



CHAPTER III

RESEARCH APPROACH AND METHODS

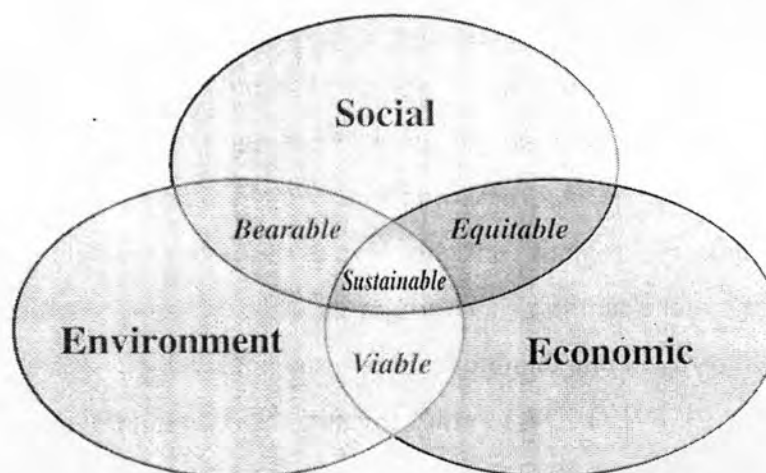
Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius — and a lot of courage — to move in the opposite direction.

E.F. Schumacher, *Small is Beautiful*, 1971

3.1 Research methodology

As is evident from the literature review in the previous chapter, an investigation of bioenergy policies in Thailand and the Mekong region involves a diversity of disciplines – energy, economics, environment, trade and agronomy. As a direct result, this research is based on a transdisciplinary approach to exploring the linkages surrounding the theory, policy and practice of bioenergy in the Mekong region. This approach takes into consideration the three pillars of sustainable development: social, economic and environmental as set out in the Brundtland Commission report, *Our Common Future* (WCED 1987).

Figure 1: The policy nexus of sustainable development



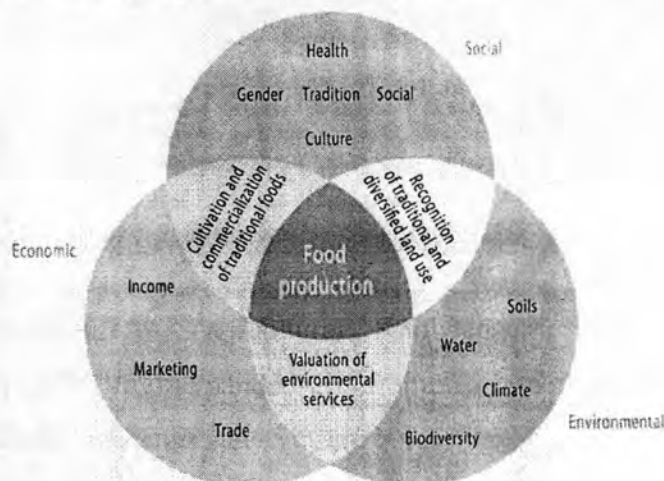
Source: UN Commission for Sustainable Development

As illustrated in **Figure 1**, institutions and governance structures aim to situate policies in the overlapping triangle between the three spheres (economic, social and environment) in order to achieve sustainable development. *Governance* is a vital element to ensure that development takes into account these three spheres. The milestone UN

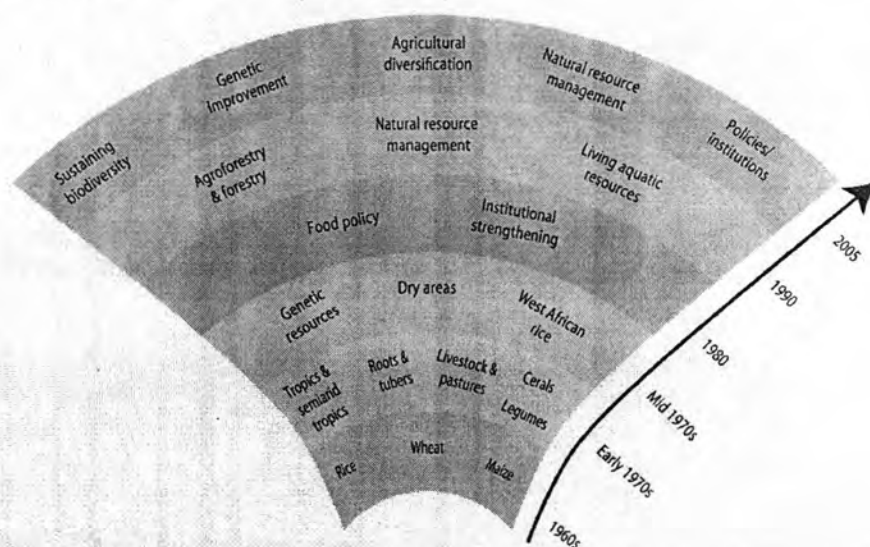
International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD 2009) expanded this framework to illustrate the role of agriculture, with food production as the centrepiece (figure below).

