm is a tropical tree (*Elaeis sp.*), highly suited to cultivation in the ecological and climatic conditions of tropical rainforest. Plantation expansion has occurred mainly on land that previously supported primary tropical forest and for this reason has been an important driver of tropical forest degradation and deforestation in many tropical countries for the past 30 years.

Two species of *Elaeis* are exploited for their oils. The most common, *E. guineensis,* is of West African origin. The other, *E. oleifera,* is of Amazon basin origin. These two species produce oil of very different chemical composition: the oil extracted from *E. oleifera* is richer in unsaturated fatty acids. It is possible to hybridize the two species; breeders are interested in this prospect because *oleifera* has morpho-agronomic features that could improve the African species, the main species cultivated today. *E. oleifera* also demonstrates resistance to diseases such as bud rot, which have had a dramatic impact in Latin America. In this region, planters have had no alternative but to create hybrid plantations (Rival and Levang, 2014).

In 2010 the cultivated extent of oil palm reached 14.9 million hectares globally, showing an annual growth rate of 3.9 percent between 2001 and 2010 – significantly higher, for example, than the annual growth rate of soybean at 2.9 percent for the same period (Statistics Division of the United Nations Food and Agriculture Organization [FAOSTAT], 2013). Rival and Levang (2014) estimate that 18 million hectares were under cultivation globally by 2014.

Palm oil and kernel oil, extracted from the pulp and kernel of the oil palm fruit respectively, are versatile commodities used in a multitude of products ranging from cooking oil and chocolate bars to soap, toothpaste, and cosmetics; increasingly, palm oil is viewed as an important feedstock for the biofuel and chemical industries. Thirty years ago palm oil represented less than 2 percent of global consumption of fats and oils; today that figure stands at 37 percent, having displaced soy as the world's most important vegetable oil in 2006 (FAOSTAT, 2013). Palm oil has grown to dominate the vegetable oil market, largely because vertically integrated corporate producers have developed a very cost-efficient agricultural production system that far exceeds the productivity of other oil-producing crops (Figure 1). Long-lived trees produce fatty fruits and oily seeds that are cultivated in industrial plantations with rigorous logistical systems, often integrated to processing facilities fueled by biomass energy. This business model, perfected in Southeast Asia, is now being exported to Latin America and Africa, where it is generating significant economic incentives that increase deforestation.

FIGURE 1. OIL YIELD (T/HA/YEAR) OF THE MAIN OIL PRODUCING CROPS



Source: reproduced from Rival and Levang, 2014

The social, economic, and environmental benefits and costs of oil palm are multiple, giving rise to a significant debate backed by influential constituencies (Rival and Levang, 2014). Reconciling the palm oil debate is not only important in its own right, but also because it encapsulates the challenges of an even larger issue at the heart the global economy: Can the planet feed 10 billion people? Can society accomplish this goal while still mitigating the worst impacts of global climate change and still conserving a significant part of the planet's natural heritage and biodiversity? What are the best economic and finance models to achieve this?

Currently Peru is a minor actor in the global palm oil industry, producing less than 0.1 percent of global production; nonetheless, the issues that surround the industry are reproduced in Peru. Like many global environmental and social controversies, local and national history flavor the debate in Peru, which is waged by individuals with economic or social agendas that are distinctly Peruvian. The historical legacy of rural violence and social inequality, as well as ongoing efforts to provide alternative development options to rural communities involved in the production of illicit drugs (UNODC, 2012), make the introduction of large-scale plantation production models particularly problematic. Layered on top of that legacy are economic forces acting on a nation experiencing rapid urbanization and robust economic growth (Centro Nacional de Planeamiento Estratégico [CEPLAN], 2010). These factors foster a political awareness of the need to invest in food security (MINAG, 2001), as well as the realization that significant economic opportunities would flow from a highly efficient agricultural production model capable of displacing a significant percentage of the $300 to $400 million dollars of vegetable oil imports each year (IndexMundi, 2015). Just as the issues of biodiversity loss and climate change drive the global

debate on palm oil, these issues are increasingly being debated within Peruvian society, in part because all of the current and projected expansion of the palm oil industry will occur in the Amazon (Dammert et al., 2013a; Dammert, 2013b; CIP, 2014).

Another aspect of Peru's palm oil industry mirrors the global discussion: The organization of the supply chain and the role of large companies and small farmers. Globally, vertically integrated corporations dominate the industry because they own approximately 50 percent of plantations, as well as processing mills and refineries and, in some cases, manufacture the consumer goods that incorporate palm oil. At the same time, most of these companies also interact, and sometimes compete, with small farmers that occupy nearly an equivalent land area but have significantly lower yields[1]. Advocates for the corporate production model argue that large capital investments require a vertically integrated supply chain – because perennial plantations produce a perishable commodity over decades, while profitability is subject to shorter-term fluctuations in global commodity markets (Killeen, 2011). In contrast, social scientists and some economists argue that small- and medium-sized farmers can competitively provide feedstock to processing plants that corporations own – ensuring that a broader spectrum of society would benefit from policies that are more sustainable in their economic, social, and environmental dimensions (Rist et al., 2010; Vermeulen and Goad, 2006). The predicted increases in global palm oil consumption and the increasing scarcity of land for expansion in southeast Asia means that the palm oil producing sector increasingly seeks growth opportunities elsewhere and is investing heavily in Africa (Hoyle and Levang, 2012) and to a lesser extent Latin America, including Peru (IDL-Reporteros, 2013b).

1.2 OBJECTIVE

This paper provides an overview of the status and outlook of oil palm cultivation and palm oil production in Peru. The objective is to identify policy options and market-based approaches that address the concerns of the full spectrum of stakeholder groups that participate in the palm oil value chain in order to ensure that future palm oil production contributes to a sustainable future for the Peruvian people.

1.3 METHODOLOGY

This document is based on information obtained by two means – 1) review of technical papers, news reports, and other material accessed via the internet; and 2) interviews conducted between the 1st and 24thth October, 2014. In the latter case, interviewees were informed of the objective of the study and given an introductory letter from the study sponsor (USAID-Peru). Sources of published information are provided via footnotes and citations. Information from interviewees was summarized as notes that were shared with the interviewee to ensure that his or her views were recorded accurately.

After describing the current regulatory and administrative context in Peru, this report then describes the current status of palm oil supply by different producer groups and the demand for palm oil in the country. This description is followed by a summary of palm oil finance and an analysis of where deforestation-free palm oil could be encouraged in Peru. We conclude the paper by reviewing developments in sustainable palm oil production and making recommendations for potential governance, financial incentive, and technical assistance investments that USAID could consider in Peru.

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[1] Smallholders own approximately 30 percent of the total spatial footprint of oil palm in Malaysia (5 Mha) and 45 percent in Indonesia (7.9 Mha) (Teoh, 2010). In Thailand and West Africa, this figure is close to 90 percent. Yields from smallholders range between 1 and 3 tons of Crude Palm Oil per hectare, while yields from corporate producers are usually in the 4 to 5 ton per hectare range.

2.0 REGULATORY AND ADMINISTRATIVE CONTEXT

Three main laws and accompanying regulatory frameworks affect the palm oil sector in Peru. The most important of these—The Land and Agriculture Laws—govern land tenure and agricultural production systems, including both individual private property and communal rights. A second—The Forestry and Wildlife Law—oversees management of forest landscapes and wildlife resources. The third—The Biofuels Promotion Law—provides incentives and standards designed to promote the use and consumption of liquid biofuels. The Ministry of Agriculture and Irrigation, the Ministry of Environment, and the Regional Governments implement these laws – which requires improved coordination between these sectors, a fundamental aspect of the current decentralization process in the country.

2.1 THE LAND AND AGRICULTURE LAWS

The Political Constitution of 1993 supports the regulations governing land tenure and explicitly guarantees the property rights for land dedicated to agriculture for private individuals, communal groups and other types of associations. This fundamental legal basis is in line with the Agriculture Law of 1991[2], which replaced the Agrarian Reform Law of 1969 (DL 17716) and is further consolidated in the Land Law of 1995[3], which has several articles in support of agro-industry[4]. It reiterates the Constitution's commitment to economic pluralism and the right of all individuals to acquire and own land, including men and women, communities, and incorporated legal entities, both national and foreign. The Agriculture Law and Land Law establish norms for the use and allocation of lands located within montane cloud and lowland tropical forest regions, and are implemented by the Ministry of Agriculture and Irrigation. These regulations establish the procedures for the allocation of public lands for land areas where the 'capacidad de uso mayor de la tierra' (principal land use capacity) has been established as some form of agricultural or livestock production. These allocations range from a minimum of 10 hectares for small farmers to a maximum of 1,500 hectares for agro-industrial estates. However, it also provides for exceptions to the 1,500 hectare limit for developments that conform to strategic priorities identified by the national government (up to 5,000 hectares), or which have the support of both the national and regional governments (up to 10,000 hectares). In these areas one can legally remove the forest cover to develop annual or perennial crops or livestock. These laws are complemented by

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2 The Agriculture Law is DL N°653 – Ley de Promocion de las Inversiones en el Sector Agrario.

3 The Land Law is Ley N°26505 – Ley de Inversion Privada en el desarrollo de actividades economicas en tierras del territorio nacional y de las comunidades campesinas y nativas, and is most commonly referred to in Peru as Ley de Tierras.

4 For example, Title I, Article 2 states specifically that legal security is guaranteed for rural properties that are to be governed according to the norms and standards of the Civil Code.

Legislative decree 838[5], a regulation Congress approved in 1997 promoting the development of agricultural investments in areas at risk for terrorism or that are economically depressed. Lands identified with a principal land use capacity as forest should be governed and managed according to the laws that deal with the forest sector (see section 2.2), and forest cover maintained or restored.

2.2 THE FORESTRY AND WILDLIFE LAW

The legal framework governing forest land is currently in transition from the Forestry and Wildlife Law[6] (Ley N° 27308), approved by the Peruvian Congress in 2001, to the Forestry and Wildlife Law (Ley N° 29763) approved by the Peruvian Congress in 2011, for which regulation is in the final stages of revision. The 2001 Law establishes that public lands with a principal land use capacity as forest should be conserved in their natural state, as Bosques de Produccion Permanente (Permanent Production Forests). The conversion of those lands to agriculture is strictly prohibited, and they should be reforested if they have been previously deforested. The 2011 Law maintains that determination but amplifies the definition of principal land use capacity as "forest" to include all lands with an intrinsic value, with ecological or edaphic characteristics typical of forests, or with a capacity for the permanent and sustained production of forest goods and services. The second law also goes on to define an additional principal land use capacity category termed 'Bosques de Proteccion' (Permanent Protection), which includes lands that are ecologically or edaphically fragile and are not appropriate for timber exploitation nor eligible to be classified for uses that might lead to their conversion or alteration (deforestation for agriculture) or the removal of their soils (presumably for mining).

2.3 THE BIOFUELS PROMOTION LAW

The 2003 law governing biofuels[7] establishes the production of biofuels as a national strategic priority. This determination is made using standard economic justification (e.g., economic growth and job creation) but also includes criteria linked to climate change mitigation and to the potential of increased rural investment to provide an alternative development model that can compete with the cultivation of crops used to make illicit drugs. The law and associated regulations include measures to foster agro-industrial development in the production and transformation of biofuel feedstocks, including palm oil. Since 2010, diesel in Peru is mandated to have a 5-percent biodiesel content. The biodiesel can be of any vegetable origin and can be sourced nationally or internationally.

2.4 THE MINISTRY OF AGRICULTURE AND IRRIGATION

The Ministry of Agriculture was created in 1943 to coordinate and implement national agricultural policy. The Ministry was renamed Ministry of Agriculture and Irrigation (Ministerio de Agricultura y Riego – MINAGRI) in 2013 to better reflect the growing importance of irrigation in the Peruvian agricultural sector. MINAGRI's approach to land allocation is based on a methodology originally developed by the U.S. Soil Conservation Service in the 1930s. The term 'Clasificacion de Capacidad de Uso Mayor de la Tierra' is a close translation of the name for that system, "Land Capability Classification" (LCC: see Klingebiel & Montgomery 1991). USAID promoted this methodology for

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5 DL. 838 - Decreto Legislativo que faculta que MINAGRI adjudique predios rústicos a favor de personas y comunidades ubicadas en areas de población desplazada.

