

Projet ANR- 11-AGRO-0007

SPOP

Programme Agrobiosphere 2011

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A IDENTIFICATION

Acronyme	SPOP
Title	Sustainable Palm Oil Production
Coordinators	Dr. Cécile Bessou Dr. Alain Rival
Date of project's start	01/03/2012
Date of project's end (conventions)	29/02/2016
Web page	http://spop.cirad.fr/

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B DELIVERABLES AND MILESTONES

N°	Tasks and deliverables	Nature	Date of delivery			Involved partners responsible
			Planned	Re-planned	Delivered	
WPO	Web site Collaborative webpage ANR report at +6, +18 Consultative (ex steering) committee	Web site Web site Reports -	+9 Added +6, +18 +12	- - - -	+9 +9 +6, +18 +18	<u>CIRAD UR34</u> + all partners
WP1	Task 1.1 : Building the superimposable assessment grids - A review of relevant available agro-ecological and socio-economic indicators - A review of palm oil production history and systems in Indonesia - A methodology to identify the sensitivity of oil palm plantations to global changes, the room for improvement and adaptation pathways - Draft of the 3D-assessment grids to be field tested and discussed with stakeholders - Final 3D-assessment grids	Data Report Tool/ method Tool and data Milestone	+12 Added +12 +12 -	- - +36 - +22	+9 based on WAW indicators- +6 Will be based on the field results and T1.2 results +9 First draft +18 Second draft Field test still ongoing & will use the results of the first reflexives T1.3 (+32)	<u>CIRAD UR34 & MOISA</u> + INRA + IRD/CIFOR + PT-SMART
	Task 1.2 : Analysing the perception of global changes and of new production standards for palm oil sustainability by the local producers - Analysis of oil palm systems and global changes perceptions: recommendations for adaptation strategies	Report	+36	-	-	<u>CIRAD MOISA</u> & UR34 + INRA + IRD/CIFOR + PT-SMART
	Task 1.3: Reflexive workshops to involve stakeholders in the definition and use of the 3D-assessment grids - A review of controversies and players related to palm oil expansion - A methodology of "hybrid forums" adapted to palm oil controversies - 3 reflexive workshops	Report Tool/ method Tool and data	+6 +20 +32	+18 - +22, +32, +42	- - -	<u>CIRAD MOISA</u> & UR34 + INRA + IRD/CIFOR + PT-SMART

WP1	Task 1.4: Data collection to fill up the assessment grids and characterize the various palm oil cropping systems - A typology of the diverse oil palm cropping systems in Sumatra according to their 3D-impacts - Key strategies to adapt the systems to global changes according to their specificities - Farm gate LCA of the diverse oil palm cropping systems - Recommendations to the producers	Report	+13	+24	-	CIRAD UR34 & MOISA + INRA + IRD/CIFOR + PT-SMART
		Report	+36	-	-	
		Report	+36	-	-	
		Report	+36	-	-	
	Task 1.5: Comparative analysis of oil palm cropping systems in Indonesia and Cameroon - A description of oil palm cropping systems in each country - A comparison of the oil palm development processes in the two countries, which underlines the positive and negative outcomes linked to the specificity of the local and national contexts - Policy recommendations	Report	+12	+20	-	IRD/CIFOR + CIRAD
		Report	+36	-	-	
WP2	Task 2.1: Global scenarios definition - Scenarios of evolution of the oil palm sector depending on a number of variables of influence and defined by the stakeholders	Data	+30	-	-	IRD/CIFOR + CIRAD + INRA
	Task 2.2: Modelling oil palm dynamics in Sumatera - Oil palm suitability maps of the study area - Oil palm dynamics model of the study area	Model & Spatialised data	+42	-	-	INRA + IRD/CIFOR + CIRAD
	Task 2.3: Land use scenarios - Prospective land use maps of the study area - General levers for managing oil palm dynamics	Report	+42	-	-	INRA + IRD/CIFOR + CIRAD
		Report	+42	-	-	

Extracts of some reports should give ways to scientific publications within the frame of the SPOP duration.

C INTERMEDIARY REPORT

C.1 OBJECTIVES OF THE PROJECT

In a nutshell, the objectives of the Project are: i) to investigate the influence of global changes on the various different oil palm cropping systems, ii) to identify the obstacles, opportunities, and uncertainties for the adaptation of these systems to global constraints, and iii) to elaborate strategies and tools designed to facilitate the transition towards sustainable oil palm cropping systems.

The approach developed in the SPOP Project follows three main lines: i) to provide new science-based knowledge and tools in order to ensure the sustainability of existing systems or to implement new sustainable systems, ii) to involve stakeholders in the innovation process by using specific methods all along the project such as multi-agent modeling and participative workshops, and iii) to identify obstacles and bottlenecks then analyze whether they are related to some inherent incapacity of oil palm cropping systems to adapt or/and to insufficient efforts in making knowledge and tools accessible to stakeholders.

C.2 ACTIVITIES AND RESULTS AFTER 18 MONTHS

Since the project started, emphasis has been put on coordinating the activities in order to enhance team work among the partners and on launching the field work to collect the data needed for our analyses.

WP0 - coordination:

- An internet webpage was created (<http://spop.cirad.fr/>) as well as an intranet collaborative webpage whose access is restricted to project members in order to exchange files and information, and to work on common documents.
- 6 Technical Committee meetings have been organised in Montpellier gathering most of the partners (physically or through skype conferences) (minutes in Appendix A.1); more informal discussions between 2 or 3 partners also occurred punctually.
- A Consultative Committee (ConsCom) has been created, gathering diverse stakeholders from the palm oil supply chain. To date, several key persons [Adjé (INRAB Bénin), S. Lord (NBPOL Singapore), D. Palaniappian (FELDA Malaysia), Soh Aik CHIN (Emeritus (Nottingham Uni)), Adam Harrison (WWF), John McCarthy (Australian University), Paul Nelson (James Cook University, Australia)...] have already agreed to participate in SPOP ConsCom, whose first meeting is planned during RSPO Round Table n°12 to be held in Medan, Indonesia at mid-November 2013.

WP1 & WP2 – field work launching:

- Since March 2012, 4 interns and 2 Ph.D. students have been supported by SPOP. Moreover, 3 students from other projects (brief in Appendix A.10) were connected to SPOP in order to enhance synergies and potentially share data input. (Details on internships in Appendix A.7-A.9)
- Tasks 1.1 and 1.2 of WP1 have been initiated. A literature review has extensively documented the historical steps of the development of oil palm in Sumatra and explored the ground reasons for differentiating palm oil production systems first on implementation history. Areas of investigation for the field work were selected based on the outputs of this review and expert knowledge from SPOP people. In the field, a first draft of the assessment grid, based on an adaptation of WAW, was tested (report up-coming) and will also be discussed with the stakeholders during a reflexive workshop in order to further improve the assessment grid (Task 1.3 Q4-2013). The analysis of the perception of global changes and sustainability standards by local population (Task 1.2) has started in the field. Numerous communications and publications were produced by the partners IRD/CIFOR/CIRAD B&SEF on preliminary results from task 1.5. After Cameroon, the same analysis in Indonesia is being carried out in 2013.
- Activities of the WP2 have also been launched with several milestones such as the beginning of Margot Moulin's Ph.D. study (INRA) in October 2012 (Tasks 2.2 and 2.3), and the organisation of first Participatory Prospective Analysis (PPA) workshop (Task 2.1). The objectives of the project and the field work of the students were introduced to the local authorities or company heads (by Julie Wohlfahrt, Laurene Feintrenie and Patrice Levang). The first PPA are planned in September 2013 in 2 villages of Bungo district (Jambi). that will take place in Indonesia in September 2013. Recommendations and narratives developed during the village workshops will be presented to public officers of the district. Based on these restitutions, discussions with the district officers will aim at developing narratives of scenarios of oil palm development at the district scale. Recommendations and strategies of action will be drawn to achieve the preferred scenario of the participants.
- The details of each task progress is given in Appendix A.2-A.5.

C.3 ENCOUNTERED DIFFICULTIES AND PROBLEMS SOLVED

The major constraint we had to face during the period under review was to obtain Indonesian visas for the PhD students and interns involved in SPOP. Despite the valuable help of our local partners, the whole process appeared to be longer than expected due to recent changes in the immigration regulation in Indonesia. Fortunately, the problem was eventually solved although planned field work of Raymond Nkongho has been seriously delayed. The work of the intern Karine Lé which was based on the testing of the draft version of the assessment grid has also been shortened for the same reason. We will have to plan future field work in Indonesia taking into account this constraint. Expected deadlines for several deliverables have been changed accordingly in the corresponding Table.

C.4 KEY FACTS AND REMARKABLE ACHIEVEMENTS

In this early stage of the project, important key facts were notably the kick-off of the Ph.D. of Margot Moulin, whose salary is entirely covered by ANR for three years, and the start of the field work. Her first steering committee took place in Montpellier in April 2013. The minutes of this meeting can be found in Appendix A.6.

The partnership between IRD, CIFOR and Cirad (UMR B&SEF) is very productive concerning the comparison of palm oil production systems in Cameroon and Indonesia. Synergies between these partners are very active notably through the supervision of the Ph.D. student Raymond Nkongho. The latter has already collected a lot of data and information on palm oil in Cameroon, which serve as a basis to analyse differences with palm oil in Indonesia. Details on the publications are given in table D.1.

C.5 MEETINGS

Date	Place	Partners present	Topic
27.09.2012	Montpellier	CIRAD + INRA (visio-conference)	Technical committee 3: see Appendix
19.12.2012	Montpellier	CIRAD + INRA + IRD/CIFOR (visio)	Technical committee 4: see Appendix
11.01.2012	Montpellier	CIRAD + INRA (visio-conference)	Technical committee 5: see Appendix
19.07.2013	Montpellier	CIRAD + IRD/CIFOR + INRA (visio-conference)	Technical committee 6: see Appendix

C.6 COMMENTS

Comments of the coordinators

The SPOP people work together in a very good atmosphere with outstanding team spirit; indeed all partners put together a lot of effort in order to solve various problems related to visas for our interns or to research permit for the PhD students. All partners agreed that all students should benefit from the same conditions in order to work under the best possible environment. Furthermore, the SPOP people managed to create complementarity and synergies in the field among the diverse SPOP interns.

It proved sometime difficult to bring all partners together at the same time for meetings thus we decided to open a private collaborative webpage which is aimed at facilitating exchanges beyond meetings. This communication tool is progressively used by SPOP researchers and students.

Besides, everyone is very constructive in trying to transcend the divergences in approaches or even vocabulary across disciplines!

Various difficulties to start the field work have consequently delayed the delivery of most of the earliest deliverables but this delay should be quickly recovered.

Comments from the partner

NA

Questions to ANR

NA

D PUBLICATIONS AND COMMUNICATIONS ON THE PROJECT AND RESULTS

D.1 PUBLICATIONS AND COMMUNICATIONS

Liste des publications multipartenaires (résultant d'un travail mené en commun)		
International	Revues à comité de lecture	1. Raymond N. Nkongho, Laurène Feintrenie, and Patrice Levang. Forthcoming. The strengths and weaknesses of the smallholder oil palm sector in Cameroon. <i>OCL</i> (accepted).
	Ouvrages ou chapitres d'ouvrage	
	Communications (conférence)	1. Feintrenie L, Levang P, Ngom E. 2012. <i>Transfer of the Asian model of oil palm development : from Indonesia to Cameroon</i> . World Bank conference on land and poverty, Washington DC, USA, 23-26 April. 2. Feintrenie L. and Rafflegau S. 2012. <i>Oil palm development: risks and opportunities based on lessons learnt from Cameroon and Indonesia</i> . 17e Conferencia Internacional sobre Palma de Aceite. 2012-09-25/2012-09-28, Cartagena, Colombia.
France	Revues à comité de lecture	
	Ouvrages ou chapitres d'ouvrage	
	Communications (conférence)	
Actions de diffusion	Articles de vulgarisation	
	Conférences de vulgarisation	
	Autres	1. Levang P. et Feintrenie L. 2013. Smallholder friendly oil palm development: lessons from Indonesia. WWF – MINADER Workshop, Limbe, Jan 31- Feb 1, 2013 2. Levang P. et Feintrenie L. 2012. Smallholder friendly oil palm development: lessons from Indonesia. WWF – MINADER Workshop, Yaoundé, Dec12-13, 2012 3. Levang P. et Feintrenie L. 2012. Développement des plantations villageoises de palmiers à huile: les leçons de l'exemple indonésien. Atelier de renforcement des capacités des acteurs sur les standards RSPO en vue d'un développement durable du palmier à huile au Cameroun. Proforest, Minader, WWF. Kribi, 12 - 14 Juin 2012 Levang P. 2012. <i>Elites et accaparement des terres au Cameroun : l'exemple du palmier à huile</i> . IRD et CIFOR. Yaoundé, 15 février 2012 4. Levang P. 2012. <i>Etat des lieux du développement du palmier à huile au Cameroun et mesures de durabilité existantes</i> . Dialogue des parties prenantes dans le développement du palmier à huile au Cameroun. MINADER, CIFOR, IRD et WWF. Hôtel Azur, Yaoundé, le 08 mai 2012. 5. Levang P. Et Feintrenie L. 2012. <i>Smallholder friendly oil palm development: lessons from Indonesia</i> . Collaboration in Conservation & Development (Ndian & Kupe Muanenguba Divisions). Workshop organized by SGSOC Herakles Farms, chariot hotel, Buea. Tuesday, 19 - Wednesday, 20 June, 2012 6. Cirad 2011 Defining indicators to certify sustainable palm oil production. Annual Report Cirad 2011.