Figure 2: A multifunctional perspective of agriculture

The inescapable interconnectedness of agriculture's different roles and functions



Pathway to the current conception of modern agriculture



Source: International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD 2009)

3.2 Data requirements

In order to analyse the policy context for the development of bioenergy in Thailand, this research uses the following methods of qualitative and quantitative data collection.

- 1.1 a literature review (including statistical analysis based on: (i) a Matrix on trade and environment linkages in the agroenergy sector (Table 11); and (ii) a causal chain assessment of the socio-environmental pressure, impact and response (PIR) to changes in agroindustrial activity (Table 12)
- 2.1 semi-structured key informant interviews (for five categories) (Table 3)
- 3.1 focus group discussions (Table 4)
- 4.1 a survey questionnaire (Tables 5 and 6)
- 5.1 observation through field visits to case study areas and participation in conferences, workshops and seminars (Tables 7 to 10)

The use of both primary and secondary data collection supported the three research components identified below. The objective was to examine the theory, policy and practice of bioenergy development in Thailand and the Mekong region. The three research questions concerning policies at the national, regional and international level were juxtaposed against practice at the local level (see table below).

Table 2: Research components: integrating theory, policy and practice

Research questions	Component I	Component II	Component III
Theory/policy/practice	Literature review	International framework	Empirical study, review of practices
What are the main issues concerning bioenergy at the <i>international</i> level?	X	X	--
What are the incentives to develop bioenergy policies at the <i>national and regional</i> level?	X	X	X
What is the evidence of bioenergy practice at the <i>local</i> level?	X	--	X

As explained at the outset of the chapter, this research is based on the *conceptual framework* of sustainable development that encompasses three pillars: social, economic and environmental (UN 1992). While this research focuses on the economic (i.e. trade) and environmental aspects of the equation, there is also reference to the social consequences. The

analytical framework is elaborated in a Matrix based on five types of possible environmental effects arising from trade: direct, scale, structural, regulatory and technology (OECD 1992). This matrix approach assists in the construction of possible scenarios for bioenergy development in Chapter VI.

3.3 Primary data collection and analysis

This research employs several techniques of primary and secondary data collection upon which to base the analysis of agroenergy theory, policy and practice in Thailand and the Mekong region. The informant interviews and data collection and analysis were facilitated through participation in the related conferences and seminars in the region, as well as field trips during the research period of October 2008 to March 2010. The field research allowed for a first-hand experience of the interaction of different informants at the local, national, regional and international levels. A list of the field visits and conferences is outlined in **Appendix I**. Participation in conferences in the region helped to triangulate the information collected with a geographically diverse array of experts and practitioners in the field.

Over 500 informants were interviewed for this research between October 2008 and March 2010. The table below illustrates the number of each category of informants interviewed, the responses by category to the questionnaire and the number of focus groups convened for each category of informant. Participation in a wide array of conferences enabled such a large number of informants to be interviewed on the margins of the meeting.

Table 3: Informants by category and method of data collection

Method of data collection	C1 Government	C2 international & regional intergov organisations	C3 Non-governmental organisations	C4 private sector	C5 local level	TOTAL
Informant interviews	114	110	173	36	76	580
Questionnaire responses	29	25	38	28	22	143
Focus groups	6 Mixed - 14	4 Mixed - 6	4 Mixed - 17	11 Mixed - 6	3 Mixed - 7	49*

* Of the total of 49 focus groups, 28 were amongst individual categories of informants and 21 brought together informants from different (mixed) categories.

3.3.1 Literature review

A review of the literature is woven into the analysis of the case narratives in Chapter V, as well as the analysis in Chapters VI and VII.

This research has also benefitted significantly from participation in an internet-based forum for sharing information about agribusiness and rural livelihoods in the Mekong – LaoFAB – *Lao Farmers and Agri-Business* (www.laofab.org). This network is the initiative of Andrew Bartlett, an agronomist who has been based in Vientiane, Lao PDR for the past quarter century. With funding from the Swiss Development and Cooperation Agency, LaoFAB brings together a growing number of experts (currently over 2,000) who are actively engaged in practicing, theorising or implementing policy in the Mekong region, with an emphasis on agriculture in Lao PDR. The first message was posted on LaoFAB on 13 November 2006. I have been actively participating since 25 November 2008. Daily participation in this forum allowed me to stay in touch with the various and diverse aspects of agroenergy, including exchanging email correspondence with experts on specific points. Above and beyond the daily exchange between practitioners, the LaoFAB repository contains a library of over 700 documents on the region, serving as an invaluable source of information

that is constantly updated. As the moderator, Andrew Bartlett posts news from a wide range of sources and initiates debate on rural development in Lao PDR by making information sharing more transparent, accessible and pluralistic.