6 The Forestry and Wildlife Law (Ley Forestal y Fauna Silvestre) is most commonly referred to in Peru as Ley Forestal.

7 The Biofuels Promotion Law is Ley 28054 - Ley de Promocion del Mercado de Biocombustibles.

decades; it has contributed to the development of agricultural landscapes across Latin America. It has also been endorsed by the Food and Agriculture Organization (FAO) and is now widely disseminated as Agro-ecological Zoning (Zonificación Agro-Ecológica – ZAE; see FAO, 1997). The philosophical orientation of both the LCC and ZAE approaches is to maximize the utility of the landscape for productive activities; however, it does not incorporate environmental or social criteria and has been criticized within the Natural Resource Conservation Service of the United States Department of Agriculture (USDA) for failing to protect highly erodible lands adequately (Helms, 1992). Nonetheless, the LCC and ZAE approach often has been used as part of a comprehensive land-use planning process, which then typically informs a political process that involves consultation with local communities (see PLUS–Santa Cruz, 1996). However, that consultative approach does not seem to have been used recently in the Loreto and San Martin regions of Peru, where the normative ruling of the Capacidad de Uso Mayor as part of a land allocation process has been employed as an isolated technical procedure to permit the development of palm oil plantations on intact natural forest landscapes (Dammert, 2013a).

2.5 THE MINISTRY OF ENVIRONMENT

The Ministry of Environment was created in 2008 as the administrative entity charged with implementing the General Environment Law of 2005[8]. This law dictated the development of a decentralized land-use planning process intended to support the sustainable development of Peru's renewable natural resources. The task of overseeing and coordinating this process is given to the General Directorate of Territorial Planning (Dirección General de Ordenamiento Territorial – DGOT), an administrative unit within MINAM charged with coordinating, amongst other functions, the land-use zoning process. This process starts with the participative development of a technical study that stratifies landscapes based on climate, soil type, hydrology, biodiversity, and a range of ecosystem services and economic uses, known as the Zonificación Ecológica Económica (ZEE). The ZEE then forms the basis for the development of a Land Use Plan (Plan de Ordenamiento Territorial – POT). The POT is a technical-political document that uses the technical information of the ZEE to arrive at a practical land-use plan developed in consultation with regional and local stakeholders. It is a relatively new approach to land-use planning, which seeks to conserve nature and meet the needs of national, regional, and local community development.

MINAM's approach to land planning is based on the methodology first proposed by Amazonian soil scientist Wim Sombroek (1994), who recommended complementing the physical and crop production criteria of the ZAE with additional information related to biodiversity, watershed management, endemic diseases, mineral reserves, infrastructure, local human populations, and actual land tenure. A major characteristic of this approach is a consultation component that ensures that stakeholders contribute to the land use planning process from the beginning to end – in contrast with a public comment period, which often typifies environmental impact studies designed to facilitate the implementation of a project rather than seek substantive input on development options (FAO, 1997).

In the Peruvian Amazon, the work to develop ZEEs has been led by the Instituto de Investigaciones de la Amazonia Peruana (IIAP), an independent public research institute located in Iquitos, Peru. The scientists at IIAP have been developing the concept of the ZEE as a methodological framework and its implementation in the Peruvian Amazon for more than 20 years. The effort to elaborate ZEE's is occurring at three scales – micro (at the level of a forestry concession or community [10,000-50,000 hectares]); meso (at the level of a district or province [100,000 to 1 million+ hectares]); and macro (for

8 Ley N° 28611 - Ley General del Medio Ambiente en Perú.

a whole region, around 10 million hectares). The macro-scale study is available for San Martin (ZEE-San Martin, 2009) and Madre de Dios (ZEE-Madre de Dios, 2009), while at least 11 meso-scales studies were being evaluated in Loreto in 2013 (Info Region, 2013). Many of these studies are still being developed or are in different stages of consultation, but once completed the documents and associated maps should be legally binding – at least in Loreto (see Ordenanza Regional N° 004-2013-GRL-CR; Info Region, 2013).

2.6 MINISTRY INTERACTION AND LEGAL DEFORESTATION

The combination of the three legal frameworks described above creates the conditions for the development of a palm oil industry that includes both small farmers and corporate agro-industrial actors. It also creates a legal pathway that permits the conversion of forest landscapes to oil palm plantations for all producer groups. That pathway depends on the determination of the principal land use capacity of the land being considered for development. If that land and its soils are deemed to have a principal land use capacity as some form of agriculture (annual crops, perennial crops, or pasture), then the determination of its management is no longer governed by the Forestry and Wildlife Law, but by the Land and Agriculture Laws[9]. In practical terms, natural forest vegetation can be legally deforested and converted to an alternative land use without the intervention of MINAM. Nonetheless, MINAM has been delegated land-use planning attributes that overlap with the land use classification authority exercised by MINAGRI. The situation is not helped by the fact that the only national-level principal land use capacity maps, developed in 1981 by the National Office for the Evaluation of Natural (Oficina Nacional de Evaluacion de Recursos Naturales – ONERN), have not been distributed widely in Peru and have not been updated since. ONERN no longer exists, and its functions have been absorbed by the General Directorate of Agricultural Environmental Affairs (Direccion General de Asuntos Ambientales Agrarios – DGAAA), a relatively small unit of MINAGRI. Unfortunately, to date there has been limited inter-sectorial coordination between MINAM and MINAGRI to coordinate their land use classification and allocation processes. These differences have confused the public and seem to contribute to the misunderstandings that characterize private sector and civil society perceptions of the palm oil sector in Peru.

At least one developer, Grupo Palmas, has succeeded in obtaining permission for establishing new plantations on primary forest landscapes that approach the maximum of 10,000 hectares (Dammert et al., 2012). In this case, 30 percent of the land holding must be conserved as natural forest habitat. However, in practice, the allocation of a geometric 30-percent conservation block would appear to be motivated by logistic or public relations considerations rather than by conservation priorities based on an objective evaluation of the ecological characteristics of the land and its importance within the larger landscape.

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9 Carrying out the determination of the 'principal use' is the responsibility of the DGAAA of the Ministry of Agriculture. In making its determination, the DGAAA relies on guidelines established in two technical documents that have been formalized as supreme decrees (executive orders) within the Peruvian legal system: D.S. 017-2009-AG (Reglamento de Clasificación de Tierras por su Capacidad de Uso Mayor) and D.S. 013-2010-AG (Reglamento para la Ejecución de Levantamiento de Suelos). Both documents were prepared by the Instituto Nacional de Recursos Naturales (INRENA), a decentralized technical institution within MINAGRI, and subsequently approved by the Dirección de Evaluación de Recursos Naturales (DERN), an administrative entity within DGAAA that develops legal norms related to environmental management.

2.7 THE DECENTRALIZATION PROCESS AND REGIONAL GOVERNMENTS

After several unsuccessful decentralization attempts, the legal entity of region became official, and regional governments were elected to manage the departments of Peru on November 20, 2002. Under the new arrangement, the former 24 departments plus the Callao Province have become regional jurisdictions. Unlike the earlier departments, regions have an elected government and have a wide array of responsibilities within their jurisdiction. Under the 2002 Law of Foundations for Decentralization and the Organic Law of Regional Governments[10], there is an ongoing process of transfer of functions from the central government ministries and other institutions to the regions. The decentralization process is widely considered a social and political imperative, with 96.4 of the agreed functions transferred at the end of 2013 (USAID/Peru, 2014). However, it is as yet an unfinished process with different ministries having carried out the process in different forms and speeds, and with some sectors arguing for a recentralization of certain functions (USAID/Peru, 2014). Regional governments often voice the complaint that they have received added administrative duties without receiving the funding and fiscal independence to execute their new responsibilities adequately[11]. The National Assembly of Regional Governments (Asamblea Nacional de Gobiernos Regionales – ANGR) has voiced its concerns repeatedly that the decentralization process has lost momentum and strategic direction in recent years (ANGR, 2014).

10 Ley 27783 - Ley de Bases de la Descentralizacion, and Ley 27867 - Ley Orgánica de Gobiernos Regionales.

11 The Law of Public Sector Budget for Fiscal Year 2014, Law No. 30114, assigned to the National Government 70 percent of the total budgeted amount, while regional governments were assigned 16 percent and municipalities 14 percent.

3.0 OVERVIEW OF CURRENT PALM OIL SUPPLY

Oil palm plantations in Peru have increased in area from approximately 14,600 hectares in 2000 to 44,400 hectares in 2010, to more than 58,000 hectares in 2013. Of these, approximately 29,000 hectares had entered production by 2010 and 38,000 hectares by 2013 (MINAGRI, 2012; FENAPALMAPeru, 2014, detailed in Annex 1–Table 6). Crude Palm Oil production is reported at 69,118 tons in 2010 (MINAGRI, 2012, detailed in Annex 1–Table 7). FENAPALMAPeru (2014) reports an average national CPO yield of 2.6 tons/hectare/annum, while the figures presented for 2010 in this report would indicate an average national yield of 2.4 tons/hectare/annum.

3.1 REVIEW OF CURRENT OIL PALM PRODUCERS

There are essentially three different types of producers in Peru: associative smallholders (< 50 hectares), medium independent (50 to 1,000 hectares), and large corporate (> 1,000 hectares). The vast majority of palm oil producers in Peru are small farmers who are affiliated with associations that sell their production to producer-owned or corporate processing facilities belonging to Grupo Palmas.

3.1.1 Associative smallholders and their affiliated institutions

The oldest oil palm plantations in Peru are owned by small farmers who received them as severance payment from the defunct, state-owned oil palm company: Empresa para el Desarrollo y Explotación de la Palma Aceitera Sociedad Anónima – EMDEPALMA S.A. EMDEPALMA initiated activities in 1973 in the Tocache Province of San Martin Region. By the middle of the next decade, however, ENDEPALMA was losing money due to management inefficiencies, complicated by the worsening terrorism situation that then plagued the upper Huallaga Valley. The company eventually ceased to operate and was reorganized as Oleaginosas del Perú S.A (OLPESA) with its principal shareholders being the former workers of ENDEPALMA, who simultaneously created the Asociación Central de Palmiculltores de Tocache – ACEPAT.

ACEPAT initiated its activities in 1991 with 1,200 hectares and about 200 families, and in 2013 had more than 1,200 producers and 5,500 hectares of plantations. ACEPAT is essentially a super-cooperative comprising 15 other associations and private landholders dedicated to the production of palm oil (see Table 6 of Annex 1). ACEPAT is the majority shareholder of OLPESA with 54 percent of outstanding shares. The rest of the shares are distributed amongst the founding members of ACEPAT, former workers of EMDEPALMA, and a small number of companies that buy palm oil or provide services to OLPESA. OLPESA has received significant support from the national and regional governments, as well as bilateral agencies and the UNODC. This support was based on the conviction that the cultivation of oil palm is a viable alternative development option and is a key component of a larger strategy to combat the cultivation of illicit crops, particularly coca. The smallholder palm oil production model has been relatively successful in attracting ex-coca farmers, as have other crops such as coffee, cacao, and palm hearts. Palm oil is the most profitable of these options when calculated on a per capita basis (UNODC, 2012), but its expansion has been limited because of the large capital investment required to establish and operate a palm oil processing mill.

The success of OLPESA and ACEPAT model (smallholder plantations linked to farmer-owned processing facility) has been replicated in other parts of the Peruvian Amazon with similarly successful results. Details of these associations and oil processing facilities are found in the Table 7 of Annex 1. OLPESA and OLAMSA are located in the most dynamic regions for smallholder expansion in Amazonian Peru, with some smallholders showing annual plantation growth rates of 50 percent or more. Both mills had well over 50 percent excess capacity in 2009, but this capacity should be occupied by 2021. Altogether, the four operating, cooperatively owned mills provide about 34 percent of the national supply of palm oil, while the associated plantations occupy about 52.2 percent of its spatial footprint. However, these metrics will change relatively soon once Grupo Palmas' *Palma de Shanusi* plantations enter reproductive maturity and start producing palm oil at rates and efficiencies similar to its sister company, Palmas del Espino (see 3.1.3).