No publication monopartner

D.2 OTHER DIFFUSION MEANS

NA

D.3 NON-PERMANENT PERSONAL (EXCEPT INTERNS)

Identification				Avant le recrutement sur le projet			Recrutement sur le projet			
Nom et prénom	Sexe H/F	Adresse email (1)	Date des dernières nouvelles	Dernier diplôme obtenu au moment du recrutement	Lieu d'études (France, UE, hors UE)	Expérience prof. antérieure (ans)	Partenaire ayant embauché la personne	Poste dans le projet (2)	Date de recrutement	Durée missions (mois) (3)
NKONGHO Raymond	H	nrndip@yahoo.com	2013.07.19	Master 2 in Botany	Cameroon	>7years	CIFOR	Doctorant	May 2011	3
MOULIN Margot	F	margot.moulin@mircourt.inra.fr	2013.08.30	Master 2/ Engineer from ENSAIA	France	0	INRA	Doctorant	October 2012	4

D.4 ACCOUNTING DETAILS

NB: expenses are given for the 03.2012-08.2013 timeframe. Not all expected expenses to the end of 2013, nor 2016, are listed.

Partner	Activity	Schedule	Budget / expected	Remark
CIRAD	Cécile Bessou training to build-up the web pages	Ez-publish + Alfresco share	-	Paid by Cirad Formation
	Chronopost mail to the ANR + partners for signature	2012	<100€	SPOP budget
	Meetings café + meals	2012	<200€	SPOP budget
	Meetings café + meals	2013	<300€	SPOP budget
	Alice Baudoin internship	June-August 2012	1300€	SPOP budget
	3 RT10 registrations	November 2012	2500€	SPOP budget
	3 RT11 registrations	November 2013	2500€	SPOP budget
	Cécile Bessou supervising mission to Indonesia	August 2013	2200€	SPOP budget
	Pierre-Marie Bosc supervising mission to Indonesia	August 2013	2000€	SPOP budget
	Karine Lé internship including mission to Indonesia	May-September 2013	7200€	SPOP budget SPOP budget
	Roxanne Houvenaeghel internship including mission to Indonesia	May-September 2013		
	Roxanne H. internship on visual sociology: camera	May 2013	700€	SPOP budget
	Marcel Djama missions to Indonesia and Singapore (RT10)	Singapour - oct 2012 Singapour et JKT - December 2012 Jakarta - June 2013	2000€	SPOP budget

Partner	Activity	Schedule	Budget / expected	Remark
INRA	Margot Moulin training	GIS training Remote sensing training Bahasa Indonesia <i>Modelling training (2014)</i> <i>Scenario training (2014)</i>	800 € 900 € 500 € 800 € 800 €	INRA "Formation Permanente" and ASTER unit has been paying Margot Moulin's trainings except "Bahasa Indonesia"
	Margot Moulin mission in France (Montpellier)	December 2012 January 2013 April 2013 <i>3 missions in 2014</i> <i>2 missions in 2015</i>	500 € 500 € 500 € 1500 € 1000 €	SPOP budget
	Margot Moulin long term Mission to Indonesia	From May to December 2013 <i>From April to October 2014</i>	7000 € 5000 €	SPOP budget
	Julie Wohlfahrt missions in France (Montpellier)	July 2012 December 2012 April 2013 <i>2 missions 2014</i> <i>2 missions 2015</i>	330 € 330 € 330 € 660 € 660 €	SPOP budget
	Julie Wohlfahrt missions in Indonesia	July 2013 (8 days) August / September 2013 (3 weeks) <i>One mission in 2014</i>	1800 € 1500 € 2000 €	Both missions of 2013 have been paid by ASTER unit
	Marc Benoît missions in France (Montpellier)	December 2012 April 2013 <i>1 mission in 2014</i> <i>1 mission in 2015</i>	330 € 240 € 300 € 300 €	SPOP budget
	Other expenses		1500 € 1000 €	GPS, computer, softwares, books, satellite images, maps
	Total	Total expenses for SPOP Total on SPOP budget <i>expected</i>	10060 € 4560 € 20220 €	For expected expenses, priority will be given for Margot Moulin's mission to Indonesia and trainings
IRD	Workshops	Up coming	As planned	SPOP budget
CIFOR	Raymond Nkongho	2012-2015	As planned	SPOP budget

E APPENDICES

A.1. MINUTES OF SPOP MEETINGS

SPOP 2012-2016		Technical Committee 27 September 2012 Minutes	Meeting 3 Cécile Bessou, Alain Rival		
<div>- Participants : Alice Baudoin AB, Marc Benoît MB (visio), Cécile Bessou CB, Pierre-Marie Bosc PMB, Marc-Philippe Carron MPC, Margot Moulin MM (visio), Sylvain Rafflegeau SR, Aude Verwilghen AV, Julie Wohlfahrt JW (visio).</div> <div>- Absents : Jean-Pierre Caliman JPC, Emmanuelle Cheyns EC, Marcel Djama MD, Laurène Feintrenie LF, Claude Jannot CJ, Patrice Levang PL, Alain Rival AR, Jean-Marc Roda JMR.</div>					
Agenda		27 September (9am-12pm)	<div>1. Presentation of AB's internship results: literature review on the production systems in Indonesia</div> <div>2. Updates on SPOP webpage: choice of the logo</div> <div>3. Next steps</div>		
Discussion points		<div>AB's literature review outputs on the selection of study fields:</div> <div><div>- Information on the diverse production systems in the diverse provinces and districts are very variable in content according to their origin: data on Riau province are more focused on agronomic and technical aspects, whereas those on Jambi province are socio-economic data. Data on West Kalimantan are scarce compared to the two first provinces; they mostly consist in scientific publications on ecological issues. Moreover, data on distinct districts within each province are currently not evenly available, and general conclusions on provinces based on a reduced number of districts must be considered with precaution. Extract of the report synthesis: <i>"Because palm oil development on peat lands is a challenge both from an environmental and technical point of view, because it is the oldest and the most threatened by land grabbing dynamics, Riau should be chosen. There is a need to know what happens on the long term but also the important part of independent smallholders offer interesting cases to understand the strength and weaknesses of their production systems, the initiatives they may have developed and how they manage their plots. West Kalimantan is at the opposite. Because palm oil is more recent and local people very enthusiastic about it, because its forest has caught the interest of both NGOs and companies, West Kalimantan is a province to be closely looked at. It also presents peat lands and because the development is still mainly done by companies, improving their production capacity and their power should help the development of a stronger share of smallholders. Palm oil extension is now fast and companies have more experience compared to indigenous people, therefore they might represent a greater threat. The presence of the environmental conservation actors could also provide with an interesting support to evaluate RSPO companies and design more sustainable production systems. Jambi has been extensively studied and the findings could for example serve as a reference or source of comparison."</i></div><div>- According to these results, the objectives of the WP2 (focusing on the cropping system diversity notably accounting for the past development of oil palm in Indonesia), and further discussion on the access to the field; Riau and Jambi provinces are selected.</div></div>			
Decisions		<div><div>♦ Communication cell:</div><div><div>- SPOP web page: the logo created by Martine Duportal was selected; the web page will be opened in October with two versions: i) for computer and ii) for smartphones. The webpage is now open: http://spop.cirad.fr/. The alfresco share collaborative part of the web page is not yet operative.</div><div>- It is important to keep the webpage alive! Everyone from the project is invited to submit infos, reports, news to the webmaster (CB) to help update the webpage. Many thanks in advance.</div></div><div>♦ Steering committee: an invitation letter with SPOP concept note will be sent to the institutional representatives and scientific department directors of the diverse partners + institutional representatives of local partners. Members of this committee will be then informed about SPOP updates and potentially provide feedbacks on a yearly basis.</div><div>♦ Technical committee: conveying the people responsible for SPOP tasks and other key players</div><div>⇒ Next meeting in December 2012 – week 51</div></div>			
<div>Documents to be uploaded on the web:</div> <div><div>- Report of AB (as soon as corrections are complete)</div></div>					

Participants : Marc Benoît MB, Cécile Bessou CB, Pierre-Marie Bosc PMB, Marc-Philippe Carron MPC, Emmanuelle Cheyns EC, Marcel Djama MD (visio), Laurene Feintrenie LF (visio), Claude Jannot CJ, Margot Moulin MM, Patrice Levang PL (visio), Alain Rival AR, Julie Wohlfahrt JW.
Absents : Jean-Pierre Caliman JPC, Sylvain Rafflegeau SR, Jean-Marc Roda JMR, Aude Verwilghen AV

Agenda

Objectives of the meeting

1. To define the assessment grids for the characterisation of the production systems and their 3D-impacts
2. To define the survey questionnaires based on the content of the grids and to plan internships in 2013
3. To coordinate WP1 and WP2 notably in terms of research places and internships

+ Miscellaneous: visa, webpages, next steps

Achievement

The first objective was partly achieved: roughly 60% of the assessment grids were drafted based on WAW indicators.
The second objective was partly achieved (50%): the number of internships and their timing were defined but the survey questionnaires have not been written down yet.
The third objective was achieved through decisions on the location and coordinated internships for coordinated activities between WP1 and WP2; notably T1.2 & T2.1; T2.1 & T2.2.
The use of the collaborative webpage "Alfresco share SPOP" was introduced to the participants. This collaborative webpage should be connected soon to the SPOP webpage but can already be used as such by SPOP people. An access was created for SPOP people who are not part of CIRAD.

Project benchmarking:

- Peter Oosterveer, Wageningen University, supervises 8 Ph.D. students from Asia to investigate the issue of land grabbing related to palm oil development in Africa.
- SHARP is an initiative from RSPO that aims to define a good and efficient model of cooperation between industrial companies and smallholders. It is facilitated by ProForest and involves OLAM, Sime Darby and Sawit Watch (list to be completed).

Administrative points:

- SPOP project duration was extended by 6 months in order to encompass the 3-year duration of Margot Moulin's Ph.D. that started in November 2012 (INRA).
- The administrative process to get a research visa in Indonesia for both interns and Ph.D. students have changed lately and become more complicated. It is important to notice that an Indonesian counterpart is now needed to fulfill the administrative requirements. CIFOR can help conduct the whole process, provided that the supervisors (SPOP people) first compile all the required documents including the pieces that must be provided by the Indonesian counterpart.
- Raymond Ngonkho research work in Indonesia was delayed due to the difficulty to get his visa and the refusal from PT-SMART regarding his hostage. He should have his complete visa soon and will start investigating two companies: Musim Mas in Riau and PT Mega Sawindo in Jambi.
- An official invitation letter was sent to Dr. Fahmuddin Agus (Indonesian Soil Research Institute) who agreed to be part of the steering committee of Margot Moulin's Ph.D. thesis. He will help proceed with her visa demand.
- Agenda for the interns in 2013 should be coordinated so that interns can help each other in the field. Interns should take Bahasa classes at the same time if possible and investigations in the field should be combined as much as possible in order to foster synergies. It is also paramount that interns paid by CIRAD or CIFOR through SPOP budget receive the same amount of money including allowances and accommodation fees.