3.3.2 Key informant interviews

Semi-structured interviews were carried out with informants from five categories of informants (Table 3). I also followed-up with selected informants, including through e-mail correspondence, to support and supplement information gathered during the initial interview.

Appendix G contains a list of the key informant interviews undertaken for this research.

The objective of the informant interviews was threefold.

- 1.1 To identify the challenges and opportunities related to Thailand's development of bioenergy.
- 2.1 To assess how a broad range of informants is integrating trade and environment considerations into the policymaking process in bioenergy.
- 3.1 To identify the problems and determine appropriate policy responses to enhance integration of trade and environment in the bioenergy sector to achieve sustainable development.

One component of the interview process was to visit the field areas and communities in which biofuel crops are being cultivated and processed in Thailand and in which there is Thai agroenergy investment in neighbouring Mekong countries. The goal was to gain local level insight and information to support the analysis at the national and regional levels. Interviews were conducted in the field with representatives in selected biofuel cultivation areas in the six countries in the Mekong region. These are areas in which the cultivation of agroenergy crops has increased rapidly over the past decade (e.g., cassava and sugarcane for ethanol; palm oil and *Jatropha* for biodiesel).

Interviews were undertaken for five different categories as described in the table below. The first category is comprised of government officials. The majority of interviewees were officials in the Thai government (C1); government officials from other countries are indicated as C1FX, with FX indicating foreign. Representatives from regional and intergovernmental organisations and bilateral development agencies form the second category of informants (C2).

The third category (C3) is constituted by non-governmental organisations (NGOs), research organisations and sustainable development experts. This category is the largest one as these NGOs are national, regional and multilateral. The private sector informants make up the fourth category (C4). Finally, local level informants, such as farmers as well as farmers' cooperatives and local community representatives comprise the fifth category (C5). A complete list of the organisations and agents for each of the five categories of informants is contained in **Appendix A**.

Table 4: Categories of informants and interview questions

Category of informants	Focus of interview question
<p>I. Government informants (C1) & foreign national government (C1FX)</p> <p>.1 Trade/economic/agricultural experts</p> <p>-1 Environment and sustainable development experts in government</p>	<p>21 Information on current and prospective bioenergy policies in Thailand and the Mekong region</p> <p>21 Assessment of priorities for bioenergy and institutional and financial support</p>
<p>II. Intergovernmental informants (C2)</p> <p>.1 Trade/economic/agricultural experts</p> <p>21 Environment and sustainable development experts in intergovernmental organisations</p>	<p>21 Role of interagency cooperation on bioenergy</p> <p>21 Role of the concept of sustainable development/sufficiency economy</p>
<p>III. Non-governmental informants (C3)</p> <p>.1 Universities and research organisations</p> <p>21 Trade/economic/agricultural experts</p> <p>21 Environment and sustainable development experts in NGOs</p>	<p>21 Opportunities for public-private partnerships</p>
<p>IV. Private sector informants (C4)</p> <p>.1 Agroenergy private sector actors</p> <p>21 Trade and industry groups and associations</p>	<p>.1 Information on current and prospective challenges and opportunities for bioenergy in Thailand and the Mekong</p> <p>21 Assessment of priorities for bioenergy</p> <p>21 Role of cooperation with government agencies on bioenergy</p> <p>21 public-private partnerships (PPP) for sustainable development</p>
<p>V. Local informants (C5)</p> <p>.1 Farmers</p> <p>21 Farmers' associations and cooperatives</p> <p>21 Local community associations</p> <p>21 Agricultural and environmental experts</p>	<p>21 Possibilities for agroenergy production and use at the local level</p> <p>21 Information on cooperation between local, provincial and national governmental agencies on bioenergy</p> <p>21 Examples of sustainable development/sufficiency economy in practice</p>

An indicative set of questions for the informant interviews is contained in English in **Appendix B** and in Thai in **Appendix C**. These questions are subdivided into four to permit trade and environmental expertise to be addressed depending on their expertise. There are supplementary questions for interviews with the private sector and local level informants.