3.1.2 Medium independent producers

MINAGRI lists three corporate entities in Ucayali Province which have been incorporated as Sociedad Anonima Cerrada (SAC), a corporate structure used in Peru for private enterprises with fewer than 20 shareholders (MINAGRI, 2012):

TABLE 2. CORPORATE ENTITIES – UCAYALI PROVINCE

Company	Plantations area (ha)
Palmagro SAC	440
Golden Amazon SAC	452
Biodiesel SAC	660
Total	1,552

In the Tocache Province, a larger contingent of landholders can be assigned to the medium-scale producer group. These include members of FREDEPALMA-SM, who sell their production to the Industrias del Espino and independent growers who are affiliated with ACEPAT/OLPESA. As in Ucayali, these growers can be identified by their corporate structure or, when the name is ambiguous, by the number of members (fewer than two) and the surface area under plantation. Several are listed as members of both FREDEPALMA-SM, which provides FFB to Industrias del Espino, and ACEPAT, which provides FFB to OLPESA:

TABLE 3. CORPORATE ENTITIES - TOCACHE PROVINCE

Company Name	Plantations Area (Ha.)
Empresa "AGROSERVIS LAS PALMERAS E.I.R.L.".	110
Emp. Agricola Palmicultora "EL SHADDAI S.R.L."	60
Empresa "EL PATACINO E.I.R.L."	140
Emp. de Producción Agro Industrial y Servicios "EMPRAIS S.R.L."	120
"INVERSIONES CAMPOS" E.I.R.L.	146
Empresa Fundo Agrícola Las Palmeras "FAGROPAL S.A.C.".	60
Empresa "FUNDO ONASSIS E.I.R.L.".	400

Company Name	Plantations Area (Ha.)
Emp. de Prod. y Com. de Palma Aceitera Tocache "PPALMACEIT E.I.R.L"	275
Empresa de Producción de Palma Aceitera Horizonte "PROPACH S.A.C.".	112
Representaciones "GERMANY"	66
Total	1,423

3.1.3 Large corporate producers

Grupo Palmas

The Grupo Palmas is a subsidiary of the Grupo Romero, one of Peru's largest domestic corporate entities with holdings in transportation, consumer goods, textiles, logistics, fisheries, communications, energy, and finance. Grupo Palmas has two main facilities composed of a division dedicated to managing plantations and producing palm fruits, as well as an industrial unit that processes fruit into crude palm oil and refines it into a variety of products. The older of the two facilities is located in the Province of Tocache in the Upper Huallaga Valley in San Martin Region. The younger facility is located about 40 km South of Yurimaguas on the border between San Martin and Loreto regions; there are also alleged plans to create new plantations in the Loreto Region.

Palmas del Espino

Located in the Province of Tocache in San Martin Region, this complex of plantations, mills, and refineries represents Peru's most economically successful palm oil enterprise. The first plantations were established in 1979 during the onset of a period of civil unrest in Peru and the region of the Upper Huallaga valley. The managers of Palmas del Espino withstood nearly two decades of isolation and conflict inflicted by terrorist groups that once dominated the region. Many consider the Grupo Romero's determination and persistence as an example of courage and patriotism during a critical period in the nation's history. It was, undoubtedly, a very unprofitable investment for the first decade of its existence, but since the mid-1990s, as vegetable oil prices climbed from $200 per ton in 1990 to more than $1,100 per ton in 2010,[12] Palmas del Espino is now a solidly profitable component of the Grupo Romero's business holdings.[13] Surprisingly, the industrial mill at Palmawasi, Industria de Espino's principal processing facility, appears to be operating at only 35 percent of its reported installed capacity – and even if all of the corporate owned and associated plantations produced fresh fruit bunches at their maximum practical potential, Industrias del Espino would still have excess capacity of approximately 20 percent.

No detailed study has been conducted to document land use change caused by the creation of Palmas del Espino, but most likely these plantations were established at the expense of natural forest. In the

12 Current prices are about $600 per metric ton.

13 In 2011, the Grupo Palmas reported net profits of S/. 95 million on total sales of S/. 365 million (Grupo Romero, Gestión Empresarial, 2012).

1980s, deforestation was of increasing concern to environmentalists, but the issue had yet to become a global priority, and the political environment in Peru at that time allowed the Grupo Romero to develop their plantations with little controversy.

The Palmas de Espino complex in Tocache also includes a small farmers association, organized as the Federación Regional de Palma Aceitera San Martín (FREDEPALMA - SM), which has been sponsored and supported by Industrias del Espino. The association includes more than 200 families that own on average about 7 ha of oil palm plantations; these farmers receive technical assistance from Palmas de Espino and have a long-term agreement to sell their production to the corporate mill. If productivity from these smallholders is similar to those obtained from corporate plantations, they should represent about 5 percent of the feedstock supply to the facilities of Industrias del Espino in Tocache.

Palma de Shanusi Complex

The first major expansion by the Grupo Palmas since consolidating production at Tocache is taking place in two adjacent land holdings called Palmas de Oriente (Caynarachi District, San Martin) and Palma de Shanusi (Yurimaguas District, Loreto). The first plantings at this large industrial-scale complex were made in 2006, and the processing facility, known as Industrias de Shanusi, started operations in 2011. All of the oil palm plantations have been developed at the expense of natural forest vegetation that led to public accusations of illegal land clearing (Rivadeneyra and Valle Riestra, 2013; Peru 21, 2013). In 2011, a judicial review found the company guilty of illegally clearing 500 hectares of forest in violation of the ZEE available for San Martin. Simultaneously, the company confronted land tenure disputes with local communities that it resolved by compensating the communities by purchasing the disputed land. This level of conflict motivated the Grupo Palmas to abandon its request for an additional 6,200 hectares under the aegis of the company Palmas de Caynarachi (Red de Observatorios de la Tierra, n.d.). Satellite images from 2013 on Google Earth show considerable development located to the north of Palmas del Shanusi, which is now apparently purchasing land from individuals as part of a strategy to expand production at this locality. Eventually, Industrias del Espino, which operates the milling facilities at Shanusi, may choose to allocate some processing capacity to associated small farmers, as they have done in Tocache. To date, however, there has been no apparent effort to organize a small farmers association similar to FREDEPALMA-SM.

Future developments

Like most companies, the Grupo Palmas does not broadcast future development plans to the public prior to initiating any investment. Nonetheless, they must file certain documents and initiate permitting processes in order to purchase public lands. According to press reports the company had four projects under evaluation in 2012 (La Region, 10 October 2012), all of which would occur in natural forest landscapes in the Loreto Region:

- Proyecto Agroindustrial "Manití" by the company registered as Islandia Energy S.A. in the Indiana District of Maynas Province for 8,850 hectares, which is located across the river from Iquitos in a Permanent Production Forest (the DGAAA of MINAGRI has approved the Environmental Impact Assessment (EIA) for this project)
- Proyecto Agroindustrial "Santa Cecilia" by the company registered as "Palmas del Amazonas" in Indiana District of Maynas Province, for 6,676 hectares in a Permanent Production Forest
- Proyecto Agroindustrial "Santa Catalina" in Sarayacu District in Ucayali Province for 10,000 hectares
- Proyecto Agroindustrial "Tierra Blanca" by the company registered as Agrícola La Carmela in Sarayacu District in Ucayalai Province for 10,000 hectares

Grupo Melka / Los Malayos

A group of investors[14] is acting through a fluid assembly of Peruvian shell companies to acquire and clear land for palm oil plantations. The group has no producing palm oil plantations to date but has at least three industrial-scale plantations under development, as well as 11 requests to obtain land (Sociedad Peruana de Ecodesarrollo [SPDE], 2013). Most of these requests are located in Loreto (see Annex 2), but their largest ongoing developments are located in Ucayali:

- Biodiesel Ucayali SAC in the Coronel Portillo Province of Ucayali Region with 4,000 hectares deforested by May of 2013
- Plantaciones Ucayali SAC in the Coronel Portillo Province of Ucayali Region with 4,700 hectares deforested by May 2013
- Cacao del Norte SAC, formerly known as Plantaciones de Loreto Sur SAC is located in the Fernando Lores District, province of Tamashiyacu, Loreto Region with 2,120 hectares cleared by August 2013, but which had increased to about 3,000 hectares by December of the same year

Inspections of satellite imagery available through Google Earth revealed that all three plantations are being developed on landscapes largely covered by natural forest when images between 2011/2012 were compared with 2013/2014. The two plantations near Pucallpa were still largely forested as recently as 2012 but shared a landscape, located only about 100 km Northwest of Pucallpa (IDL-Reporteros, 2013b), which was experiencing obvious signs of degradation due to the advance of small-scale subsistence agriculture. The landholding near Tamashiyacu showed considerably fewer signs of human activity. As recently as 2011, the only visible sign of human intervention was a road (presumably for logging), which now terminates at the oil palm nursery of Cacao del Norte SAC. When questioned by journalists on the legality of the land-clearing operations, the companies' legal representative claimed that agricultural activities on land holdings titled by the Legislative Decree 838 of 1997—Law for the allocation of land in economically depressed regions—do not require any authorization for land-use change. On 20th March 2014, the regional prosecution and judiciary authorities started a formal prosecution of the Tamshiyacu development project (La Region, 27 February 2014).

3.2 CHARACTERISTICS OF SMALL-, MEDIUM-, AND LARGE-SCALE PRODUCERS

There are many differences among these three types of producers. The most obvious is the size of their plantings, but they also differ in their use of technology, capital assets, and access to credit, which impacts their decision productivity, profit, and appetite for risk.

[14] Reportedly coordinated by Dennis Melka, CEO Asian Plantations Ltd.

TABLE 4. CHARACTERISTICS OF SMALL-, MEDIUM-, AND LARGE-SCALE PRODUCERS

Size	Characteristics
Small farmer	Landholding: Family owned Land tenure: Secure but often incompletely documented, usually less than 10 ha Labor: Largely dependent on family members; as of 2012, there were approximately 5,000 families participating in the various associations linked to one of the seven processing mills operating in Peru (includes FREDEPALMA-SM) Productivity: Yield low (8 – 15 tons FF/ha); oil extraction rate sub-optimum (20 percent) Plantation cycle: Palm trees often well past prime producing potential (> 13 years), based on older cultivars; some with new plantings dated from 2008 boom in biofuel investments Technical assistance: So far have relied on public programs for technical assistance (UNODC) Access to credit: Very limited Annual cash flow: $500 to $10,000
Medium-scale producer	Landholding: Family owned but sometimes using legal entities (SAC, SRL, EIRL) to manage the legal liabilities of a small business and protect family assets Land tenure: Usually secure and fully documented, but not always; perhaps covering as much as 2,000 hectares each in Tocache and Coronel Portillo Labor: Permanent employees and/or contract labor, usually without benefits, probably not more than 400 employees total Productivity: Yield moderately high (15 – 20 tons/ha); oil extraction rates near optimum (25 percent) Plantation cycle: Plantings tend to be younger, most post 2008 boom in biofuel investments; very little staggered planting (perhaps planned for future expansions) Technical assistance: Receives technical assistance from *Industrias del Espino* (Tocache) or purchases it from specialized service providers (Ucayali); uses new (improved) varieties Access to credit: Risk tolerant and willing to take on credit to expand Annual cash flow: $50,000 to $500,000
Industrial-scale, vertically integrated, corporation (data based on Grupo Palmas)	Landholding: Family-owned corporate entity (SA) with overlapping ownership (e.g., *Palmas del Espino* has 30 shareholders including family members and other corporations controlled by the *Grupo Romero*) or nested within another corporate entity (e.g., *Palmas de Shanusi* is a subsidiary of *Palmas del Espino* and *Grupo Palmas*), which presumably allows them to manage the assets of a complex holding company for the benefit of shareholders

Size	Characteristics
	Land tenure: Secure for initial plantations by Grupo Palmas in Tocache but subject to litigation in Caynarachi and Yurimaguas (Shanusi); potential denial of permits for developments in project stage Labor: Highly professional management, with more than 5,000 permanent employees with full benefits and low turnover, as well as approximately 43,000 contract laborers at minimum wage (US$300 per month) Productivity: Yield high, usually between 20-25 tons FFB/ha per year Plantation cycle: Plantings span the full 20-year cycle of a well-managed plantation, where 5 percent is replanted each year, so that no more than 20 percent of the total plantation is reproductively immature and 20 percent nearing low-yield stage prior to replacement. New investments stimulated (presumably) by the post 2008 biofuel regulatory framework. Technical assistance: In-house; bring in specialists from Costa Rica and/or Malaysia as needed Access to credit: Unrestricted, including in-group financial resources, banks, and bond markets Annual cash flow: $50 and $100 million based on *Palmas de Espino*; this should eventually double when *Palmas de Shanusi* fully comes on line

3.3 FOREST COVER AND BIODIVERSITY IMPACTS OF PRODUCTION

High-yield agriculture potentially reduces pressure on forests by requiring less land to increase production. However, a recent study compares land use and agronomic practices between large- and small-scale plantations in Amazonian Peru (Gutierrez-Velez et al., 2011). Using satellite and field data, they assessed the area deforested by large-scale, high-yield oil palm expansion in the Peruvian Amazon from 2000 to 2010, finding that 72 percent of new plantations expanded into forested areas. In a focus area in the Ucayali region, they compared deforestation for large-scale, high-yield and smallholder, low-yield oil palm plantations. Smallholder, low-yield plantations accounted for most expansion overall (80 percent), but only 30 percent of their expansion involved forest conversion, contrasting with 75 percent of high-yield expansion involving forest conversion. High-yield expansion minimized the total area required to achieve production but at higher expense to forests than low-yield plantations. The authors suggest that high-yield agriculture can be effective in sparing forests only if coupled with incentives for agricultural expansion into already cleared lands, both by small and large producers. The study did not stratify their analysis to identify the land-use change of medium-sized producers identified in this study but allocated those landholdings to the high-yield agribusiness category, at least in the Ucayali sector.