Discussion points

Presentation of Margot Moulin's Ph.D. thesis "Modeling the diversity of palm oil development dynamics":

- There is a need to assess how the diverse palm oil systems may be sustainable within two dimensions: 1) a spatial dimension at both small (plantation) and large scales (mill supply area); and 2) a time dimension, since both present and future developments are of interest to the project. To predict potential future developments, the aim of the thesis is first to understand the past and current dynamics of the development of the diverse palm oil systems within the land system. The dynamics of land system (LULUC) are complex due to numerous interacting factors such as bio-geo-chemical and human processes. The analysis of these factors will feed the multi-agent model built-up during the thesis as a tool to simulate prospective scenarios of palm oil development in Sumatra. Details on the modeling plan and Ph.D. schedule can be found in the pdf of the presentation posted on Alfresco.

Field work:

- See internship list below
- SR specified that he will work on data from a former intern during 2013-Q1 to contribute to T1.4
- First reflexives workshop will be organised by MD in 2013. The bottom-line is to involve stakeholders in the critical review of the 3D-impact assessment grids. This participative process aims i) to communicate on SPOP objectives and potentially get stakeholders on board so that they can feel involved in the project and interested in using its outputs; ii) to establish the soundness of the assessment grids according to stakeholders' knowledge and needs, and to modify, complete and validate the grids; iii) to identify obstacles to the diffusion of project results and to the use of proposed quantified indicators. This workshop should be held while SPOP members are in Indonesia supervising interns in the field (*i.e.* April-Mai 2013) so that they can participate in the workshop. It is paramount to well select the participants among the potential stakeholders, since their contribution to the workshop has to be critical but also constructive.

Potential bottlenecks/opened questions:

- According to Alice Baudoin's report: 8 types of palm oil systems are distinguished, *i.e.* PTP/PIR(-Trans)/KKPA-KUD high investment/Ophir/Semi-independent/independent/Joint venture/KKPA low investment (see Alice Baudoin's report in Alfresco for more details). In a first step, these 8 types will be investigated separately. The first question consists in determining if similar palm oil cropping systems (notably agricultural practices) can be found across diverse systems among

the 8 types above-mentioned ("ubiquist" cropping system) or if some cropping systems are specific to one of the 8 types ("niche" cropping system). Among "ubiquist" cropping systems, it is then necessary to investigate whether further factors (apart from palm oil cropping system) may affect the palm oil 3D-impacts in a systemic way so that palm oil systems can be further discriminated. According to the answers, the 8 types of palm oil systems may be re-combined and/or re-defined.

- Within SPOP project, emphasis is put on "palm oil cropping system". Nevertheless, the 3D assessment grids must be completed at the farm level, especially due to intrinsic inter-connections between palm oil, other productions and overall global socio-economic impacts. While the description of the diverse systems will be done at the farm level (structural indicators of the farm organisation), the assessment of agricultural performances and environmental impacts will be focused on palm oil systems (impact indicators at the plot(s) scale). Difficulties may arise 1) when differentiating structural or performance indicators for socio-economic aspects; and 2) when putting into perspective or weighting impacts only linked to palm oil or related to other productions or activities.
- By extension, in the assessment grids, indicators should be included that allow for distinguishing direct and indirect impacts from a palm oil cropping/production system, i.e. how to account for impacts on local population livelihoods related to the influential area of a palm oil plantation? This question also raises the issue of delineating this kind of influential area.
- Concerning the first reflexives workshop: it might be too complex to ask the invited stakeholders to revise the complete 3D-assessment grids. A set of more specific questions may be needed.

Decisions	♦ Project benchmarking: contacts will be taken with P. Oosterveer, SHARP members and further representatives from on-going projects related to palm oil production and sustainability assessments.	Responsible people/timing CB+AR/2013-S1 EC for SHARP/2013-S1 EC /2013-S1 CB/2013-01
	♦ Yves Laumonier (CIFOR) will be contacted by EC in order to clarify the potential role of local NGOs to help facilitating the visa demand.	
	♦ Reflexives workshop: a letter presenting SPOP and the assessment grids/proposed indicators will be sent to MD in order for him to start looking for participants to the workshop while he is in Indonesia.	CB/2013-01
	♦ Communication cell:	
	- A request will be submitted to upgrade Alfresco share in order to be able to export uploaded documents toward a bibliographic tool such as Endnote or Zotero.	B. Girardot/2013-?
	- Connection between SPOP web page and Alfresco share SPOP in under construction.	CB+AR/2013-01
	♦ Administrative points:	
	- A mail will be sent to Gilles St-Martin, regional representative of CIRAD in South-East Asia to inform him about interns planning and bottlenecks for visa demands.	SPOP coordinators with the help of local contacts
	♦ Steering committee: an invitation letter presenting SPOP and inviting people to contribute to SPOP steering committee still need to be sent to the institutional representatives and scientific department directors of the diverse partners + institutional representatives of local partners. Members of this committee will be then informed about SPOP updates and potentially provide feedbacks on a yearly basis.	
	♦ Technical committee:	

⇒ Next meeting Tuesday 8. January 2013, 9 am (Paris time)

	State	Country	Timing	Supervisors	Objectives	
Interns planning	I.1	Done by Alice Baudoin	Indonesia	2012/ Summer	CB + PMB	Literature review on the palm oil production systems found in Indonesia and review of interests to select the provinces and districts for SPOP field work.
	I.2	Selection of candidate ongoing	Indonesia	2013/ 05-09	LF + PL	Palm oil supply chain analysis in the selected district of Riau Province Prospective workshop to define the global scenarios of palm oil development (T2.1)
	I.3	Internship proposal to be published	Indonesia	2013/ 05-09	EC	Investigating the perception of global changes by diverse palm oil actors and local population (T1.2)
	I.4	Internship proposal to be published	Indonesia	2013/ 04-09	CJ + CB	Assessing the 3D impacts of the diverse cropping systems (T1.4)
	I.5?	Internship to be defined (Malaysian student?)		2013/ 04-05	MD	Reflexives to complete/validate the assessment grids with local actors (+ analyzing the perception of global changes by local actors)
	I.6?	Internship to be defined	Cameroon	2013/14	SR (+ RN?)	Assessing the 3D impacts of the diverse cropping systems (T1.4)
	I.7?	Internship to be defined	Indonesia	2013/14	Ph.D. student at INRA (+JW, JMR)	Model build-up and land use scenarios modeling (T2.2 + T2.3)

Documents to be uploaded on Alfresco web:

- 1 power point as pdf on MM Ph.D. (by MM) in File [Margot Moulin]
- 1 report as pdf on Alice Baudoin's literature review on palm oil systems (by CB) in File [SPOP INTERNSHIPS]
- 1 draft of the assessment grids (by CB) in File [SPOP DOCS]
- **To be completed by participants**

SPOP 2013-2016	Technical Committee 11 January 2013 Minutes	Meeting 5 Cécile Bessou, Alain Rival	<small>AGENCE NATIONALE DE LA RECHERCHE</small> ANR
Participants : Cécile Bessou CB, Pierre-Marie Bosc PMB, Laurène Feintrenie LF, Claude Jannot CJ, Margot Moulin MM), Sylvain Rafflegeau SR			
Absents : Marc Benoît MB, Jean-Pierre Caliman JPC, Marc-Philippe Carron MPC, Emmanuelle Cheyns EC, Marcel Djama MD, Patrice Levang PL, Alain Rival AR, Jean-Marc Roda JMR, Aude Verwilghen AV, Julie Wohlfahrt JW			
Agenda	Objectives of the meeting	1. To work further on the assessment grid draft strated in December 2012 2. To discuss on administrative points regarding the internships	
Achievement	The first objective was merely achieved due to the limited attendance. The focus was finally put on the planning of the internships for 2013. Discussion among SPOP partners raised the issue of new regulations to get visa for students.		
Discussion points	Administrative points:		
	- SPOP people will gather further information on the administrative documents needed to get visa for the interns and Ph.D. student. In particular, we will ask for some help from SPOP local partners and investigate the differences between visa supported by private or public counterparts. Ideally, all SPOP interns should get the same access to the field.		
	Technical points:		
	- Data on planting material and yields are very sensitive; accurate data is hard to gather, whereas yield and planting material are important factors explaining farm performances. There would be a need for assessing these parameters in a comprehensive manner at the level of a supply area, in order to serve as a reference to better interpret data collected through surveys within the frame of SPOP field work. This work can however not be carried out within the frame of SPOP, since it would require 1-year field work, which has not been planned in the initial budget. We might try to take the opportunity of other project calls to try to conduct this study. Palmelit might be interested in funding such field work.		
Decisions	- CIFOR and ICRAF are collecting data for Indonesia on palm oil production and spatial development. This information is collected within the frame of the Sentinel Landscape programme of CIFOR. This data should be useful for SPOP.		
	♦ Administrative points:		Responsible people/timing All supervisors
	- Focus on the visa processes.		
	♦ Technical committee:		
	⇒ Next meeting Q2/3 2013		
Documents to be uploaded on Alfresco web:			
- Updates on the assessment grid draft			

Participants : Cécile Bessou CB, Pierre-Marie Bosc PMB, Emmanuelle Cheyns EC, Claude Jannot CJ, Margot Moulin MM (visio), Patrice Levang PL, Sylvain Rafflegeau SR, Alain Rival AR, Julie Wohlfahrt JW (visio).

Absents : Marc Benoît MB, Jean-Pierre Caliman JPC, Marc-Philippe Carron MPC, Marcel Djama MD, Laurène Feintrenie LF, Raymond Nkongho RN, Jean-Marc Roda JMR, Aude Verwilghen AV

- Agenda**
1. Review of ongoing activities esp. field work of interns, Ph.D. studies, progress on deliverables, encountered difficulties etc.
 2. Update on the draft of the assessment grid in light of first field works
 3. Update on budgets (planned, realised, RSPO RT11 registration)
 4. Contributions for the ANR report (18 months) + for the web updates
 5. Publications planned
 6. Miscellaneous ("steering committee" by AR, others)

- Updates**
1. In August 2013, 2 Ph.D. students (MM, RN) and 3 interns (Karine Lé, Roxanne Houvenaeghel, Soytavanh Mienmany) are working in the field within the frame of SPOP. At that time, all are in Indonesia. Globally, it was difficult for all the interns and Ph.D. students to get proper visas to enter Indonesia and get access to the field. Emphasis was put on trying to get the same working conditions for all of them, i.e. trying to get invitation letters from the same counterpart in Indonesia in order for the students to get access to the same survey area in Riau and Jambi provinces. Thanks to our partners in Indonesia, CIFOR and PT-SMART, and Dr. Fahmuddin Agus, member of Margot's steering committee, all administrative issues were solved but they caused some delay before the field works could start.

We must be aware that the way access to the field is permitted by local partners induces bias in the assessment (oriented choices of the interviewed people, especially smallholders around the companies' plantations) so that cross-checked through other access ways would be needed. The effect of such bias will have to be estimated and changes in field access considered for another field work campaign (if and where possible). The conclusions of each internship will be discussed during the next technical committee.

By the end of August, 4 supervising missions had been conducted by SPOP people in the field (LF, JW, PMB, CB). The presence of the diverse supervisors was notably useful to introduce the project and the field works to diverse local authorities, e.g. village or companies' heads. At the technical level, emphasis was put on enhancing synergies between the diverse field works in order to optimise the complementarity in the outputs. This could be done by working out the overlapping and complementarity of the diverse questionnaires and sampling areas.

The first prospective workshop has been organised (LF, PL) and will be held in September in the Bungo district, Indonesia. The same workshop should be organised in Cameroon with IRD fundings (recall from internal discussion on 2012.11.29).