- 21 Questions for trade, economic, agriculture and energy informants (categories C1, C2, C3, C5)
- 21 Questions for environmental informants (C1, C2, C3, C5)
- 21 Supplementary questions for local level informants (C4, C5)
- 21 Questions for private sector informants (C4)

The questions for the informant interviews were used as a starting point for the interviews, which were undertaken on a semi-structured basis. The diagram in Figure 2 above was also used during the interviews to visualise the linkages between the different sectors.

The questions for the informant interviews are based on the following:

- 21 The current role and prospects for agroenergy development as well as contribution of biofuels as a driver of agricultural expansion in Thailand the Mekong
- 21 Institutional mechanisms for bioenergy at the national level
- 21 Mechanisms for regional cooperation (e.g., GMS Core Agricultural Support Programme)
- 21 Agroenergy trade potential and agricultural standards
- 21 Links between food, fuel and fibre
- 21 Prospects for second generation biofuels
- 21 Interaction with government agencies related to agroenergy
- 21 Role of incentives and cooperation between government agencies

The questions for the interviewees were differentiated slightly to emphasise the trade dimension and the environmental dimension. Thus, there is overlap on the elements listed above. However, the focus for the interviewees with predominantly socio-ecological expertise included:

- 21 Key hotspots for environmental threats in Thailand and the Mekong from agroenergy expansion
- 21 Socio-ecological impacts of agroenergy expansion in Thailand and the Mekong

- 21 Role of the Clean Development Mechanism and agricultural aspects of climate change
- 21 Role of *Sufficiency Economy* on local livelihoods

The supplementary questions for local level informants were designed to gain more specific information on the planted areas, size of farm, production process, use of chemical inputs (fertilisers and pesticides), crops planted, harvesting season, and support from community programmes and cooperatives.

Private sector interviewees were asked about the crops they produce, whether they export or import bioenergy, investment focus in the Mekong, impact of agroenergy standards, whether socio-ecological considerations influenced investment decisions, agroenergy processing technologies and the role of the Clean Development Mechanism in stimulating energy efficiency.

The list of questions was adapted over the research period to take into consideration information gained during the interview process itself. This enabled the interviews to be as constructive an input as possible to the data collection process.

3.3.3 Focus groups

Indepth conversations with focus groups were used to target specific aspects of the bioenergy development with experts in the field. The objective of the focus groups was to broaden the discussions with selected informants to encourage an exchange of information and gather diverse opinions based on predefined elements of the debate.

The focus group discussion points elaborated in **Appendix F** outline the following aspects:

- 21 Incentives to stimulate the bioenergy sector
- 21 Policy instruments and regulatory impediments
- 21 Thailand's potential for trade in bioenergy
- 21 Agroenergy feedstock base
- 21 Regional framework for bioenergy
- 21 Role of contract farming
- 21 Food versus fuel debate
- 21 Climate change impacts on agroenergy

These elements were used as the starting point for the discussions depending on the experts involved.

Focus groups were undertaken for each of the five categories of informants. There were also focus groups that combined combinations of categories of informants to encourage a debate from different perspectives. I took advantage of the conference setting to arrange for mixed focus groups. Conferences and workshops provided the opportunity to draw together government officials (C1), private sector (C4) and community groups (C5).

Table 5: Focus group by category of informant

Category of informant	Number of focus groups
	TOTAL 49 (28 individual; 21 mixed)
Government (C1, C1FX)	6
Intergovernmental (C2)	4
Non-governmental (C3)	4
Private sector (C4)	11
Local level (C5)	3
C1-C3-C5 (gov-NGO-local level)	3
C1-C2-C3 (gov-intergov-NGO)	1
C1-C4-C5(gov-private-local)	2
C1-C3 (gov-NGO)	5
C1-C4 (gov-private sector)	2
C1-C5 (gov-local level)	1
C2-C3 (intergov-NGO)	4
C3-C4 (NGO-private sector)	2
C3-C5 (NGO-local level)	1

Appendix I contains a list of the focus groups conducted for the five different categories of interviewees.

3.3.4 Survey questionnaire

The survey questionnaire was designed to gain insight into the challenges and opportunities presented by agroenergy development in Thailand and the Mekong as perceived by the representatives of the five informant categories. The questionnaire consisted of ten questions with multiple choice answers (table below).

Table 6: Survey questionnaire

1.1 What is the main driving force behind your country's <u>policies</u> on biofuels?
2.1 Could your Government benefit from more information in formulating biofuels policies?
3.1 Could coordination between ministries on biofuels policy be <u>improved</u> in your country?
4.1 What is the <u>main challenge</u> to the development of the biodiesel sector in your country?
5.1 What is the <u>main challenge</u> to the development of the ethanol sector in your country?
6.1 Which actor should <u>take the lead</u> in developing the biofuels sector in your country ?
7.1 Which actor should <u>take the lead</u> in developing the biofuels sector in the Mekong region ?
8.1 Are you aware of, or do you benefit from Government incentives to promote biofuels?
9.1 Are you aware of, or do you make use of standards related to biofuels?
10. In your opinion, is your country's biofuels sector <u>developing</u> along the right path as of 2009?