3.4 SOCIAL AND GENDER IMPACTS OF PRODUCTION

The expansion of smallholder palm oil plantations in the Peruvian Amazon has been supported by the Peruvian government and UNODC/USAID in Peru on the understanding that it has compelling producer economics that can compete with those of illicit drug plantations, principally coca leaf. An evaluation of investments by UNODC/USAID (UNODC, 2013) shows that more benefits accrue to farmers if they also have participation in the palm oil processing node of the value chain. In 2011, the 294 associated farmer shareholders of the OLPASA processing facility in Aguaytía received average family income per

capita of US$16,399, exceeding the US$9,703 recorded in 2010. The 1491 farmer shareholders of the OLPESA processing facility in Tocache received an average per capita household income of US$6,384 (UNODC, 2012). This income is additional to that received by farmer families from the sales of FFB to their processing companies. As a point of comparison, the annual minimum wage in Peru currently stands at US$3,214. Therefore, the additional benefit of being integrated into the processing node of the palm oil value chain is between two and four times the national annual minimum wage.

It is important to note that, to date, the main beneficiaries of smallholder palm plantations in Peru have been Andean migrants who settled relatively recently in the Amazon. Indigenous peoples and established settlers, known locally as 'riberenos', have not participated in any significant way in palm oil schemes. Experience with smallholder schemes in Indonesia and Malaysia shows that migrants and transmigrants usually benefit much more from palm oil development than indigenous peoples, and that in the cases where indigenous people did participate significantly, the wealthier members of the community benefited most[15].

If this pattern—individual gain at the expense of previously communally held resources and increasing deforestation and fragmentation of indigenous-held land—repeats in Peru, it will be virtually impossible to ensure deforestation-free palm oil plantations, and significant social conflict may accompany increasing deforestation rates. Palm oil may additionally serve as justification for economic discourses (de Soto, 2011) that are seen to weaken customary land ownership and indigenous peoples' rights and that are strongly at odds with the Peruvian indigenous and forest conservation movement (Chirif, 2011).

In the case of corporate plantations, the social and gender benefits of palm oil are already more contested. Grupo Palmas (2011) maintains that their operations generate substantial stable employment (approximately 4000 permanent jobs), that they provide additional benefits including free lodging and food, and that they are investing in increasing the participation of women (currently about 10 percent of the labor force). Gamero (2011) argues that the current agrarian labor regime and current contract law do not favor palm oil workers. For example, of the approximately 1,800 plantation laborers at Palmas del Espino, only 80 have permanent contracts that entitle them to pension and health benefits, even though many have been employed for more than 10 years. Of the more than 200 women employed, none have permanent contracts, most of the work assigned to them is of a menial nature, and they are paid below the minimum wage. Plantation labor costs represent only 4 percent of the cost of capital in this enterprise, allowing the Grupo Palmas to be a highly profitable operation (Gamero, 2011).

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15 The following excerpt from Rival and Levang, 2014 serves as a key cautionary note: "The arrival of palm oil triggered marked social and economic differentiation within the indigenous communities. Before palm made its appearance there was already a difference between rich and poor families, but it was much less obvious. All families had land and a minimal income from slash-and-burn cultivation, the exploitation of rubber agro-forests or collection of forest products. Well-off families also had income from trade, transport or government jobs. With palm oil the better-off got richer, more often than not at the expense of their poorer neighbours. The latter often lost everything, not only their land but also access to the nearest forest resources, following conversion of the forest into plantations. Their resentment is directed first at the (palm oil) company, which they feel has duped them and which they identify with oil palm, but also at those near to them that have succeeded, and even more strongly at the transmigrants who have usually done better out of the business. This group had no land reserves at the outset so were not tempted to sell their plantations. As they came from areas where the population is dense, land scarce and labour cheap, transmigrants are used to working hard and have only oil palm to help them escape poverty. The contrast is striking in areas of transmigration which have been turned over to plam oil. In barely 10 years, poor transmigrants have become rich planters."

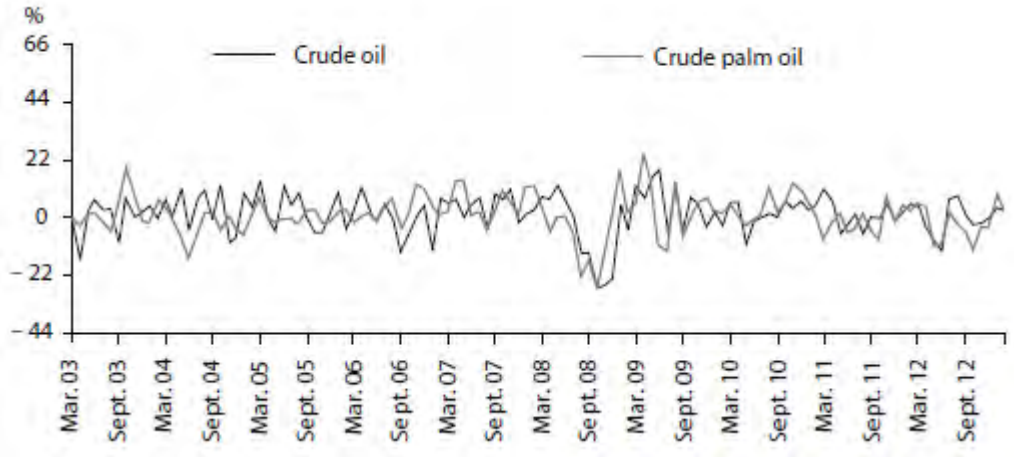
4.0 OVERVIEW OF CURRENT PALM OIL DEMAND

4.1 CURRENT SOURCES OF DEMAND

So far, all of Peruvian palm oil production is directed to the domestic market. The food and cosmetic industry and the biodiesel industry are the main consumers. Vegetable oil demand in Peru has experienced robust growth over the past two decades, increasing at an annual rate of about 10 percent and reaching approximately 501,000 tons in 2013. Palm oil represents about 17 percent of total consumption in 2012[16]. Total vegetable oil imports are reported at 400,000 tons in 2013, approximately double the levels reported for 2000 (IndexMundi, 2015). Soy oil is the main import (approximately 80 percent of imports) and the main competitor for locally produced palm oil. Approximately 20 percent of soy oil supplies originate from mills that crush imported soy beans that also produce soymeal, an important ingredient in animal feeds[17].

The demand for biofuel feedstock has been the largest single driver of growth in vegetable oil imports in Peru, with CPO prices closely linked to international fuel prices (Fig. 2). Of the approximately 510,000 tons of vegetable oil consumed in Peru in 2013, about 44 percent was used as biodiesel feedstock.

FIGURE 2. PERCENTAGE CHANGE IN THE PRICE OF CRUDE OIL AND CRUDE PALM OIL (CIF ROTTERDAM), 2003-2012



Source: World Bank, reproduced from Rival and Levang 2014

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16 In 2012, consumption amounted to about 85,000 metric tonnes (MT), of which 60,000 were locally sourced and 25,000 imported. Imports totaled US$29.92 million, including refined palm oil (25.059 MT), and refined palm kernel oil (289.3 TM) imported principally from Malaysia, Indonesia, and Ecuador.

17 Soy bean meal is presumably displacing fishmeal (which makes chickens taste fishy). Production of fishmeal is an order of magnitude larger, but most of that is exported.

Diesel is the most consumed fuel in Peru, and consumption reached 4.36 million tons in 2012; it is expected to reach 6.82 million tons by 2021 (GAIN, 2014). Current consumption of biodiesel represents about 5 percent of diesel consumption, which is in line with Peruvian regulation that mandates 5 percent biodiesel in diesel (USDA, 2013). This regulation is intended to stimulate the domestic production of biodiesel feedstocks. Current demand for biodiesel could, theoretically, be met by the production from approximately 60,000 hectares of oil palm plantation, assuming that all plantations operate at the same level of efficiency and productivity as Palmas del Espino. Estimated demand in 2021 with a 5-percent mandate would translate into about 100,000 hectares and 200,000 hectares with a 10-percent biofuel mandate. Two operators produce roughly 90 percent of biodiesel in Peru: The AgroEnergy Division of Industrias del Espino, located in San Martin, and Heaven Petroleum, located in Lima. In September of 2014 British Petroleum (BP) made an undisclosed equity investment in Pure Biofuels, a new Peruvian biofuel company. The corporate spokesman for BP emphasized the company's strategic location, which provides access to growing markets with biofuel mandates (Biofuels Digest, 2014).

Biodiesel refineries will source vegetable oil from the cheapest available source. A sudden 700-percent increase in U.S. biofuels exports to Peru in 2009 triggered an imposition of anti-dumping and countervailing duties by the Peruvian government. In August 2010, the Peruvian consumer defense institute (INDECOPI) imposed a fine of $178 per ton on pure biodiesel (B100) or any blends greater than B50 (50 percent biodiesel) imported from the United States. Although this ruling was targeted at the United States, 70 percent of soybean oil imports into Peru originate in Argentina. Apparently, Peruvian biofuel refineries have stopped sourcing vegetable oil from Peruvian palm oil in 2014, and currently 100 percent of the vegetable oil used to meet the biofuel mandate in Peru is manufactured using Argentine soybean oil (GAIN, 2014). This decision is driven entirely by the international markets and the more competitive position of Argentine imports, when compared to domestic production. This development is ironic, considering the following:

1. The biofuel mandate was created to stimulate the production of Peruvian vegetable oils.
2. The expansion of soy in Argentina has been responsible for large-scale deforestation in the Gran Chaco biome, exceeding 200,000 hectares per year (Hansen et al., 2013), which negates any potential climate benefit from the biofuel mandate.
3. Peru has a free-trade agreement with the United States but not with Argentina. This issue has apparently caused the Grupo Palmas to delay the development of future oil palm plantations and close its biofuel unit in 2014 (GAIN, 2014).

In addition to biofuels and cooking oils, palm oil is used in the manufacturing of a wide range of consumer goods, most of which members of Consumer Goods Forum (CGF) produce. The CGF is an alliance of private businesses that are committed to incorporating criteria regarding sustainability into their supply chains. This CGF commitment covers both environmental and social criteria and includes a specific commitment to eliminate the purchase of commodities implicated in deforestation. One major Peruvian company is a member of the CGF: Supermarcados Peruanos. In addition, numerous global CGF members have Peruvian subsidiaries, several of which manufacture goods in Peru. These include:

- Ajinomoto
- Cargil (fishmeal, café, animal feed)
- Carrefour
- Colgate Palmolive

- Johnson & Johnson
- Mondelez (formerly Kraft)
- Nestle
- Procter & Gamble
- Unilever

4.2 FUTURE TRENDS

The future of Peruvian palm oil demand depends, not surprisingly, on the domestic food and cosmetics market as well as the international biofuel market and regulations. Domestic food and cosmetics demand is expected to continue to grow at about 10 percent annually and will represent the only short-term market for palm oil, as domestic production of biodiesel is expected to grind to a halt in 2015 (GAIN, 2014) due to cheaper Argentine biodiesel. As biodiesel production was consuming approximately 50 percent of domestic palm oil supply, this development may negatively depress local prices in the short term.