2. The first draft of the assessment grid is being field tested. Based on the exhaustive list of variables and indicators provided within the conceptual framework of WAW, it was difficult to build-up the draft without testing first in the field which information could be more or less easy to collect. Moreover, the main factor distinguishing farm categories in WAW is the type of manpower and whether the farm relies only on family manpower or not. This baseline assumption may be not sufficient in the case of palm oil farming systems in Indonesia. The grid is being tested currently by Karine Lé. PMB just came back from his supervision mission where he and Karine revised the questionnaire to this end.
3. Details on each partner budget will be provided for the ANR report. Up to now, there has not been any budget difficulty, and realised expenses are closed to planned ones. AR and CB will attend RT11 in Medan, Indonesia, in November 2013. EC, PMB and MM may also join. Early registration is opened until 1st October. In the meantime, AR will also attend the First European RSPO RT in Berlin in September 2013.
4. Contributions for the ANR report should be written in English and sent to the SPOP coordinators before the end of August. It is reminded to all that publications and other diffusion means should explicitly mention the support from ANR and the SPOP project. The results of the field work will be posted on the web page.
5. The detail of publications (planned and realised) should be listed in the ANR report. Papers published within the frame of ANR SPOP must stipulate it within the acknowledgements. The sentence might be: "The authors are grateful to ANR (the French National Research Agency) which supported this work within the frame of the ANR SPOP project."
6. AR has sent invitation to build-up the Consultative (ex. Steering) committee of SPOP. The involved people within the Consultative Committee (CC) will be conveyed once a year (physically or through visio-conference) in order to gather their opinions on the project progresses. First answers have been already received (?positive, ?stand-by)

Margot Moulin's Ph.D. thesis "Modeling the diversity of palm oil development dynamics":

- Margot's first field work period will last from May until November 2013; the second one in 2014 is not yet precisely planned. During this first period of field work, Margot will try to cover two areas (Riau and Jambi) in order to allow for potential extrapolation of the model to diverse areas. It will be at the cost of a more exhaustive assessment on a unique area, which means that she has to find a compromise. Should a more comprehensive assessment of the two areas be needed, interns may be hired to complete the surveys.

Field work:

- Discussion points**
- Roxanne Houvenaeghel is currently in Indonesia (Task 1.2 supervised by EC). She is working in the same field area (district) as Soytavanh (Task 2.1 supervised by LF). However, the exact villages for her survey have not been yet selected. Soytavanh is working in two villages (Senamat Ulu and Batu Karbao) which have specific status in terms of resource management (protected community forest). Therefore, Roxanne should look for villages without such history (Sungai Tdang village? Others?). She should discuss this with LF notably since she knows the area pretty well.
 - Contact may be taken through AR's support to get a field access to Malaysia (with the help of FELDA) for RN.
 - Report on Kampar region (Riau Province) from Raymond Bourgeois may be useful to add information to current field work.
 - JPC may provide some access to governmental data concerning the rural census in Indonesia in 2013.
 - The CIFOR programme on Sentinel Landscape is quite advanced in Cameroon and starting in Indonesia; it should provide

	<p>SPOP with useful data on palm oil development and maps.</p> <ul style="list-style-type: none"> - First reflexives workshop shall be organised by MD in Q4 2013, depending on the availability of the revised draft of the assessment grid. Ideally, this workshop could be organised in margin of RT11 to benefit from the presence of diverse stakeholders. - Yields are very difficult to assess accurately. Further projects should include a specific study with intense field work survey to better estimate the exact yields of the diverse farmers within a supply area: it would include a monthly record of yields at the plot scale, a field survey of planting material used with field tests, and interviews of farm groups and cooperatives to cross checked measured yield components with other top-down approaches bases on costs and payments (CJ). 	
	<ul style="list-style-type: none"> ♦ The Consultative Committee will have an advisory role on the activities and results along the project. Members will be brought together once a year for an official meeting (physically or virtually through the Internet) and will be given regular updates on the activities along the years. They will be free to make comments whenever they want. SPOP people shall send further contacts to AR to extend the list of invited people. ♦ SPOP people should submit an abstract for ICOPE Conference (Conference on Palm Oil and the Environment) to be held in Bali in February 12-14. 2014. Deadline for abstract submission is October 30. 2013. 	<p>Responsible people/timing CB+AR</p> <p>All SPOP people</p> <p>CB</p> <p>+ all SPOP people</p>
Decisions	<ul style="list-style-type: none"> ♦ Communication cell: <ul style="list-style-type: none"> - SPOP web page must be updated, for that SPOP people need to send documents and idea to CB. - Alfresco collaborative web site will be maintained, provided that SPOP people manage to get used to it: new explanations and demonstration will be provided at the next technical committee. Posted documents on Alfresco that deserve to also be made public on SPOP webpage must be signified to CB - Technical committee: <ul style="list-style-type: none"> ⇒ Next meeting ? December 2013, ? am (Paris time) 	
<p>Documents to be uploaded on Alfresco web:</p> <ul style="list-style-type: none"> - Details on the diverse interns and internships' outputs (by all supervisors) [SPOP INTERNSHIPS] - To be completed by participants 		

A.2. REPORT ON TASK 1.1

BY PIERRE-MARIE BOSC & CÉCILE BESSOU

Task 1.1: Building the superimposable assessment grids

Objective: to provide a tool in order to assess 3D impacts of the oil palm plantations; such tool being designed to be sensitive to local production conditions and agricultural practices and allow for the definition of room for improvement and adaptation pathways

Partners involved: leader CIRAD (+ IRD/CIFOR + INRA + PT-SMART)

Deliverables:

- a review of relevant available agro-ecological indicators
- a review of relevant socio-economic indicators
- a methodology to identify the sensitivity of oil palm plantations to global changes, the room for improvement and adaptation pathways
- assessment grids
- results of field testing of the assessment grids (involvement of stakeholders + ways of improvement of the grids)

Achievements 2012-13

The baseline assumption of SPOP is that 3D impacts vary with the diverse palm oil production systems. We needed first to explore the diversity of the palm oil production systems and to understand which factors define the diverse production systems (i.e. which factors and how they are specific to each system) and how they are correlated to diverse production strategies. We then need to understand which factors affect the 3D impacts of the diverse palm oil systems and how these factors vary from one system to another in order to elaborate adaptation strategies.

In 2012, a literature review (internship of Alice Baudoin) has extensively documented the historical steps of the development of oil palm in Sumatra and explored the ground reasons for differentiating palm oil production systems first on implementation history. This review has helped the team to select the study area to elaborate the multidimension assessment grid for palm oil production. Collective decisions were taken concerning the choice of the study areas for the whole project (Riau and Jambi provinces in Sumatra, Indonesia).

For task 1.1, the Riau province has been chosen since it provides a large diversity of productive arrangements from the Estate agro industrial plantation up to more independent systems with different intermediate organizational patterns (Report by Alice Baudoin, presentation at Cirad thematic meeting on oil palm, July 9th, 2012). A selective process has been launched to recruit an internship (Karine Lé, SupAgro, Montpellier) to work on the assessment grid during a six month period ending September 30th, 2013). Based on the initial WAW assessment grid, the confrontation to the local conditions led to several adjustments, still on going. The complexity of the inter-connected factors makes it difficult to design categories of production system only based on some relevant structural factors (as it is the baseline in WAW regarding the type of manpower and the degree of self-sufficiency). Moreover, the historical grounds to some production systems are not sufficient to distinguish among producer strategies, since one producer may have several plots within different implementation schemes. Among the SPOP people, for the diverse tasks, we hence discussed the possibility to start from an ex ante classification of production systems based

on the agricultural practices, and to build-up an ex post classification by adding information from the socio-economic analysis. The internship will provide a questionnaire for family holding types including the different activities developed with the family members going beyond farming when needed. This process proved interesting and useful since it will allow to characterize different livelihood strategies. We shall confirm that palm oil production is a key component of the family strategies.

For the intern accommodation and access to field, we adopted a pragmatic approach being based in Smartri compound in Libo (Smartri is the research center of PT-SMART, partner of SPOP project) ; this location offered logistic support for the internship and the expert support mission and made the work possible (support staff for designing the questionnaire, translation, housing, transport...). The location may have induced a bias regarding the representation of the number of more "independent" family holding, but this phase was key to establish the methodological basis of the assessment grid. Further investigation may be needed to get a more balanced picture of the "more independent" holdings.

The products of this internship will be (for early October): the Master report, the questionnaire and the assessment grid to be discussed next November as a back to back activity during the RSPO week.

NB: Tasks 1.3 and 1.4 have not started yet and will build on preliminary results from task 1.1

A.3. REPORT ON TASK 1.2

BY EMMANUELLE CHEYNS

Task 1.2: Analyzing perception of global changes and of new production standards for palm oil sustainability

Objective: Analyze the perception of global changes by stakeholders involved in oil palm production standards. Analyze elaboration and perception of the standards relating to the evolution of oil palm cropping system.

Partners involved: leader CIRAD (+ CIFOR/IRD + local partners)

Deliverable:

- Analysis of oil palm cropping systems and global changes perceptions: recommendations for adaptation strategies.

Main action (January-August 2013) consisted of the direction of a study and the internship study conducted in Indonesia by Roxane Houvenaeghel.

Title of the study: '**Analysis of the diversity of perceptions of global change and sustainability in the palm oil sector**' (Indonesia)

Context: The palm oil sector in Indonesia is emblematic of the controversies surrounding the impacts of agricultural production on the environment and societies. It is also the subject of institutional reconstruction of forms of more sustainable production, which integrate social and environmental criteria (creation of public and private standards, 'multi-stakeholder initiatives'¹, etc.). This reconstruction is partly being undertaken by 'macro-actors' (international organizations, transnational NGOs, multinationals, etc.) who work on a global scale and are motivated primarily by global issues ('feeding the planet', ensuring global food security, reducing greenhouse gas emissions, etc.).

Questions: How are global issues related to palm oil production viewed and addressed by people located locally (local communities, family farmers, local authorities, industrial producers)? Conversely, how do 'macro-actors' perceive and deal with local issues? How are these issues expressed or translated? The purpose of the study is to reveal a plurality of perceptions and address the differences between the perceptions of global/local changes by actors involved at a global scale and those who are living these changes at the local level.

This study is at present conducted in Indonesia in Sumatra Province, regarding local actors (especially rural communities). Roxane Houvenaeghel had been employed as Master student (M2) to conduct interviews in Indonesia.

Product to be delivered: Synthesis of the main results in English. Potentially a publication is results allow this type of valorization.

Actions to be conducted from September 2013 to august 2014: Analyze the perception of global/local changes by other stakeholders involved in oil palm production standards (including European stakeholders). A publication in a Journal based on those results.

¹ www.rspo.org, <http://www.sharp-partnership.org/>, etc.

A.4. REPORT ON TASKS 1.5 & 2.1

BY LAURÈNE FEINTRENIE & PATRICE LEVANG

Task 1.5: Comparative analysis of oil palm production systems in Indonesia and Cameroon

Task 1.5: Description

A comparative analysis of oil palm production systems in the two countries will underline the positive and negative outcomes linked to the specificity of the local and national contexts, and generate policy recommendations to promote sustainable production systems.

This task is coordinated by Patrice Levang (CIFOR/IRD) and Laurène Feintrenie (CIRAD). The research team also includes a Cameroonian PhD student, Raymond Nkongho.

The activities of his task 1.5 should run from January 2013 to December 2014.

Deliverables:

- A description of oil palm production systems in each country.
- A comparison of the oil palm development processes in the two countries, which underlines the positive and negative outcomes linked to the specificity of the local and national contexts.
- Policy recommendations

Task 1.5: Raymond Nkongho's PhD

Raymond's PhD title: 'Conditions to sustainably develop the smallholder oil palm sector in Cameroon'.

Abstract:

The research will favor a holistic approach of the development of the oil palm sector in Cameroon with a particular emphasis on smallholders, their strengths and weaknesses, their links with agro-industries, their economic, social and environmental impacts. The ultimate goal of the research undertaken is to contribute to the promotion of a smallholder oil palm development that is environmentally friendly, socially acceptable and economically beneficial.

The importance of oil palm at the household level and the national economy in Cameroon cannot be over emphasized. Despite its positive merits oil palm is accused of being a driver of deforestation which ultimately results in major biodiversity losses and global warming since huge expenses of forests are usually cleared for the cultivation of oil palm. The experiences gained in Southeast Asia, notably Malaysia and Indonesia, Latin America, notably Colombia and Brazil will be very useful for the research and this will go a long way to enforce some governance in the oil palm sector in Cameroon.

With the recent incoming of some large oil palm companies especially from Southeast Asia to invest in Africa and Cameroon in particular, the research will be quite timely since it hopes to address some of the questions being posed in most international and national conferences today concerning oil palm/forest/climate change.

Raymond submitted two papers on oil palm in Cameroon:

- Raymond N. NKONGHO, Laurène FEINTRENIE, and Patrice LEVANG. Forthcoming. The strengths and weaknesses of the smallholder oil palm sector in Cameroon. *OCL* (accepted).
- Raymond NKONGHO, Yvonne NCHANJI, Ofundem TATAW, and Patrice LEVANG. Forthcoming. *Less oil but more money! Artisanal palm oil milling in Cameroon*

Another paper is currently being prepared on the history of oil palm in Cameroon.