Appendix D contains the full questionnaire in English, with the Thai version in **Appendix E**.

In the majority of cases, select key informants were asked to respond to the questionnaire prior to the interview or focus group discussion in order to set the scene for a more indepth conversation on agroenergy issues. Of over 500 informant interviewees, 143 responded to the survey questionnaire.

The data were analysed using Statistical Package for the Social Sciences (SPSS) software programme (**Appendix M**). The results of this data are interwoven in the analysis in the final three chapters of the thesis. The frequency count of the sample for the survey questionnaire is outlined in the following table.

Table 7: Questionnaire – frequency count in each informant category

Informant category	Frequency	%	Valid %
National government	29	20.3	20.3
International and regional Intergovernmental organisations	25	17.5	17.5
Non-governmental organisations	38	26.6	26.6
Private sector	29	20.3	20.3
Local community organisations	22	15.4	15.4
Total	143	100.0	100.0

3.3.5 Field visit observation

Field visits were an ongoing element of the data collection process over the course of my four years in Thailand. The main intensive research period in Thailand and the Mekong consisted of ten months from October 2008 until July 2009. This was supplemented by six months of selected field research in Brazil while I was writing up the field notes from Thailand and the Mekong. I also benefitted from undertaking research to prepare a trade and environment assessment for Thailand and for Lao PDR from August 2006 until July 2008 during which time I made ten field visits to Luang Prabang, Vientiane and environs (Shaw et al 2007).

Field research for this research was conducted in the case studies of community and commercial bioenergy as outlined in the table below.

Table 8: Case studies of community and commercial bioenergy

<i>PART I: Community biodiesel</i>	Agroenergy crop
Case 1 – Rangsit, central Thailand	Palm oil
Case 2 – Khon Kaen, northeastern Thailand & Si Prajam, central Thailand	Oil nuts (Jatropha)
Case 3 – Aoluk, Krabi; Phang Nga; Phuket; & Surat Thani, southern Thailand	Palm oil (versus rubber)
<i>PART II: Commercial bioenergy</i>	
Case 4 – Khon Kaen, northeastern Thailand	Sugarcane and cassava
Case 5 – Pakse, Champassak, southern Lao PDR	Palm oil and cassava; Jatropha
Case 6 – Shan state, central Myanmar	Jatropha

In addition to the case study field visits, empirical evidence was facilitated by research throughout the Mekong region, including Cambodia, Yunnan, China and Vietnam, as well as Brazil as set out in the table below.

Table 9: Field trips

Date	Conference/presentation/field trip	Organiser	Location
August 2006 – June 2007	Field work to carry out a Rapid Trade and Environment Assessment National Workshop for Thailand and Lao PDR culminating in two publications (Shaw et al 2007) two regional workshops in June 2007	International Institute for Sustainable Development (IISD) & International Institute for Trade and Development (ITD)	Bangkok, Thailand & Vientiane, Lao PDR
13-Feb-08	Field Trip to Tonle Sap, Kampong Phluk, Chong Khneas, Cambodia	Swedish Environmental Secretariat for Asia (SENSA), Swedish International Development Agency (Sida)	Tonle Sap, Cambodia
7-May-08	Field Trip to Kung Krabaen Bay Royal Development Study Center, Kihong Khud Thamai, Chantaboury, Thailand	Ministry of Foreign Affairs, Thailand	Chantaboury, Thailand
17 Jan 2009	Field trip to Thai Tapioca Institute organized by the World Tapioca Conference	Ministry of Commerce	Korat, Thailand
21-Jan-09	Field trip to the Learning Center for Energy Sufficiency	Khon Kaen University	Vanghinlad, Khon Kaen, Thailand
18-Feb-09	Field trip to the Energy Sufficiency Center & Organic Agricultural Center	Organised by Dr. Sawaeng and Pra Tawee	Si Prajan & Souphanburi, Thailand