5.0 PALM OIL FINANCE

UNODC states that expansion of the cooperative smallholder sector of the palm oil industry is hampered by the systematic lack of access to credit. Apparently, the only credit that has been made available to the sector, at least up to 2011, was short-term working capital linked to the needs of producers and processors during the annual harvest (UNODC, 2012). There is limited available information on the financial resources or use of credit of medium-sized producers, but typically these types of family enterprises do not rely on credit. If they do use credit, it typically does not rely on rural land collateral, which the Peruvian banking system does not consider attractive. Small farmers have benefited from grants made by MINAGRI's Agroideas and the UNODC programs. There is only a single mention of the use of credit in the press, which refers to a cooperative that specializes in micro-credit (Caja Señor de Luren), which sold its portfolio of oil palm related debt in Huanuco to the state-owned agricultural development bank, Agrobanco. However, the web site of that institution does not show any programs focused on palm oil.

Profit margins for the corporate global palm oil industry have been high since 2007, when global commodities experienced an unprecedented increase in demand, reaching an historic peak in 2011 at $1,200 per ton. Profit margins during this period approached 60 percent for mature plantations in Southeast Asia, which over longer periods ranged between 20 and 30 percent. Nonetheless, startups are capital intensive, do not start generating significant revenues for at least five years, and may have pay-back times close to a decade. Once established, however, palm oil plantations and their associated mills are highly profitable where operating costs are typically only about 20 percent of cash flow.

For example, Palmas del Espino, the keystone subsidiary within Grupo Palmas, has more than doubled its net equity from about US$235 million to US$500 million between 2009 and 2014, while its plantation and industrial assets are currently valued at more than US$700 million. Profit margins—earnings before interest, taxes, depreciation, and amortization—averaged between 25 and 55 percent over the same period. Growth has been financed, in part, by long-term debt raised via the Bolsa de Valores de Lima. Approximately US$120 million of bonds have sold since 2007, apparently at favorable interest rates that reflects the Grupo Romero's liquidity and Palmas del Espinos strong balance sheet[18].

There are no comparable data available for the Grupo Melka, but press reports indicate that this is a case of direct foreign investment by Asian Plantations Ltd. with capital that originates in Malaysia and other countries[19]. Using generic estimates of the cost for establishing oil palm plantations, bringing the three investments underway into production would represent between US$50 and US$100 million dollars. Felda Global Ventures' recent purchase of Asian Plantations Ltd. confirms the growing importance of international equity finance in Peruvian palm oil.

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[18] The bonds were rated AA-.pe by Equilibrium Clasificadora de Riesgo S.A, Palmas del Espino S.A and Subsidiaries 2014. Read more at: http://www.equilibrium.com.pe/Palmas.pdf

[19] For more information, visit: http://www.pacificagricapital.com/funds/asian-agriculture-fund.html and http://www.thestar.com.my/Business/Business-News/2014/08/30/FGV-buys-Asian-Plantations-This-has-strengthened-its-position-as-worlds-thirdlargest-plantation-oper/?style=biz

6.0 GEOGRAPHIC ANALYSIS OF PALM OIL PLANTATIONS AND PRODUCTION EXPANSION POTENTIAL

There are three distinct landscapes in which oil palm plantations have a historical presence and in which expansion has occurred over the past few years:

1. Tocache Province, San Martin, dominated by the presence of Grupo Palmas (Palmas del Espino, etc.) and its associated growers FREDEPALMA-SM, as well as OLPESA and its associated growers (ACEPAT, etc.)
2. Shanusi River spanning the Caynarachi and Yurimaguas districts on the San Martin – Loreto border dominated by Industria de Palma Aceitera de Loreto y San Martín SA (INDUPALSA) and its associated growers (Asociación de Productores Jardines de Palma – JARPAL), as well as the new and expanding plantation of the Grupo Palmas (Palmas de Shanusi, etc.)
3. Ucayali Region, specifically the Coronel Portillo/Padre Abad, which is home to three farmer-owned mills (OLAMSA-1. OLAMSA-2, OLPASA) and their associated growers, as well as the new plantations under development by the Grupo Melka

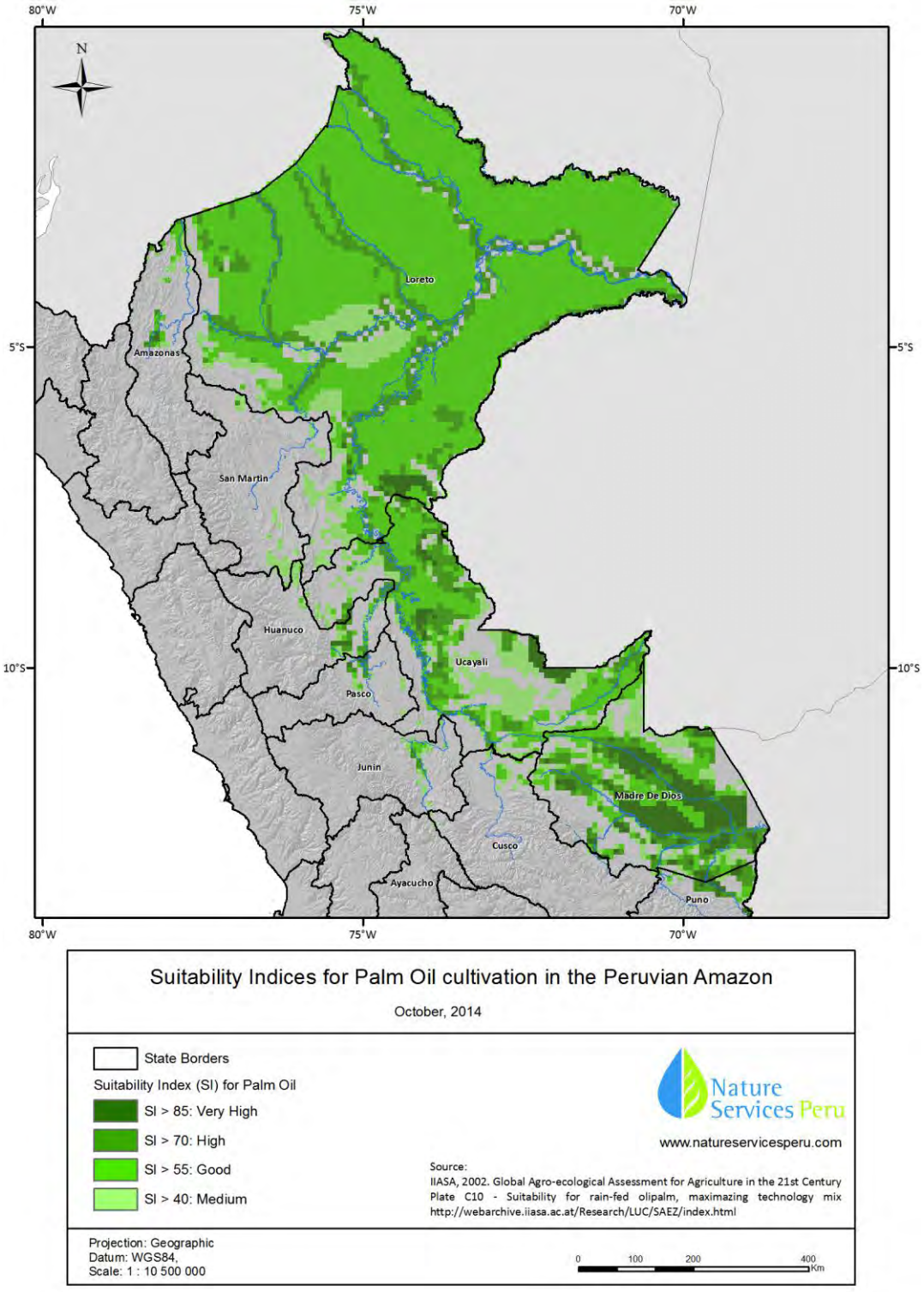
All three areas have a presence of both large corporate and smallholder plantations, but medium independent producers are so far absent from the Shanusi River landscape. The only landscape where corporate mills are purchasing feedstock from smallholders is in Tocache, where Industrias del Espino sources about 10 percent of its feedstock from affiliates of FREDEPALMA-SM, a supply model that has not been replicated, as of yet, at the Industrias del Shanusi mills in the Caynarachi/Yurimaguas districts. At the same time, each landscape continues to experience deforestation due to the expansion of the agricultural frontier. In Shanusi and Ucayali the deforestation includes to a significant extent corporate and smallholder actors involved with the palm oil sector.

6.1 LAND SUITABLE FOR PALM OIL EXPANSION

The Ministry of Agriculture's position on land for palm oil development in the Amazon has changed with time. When launching the National Palm Oil Plan, it stated that 1,405,000 hectares had potential for palm oil development (MINAG, 2001, pg.18). In 2012, the land with potential for palm oil development was stated as 1,135,000 hectares (MINAGRI, 2012, pg.18). More recently, MINAGRI officials were quoted as saying that Peru had 600,000 hectares available for palm oil cultivation (La Republica, 2014). From the available documents, it was not possible to access or ascertain the underlying land

classification data leading to these statements of potential land for oil palm; hence, it is not clear whether the authorities refer to land suitability or land availability. For these reasons, a simple, high-level GIS analysis of land suitability and availability for oil palm expansion is presented on the following pages. As a basis for this analysis we used Plate C10 (Suitability of rain-fed oil palm, maximizing technology mix) of the Global Agro-ecological Assessment for Agriculture (International Institute for Applied Systems Analysis, IIASA, 2002) and official Peruvian GIS shapes for land tenure and deforestation sourced from Instituto Nacional de Estadística e Informática (INEI), MINAM-PNCB, and MINAGRI (detailed in Annexes 3, 4, and 5).

MAP 1: SUITABILITY INDICES FOR PALM OIL CULTIVATION IN THE PERUVIAN AMAZON



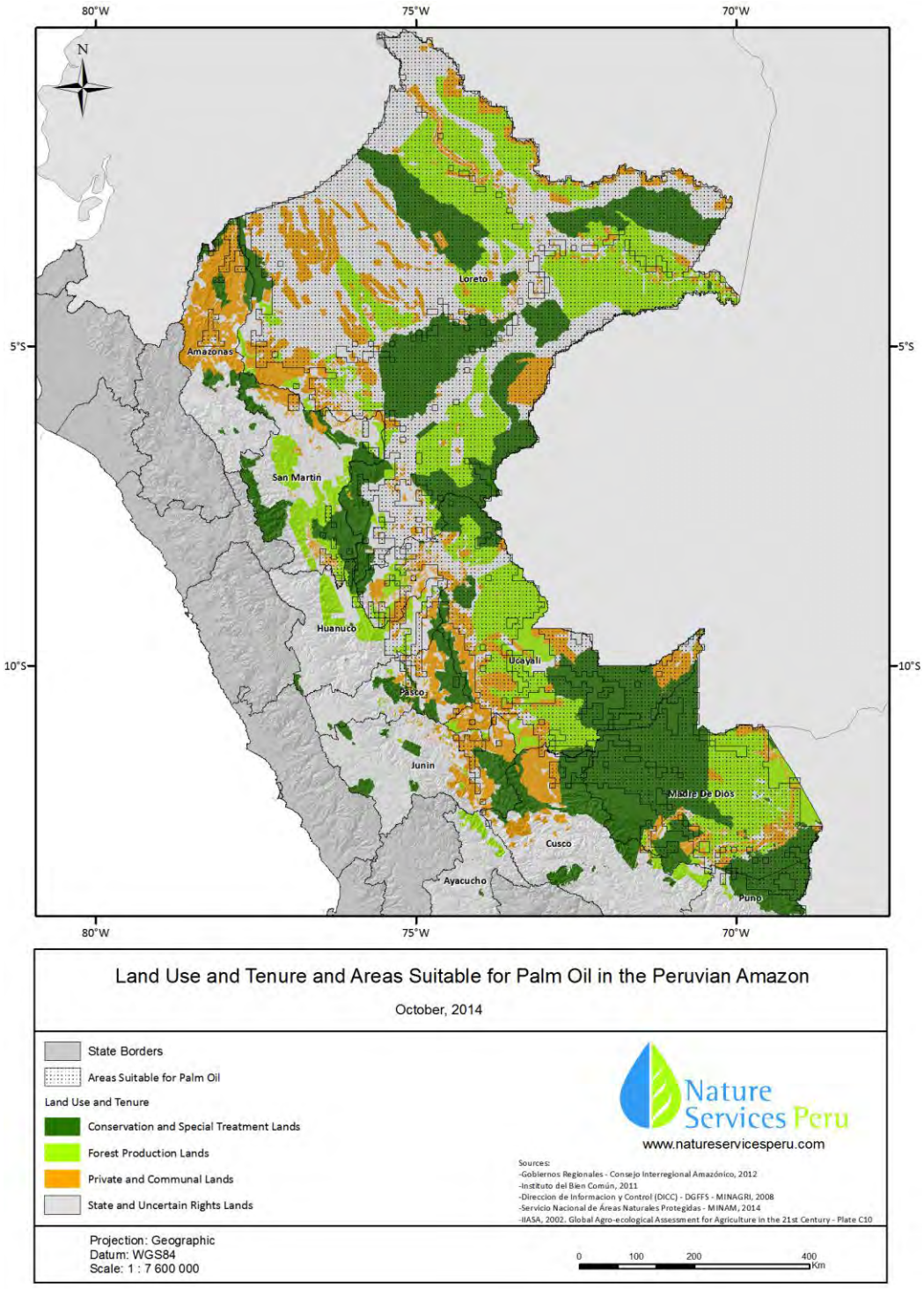
The analysis shows that more than 49.2 million hectares of land have a Suitability Index (SI) of medium or higher for oil palm cultivation in the Peruvian Amazon. Of these, 33.6 million hectares (68.3 percent)