After his first data collection in Indonesia (July 2012-January 2013), Raymond wrote a report:

- Raymond Nkongho and Fuad Abdulgani. 2013. *A report on contract schemes and oil palm production systems in Pelepat sub-district, of Bungo, Jambi Province.*

Plans for August 2013-August 2014:

Raymond will prepare a report on oil palm in Cameroon based on the three papers he has submitted.

Raymond will go to Indonesia between August and November 2013 to complete his data on oil palm business models developed. He will write a report on a comparison of oil palm development processes in the two countries – Cameroon and Indonesia – after this new trip to Indonesia.

Task 1.5: First published results

Publications:

- Raymond N. Nkongho, Laurène Feintrenie, and Patrice Levang. Forthcoming. The strengths and weaknesses of the smallholder oil palm sector in Cameroon. *OCL* (accepted).
- Feintrenie L. 2012. Oil palm in Cameroon: risks and opportunities. *Nature et Faune*, 26 (2): 23-27.
- Hoyle D., and Levang P. 2012. *Oil palm development in Cameroon*. An ad hoc working paper prepared by David Hoyle (WWF) and Patrice Levang (IRD/CIFOR), 16 p.

International conferences:

- Feintrenie L, Levang P, Ngom E. 2012. *Transfer of the Asian model of oil palm development : from Indonesia to Cameroon*. World Bank conference on land and poverty, Washington DC, USA, 23-26 April.
- Feintrenie L. and Rafflegeau S. 2012. *Oil palm development: risks and opportunities based on lessons learnt from Cameroon and Indonesia*. 17e Conferencia Internacional sobre Palma de Aceite. 2012-09-25/2012-09-28, Carthagena, Colombia.

Presentations in workshops :

- Levang P. et Feintrenie L. 2013. *Smallholder friendly oil palm development: lessons from Indonesia*. WWF – MINADER Workshop, Limbe, Jan 31- Feb 1, 2013
- Levang P. et Feintrenie L. 2012. *Smallholder friendly oil palm development: lessons from Indonesia*. WWF – MINADER Workshop, Yaoundé, Dec12-13, 2012
- Levang P. et Feintrenie L. 2012. *Développement des plantations villageoises de palmiers à huile: les leçons de l'exemple indonésien*. Atelier de renforcement des capacités des acteurs sur les standards RSPO en vue d'un développement durable du palmier à huile au Cameroun. Proforest, Minader, WWF. Kribi, 12 - 14 Juin 2012

- Levang P. Et Feintrenie L. 2012. *Smallholder friendly oil palm development: lessons from Indonesia*. Collaboration in Conservation & Development (Ndian & Kupe Muanenguba Divisions). Workshop organized by SGSOC Herakles Farms, chariot hotel, Buea. Tuesday, 19 - Wednesday, 20 June, 2012
- Levang P. 2012. *Etat des lieux du développement du palmier à huile au Cameroun et mesures de durabilité existantes*. Dialogue des parties prenantes dans le développement du palmier à huile au Cameroun. MINADER, CIFOR, IRD et WWF. Hôtel Azur, Yaoundé, le 08 mai 2012.
- Levang P. 2012. *Elites et accaparement des terres au Cameroun : l'exemple du palmier à huile*. IRD et CIFOR. Yaoundé, 15 février 2012

Task 2.1: Global scenarios definition

Task 2.1: Description

This task aims at defining scenarios of evolution of the oil palm sector - including the production systems, the trade chain and the governance of this economical sector by public authorities - with the stakeholders of the sector, at various scales. To achieve this goal we will conduct a Participatory Prospective Analysis (PPA), as developed by Bourgeois and Jésus (2004²). This method is based on a succession of workshops with stakeholders to define a system - here the oil palm sector, the variables which may influence on this system, their interactions, and finally scenarios of evolution of the system depending on the evolution of the variables.

This research will be conducted in one district in Indonesia and one in Cameroon. PPA workshops will be conducted in 2 villages in Indonesia and in 2 or 3 industrial sites in Cameroon, on a 5 days basis. Participants will be selected previously to the workshops, and will be either local experts of the oil palm sector (farmers, millers, brokers...), or representatives of stakeholders involved in oil palm development at local scale (local authorities, NGOs, public extension services). There will be about 10 participants to each village workshop.

Village/industrial site PPA workshop will deliver narratives of scenarios of oil palm development at the local scale. Several scenarios will be described, with the conditions that led to each scenario and the consequences on livelihoods, economy and the environment. Recommendations and strategies of action will be drawn to achieve the preferred scenario of the participants.

This task is coordinated by Laurene Feintrenie (CIRAD) and Patrice Levang (CIFOR/IRD). The research team also includes a Cameroonian PhD student, Raymond Nkongho, and involves a Master student, Soytavanh Mienmany. Margot Moulin, a PhD Student working on modeling oil palm dynamics in the Indonesian study site (task 2.2 and 2.3), will also participate in the Participatory Prospective Analysis workshops.

The intern who will work on PPA activities in Indonesia, Soytavanh Mienmany, works in partnership with another intern, supervised by Emmanuelle Cheyns (task 1.2, Roxane Houvenaeghel), who will work on perception of changes by local stakeholders.

The Task 2.1 should run from January 2013 to May 2014.

Deliverables: Narratives of scenarios of evolution of the oil palm sector depending on a number of variables of influence and defined by the stakeholders.

² Bourgeois, R., F., Jésus. 2004. Participatory prospective analysis, exploring and anticipating challenges with stakeholders. Bogor, Indonésie: UNESCAP-CASPA. 90 p.

Task 2.1: PPA in Indonesia

In Indonesia, the participatory prospective analysis will be conducted in Bungo district, in Jambi province. Previous studies have been conducted in this district since 1980s by CIRAD, IRD, CIFOR and ICRAF, including work by Laurène Feintrenie and Patrice Levang. Thanks to this, a long-term analysis of agriculture and land use changes in the district is available. The district has been the theater of a forest conversion to rubber agroforests, then to rubber plantations, and since 2000 increasingly to oil palm plantations. The resulted landscape is a mosaic of oil palm and rubber plantations, agroforests and forests, the two last being maintained mostly in mountainous and poorly accessible areas.

Good relationships have been established by Laurène Feintrenie and Patrice Levang with the public offices of the district, up to the head of district. This should allow a better dialogue with the public actors and eventually a use of the PPA results in the land use planning of the district.

PPA workshops will be organized in 2 villages. Recommendations and narratives developed during the village workshops will be presented to public officers of the district.

Based on these restitutions, discussions with the district officers will aim at developing narratives of scenarios of oil palm development at the district scale. Recommendations and strategies of action will be drawn to achieve the preferred scenario of the participants.

The final results of the prospective analysis should be presented to the district authorities either directly after the workshops or later on, and be used as a support for the planning of public activities in the coming decade in the district.

Field trip of Laurène Feintrenie in Indonesia, May 22nd – June 3rd 2013:

The main objective of the trip to Indonesia was to supervise three students of the project and introduce them to the public authorities of Bungo district, and the head of villages in Bungo. The students supervised during this trip are: Soytaoanh Mienmany, Lao Master student from IRC-Montpellier SupAgro, intern at CIFOR with Laurène Feintrenie as main supervisor ; Roxane Houvenaeghel, Master student in sociology in Paris I University of Sorbonne, intern at CIRAD under Emmanuelle Cheyng supervision; and Margot Moulin, PhD candidate at INRA registered in agronomy under Julie Wohlfahrt supervision.

In Bungo, we visited the district public extension services, and first of all the BAPPEDA office, which is the planning agency decentralized office responsible for the planning of public projects and activities and writing of a 5-years plan and 20-years plan. We met the head of this office, Mr Dedi, and several officers. The BAPPEDA is interesting in working with us on the prospective analysis. The results of this analysis might be used as a support to the revision of the on-going 5-year plan, and the writing of the next plans. Then we visited the forestry and plantation offices, where we had also very welcoming contacts.

The officers met during these visits all expressed their good will in helping the students and their interests in the results of the prospective analysis. The students will thus be able to benefit from the support and the expertise of these public officers, and get access to data (spatial data, information on public programs, statistics and other).

We visited villages along three geographical axes in order to select the villages where the students will work:

- 1) Along the Buat river, from Muara Bungo to Lubuk Beringin and Senamat Ulu;
- 2) Around the oldest oil palm development site of the district, in Kuamang Kuning area;
- 3) Along the Pelepat river, from Muara Bungo to Batu Kerbau.

It has been decided that Soyta vanh will work in the villages Senamat Ulu and Batu Kerbau, where industrial and smallholders' oil palm plantations have been developed recently. Roxane might also work in these villages. Margot will complete the analysis conducted by Soyta vanh by looking at older areas of oil palm development, especially in the villages Koto Jayo and Danau. The comparative analysis of recent and old sites of industrial oil palm plantations in the district should feed the discussion on the evolution of oil palm development in the district.

Soyta vanh Mienmany's internship:

Soyta vanh's study is entitled: 'Prospective analysis of oil palm development in Bungo district, Jambi province, Indonesia'.

Because of some administrative difficulties to get the Research visa, Soyta vanh began her internship later than planned, on May 4th. She will stay in Indonesia until October 3rd.

- 6-18 May: Indonesian language classes
- 19-23 May: administration matters in Bogor and Jakarta
- 24 May-2 June: field trip to Bungo under Laurène Feintrenie's supervision, and with Roxane Houvenaeghel and Margot Moulin; exploratory survey and introduction to the public authorities and heads of villages.
- June: quick mapping of the villages and historical survey. Because of the delay, it has been decided that Soyta vanh will focus on two villages. PPA workshops will thus be conducted in only these two villages.
- July: technico-economic analysis of Oil Palm smallholders' plantations.
- 1-15 August: Stakeholder analysis to understand the organization of the various categories of stakeholders dealing with oil palm (industry, independent growers, plasma smallholders, middlemen, public technical services, etc...).
- 16-31 August: analysis of the data collected and organization of the PPA workshops.
- September: conduct the workshops. Writing a draft report on the prospective analysis. Present the results to Bungo head of district office, and at CIFOR in Bogor.
- October: back to Montpellier, writing the Master thesis and preparing the defense.

Task 2.1: PPA in Cameroon

In Cameroon, the participatory prospective analysis will be conducted in 2 or 3 industrial sites beginning in November 2013 and finished before March 2014. The industrial sites will probably be Socapalm (in Eseka), CDC (in Muyuka) and eventually Pamol (in Ekondo Titi).

Provisional timetable

Month	Task	People involved	Activity	Deliverable
May 2011-Aug 2012	1.5	Raymond (with Patrice and Laurène)	Research on oil palm in Cameroon	Report, 3 papers
Sept-Dec 2012	1.5	Raymond	Research on oil palm in Indonesia	Report
Sept	1.5	Raymond	Indonesian language classes	
1 st week of Oct	1.5	Raymond	CIFOR annual meeting	Presentation on oil palm in Cameroon
Oct-Dec 2012	1.5	Raymond	Field work in Sumatra (to PT. Musim Mas and later to PT. Smart in order to study the KKPA and other smallholder oil palm schemes developed in Indonesia)	Trip report
Jan - Aug 2013	1.5	Raymond (with Patrice and Laurène)	Comparison on oil palm in Cameroon and in Indonesia	Papers
Aug-Nov 2013	1.5	Raymond	Complementary data collection in Indonesia	Report
May – Oct 2013	2.1	Laurène, Raymond, Patrice, Soytavanh, Margot	PPA workshops in Indonesia	Report, narratives of scenario of oil palm development at village and district scales
May	2.1	Soytavanh	language class and literature review	
June – July	2.1	Soytavanh, Laurène	Literature review and field survey (perception survey on oil palm development among the various categories of stakeholder in the district) One field trip for Laurène to supervise the intern.	
August	2.1	Soytavanh	Preparation of the workshops (selection and invitation of the 10 participants in each workshop, in the district workshop we should have one participant of each of the village workshops, plus representatives of all the other stakeholders categories).	
September	2.1	Laurène, Raymond, Patrice, Soytavanh, Margot	PPA workshops : field trips for Laurène, Patrice, Margot and Raymond.	
October	2.1	intern	writing a report	Master thesis
October	2.1	Laurène, Raymond,	Analysis and writing	Narratives of scenario of oil palm development at