27 February 2009	Field visit to Mae Fah Lung Foundation	Independent	Chiang Rai, Thailand
19-Mar-09	Field trip to the Gene Bank, Kunming Institute of Botany, Chinese Academy of Sciences	Sida SENSE and the Kunming Institute of Botany, Chinese Academy of Sciences	Kunming, Yunnan, China
19-Mar-09	Field trip to Xiaohe Township and Heiniquo Village, World Agroforestry Center (ICRAF) Payment for Environmental Services in the Songhuaba Watershed	Sida SENSE and the World Agroforestry Center (ICRAF)	Kunming, Yunnan, China
23-25 March 09	Field trip to Pakse, Champassak	independent field research organised by Subanh and Thongchanh	Pakse, Lao PDR
10-12 April 2009	Field trip to Aoluk, Krabi	independent field research organised by Athiras Dumdee, private sector	Aoluk, Krabi, Thailand
15-May-09	Field trip and biodiesel seminar	Bangkok University and Samai Jai-In	Saraburi, Thailand
22-May-09	Field trip to the Royal Chitralada Agricultural Project	World Renewable Energy Congress	Chitralada Villa, Thailand
7-8 June 09	Field trip to palm oil and ethanol refineries, Laem Chabang, Ma Ta Phut & Rayong	Private Sector & Office of the Rubber Replanting Aid Fund (ORRAF)	Eastern Seaboard Industrial Zone, Thailand
9-10 June 09	Field trip to Southern Thailand community oil palm & rubber plantations & plants	Office of Rubber Replanting Aid Fund (ORRAF)	Phuket, Phang Nga & Krabi, Southern Thailand
23-24 February 2010	Field trip to Cristalina, Goiás, Brazil	organised by Tim Hirsch, Journalist & Rede Terra, Instituto de Desenvolvimento Sustentável e Apoio à Agricultura Familiar	Cristalina, Brazil
15 May 2010	Field trip to community agricultural projects organised by the Conference on Revisiting Agrarian Reform in Southeast Asia: Empirical, Theoretical and Applied Perspectives	Chiang Mai University Regional Center for Social Sciences and Sustainable Development (RCSD)	Chiang Mai, Thailand
21 May 2010	Field trip to sugarcane plantation and ethanol factory organized by the International Bioenergy Conference	Sugarcane Industry Association of Brazil (UNICA); University of São Paulo	São Paulo, Brazil

3.3.6 Conferences, workshops, meetings and publications

Participation in conferences, workshops and meetings relevant to agroenergy in Thailand and neighbouring Mekong countries, as well as Brazil formed an important part of the research. These gatherings gave me the opportunity to discuss with a wide range of

informants, many of whom agreed to be interviewed for this research, participate in focus group discussions and fill out the survey questionnaire. These conferences took place between October 2008 and May 2010.

A full list of the conferences attended and presentations made is contained in Appendix H.

Table 10: Conferences

Date	Conference (presentation)	Organiser	Location
16-Oct-08	Southeast Asian Studies Conference	Chulalongkorn University	Bangkok, Thailand
12-Oct-08	Mekong Public Forum	Chulalongkorn University	Bangkok, Thailand
20-Nov-08	Conference on Economic Integration in Asia - Energy and Environment in Asia	Faculty of Economics, Thammasat University	Bangkok, Thailand
15-16 Jan 2009	World Tapioca Conference	Ministry of Commerce	Nonthaburi, Thailand
22-Jan-09	Climate Game Change Conference	Swedish Environmental Secretariat for Asia (SENSA), Swedish International Development Agency (Sida)	Bangkok, Thailand
2-3 Feb 09	Climate Change Dialogue	Mekong River Commission (MRC)	Bangkok, Thailand
20-22 Feb 09	ASEAN Peoples' Forum	Chulalongkorn University	Bangkok, Thailand
5-8 Mar09	World Alternative Energy Sciences Expo (WAESE)	Ministry of Science and Technology	Bangkok, Thailand
19-21 May 2009	World Renewable Energy Congress (WREC)	Ministry of Energy & King Mongkut's University of Technology	Bangkok, Thailand
22-May-09	International Conference on Opportunities with Alternative Energy	Ministry of Energy & Energy Research Institute, Chulalongkorn University	Bangkok, Thailand
2-Jun-09	Sustainable Palm Oil Certification workshop	Office of Agricultural Economics, Ministry of Agriculture & German Technical Assistance (GTZ)	Bangkok, Thailand
15-17 September 2009	Encontro Verde das Américas - IX Greenmeeting of the Americas - presentation on Bioenergia e Mudanças Climáticas: Desafios do Desenvolvimento Sustentável / Bioenergy in a climate challenged world: challenges of sustainable development	Government of Brazil	Brasilia, Brazil
7-9 October 2009	Global Renewable Energy Forum - prepared the official report of the conference	United Nations Industrial Development Organisation (UNIDO) & the Government of Mexico	Léon, México
27-28 October	Global Forum on Environment, Sustainable Development & Amazon -	União Feminina das Américas (UNIFAS)	Brasilia, Brazil