are in the region on Loreto, 7.1 million hectares (14.4 percent) are in Ucayali, and 6.3 million hectares (12.8 percent) are in Madre de Dios (for detailed figures, see Annex 3). It is clear from the figures that land suitability is not a constraint for the growth of oil palm plantations in Peru. Of particular note is the fact that the pioneering oil palm cluster of Tocache and the more recent Shanusi cluster appear to be located in areas of only moderate land suitability. This observation seems to indicate that other factors influencing land availability—possibly including road access, tenure, and socio-political circumstances—have so far been more important in determining the growth of oil palm in Peru than land suitability factors. As road infrastructure penetrates deeper into the Peruvian Amazon, it is probable that palm oil production will shift to the west, as is consistent with corporate actors' recent land acquisitions in Loreto and Ucayali since the beginning of this decade.

6.2 LAND AVAILABILITY FOR OIL PALM EXPANSION RELATED TO LAND USE AND TENURE

We refined the analysis by overlaying land suitability with land use and tenure data for the Amazon in accordance with the land use and tenure categories laid out in the existing agriculture and forestry laws. Of the 49.2 million hectares suitable for palm oil plantations, there are approximately 7.1 million hectares (14.4 percent) located on private and indigenous community lands; 13.3 million hectares (27 percent) located on Production Forestry Lands; 15.5 million hectares (31.7) located on Protection Forestry Lands; 1.3 million hectares (2.6 percent) located on territorial reserves for voluntarily isolated indigenous peoples; and 12 million hectares (24.4 percent) located on State lands or lands with undefined tenure (for detailed estimates, see Annex 4). Production Forestry Lands, Protection Forestry Lands, and territorial reserves total 30.1 million hectares and are legally not available for agriculture, including palm oil cultivation. This leaves 19.1 million hectares of suitable land theoretically available for palm oil cultivation, of which more than 62.8 percent are State lands or lands with undefined tenure. The question then arises as to how much of this land is already deforested and could therefore be utilized for zero-deforestation palm oil expansion.

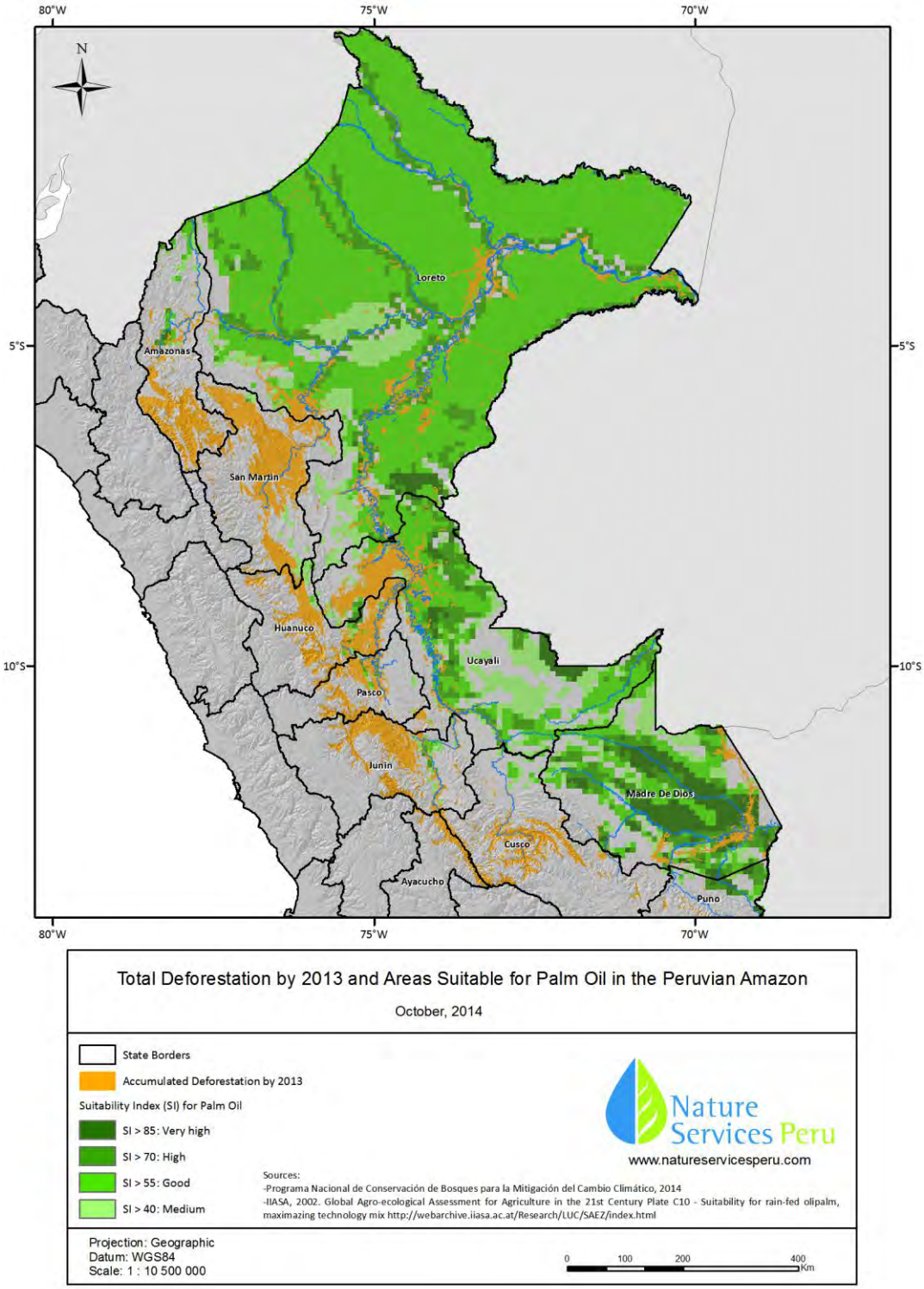
MAP 2. LAND USE AND TENURE AND AREAS SUITABLE FOR PALM OIL IN THE PERUVIAN AMAZON



6.3 LAND AVAILABILITY FOR ZERO-DEFORESTATION OIL PALM EXPANSION

Of the approximately 8 million hectares of deforested lands in the Peruvian Amazon (FIP, 2013) a little more than 2.1 million hectares are in lands suitable for palm oil cultivation. Less than 27 percent of deforested lands are suitable for oil palm cultivation, because much of Amazon deforestation to date has occurred in the western flank of the Andes at elevations and gradients not suitable for palm oil growth. Of the 2.1 million hectares, 90 percent are found in just four regions: Loreto, Ucayali, Madre de Dios, and Huanuco. Approximately 1,030,000 hectares are in the region of Loreto, 493,000 hectares are in Ucayali, 225,000 hectares are in Madre de Dios, and 156,000 hectares are in Huanuco (for detailed figures, see Annex 5). A preliminary inspection of high-resolution satellite imagery of all three existing oil palm cultivation clusters reveals that more than 50 percent of previously deforested land is currently covered with secondary forest or pastures of marginal economic activity and, therefore, amenable to conversion to oil palm. This preliminary analysis would indicate that there are approximately 1 million hectares of deforested lands in the Peruvian Amazon where zero-deforestation palm oil expansion could viably occur. In other words, oil palm plantations could be expanded by a factor of 10 in Peru without having to resort to deforestation of primary forest.

MAP 3. TOTAL DEFORESTATION BY 2013 AND AREAS SUITABLE FOR PALM OIL IN THE PERUVIAN AMAZON



It is important to note that while primary forest lands remain plentifully available for regional governments and MINAGRI to allocate them—and while limited enforcement capacity exists to ensure

compliance with forestry regulations—it is unrealistic to expect that large corporate or smallholder actors focus their palm oil development on deforested or degraded lands. These lands are heterogeneously distributed and owned, implying higher costs of purchase (IDL-Reporteros, 2013a); aggregation (time and other transaction costs); and land preparation (timber sales from forested lands can significantly offset land preparation and plantation establishment costs).

It is unlikely that small farmers and their associated farmer-owned processing facilities can out-compete large-scale producers based in Peru; however, it also remains to be seen if the Peruvian palm oil sector as a whole can compete successfully with vegetable oil imports, particularly if free-trade agreements shield imported vegetable oils from protective tariffs. An additional argument for supporting independent growers and their mills is to avoid creating a vertical monopoly in which one or two single large companies dominate the supply of domestic palm oil; potential conflict of interest could result because of its downstream businesses in the food supply chain. In this case, an important option would be to leverage the business acumen and technical expertise of the existing large-scale industrial producers with the land assets of small- and medium-sized farmers. The potential for this mixed model has already been demonstrated by FREDEPALMA-SM, the association of independent growers that sell their production under long-term contracts to Industrias del Espino, and by the recent growth of medium-sized producers in Ucayali, which sell their production to OLAMSA[20].

[20] One of these producers might have a mill or plans for constructing a mill.

7.0 TOWARD SUSTAINABLE PALM OIL IN PERU

Sustainability is typically defined as a production system that is viable over the long term in its environmental, social, and economic dimensions. In the context of TFA 2020, sustainable palm oil results in zero-net deforestation. However, there is much discussion over the definition of sustainability and the linkages between various components that define the debate about what is sustainable and what is not. For example, an agronomist might focus on management of soil resources to ensure the long-term productivity of a farm or plantation, while an ecologist might emphasize the importance of protecting forest habitats that conserve biodiversity. A hydrologist might argue that conserving both soil resources and forest habitats should be part of an integrated strategy to protect the freshwater resources upon which human society and natural ecosystems ultimately depend. An anthropologist might focus on the impacts, both positive and negative, of production systems that may negatively affect indigenous populations that depend on natural ecosystems, while reducing poverty in migrant communities seeking economic opportunities. Political scientists know from experience that the failure to equitably share opportunity will lead to conflict, which can disrupt or even destroy a productive system, no matter how efficient that system may be. From a business perspective, profitability and investment are important, since those criteria decide whether an enterprise will prosper and grow.

Over the past decade, attempts to reconcile these points of view have dominated forums dedicated to sustainable production systems. This discussion has convinced most of its participants that understanding the concerns and aspirations of all stakeholders is essential for developing production models that are truly sustainable in their environmental, social, and economic dimensions.