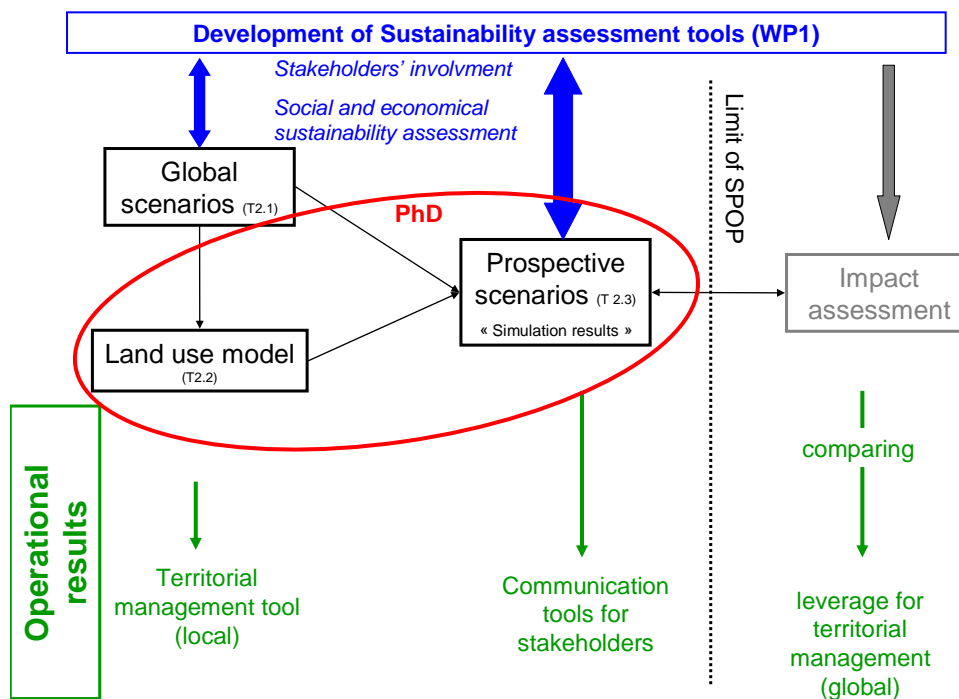
			<i>Patrice</i>		<i>village and district scales.</i>
Nov 2013- Feb 2014	2.1	Raymond, Laurène, Patrice	PPA workshops in Cameroon		Report, narratives of scenario of oil palm development at village and district scales.
November	2.1	Raymond	<i>Preparation of the workshops (selection and invitation of the 10 participants in each workshop, in the district workshop we should have one participant of each of the village workshops, plus representatives of all the other stakeholders categories).</i>		
Dec 2013- Jan 2014	2.1	Raymond, Laurène, Patrice	PPA workshops		
Feb 2014	2.1	Raymond, Laurène, Patrice	Analysis and writing		Narratives of scenario of oil palm development at village and district scales.
May 2014	2.1	Laurène, Raymond, Patrice	Writing		Paper based on narratives of oil palm development scenarios in Cameroon and Indonesia. Policy recommendations.
March – Aug 2014	1.5	Raymond	Compilation of research data, paper writing, thesis writing		PhD Thesis, 4 papers
Dec 2014	1.5	Raymond	Public defense in University Paul Valéry of Montpellier		PhD Defense

A.5. REPORT ON TASKS 2.2 & 2.3

BY JULIE WOHLFAHRT

Objective of the tasks 2.2. and 2.3 of WP2

The aim of the WP2 is to assess future developments of oil palm plantations. This will be done by (i) establishing global evolution scenarios (task 2.1.) and (ii) developing a land use change model based on the stakeholders decision system and spatial analysis to assess territorial re-organizations regarding oil palm potential futures (tasks 2.2. and 2.3.). Tasks 2.2. and 2.3. will be achieved during a PhD work.



Achievements since August 2012

- PhD kick-off:

Margot Moulin (PhD student) was recruited in October 2012. During the first months she did a literature review on oil palm and land use change.

She followed several trainings:

- A GIS training in Aussois (Summer school of GDR Magis) - 15-19th October 2012
- A literature review and scientific publications training in Nancy (INRA) – *Mastering the scientific and technic information in Research (MISTeR 1-2-3, 21hours)* - 21-28th of November 2012
- A Microsoft Office Access training in Mirecourt (INRA) - *Access: conception and management of a data basis* (28 hours) - 23rd October and 7th-9th of November 2012
- A data mining training in Nancy (Doctoral school RP2E-Ecole des Mines) *Introduction to data analysis in Nancy* (20hours) - from 6th of December 2012 to 31st of January 2013
- A remote sensing training in Montpellier (Agroparistech-Maison de la télédétection) *Extraction of the information in remote sensing* (40hours) - 14-18th of January 2013
- A PhD student training in Saint Martin de Londres (INRA) *The thesis experience* (20hours) - 25-29th of March 2013

- An Indonesian language training in Yogyakarta (Alam Bahasa-Indonesian language school)
- *Basic conversation in Indonesian (60hours)* - 3rd-14th of June 2013

She spent a week in CIRAD Montpellier in order to meet the other SPOP partners and to benefit from their agronomical knowledge about oil palm.

Between October 2012 and April 2013, she also started to assess the feasibility of oil palm mapping based on remote sensing in close collaboration with the research team of UMR TETIS. She gathered spatialized data and satellite images for the study regions (Riau and Jambi, Indonesia) and she started the remote sensing treatment. The first results were not really satisfying in terms of oil palm recognition. The next step will be to couple automatic recognition with expert recognition. This work is still ongoing.

- PhD steering Committee:

Margot Moulin's PhD first steering committee has been held in Montpellier on the 2nd of April 2012. All participants agreed on the quality of the work done. Several propositions have been made to help focusing the subject and the methodology (see attached minutes).

- Margot Moulin's field work:

Margot Moulin left France for Indonesia on May 22nd 2013. She spent one week in Bungo District (Jambi, Indonesia) with Laurene Feintrenie and two other interns of the SPOP project. This week allows her to discover one of the study regions and to be introduced to the villagers by L. Feintrenie who already knows the region.

In the beginning of June, Margot Moulin spent two weeks learning Bahasa Indonesia, following lessons in Yogyakarta.

After that she spent 10 days in Jakarta and Bogor in order to fulfil administrative duty regarding her research visa and to meet the SPOP partners from CIFOR (based in Bogor).

On June 24th, Margot Moulin left Jakarta for Libo (SMART Research Institute, Riau, Indonesia). She will stay in Libo until September to achieve a first survey aiming at describing oil palm agricultural practices and socio-economical conditions in several production systems (company, smallholders, etc.). This work is done in collaboration with an intern from the SPOS project WP1, supervised by Pierre-Marie Bosc (CIRAD).

- Julie Wohlfahrt's supervision visit:

Julie Wohlfahrt (PhD co-supervisor) came to Indonesia from July 2nd to July 8th 2013. The purpose of this visit was first, to meet with Margot Moulin and the SMARTRI partner (Jean-Pierre Caliman) in order to follow the PhD field work. Secondly, Margot Moulin and Julie Wohlfahrt met with Daud Arsono (PT SMART CEO) and other PT Smart managers to expose the PhD objectives and planning and to discuss the collaboration between the SPOP project and SMARTRI. This meeting took place in Jakarta on July the 8th 2013.

- Short term perspectives:

The survey in Libo should be completed at the end of August and a first analysis of the results will be done between September and October 2013.

In September 2013, Margot Moulin will attend the "prospective workshops" conducted by Laurene Feintrenie and Patrick Levang (T2.1.) in order to assess the linkage between the outputs of those workshops and the prospective scenario modelling plan in her PhD.

Between October and December 2013, Margot Moulin should be conducting a survey on the second case study (Jambi).

Planning and status of research activities for T2.2. and T2.3.:

Date	Activity	Status – 08/13	Remarks
September 2012	First review of available spatial data	On-going	
October 2012	Beginning of the PhD	Done	
October 2012 – April 2013	Literature review on production system dynamics and oil palm production dynamics	Done	See attached steering committee report attached
	Spatialized data collection and preliminary spatial regularities identification	On-going	This activity is delayed due to the difficulty of identifying oil palm by remote sensing
	First steering committee of the PhD	Done (04/02/13)	See minutes attached
April 2013 - October 2013 (delayed)	Field work: survey, data collection	On-going	Margot Moulin faced some administrative issues (research visa delivery delay) so the actual field work only began in July 2013. She will stay in Indonesia until December 2013 in order to complete the two case study surveys.
	First formalization of the palm oil cropping systems in Riau and Jambi	Expected January 2014	
	<i>Deliverable 1: oil palm suitability maps of the study area</i>	Expected January 2014	
October 2013 January 2014 - April 2014	Development of the oil palm dynamic system production model	First version expected in April 2014	
	Second steering committee	Expected in April 2014	
	First scientific article	Expected in April 2014	
April 2014- October 2014	Field work: survey, data collection		
	Model validation / feedbacks between validation and development to improve the model		
	Scenarios simulation and validation		
	Third steering committee		
	<i>Deliverable 2 : Oil palm dynamics model of the study area</i>		
October 2014- September 2015	Finalizing the model development and the scenarios		
	Second scientific article		
	Writing of the PhD		
	<i>Deliverable 3: Prospective land use maps of the study area</i>		
	<i>Deliverable 4: General levers for managing oil palm dynamics</i>		

A.6. MINUTES OF THE FIRST STEERING COMMITTEE - 2ND OF APRIL 2013

BY MARGOT MOULIN'S PHD

Oil palm cropping systems spatial organization possible futures

Members of the steering committee:

- Fahmuddin Agus (Indonesian Soil Research Institute)-FA
- Cécile Bessou (CIRAD UR Perennial Cropping Systems, Coordinator of SPOP project)-CB
- Thomas Houët (CNRS UMR GEODE Environmental Geography)-TH
- Valentine Lebourgeois (CIRAD UMR TETIS Territories, Environment, Remote Sensing and Spatial Information)-VL
- Christophe Le Page (CIRAD UPR Green Renewable Resources Management and Environment)-CLP
- Claudine Thenail (INRA UR Paysage-Landscape)-CT

Advisors:

- Marc Benoit (INRA UR ASTER Agro-systems, Territories, Resources)-MB
- Jean-Marc Roda (CIRAD UR Production and Processing of Tropical and Mediterranean Woods)-Absent
- Julie Wohlfahrt (INRA UR ASTER Agro-systems, Territories, Resources)-JW

Objectives of the thesis and targeted stakeholders

The committee highlighted the lack of precision of the finalized objective and the final users of the PhD results.

As the SPOP project will aim at giving clues to orient different strategies without choosing the right strategy (CB), we decided that the main product of the thesis will not be recommendations for sustainable palm oil production. The aim of this work is more to propose possible futures of palm oil production but the PhD will not encompass the 3D impact assessment of these possible futures. This tool will take into account global key processes (scenarios of global changes) and local level decisions (land use model). There is no global incentive to try to get a more specific landscape but just to explore what are the possible ranges of consequences of the sum of local decisions depending on different scenarios (TH). The out-puts of the thesis will be a tool for palm oil production decision makers to help them modeling the spatial organization of the different oil palm agricultural practices.

There is a need to clearly identify who are the targeted stakeholders of the thesis. The scale of analysis and the targeted stakeholders' definitions will orient the study from the beginning (All). The Roundtable for Sustainable Palm Oil (RSPO) seems to regroup the targeted stakeholders as it is composed of many different stakeholders ranging from representatives of groups of small growers to food manufacturers. RSPO could be interested in understanding the oil palm spatial extension dynamics, which levers of action could be used for the different types of growers to optimize the space(for example, to which extent is it possible to avoid planting on peat soils) (CB).

Individual decision analysis

The steering committee proposed two purposes of individual decision analysis:

- Understanding large scale land use patterns from local decision
- Identifying individual and local room of maneuvers to adapt to global changes

- The objective of the thesis is to produce prospective maps of oil palm plantations. Thus the thesis will analyze the current individual decision to model large scale land use patterns. It will also analyze the adaptation of these local decisions to produce the prospective maps at the large scale. Room of maneuvers to adapt to global changes will not be studied.

The steering committee raised-up also the question of the stakeholders involved in the local decisions: “who is making the decision for each agricultural practice?”. There is a need to identify the decision maker in order to integrate the appropriate stakeholders in the modeling process. For example, even independent small growers are not fully independent as they depend on the mill company to sell their products. On the other hand, in a company, there are several plantation managers. This issue has to be dealt with on the field.