2009	V Fórum Mundial das Américas, Africa e Amazônia - presentation on biofuels		
20-Nov-09	Roundtable on Trade, Development & Climate Change: Copenhagen - A difícil equação entre mudanças climáticas, comércio e desenvolvimento sustentável	International Center for Trade & Sustainable Development (ICTSD) (Geneva), Centro Brasileiro de Relações Internacionais (CEBRI) & Instituto de Estudos do Comércio e Negociações Internacionais (ICONE)	Brasilia, Brazil
13-15 May 2010	Panel coordinator for Agroenergy Trade and Investment: Articulating policy in practice in the Mekong, Conference on Revisiting Agrarian Reform in Southeast Asia: Empirical, Theoretical and Applied Perspectives	Chiang Mai University Regional Center for Social Sciences and Sustainable Development (RCSD)	Chiang Mai, Thailand
19-20 May 2010	International Bioenergy Conference	Sugarcane Industry Association of Brazil (UNICA); University of São Paulo	São Paulo, Brazil

I gave two presentations on agroenergy and sustainable development on behalf of the Government of Canada (Embassy of Canada to Brazil) at the Greenmeeting of the Americas on 19 September 2009 in Brasilia and the Forum of the Americas on 26 October 2009. I was also invited by the International Center for Trade and Sustainable Development (ICTSD) and the International Institute for Trade and Development (ITD) to present my research to the Asian Biofuels Dialogue in Bangkok on 9-10 November 2009.

As a member of the IISD Reporting Services *Earth Negotiations Bulletin*, I was engaged to prepare the official report of the UNIDO organised World Renewable Energy Forum in León, Mexico from 9-11 October 2009.

I presented a paper on *Bioenergy: Food or Fuel: Prospects and Policy Options for Thailand's biofuels trade* at the World Renewable Energy Congress on 19 May 2009. The paper was published in the congress proceedings. The abstract of the paper is contained in **Appendix R**.

Workshops, seminars and lectures

This research also benefits from my participation in numerous workshops, seminars and lectures related to the research topic (table below). These events took place between September 2008 and November 2009.

Table 11: Meetings, lectures and workshops

Date	Conference/presentation/ field trip	Organiser	Location
8-Sep-08	Lecture on <i>Trade Policy in the New Century</i> by Prof Razeen Sally, London School of Economics (LSE) & European Centre for International Political Economy (ECIPE)	Institute for Security & International Studies (ISIS), Chulalongkorn University	Bangkok, Thailand
9-Sep-08	Lecture on Corruption in Thai Politics	Prof Pasuk, Chulalongkorn University	Bangkok, Thailand
16-Oct-08	Southeast Asian Studies Conference	Chulalongkorn University	Bangkok, Thailand
22-Oct-08	Seminar on Thailand and the Global Financial Crisis	International Monetary Fund (IMF) & the International Institute for Trade and Development (ITD)	Bangkok, Thailand
12-Oct-08	Mekong Public Forum	Chulalongkorn University	Bangkok, Thailand
17-Nov-08	Seminar on Trade in the Greater Mekong Subregion	International Institute for Trade and Development (ITD) and the Asian Development Bank (ADB)	Bangkok, Thailand
20-Nov-08	Conference on Economic Integration in Asia - Energy and Environment in Asia	Faculty of Economics, Thammasat University	Bangkok, Thailand
28-Nov-08	Green Trade Seminar (presentation)	International Trade Center (ITC), Geneva	Bangkok, Thailand
19-Dec-08	Lecture on Energy in Thailand by Witoon Permpoonsachareon, General Secretary, Foundation for Ecological Recovery	Chulalongkorn University	Bangkok, Thailand
14-Jan-09	Lecture on Cultures of Knowledge by Vikrom Mathur	Stockholm Environment Institute (SEI)	Bangkok, Thailand
15-16 Jan 2009	World Tapioca Conference	Ministry of Commerce	Nonthaburi, Thailand
19-20 Jan 2009	Mekong Research Roundtable Meeting	Mekong Institute	Khon Kaen, Thailand
25-26 Feb 09	4th French-Mae Fah Lung University Seminar on Mekong Studies at Crossed Glances	French-Upper Mekong Subregion Academic Cooperation Centre; Research Institute on Contemporary Southeast Asia (IRASEC) and the Center for Natural Resources and Environmental Management, Mae Fah Luang University	Chiang Rai, Thailand
6-Mar-09	Development Cooperation Seminar on Economic Shocks and the Vulnerable in Thailand: A Case study of rising food and fuel prices	United Nations (UN), National Economic and Social Development Board (NESDB) & Thailand Development Research Institute (TDRI)	Bangkok, Thailand
10-11 March 09	Biofuels Development in the Asian Region Seminar	Netherlands Development Organisation (SNV)	Bangkok, Thailand
12-Mar-09	Policy Dialogue on Creative Economy in Thailand	International Institute for Trade & Development (ITD) & United	Bangkok, Thailand