7.1 STAKEHOLDERS IN THE PALM OIL INDUSTRY IN PERU

The term "stakeholder" can be defined as any person or organization with a legitimate interest in a given situation, action, or enterprise. In the case of the Peruvian palm oil sector, this term includes the people who own or work on the farms and plantations that grow oil palm, as well as the shareholders, clients, and employees of the companies that transform palm fruits into palm oil. It also includes the communities that share the landscapes with oil palm farms and plantations – especially those landscapes where the industry is expanding. Peruvian society as a whole has a profoundly legitimate interest in the sector, especially when public lands are being allocated or public funds are being expended to support a particular group of producers. Therefore, stakeholders include consumers who are concerned about the source of the food they eat or the manufactured goods they purchase, as well as advocacy groups that represent constituencies or promote political agendas within the confines of a free democratic society.

A process for organizing the interaction of all these stakeholders has become part of the solution. The Roundtable for Sustainable Palm Oil (RSPO) was founded in 2002 in response to consumer concern about palm oil plantations and deforestation in Southeast Asia, which was threatening extinction of iconic wildlife species including elephants, rhinoceros, and orangutans. The RSPO has grown to represent all major producers, commodity traders, consumer goods manufacturers, retailers, and banks, as well as civil society organizations dedicated to social welfare and environmental conservation. By 2012, 2.2 million hectares of plantations (15 percent of the global surface area planted) were RSPO-certified, and 16 percent of global palm oil sales are now Certified Sustainable Palm Oil (World Wildlife

Fund [WWF], 2012). In Peru, the smallholder associations OLPESA and OLAMSA are both members, as well as the Peruvian subsidiary of Unilever. Unilever recently made a commitment that 100 percent of its palm oil will be purchased from sustainable sources by the end of 2015. Unilever Peru confirmed this commitment in its 2013 Sustainability Report (Unilever, 2014). During 2014, several stakeholder meetings took place to make RSPO more operational in Peru; however, the level of engagement remains low, and a national interpretation of the RSPO Principles and Criteria is still pending. One key outstanding area for RSPO on a global level is certification for smallholder producers; this certification is currently the focus of an ongoing review of the certification principles and criteria.

7.2 POTENTIAL FOR INCREASING SUSTAINABLE SUPPLY

Levang and Rival (2014) make general recommendations for sustainable expansion of the palm oil sector, many of which are applicable to Peru:

1. Ecological intensification of existing plantations with the dissemination of selected plant material, well-planned fertilization, and recycling of effluents
2. Conservation of biodiversity and of permanent forest reserves, with priority for oil palm given to the development of zones already deforested or degraded
3. Supervised application of RSPO Principles and Criteria – interpreted in light of local constraints and integrated into national policies and regulations
4. Integration of smallholders in the development of agro-industrial complexes, either through the establishment of production contracts or by measures to support family farming
5. Respect for the rights of indigenous peoples and local communities by obtaining their Free, Prior and Informed Consent (FPIC) and open communication about any new plantations
6. Study of land rights and the land register when this exists, as well as compliance with regulations on the acquisition of land
7. Provision to ensure that donors and international nongovernmental organizations (NGOs) give the oil palm crop a primary role in the reduction of poverty in tropical countries

Combing these recommendations with the barriers for deforestation-free oil palm expansion detailed in this report, we suggest a step-wise, concerted approach for USAID and its TFA 2020 partners' potential investment in the palm oil sector in Peru:

1. Support a moratorium on the allocation of forested lands to agro-industrial projects, including palm oil, until Principal Land Use Capacity maps have been updated for all Amazon regions of Peru—and invest in strengthening land use regulations and governance within the context of the ongoing national decentralization process—in order to help resolve current conflicts arising from palm oil expansion in San Martin, Loreto, and Ucayali regions.
2. Develop and implement a ZDPOF to incentivize increased yield and clustering by smallholder and independent medium-sized producers and encourage expansion of their plantations on suitable deforested and degraded landscapes in coordination with associative or corporate palm oil processing facilities that commit to buy increased production from ZDPOF investments.
3. Accompany the above measures with increased intersectoral dialogue between all palm oil value chain actors through the RSPO and strengthened technical assistance and research to strengthen the knowledge base upon which a sustainable and climate-resilient palm oil industry depends.

Specific proposed solutions to overcome barriers to zero-deforestation palm oil production in Peru are presented in the following table:

TABLE 5. SPECIFIC PROPOSED SOLUTIONS TO OVERCOME BARRIERS TO ZERO DEFORESTATION PALM OIL PRODUCTION IN PERU

Barrier	Proposed solutions
1 - Land Use Regulations and Governance	
Limited institutional and law enforcement capacity compounded by high levels of corruption in regions suitable for palm oil cultivation	• In coordination with the relevant authorities, support a moratorium on the allocation of state or undefined tenure land to agro-industrial projects until Principal Capacity Land Use maps exist for Amazon regions. • Invest in strengthening the operational capacity of regional land use and natural resource management institutions including the recently created Regional Environmental Authorities (Autoridades Regionales Ambientales – ARA). This strengthening should be synergistic with other land use governance initiatives currently underway by the Peruvian Government and could strengthen law enforcement and provenance tracking systems at the local level. • Support transparency by making land zoning and tenure information available in GIS format on open access web portals like Global Forest Watch or Google Earth Engine.
Unclear land rights and land tenure	• Support land titling initiatives in the Amazon—especially with regard to indigenous people and local populations in the regions of Ucayali and Loreto—to reduce land speculation and the questionable allocation of primary forest lands by regional governments. Synergies with the recently approved IADB-funded Land Cadastre and Titling Project (PE-L1026) should be explored. This work should take place in coordination with civil society organizations such as the Instituto del Bien Comun and the Centro para el Desarrollo del Indigena Amazonico (CEDIA) which have long-standing expertise in indigenous community and local people land titling.
Complex, contradictory regulatory framework regarding agriculture and forestry	• Support intersectoral coordination between the Forestry Service, the Directorate of Agricultural Competitiveness at the Ministry of Agriculture and the National Program for Forest Conservation at the Ministry of Environment, specifically around the agricultural landscape and palm oil Nationally Appropriate Mitigation Actions currently in development.
Business and Financial Incentives	
Developing plantations on deforested and degraded lands implies higher costs than development on primary forests.	• The additional costs of developing palm oil on degraded and deforested lands should be studied in greater detail, and a financial incentives program for the restoration of these landscapes should be made available to palm oil growers. Incentives potentially could be linked to biochar and biofertilizer production programs from palm oil processing facilities. • This work should build on ongoing activities by the Peruvian Ministry of Finance and its development partners to mainstream reforestation and ecosystem restoration projects in the National Public Investment System.

Barrier	Proposed solutions
Smallholders' limited access to credit and financial services that encourage ecological intensification and environmental stewardship	• Develop and implement a ZDPOF, which would work through Intermediary Financial Institutions to achieve increased yields (from 2T/ha to 4T/ha average), ecological intensification, and environmental stewardship by small- and medium-sized producers. Investments from ZDPOF would aim to: a) Procure high-quality seed (an investment of US$1 per plant produces returns of $1000+ over plant lifetime). b) Optimize fertilizer application (which accounts for 50-60 percent of operating costs in industrial plantations). c) Implement harvest best practices to reduce FFB spoilage. • Disbursements by ZDPOF would be linked through contract to the maintenance of primary forests, especially High Conservation Value and High Carbon Storage forests as proposed by Killeen (2011), with third-party compliance monitoring.
Limited smallholder-corporate producer cooperation	• Support corporate palm oil processing actors (e.g., Industrias del Espino and Industrias del Shanusi) to invest in the productive capacity and expansion of independent producers, including both small- and medium-sized producers. The current association of Industrias del Espino with FREDEPALMA-SM could be a useful example from which to draw lessons.
Intersectoral Coordination and Knowledge Base	
Absence of Principal Land Use Capacity maps for the Amazon regions	• Support the development of Principal Land Use Capacity maps between the national and regional governments (possibly using one region of palm oil interest like Ucayali or Loreto as a pilot) and encourage its integration in the Agro-ecological Zoning and Ecologic-Economic Zoning processes.
Limited inter-sectorial and value chain actor dialogue and consensus building	• Support engagement by different sectors of government and all palm oil value chain actors by supporting participatory fora like the Roundtable for Sustainable Palm Oil in Peru.
Limited pure and applied research into sustainable palm oil production and value chains	• Strengthen collaboration between international (e.g., CGIAR), regional (e.g., CORPOICA, Colombia), and national (e.g., INIA) agricultural and forestry research institutions. Emphasis should be placed on linking current research agendas and investments, including INIA's US$100 million IADB-funded agricultural innovation program, which is in initial stages of execution.

From a spatial perspective, the solutions here proposed should be prioritized in those areas that concentrate deforested and degraded lands suitable for palm oil cultivation. A preliminary analysis would seem to indicate the following four landscapes for this purpose: (1) along the Tarapoto-Yurimaguas road, in the regions of San Martin and Loreto; (2) along the Iquitos-Nauta road, in the region of Loreto; (3) along the Federico Basadre road between Aguaytia and Pucallpa, in the region of Ucayali; and (4) along the Southern Interoceanic Highway between Santa Rosa and Puerto Maldonado, in the region of Madre de Dios.

8.0 CONCLUSIONS

The way palm oil supply evolves in Peru, both in terms of scale and producer type, will depend on market forces and political regulation. First and foremost is whether the government of Peru will continue to allocate public lands for the establishment of industrial-scale oil palm plantations. This practice has been described in the press as the consequence of developers who take advantage of 'loopholes' in the current regulatory system. However, an alternative explanation would be to understand it as a policy to promote the development of an industry that the Ministry of Agriculture and other sectors of government have declared as strategic. The loopholes are not accidental or unfortunate oversights, but rather legal mechanisms deliberately established to promote the development of large-scale agribusiness investments. If that policy continues, large-scale producers are most likely to dominate the palm oil industry because of their competitive advantage linked to the economy of scale and access to credit and capital. Whether one, two, or more corporate groups will dominate this sector is also unresolved; if Grupo Melka succeeds in establishing successful plantation/mill complexes, then other groups might be induced to try as well.

If large-scale forest clearing is ended, then the growth of the palm oil industry will depend on increasing yield and the expansion of the small- and medium-sized independent growers who operate on landscapes that already have been affected by settlers and deforested to a significant extent. As already mentioned, the available land area for zero-deforestation development by this sector is approximately 1 million hectares, but it is unlikely to take place without adequate financial incentives and strengthened land use governance in Amazon regions. Palm oil is a crop that can potentially generate significant economic and social prosperity in the Peruvian Amazon (UNODC, 2013). Ensuring greater equity in participation and the distribution of this new prosperity appears to be a key challenge for the Peruvian authorities and their development organization partners to avoid the negative impacts on local populations and indigenous people that have occurred in other countries where palm oil plantations are expanding (Rival and Levang, 2014).