There is not enough information for the moment to decide exactly which stakeholders should be included in the study.

Choice of the processes to study (decision rules/landscape patterns)

In the steering committee report, choices are mainly methodological. The committee highlighted the fact that choices have to be made on the processes the thesis wants to analyze or represent. For example, the thesis could focus on the potential levers of action that could be found in the organization between companies and small farmers (CT).

The link between the objective of the model and the methodological choices is important. It is then essential to have already chosen the output criteria of the model (for example: the spatial extension of oil palm, the oil palm fertilization practices, etc.) in order to collect the right information during the surveys and to model the appropriate processes. Environmental criteria and scenarios/models cannot be disconnected (CT).

In work package 1 the SPOP project will try to choose criteria to assess the impacts of the cropping systems (CB). Based on this work, we will choose the criteria we want to assess with the model.

The decision has been taken to focus on describing and understanding the diversity of oil palm agricultural practices that can impact the environment. The outputs of the model will be prospective maps of oil palm agricultural practices at the scale of the plot.

Model to use

ABM seems to be the right modeling approach to model decision processes. OCELET, which a domain specific language, especially built for spatiotemporal modeling might be an interesting work to look at (VL).

A review of conceptual works on land use modeling could be a starting point to have a conceptual framing of the system we would like to represent (CLP).

The availability of field data (maps, scale, grain) should be assessed as it may impact the use of the model (with the risk of developing an irrelevant model if data to run it are not available). There is a close link between the data you will be able to collect and the model you can develop (if you don't have the data for a factor, don't take it into account in your model) (JW).

Here again, this issue has to be dealt with on the field. Each company has maps of their own plantation. Some can be found at RSPO but there are not maps that combine all the plantations in Sumatra (CB, JW). The Pt Smart Company (which is the company that will welcome the PhD field work) might be able to help us getting that kind of information.

Stakeholders feedback

VL asked if participative arenas are planned during the PhD, in order to get feedback from the users of the tool. For the moment, stakeholders will be involved to co-construct the scenarios (T2.1). The model may not be validated because of the limited time of the PhD (CB).

Relation between scenarios and model

Two approaches could be developed for the PhD:

- First building the model and then the scenarios
- First defining global scenarios as a framework for the model (TH, CLP).

In the first case, the model would be able to simulate any global trend scenarios. In order to do so, it should include all the decision process and their evolution. This seems quite unfeasible regarding the limited time of the PhD work.

In the second case, the model will be efficient to traduce the scenarios in terms of landscape future (TH). The model will then only incorporate decision processes linked to the targeted scenarios. These processes could then be approached by a limited set of questions. Anyway, the simulations will be limited to the defined scenarios. The model would not be able to predict landscape outside the scenarios.

Definition of the scenarios:

Scenarios can be developed either by stakeholders, by experts or by scientists. They can also be defined at a local scale (with stakeholders) or at a global scale (general trend scenarios). One idea is to base the survey on the scenarios yielded by T2.1. Scenarios could then be at a local scale and could be proposed in local participative multi-actors arena which could help in defining the purpose of the scenarios (CLP).

Some global scenarios regarding oil palm sector will be written with stakeholders to identify some important variables to absolutely collect data about.

Remote sensing

The place of remote sensing in the thesis has to be assessed depending on the purpose of the use of remote sensing (VL, TH). The purpose of remote sensing work can be only to produce maps for the model or support maps for the interviews. On the other hand, a remote sensing methodological approach could be developed developing a time series to detect oil palm cropping systems, as this cannot currently be done.

MODIS images are relevant for time series analysis. Object-oriented approach and expert rules (e-cognition, SPOT 2,5m) could also help in automatically detecting oil palm plantations while incorporating different indices such as texture indices (VL). However, these two methods can take times (VL).

LANDSAT images are relevant for local scale (TH, VL) and could be simply analyzed through photo-interpretation (TH).

In this work, the purpose of remote sensing will be to produce maps for the model. The aim is to identify through remote sensing the different oil palm agricultural practices. A new methodological approach for remote sensing will not be developed during the thesis. Thus, common satellite images analysis will be done. A trial of supervised classification will be done first on LANDSAT8 images whose quality is much better than LANDSAT7 for Indonesia. Depending on the results, a more precise photo-interpretation will be done at the scale of the study sites and then used to extrapolate at the scale of the two provinces. The validation of the remote sensing analysis will be at least done while collecting GPS coordinates at the scale of the study sites.

In the case local oil palm growers are used to work with maps, a basic cartography could be done to use maps as a support during the interviews, in the case (CT).

As we run out of time for producing maps of oil palm plantations, plots GPS coordinates will be taken for each farmer interviewed. By the time the second field work starts, maps of oil palm plantations may be produced and thus maybe incorporated as support for this second set of interviews.

Historic evolutions of oil palm production

The two regions of interest for the project (Riau and Jambi) are geographically closed by but are different historically. They yielded two different landscapes (Riau province is almost covered with oil palms whereas it remains other land uses in Jambi province). A relation between past trends of the landscapes and historic evolution of the factors involved in the organization of the landscape could be made to model the future. It could feed the model and the scenarios (TH). It could be interesting to find out what are the former land uses based on the historic of the oil palm plantations (CB) (for example it could be interesting to get know who preferentially plant and planted on peat soils).

Moreover, the actual knowledge of a farmer and his choices of agricultural practices can be dependent of his history (if he has been in a PIR scheme for example) (CB). However, the prospective work may not be based on what happened in the past (JW).

Depending on the remote sensing possibility to detect oil palm plantations, past trends of the landscape along with historical factor of oil palm area development will be used to give the spatial envelop of the futures oil palm area. For each plot, the former land use as well as the soil types will be systematically asked during the interviews and will be crossed with available soil types' maps.

The historic of each grower will be collected in order to assess his ability to manage his oil palm plot. Along with other socio-economic data, this historical data will be used to do a typology of the oil palm growers based on their strategies regarding oil palm agricultural practices. Then based on this typology, we may select some farmers in each type to study the way they will adapt to global scenarios.

Conclusions

The targeted actors of the model are the different stakeholders involved in RSPO. The final outputs of the thesis will not be recommendations for sustainable palm oil production but they will produce prospective maps of oil palm agricultural practices.

The stakeholders that are going to be studied are the decision makers of the agricultural practices at the grain of the plot (smallholders and industrial plantations). These stakeholders will be more precisely defined on the field. The individual decisions of stakeholders will be studied in order to understand large scale land use patterns.

The focus of the thesis will be the diversity of oil palm agricultural practices that most impact the environment. The outputs of the model will be prospective maps of these agricultural practices evolutions at the grain of the plot. Global scenarios will be first defined with oil palm stakeholders. These scenarios will highlight important variables that will give a frame to the data collection for building the model. Thus the model will not be able to predict landscape changes outside of these global scenarios. The model will be also be constrained by the inputs data available. This will be also defined on the field. Stakeholders' feedbacks on the model may not be possible because of the limited time of the PhD.

Remote sensing will be used to produce maps for the model. To do so, common supervised classification will be tested. Depending on the results, further photo-interpretation will be done at

the scale of the study sites and then use to extrapolate the location of the agricultural practices at the scale of the two regions.

The study of palm oil production historic will have two purposes. First, trends of oil palm area along with historical factors will be studied to define a spatial envelop of possible future oil palm area. This analysis will depend on the feasibility of historic satellite images analysis and available historical maps. Secondly, the historic of each oil palm stakeholders will be collected through the interviews in order to better define the typology of stakeholders and the way they could adapt to changes.

A.7. INTERNSHIP OF SOYTAVANH MIENMANY IN INDONESIA, JAMBI PROVINCE, SPOP

SUPERVISOR: LAURÈNE FEINTRENIE

Title

Prospective analysis of oil palm development in Riau province

Context

SPOP Project, *Sustainable Palm Oil Production - Designing strategies from improved knowledge on oil palm cropping systems*, a research project funded by ANR, French National Research Agency, coordinated by CIRAD, in collaboration with INRA, IRD and CIFOR, running from 2012 to 2016.
<http://spop.cirad.fr/>

Description

Field work will consist in stakeholders' interviews, commodity chain analysis based on field data collection and statistical data analysis and literature review. Outputs of the internship should encompass (in English):

1. an analysis of oil palm sector organization in the studied area with:
 - a. typology of oil palm growers,
 - b. typology of oil palm cropping systems,
 - c. technical-economic analysis of oil palm cropping systems,
 - d. stakeholders analysis.
2. Prospective analysis on oil palm development in the studied area, based on Participatory Prospective Analysis workshops conducted in collaboration with the project team.

Diploma

Master 2

Skills

Knowledge in socio-economic analysis of agricultural systems and commodity chains. Knowledge in agronomic diagnosis and participatory methods.

Conditions

Compensation: 440€/month

Language class: 15 days of intensive language class will be covered by CIFOR, in a language school in Yogyakarta.

Travel Expenses: CIFOR will provide travel expenses as follows: Return ticket to Indonesia by the most direct and economical route, Ground transportation, Airport fees, Visa fees.

Place

Indonesia, partly at CIFOR headquarter in Bogor, partly in the field in Riau province (Sumatra island)

Start

May 2013

Further information

Laurène Feintrenie

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Courriel : laurene.feintrenie@cirad.fr

A.8. INTERNSHIP OF ROXANNE HOUVENAEGHEL, IN INDONESIA, RIAU PROVINCE, SPOP

SUPERVISOR: EMMANUELLE CHEYNS

Academic attachment of the student: Université Paris 1 Panthéon-Sorbonne - Economic and Social Development Institute
presented by Montpellier SupAgro, France

Employer: CIRAD

Research partners: CIFOR, Centre of International Research in Forestry, Bogor, Indonesia and UNILA (University of Lampung)

Period: 6 months (2013), of which 4 in Indonesia (Bogor and Sumatra).
Mid-April to end of September 2013. Arrival in Indonesia early May.

Location: Riau and Jambi provinces (Sumatra Island)

Internship title: Analysis of the diversity of perceptions of global change and sustainability in the palm oil sector' (Indonesia)

Context: SPOP Project, *Sustainable Palm Oil Production - Designing strategies from improved knowledge on oil palm cropping systems*, a research project funded by ANR, French National Research Agency, coordinated by CIRAD, in collaboration with INRA, IRD and CIFOR, running from 2012 to 2015. <http://spop.cirad.fr/>

The student will be able to work in collaboration with another internee, on the same site, who will be working on a study on the future of the palm oil sector.

Outcome:

Report in English including:

- An analysis the local issues linked to sustainability, from locally situated perspective.
- An analysis of those local issues and the way they are raised by international actors.
- A study of the relations between types of production and global and local issues of sustainability.
- An analysis of the impact of global changes on local production systems.

Supervisors:

Emmanuelle Cheyns, [CIRAD](http://www.cirad.fr), UR Innovation, based in Montpellier, France
(emmanuelle.cheyns@cirad.fr)

'Analysis of the diversity of perceptions of global change and sustainability in the palm oil sector' (Indonesia)

The palm oil sector in Indonesia is emblematic of the controversies surrounding the impacts of agricultural production on the environment and societies. It is also the subject of institutional reconstruction of forms of more sustainable production, which integrate social and environmental criteria (creation of public and private standards, 'multi-stakeholder initiatives'³, etc.). This reconstruction is partly being undertaken by 'macro-actors' (international organizations,

³ www.rspo.org, <http://www.sharp-partnership.org/>, etc.

transnational NGOs, multinationals, etc.) who work on a global scale and are motivated primarily by global issues ('feeding the planet', ensuring global food security, reducing greenhouse gas emissions, etc.).

How are global issues related to palm oil production viewed and addressed by people located locally (local communities, family farmers, local authorities, industrial producers)? Conversely, how do 'macro-actors' perceive and deal with local issues? How are these issues expressed or translated? The purpose of the study is to reveal a plurality of perceptions and address the differences between the perceptions of global/local changes by actors involved at a global scale and those who are living these changes at the local level. It will be a matter of also unveiling the local actors' perceptions of different 'types' of production models ('integrated contracts', 'independent growers', diversified agriculture, etc.).