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ANNEX 1. OIL PALM PLANTATION ACTORS AND EXTENT AND PALM OIL PROCESSING CAPACITY

TABLE 6. OIL PALM PLANTATION ACTORS AND EXTENT IN 2013

Table 1 - Oil Palm Plantation Actors and Extent in 2013

Oil Palm Growers	Parent Organization	Associated Mill	Year initiated	Town	Province	Region	Area Planted 2013 (Ha)	Area Producing 2013 (Ha)	Producers (Families)	Mean size of holding (Hectares)
Associative Small Farmers	Comité Central de Palmicultores de Ucayali (COCEPU)	OLAMSA	1998	Neshuya, Campo Verde	Coronel Portillo	Ucayali	7578	19884	2000	4
Associative Small Farmers	Palm Oil Farmers' Association of Shambillo (ASPASH)	OLPASA	2000	Aguaytia	Padre Abad	Ucayali	2185		394	6
Associative Small Farmers	Asociación Central de Palmicullores de Tocache (ACEPAT)	*OLPESA*	1991	Polvora, Tocache & Uchiza	Tocache	San Martín	11785		799	15
Associative Small Farmers	Asociación Jardínes de Palma (JARPAL)	INDUPALSA	1999	Caynarachi / Yurimaguas	Lamas / Alto Amazonas	San Martín / Loreto	4900		464	11
Associative Small Farmers	Asociación Agropecuaria Nuevo Amanecer (AANA) & Asociación de productiores de Palma Aceitera Honoria	AANA	2011	Puerto Inca	Honoria	Huanuco	820		350	2
Associative Small Farmers	Asociación de Palmicultores Palmas de Loreto (APPAL) no mill	No mill yet	2012	Iquitos / Nauta	Maynas	Loreto	1000		250	4
Associative Small Farmers	Federación Regional de Palma Aceitera San Martín (FREDEPALMA - SM):	Industrias del Espino	2003	Polvora, Tocache & Uchiza	Tocache	San Martín	2320		443	5
Independent Producers	Miscellaneous	OLAMSA	...	Neshuya, Campo Verde	Coronel Portillo	Ucayali	1492	2200	3	497
Independent Producers	Miscellaneous	Industrias del Espino / OLPESA	...	Polvora, Tocache & Uchiza	Tocache	San Martín	1459		10	146
Palmas del Espino	Grupo Palmas / part of Grupo Romero	Industrias del Espino	1979	Uchiza	Tocache	San Martín	13037	15910	NA	NA
Palmas de Shanusi		Industrias del Shanusi	2006	Yurimaguas	Alto Amazonas	Loreto	7527		NA	NA
Palmas del Oriente			2010	Caynarachi	Lamas	San Martín	4500		NA	NA
Cacao del Norte	Grupo Melka	No mill yet	2013	Tamshiyacu	Maynas	Loreto	Nursery	Not yet in production	NA	NA
Plantaciones de Ucayali			2013	Requena	Coronel Portillo	Ucayali	Nursery		NA	NA
Biodiesel del Ucayali			2013	Requena	Coronel Portillo	Ucayali	Nursery		NA	NA
				Total Small farmers			**30588**	**19884**	**4700**	**7**
				Total Independents			**2951**	**2200**	**13**	**227**
				Total Corporate			**25064**	**15910**	**2**	**12532**
				Grand Total			**58603**	**37994**		

Sources: FENAPALMAPeru 2014, CONAPAL 2014, SPDE 2014

Sources: FENAPALMAPeru, 2014; CONAPAL, 2014; SPDE, 2014.

TABLE 7. PALM OIL PROCESSING CAPACITY IN 2010

Table 2 - Palm Oil Processing Capacity in 2010

Company		Year initiated	Town	Province	Region	Processing capacity (t/hr)	Processing capacity (t/yr)	% total capacity	Production Actual 2010 (t/yr)	% capacity utilised
OLAMSA -1	Oleaginosa Amazónica S.A	1998	Neshuya,	Coronel Portillo	Ucayali	6	8.640	4%	4.570	53%
OLAMSA -2	Oleaginosa Amazónica S.A	1998	Campo Verde	Coronel Portillo	Ucayali	6	8.640	4%	4.570	53%
OLPASA	Oleaginosa Padre Abad S.A.	2000	Aguaytia	Padre Abad	Ucayali	6	8.640	4%	3.000	35%
OLPESA	Oleaginosas del Perú S.A.	1991	Uchiza	Tocache	San Martín	10	14.400	6%	9.175	64%
INDUPALSA	Industria de Palma Aceitera de Loreto y San Martín SA	1995	Caynarachi / Yurimaguas	Lamas / Alto Amazonas	San Martín / Loreto	6	8.640	4%	2.150	25%
Planta del Palmawasi	Industrias del Espino / Grupo Palmas	1984	Uchiza	Tocache	San Martín	**60**	108.000	44%	34.000	**31%**
Planta de Nuevo Horizonte	Industrias del Espino / Grupo Palmas	2009	Polvora	Tocache	San Martín	10	14.400	6%	1.990	**14%**
Planta de Shanusi	Industrias Shanusi/ Grupo Palmas	2009	Yurimaguas	Alto Amazonas	Loreto	40	71.928	30%	14.233	**20%**
						144	**243.288**	**100%**	**69.118**	**28%**

Fuente: Grupo Palmas 2012, FENAPALMAPeru 2014, MINAG 2001

Mills linked to smallholder associations

Mills belonging to Grupo Palmas

Sources: Grupo Palmas, 2012; FENAPALMAPeru, 2014; MINAG, 2001.

ANNEX 2. CURRENT LAND REQUESTS FOR PALM OIL PLANTATION – LORETO

TABLE 8. CURRENT LAND REQUESTS FOR PALM OIL PLANTATION TOTALING 106,212 HECTARES IN THE REGION OF LORETO

Titular	Proyecto	Extensión	Ubicación
Empresa Agrícola La Carmela S.A.	Tierra Blanca	10,000 ha	Distrito de Sarayacu, provincia de Ucayali, región Loreto
Empresa Desarrollos Agroindustriales Sangamayoc S.A.	Santa Catalina	10,000 ha	Distrito de Sarayacu, provincia de Ucayali, región Loreto
Islandia Energy S.A.	Manití	8,850 ha 2,051 m²	Distrito de Indiana, provincia de Maynas, región Loreto
Palmas del Espino S.A., cede su derecho a Palmas del Amazonas S.A.	Santa Cecilia	6,676 ha 1,519 m²	Distrito de Indiana, provincia de Maynas, región Loreto
Plantaciones del Manití S.A.C.	Plantaciones del Manití S.A.C.	6,676 ha	Caserío Santa Cecilia, distrito de Indiana, provincia de Maynas, región Loreto
Plantaciones de Tamshiyacu	Plantaciones de Tamshiyacu	8,850 ha	Caserío Santa Cecilia, distrito de Indiana, provincia de Maynas, región Ucayali
Plantaciones del Perú Este S.A.C.	Plantaciones del Perú Este S.A.C.	10,000 ha	Carretera Tamshiyacu, distrito de Fernando Lores - Indiana, provincia de Maynas, región Loreto
Plantaciones de Loreto Este S.A.C.	Plantaciones de Loreto Este S.A.C.	10,000 ha	Carretera Tamshiyacu, distrito de Fernando Lores - Indiana, provincia de Maynas, región Loreto
Plantaciones de San Francisco S.A.C.	Plantaciones de San Francisco S.A.C.	10,000 ha	Quebrada Tamshiyacu, distrito de Fernando Lores - Indiana, provincia de Maynas, región Loreto
Plantaciones de Marin S.A.C.	Plantaciones de Marin S.A.C.	5,771 ha	Carretera Tamshiyacu, distrito de Fernando Lores - Indiana, provincia de Maynas, región Loreto
Plantaciones de Loreto Sur S.A.C.	Plantaciones de Loreto Sur S.A.C.	9,389 ha	Quebrada Tamshiyacu, distrito de Fernando Lores - Indiana, provincia de Maynas, región Loreto
Plantaciones de Loreto Sur S.A.C.	Instalación de cultivos bioenergéticos	10,000 ha	Sector Sapuena - Yaquerana, distrito de Jenaro Herrera, provincia de Requena, región Loreto

Source: Regional Agricultural Directorate of Loreto; compiled by SPDE.

ANNEX 3. HECTARES SUITABLE FOR PALM OIL PLANTATION ACCORDING TO SUITABILITY INDEX (SI)

TABLE 9. HECTARES SUITABLE FOR PALM OIL PLANTATION ACCORDING TO SUITABILITY INDEX (SI)

Region	SI > 40: Medium	SI > 55: Good	IA > 70: High	IA > 85: Very High	Total
AMAZONAS	137.191	170.442	41.533	25.556	374.722
AYACUCHO	7.155	0	0	0	7.155
CUSCO	124.012	86.984	4.601	8.878	224.475
HUANUCO	201.281	105.168	123.695	54.630	484.774
JUNIN	137.983	42.248	33.789	0	214.020
LORETO	2.457.404	26.125.656	4.778.682	261.556	33.623.298
MADRE DE DIOS	1.092.155	1.710.008	1.522.541	1.947.916	6.272.620
PASCO	85.958	25.715	42.104	29.646	183.423
PUNO	51.283	74.228	164.253	89.261	379.025
SAN MARTIN	311.758	0	8.505	0	320.263
UCAYALI	2.229.918	2.760.205	1.716.640	441.038	7.147.801
Total	***6.836.098***	***31.100.654***	***8.436.343***	***2.858.481***	***49.231.576***

Compiled by author.

Sources for Table 9: *Regional borders: INEI (2004); Suitability for Palm Oil: Fischer, G., Van Velthuizen, H., Shah, M., and Nachtergaele, F. (2002). Global Agro-ecological Assessment for Agriculture in the 21st Century. International Institute for Applied Systems Analysis (IIASA). Roma. Plate C10 - Suitability for rain-fed oil palm, maximizing technology mix. Retrieved from http://webarchive.iiasa.ac.at/Research/LUC/SAEZ/index.html*

ANNEX 4. LAND TENURE

TABLE 10. LAND TENURE IN AREAS SUITABLE FOR PALM OIL CULTIVATION IN THE PERUVIAN AMAZON

Tenure grouped according to Forestry Law Categories	Category	Palm Oil Suitability Index (SI)				Total
		SI> 40: Medium	SI > 55: Good	SI> 70: High	SI> 85:Very High	
Private and Community Lands	1 - Private title	184.684	192.583	166.433	119.864	663.564
	2 - Community Lands	1.067.974	3.854.273	1.367.702	152.694	6.442.643
Forestry Lands for Production	3 - Logging concesions	918.827	3.324.362	870.494	524.622	5.638.305
	4 - Production forests still available	501.597	5.348.224	857.672	142.012	6.849.505
	5 - Non-timber concessions	45.051	149.344	60.045	445.156	699.596
	6 - Reforestation concessions	26.240	20.674	42.962	12.985	102.861
Forestry Lands for Protection	7 - Natural Protected Areas	2.301.870	10.236.687	1.927.808	654.026	15.120.391
	8 - Conservation Concessions	3.075	286.608	36.557	159.017	485.257
Special treatment areas	9 - Territorial Reserves IIPP	416.628	281.833	164.568	412.813	1.275.842
State lands or uncertain tenure	10 - State lands or uncertain tenure	1.370.152	7.406.066	2.942.102	235.292	11.953.612
Total		6.836.098	31.100.654	8.436.343	2.858.481	49.231.576

Compiled by author.

Sources for Table 10:

Private titles: Gobiernos Regionales - CIAM, 2012 (information only for Loreto, Amazonas, Madre de Dios, Ucayali, and San Martin).

Indigenous Communities: IBC, 2011.

Territorial reserves: IBC, 2011.

Forestry concessions: Direccion de Informacion y Control (DICC) - DGFFS - MINAGRI, 2008.

Non-timber concessions: DICC - DGFFS - MINAGRI, 2008.

Production forests still available: DICC - DGFFS - MINAGRI, 2008.

Reforestation concessions: DICC - DGFFS - MINAGRI, 2008.

Natural Protected Areas: SERNANP - MINAM, 2014.

Conservation Concessions: DICC - DGFFS - MINAGRI, 2008.

Suitability for Palm Oil: Fischer, Van Velthuizen, Shah., and Nachtergaele, 2002.

ANNEX 5. DEFORESTATION TO 2013

TABLE 11. DEFORESTATION TO 2013 ON LANDS SUITABLE FOR PALM OIL (PO) PLANTATION IN THE PERUVIAN AMAZON

Region	Total Deforestation to 2013	Deforestation to 2013 in areas suitable for PO	SI > 40: Medium	SI> 55: Good	SI> 70: High	SI> 85:Very High
AMAZONAS	705.520	21.268	4.593	10.373	2.794	3.508
AYACUCHO	120.579	4.192	4.192	0	0	0
CUSCO	488.427	10.654	6.985	1.099	1.375	1.195
HUANUCO	674.508	156.155	54.747	37.634	46.535	17.239
JUNIN	557.765	30.055	17.658	5.790	6.607	0
LORETO	1.255.949	1.030.432	79.873	657.268	289.955	3.336
MADRE DE DIOS	307.072	225.571	25.976	28.475	86.455	84.665
PASCO	300.477	57.094	22.331	5.856	14.599	14.308
PUNO	136.702	5.789	1.169	1.490	1.525	1.605
SAN MARTIN	1.338.284	86.371	84.028	0	2.343	0
UCAYALI	788.092	493.404	156.561	166.219	165.951	4.673
Total	**6.673.375**	**2.120.985**	**458.113**	**914.204**	**618.139**	**130.529**

Compiled by autor.

***Sources**:*

Deforestation: Programa Nacional de Conservación de Bosques para la Mitigación del Cambio Climático, 2014.

Suitability for palm oil: Fischer, Van Velthuizen, Shah., and Nachtergaele, 2002.

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