In practical terms, the internship will consist of:

- Introduction to the study site and the issues at CIRAD in Montpellier.
- An on-the-ground period in Indonesia for 4 months to conduct a qualitative survey that will rely on several mechanisms:
 - review of literature,
 - in-depth qualitative interviews, particularly in rural areas (Sumatra), with stakeholders (plantation managers, officials, civil society) and with smallholders (plasma smallholders and independent smallholders).
 - Analysis of the use of local issues in visual media (videos) created by actors (NGOs, partnership arrangements, etc.).
 - It might also be possible to undertake a process of visual sociology within the field survey: interviewed filmed during the qualitative land survey, to be used as a reflective tool to discuss the diversity of perceptions, in a participatory workshop.
 - The results of investigation will be shared with stakeholders.

Objectives are to identify the constraints systems that production players have to deal with, how producers are influenced by global changes, how they evolve in order to address them. There will be a special focus on smallholders' strategies to adapt to these constraints.

Expected output: New knowledge and data on the impacts of global constraints on oil palm plantations will be provided. The consideration of the study results, which I will share with the stakeholders, may increase knowledge on the relation between global changes and local issues, and raise a better concern of local/national stakes.

Facts on SPOP

Partners: CIRAD, INRA, CIFOR, IRD, Montpellier SupAgro

Local partners: University of Lampung, SMARTRI

Fields: Sumatra, Indonesia & Cameroon

Coordinators: cecile.bessou@cirad.fr, alain.rival@cirad.fr

Webpage: <http://spop.cirad.fr/>

A.9. INTERNSHIP OF KARINE LÉ ON AGRICULTURAL SURVEYS IN SMALLHOLDERS AND INDUSTRIAL PLANTATIONS IN ORDER TO DESCRIBE THE VARIOUS OIL PALM CROPPING SYSTEMS, SPOP

SUPERVISOR: PIERRE-MARIE BOSC (ASSISTED BY CLAUDE JANNOT & SYLVAIN RAFFLEGEAU)

Context

This internship will contribute to the first work package of the ANR SPOP Project taking place in Sumatra, Indonesia.

It will be supervised by a team of researchers involved in project based in Montpellier and in Sumatra with complementary backgrounds ranging from agronomy to socio-economics.

Internship's objectives

The objective of the work will be to describe and characterize the way agricultural production is organized at the level of holdings ranging from household based holding to private companies.

We propose to analyze the evolution the organization of palm oil production through following typology:

- Family farming (encompassing their diversity and notably farmers operating in contract arrangements with large plantations or with mills)
- Family farming with structural and permanent hired labour
- Farm enterprise with exclusively hired labour (such as industrial company)

The main difference to discriminate between the two latter will be in the level of family control on the farm business and we suggest that this control is no longer exclusively in family hand when looking at the third category. In the farm enterprise category we will also face diversity and we will probably have to include criteria regarding the investment (levels and origins). Establishing this typology would be the first path for studying the link between the way production is organized and the impact assessment of the cropping systems on global issues.

This typology has to be tested locally and sub types will be defined when needed and specifically for family farm types.

The establishment of the typology will be the base to test a common grid to characterize the impacts of the oil palm production structures.

Hypothesis

Cropping systems are very diverse. This diversity originates from several changing parameters: i) varying soil and climate conditions, ii) diverse cultural and social contexts, iii) different background and history for each cropping system leading to diverging dynamics and evolution pathways and iv) multiple types of producers and stakeholders with varying knowledge, capacity and resources.

Given this diversity, it is unlikely that all oil palm cropping systems will react the same way to global changes which are both general such as the eradication of poverty in rural areas and specific

to this commodity chain, such as a dramatically increasing demand for fat and the urgent need to preserve biodiversity-rich and fragile tropical ecosystems. All of the considered oil palm cropping systems will not have the same sensitivity to global changes and will be more or less able to adapt to the induced constraints.

In this project we aim to test the following hypothesis: environmental and socio-economic impacts of agricultural production depend pretty much on the type production structure. As many drivers of change in agriculture seem to favor the development of plantations based on hired labour, we propose to focus the issue and research activities on assessing the way oil palm sector is structured at the level of production.

Methods / Means

To achieve this objective the candidate will need to:

- Propose an extensive bibliographic review from articles, studies and grey literature in English and French in order to define a program for the field work ; this phase will be organized through several oral presentations
- Establishment of a program for the field work, including the tools that will be needed
- Field work in Sumatra to complement the information; several complementary tools will be needed and defined on the basis of the bibliographic review

Supervision

Pierre-Marie Bosc assisted by Claude Jannot & Sylvain Rafflegeau

A.10. IMPACTS OF PRACTICES ON THE SOIL BIOTA AND SUBSEQUENT COMPREHENSIVE SOIL FERTILITY UNDER OIL PALMS

BY MP CARRON & D. SNOECK

Outputs from this project could be used to define specific 3D-impact indicators related to soil fertility maintenance.

1. Presentation of the project

How can organic matter and the soil biota be more effectively taken into account to assess how farming practices impact the comprehensive soil fertility under oil palm?

The project involve developing knowledge relative to the "soil biota" in oil palm plantations. Abundance, taxonomic and functional biodiversity of soil biota (macrofauna, nematodes, and microbial communities) will be assessed in relation to the physical & chemical traits on the one hand, the nutritional status and palm performances on the other hand. Then, a diagnostic for comprehensive soil fertility will be built. Using this diagnostic, several protocols of recycling organic waste will be assessed to validate the working hypothesis and investigate the conditions of synergy of efficiency for organic and mineral fertilizations. This project will address the issue to preserve "the Soil Capital" through challenges such as 1) managing soil sustainability, 2) improving the efficiency of fertilization practices and 3) eliminating associated pollution by "acting" on the biological fertility of the soil to improve the physical and chemical traits.

First step in the project will focus on defining the right protocols for analytical studies of soil biota. Work in this first step will develop knowledge relative to spatial and temporal variability of soil traits under oil palms. In the second step, such protocols will be used to assess the soil impacts in different fertilization trials (EFB, Compost, POME)

2. Realized: 2012- First year of the project

An engineer student was hired to start the project: Mr Auriac Q. (ENSAT, Toulouse/IRC, Montpellier). He studied the spatial variability of soil fauna under oil palm depending of the places (pathway-P, circle-C, windrow-W, and in between). The work was done in a plot with application of EFB (60 tons every two years) and in another neighbour place without EFB (control) in the same block (B09). Macrofauna, nematodes and microbial communities were analysed, as well as chemical and physical soil traits.

Data documented the variability of soil traits between the different zones.

- The area of the harvest pathway (P) presents a low chemical fertility on the conventional treatment (Conv). On the contrary, under EFBs applied since 3 months, a significant increase of the pH, contents of K (total and exchangeable) and of Mg are noticed. In an unexpected way, the application of EFBs did not increased the soil org C content, neither in N total, neither Ca, nor the CEC. The macrofauna is logically very poor under Conv treatment although one finds a good density of earthworms in edge of the pathway (area PC: 35/m² for Conv against 173/m² for EFB). The macrofauna is more abundant and diversified under EFB, especially on the level of the litter. The abundance of the nematodes populations is comparable for the two treatments. However, their composition differs, with a higher index of maturity under EFB.
- The circle area directly around the tree (C) displayed a low apparent density. The chemical fertility is there at its maximum. It should be noted that it is also on this area that one finds the strongest org C content (> 2 %) for the two treatments. The macrofauna is mainly represented by soil engineers (120 earthworms/m² for Conv against 43/m² for EFB). The nematodes communities on this area, and only for the Conv treatment, have a density two to three times higher than that moreover plot; this characteristic is to be put in relation to the exceptional

content phosphorus on this area. The community of nematodes presents here a low maturity index. We did not find such “a distinctive feature” on EFB treatment.

- On both treatments, the windrow area (W) presents a low chemical fertility. The macrofauna is there at its maximum. The populations of nematodes have a comparable profiles and abundances.

By assigning to the raw data an index corresponding to the relative area of each area around the palm, weighted mean values were calculated for each of the two treatments. It came out from it that, at the level of the plot, the physical properties are not affected by the fertilisation treatments under the conditions of the study. On the other hand, the chemical index of fertility of EFB plot is higher than that of the Conv plot. The macrofauna is also twice more abundant (843 organism/m² in Conv litter + soil 0-15 cm against 1248 org./m² in EFB). But for all that, the biodiversity and the specific wealth are not improved by it. The application of EFBs on harvest pathway reduced spatial heterogeneity for the various studied parameters. The study also showed that the density and the composition of the macrofauna are very different according to whether the EFBs were applied recently (3 months) or since a long time (27 months).

A paper is in progress for publication.

3. In progress: 2013- Second year of the project

An engineer student was welcome to continue the first step of the project: Ms Pierrat M. (ISA, Lille). She studied the temporal variability of soil fauna (macrofauna & nematodes) under EFB between two successive applications (2 years). It was done using a time-sequence. Control was taken on plots without EFB applications. The protocol permitted to cross data with those obtained in the first work in 2012.

LE DEVELOPPEMENT DES PLANTATIONS DE PALMIERS À HUILE AU CAMEROUN ENJEUX POUR UN DEVELOPPEMENT DURABLE

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Conclusion générale

Le développement des plantations de palmiers à huile est un phénomène complexe, difficile à appréhender. Les situations varient d'une région à l'autre et d'un mode de production à l'autre. Pour comprendre les implications d'un développement, qui s'accélère ces dernières années avec l'espoir pour les planteurs d'augmenter leurs profits ou leur revenu grâce à l'une des cultures pérennes les plus rentables, il faut sortir de la vision européo-centrée de l'huile de palme. Les campagnes à court terme des ONG qui caricaturent la réalité pour capter l'attention d'un consommateur volatile et les habitudes alimentaires des pays du Nord changeantes ne correspondent pas à la réalité des planteurs qui ne peuvent envisager les plantations, culture pérenne, qu'à long terme. Il ne faut donc pas oublier que derrière les messages des militants anti-huile de palme, il y a des hommes qui cherchent à nourrir leur famille. Le secteur « huile de palme » n'est pas le tableau noir que l'on dépeint si souvent. C'est un secteur complexe qui a besoin d'un cadre strict et d'améliorations pour mettre fin aux diverses externalités négatives qu'il engendre, mais c'est aussi un secteur d'avenir, la promesse d'un lendemain meilleur.

Le développement durable des plantations, devenu ce nouvel label à la mode que les grandes entreprises veulent obtenir pour se faire bien voir, commence à voir le jour. Si le Cameroun reste à la traîne par rapport aux grandes plantations d'Asie du Sud-Est, il commence à se réveiller. L'essor de la filière produit assez d'émulations pour inciter les différents acteurs, notamment les agro-industries, à agir en faveur d'un développement durable de la plantation. On peut donc conclure que l'essor de la filière palmier à huile peut être durable.

Mais le développement des plantations de palmiers à huile, au-delà de ces conséquences sociales, économiques et environnementales, pose la question de l'enjeu d'un développement durable dans les pays en développement.

Ces pays ne devraient-ils pas trouver leur propre rythme et leur propre voie de développement, au lieu de suivre les pas chaotiques des pays du Nord ?

Ne faudrait-il pas envisager un mode de développement et des échanges plus équitables en vue de mettre fin à la dépendance des pays en développement vis-à-vis des pays du Nord ?

Le développement durable est une alternative au modèle économique, social et politique des pays du Nord qui a atteint ses limites. C'est une clé pour une transition vers un nouveau mode de « faire ensemble » en repensant l'homme au cœur de la nature et son rapport à la vie. C'est également un véritable enjeu pour les pays en développement qui pourraient rendre leur économie plus compétitive sans compromettre leur avenir, tout en luttant contre la pauvreté et en respectant leur propre culture, origines et écosystèmes. Se développer durablement c'est redonner aux personnes du pouvoir sur leur propre vie. Pour reprendre les mots de Jean-Charles Jacquemard, « les progrès ne sont plus obtenus uniquement par une impulsion top-down, mais par un investissement de l'ensemble des acteurs du projet » ; le développement durable devient donc un

engagement citoyen, une prise de responsabilité, au travers de la formation d'une véritable société civile. Comme le dit Julius Nyerere, « ce n'est pas l'argent, c'est le peuple qui est à la source du développement. L'argent, les richesses qu'il représente sont la conséquence et non le fondement du développement. Les quatre fondements du développement sont : le peuple, la terre, une juste politique et un bon gouvernement ».

Le développement durable est ainsi une promesse à tenir et à faire tenir. Le moyen de croire en l'avenir pour des populations qui n'ont parfois plus le courage d'avancer. Penser le développement durable des plantations de palmiers à huile, c'est donc aussi penser l'avenir de communautés qui ont tout à gagner d'un tel développement.