		Nations Conference on Trade and Development (UNCTAD)	
17-18 Mar 2009	SENSA Annual Retreat (presentation)	Sida SENSA and the Kunming Institute of Botany, Chinese Academy of Sciences	Kunming, Yunnan, China
26-Mar-09	Twenty Ninth Meeting of the Mekong River Commission Joint Committee	Mekong River Commission (MRC)	Nonthaburi, Thailand
26-27 Mar 09	Regional Symposium "The Lessons Learnt from Experience of the River Basin Committee Operation in the Mekong" Basin"	World Bank	Nonthaburi, Thailand
28-Apr-09	Lecture on the impacts of climate change in the Mekong	Siam Society	Bangkok, Thailand
30 April - 1 May 2009	Regional Dialogue on Trade and Climate Change (presentation)	International Institute for Sustainable Development (IISD) & International Institute for Trade and Development (ITD) & International Center for Trade and Sustainable Development (ICTSD)	Bangkok, Thailand
11-12 May 2009	Sumernet Learning Forum	Stockholm Environment Institute (SEI)	Bangkok, Thailand
20-May-09	Thailand's Bioenergy Roadmap Seminar	American Chamber of Commerce	Bangkok, Thailand
2-Jun-09	Sustainable Palm Oil Certification workshop	Office of Agricultural Economics, Ministry of Agriculture & German Technical Assistance	Bangkok, Thailand
29-Oct-09	Semana Academica - presentation on the Challenges of Agroenergy (lecture)	Projeção Colegio	Brasilia, Brazil
9-10 November 2009	Dialogue on Biofuels in Asia: Striking a Balance between Trade, Agriculture and Energy Policies. Presentation on the impacts of biofuels subsidies in OECD countries on trade and competitiveness in Asian producing countries (presentation)	International Center for Trade & Sustainable Development (ICTSD) (Geneva), International Institute for Trade & Development (ITD) & the Institute for Agriculture & Trade Policy (IATP)	Bangkok, Thailand

Publications

The paper I presented at the World Renewable Energy Congress in May 2009 (**Appendix Q**) was expanded for submission to the *International Journal of Thai Studies* for peer review. It was accepted for publication in the December 2009 volume of the journal (Shaw 2009). The article is entitled "Prospects and Policy Options for Thailand's Trade in Bioenergy in the Mekong Region: Implications for Sustainable Development."

An earlier version of Chapter IV outlining Thailand's bioenergy policies and prospects was peer reviewed and published by the Food and Agriculture Organisation of the United Nations in Rome in January 2010 (Shaw 2010) as a chapter in *Recent Trends in the Law and Policy of Bioenergy Production, Promotion and Use: Case Studies on Bioenergy Legislation* (FAO 2010).

My abstract was accepted for inclusion in the International Conference on Alternative Energy in Singapore on 21-23 April 2010.

My proposal was accepted to organise a panel around agroenergy development in the Mekong for the conference entitled *Revisiting Agrarian Transformations* organised by Chayan Vaddanaphuti, Director, Regional Center for Social Science and Sustainable Development (RCSD), Chiang Mai University and Philip Hirsh, Director, Center for Mekong Studies, University of Australia. The conference took place from 13-15 May 2010. The abstract of the discussion paper prepared for the panel is contained in **Appendix R**. I prepared the lead paper and organised the panel on "Agroenergy Trade and Investment: Articulating policy in practice in the Mekong" (available at <http://rcsd.soc.cmu.ac.th/ChATSEA>). Importantly, this panel brought together several of the key interviewees from my field research – Samai Jai-In, Athiras Dumdee and Thongchanh Sengsoulivong.

3.4 Treatment of the data

The field visits resulted in data from the interviews (i.e., interview notes, survey questionnaires and photos), documents and information notes from non-governmental organizations working at the local level. Field notes were taken by hand in English, with recordings of selected interviews where possible. The interviews in Thailand were conducted with rudimentary Thai at the local level and mainly in English for the other four categories of informants. Most interviews in Brazil were held in Portuguese, particularly those at the local level.

The data was collected mainly from October 2008 until July 2009, with follow-up correspondence by email and telephone while I was writing up my notes and analysing the data after my move to Brazil from August until December 2009. During the latter period, selected interviews and field trips were carried out in Brazil to provide a comparative element to the analysis in Thailand and the Mekong region.

The data are assessed as part of the discussion of the case narratives in Chapter V. The evidence that emerges supports the regional modernities theory underlying this research. In sum, the research illustrates the importance of a regional construction of modernity to accentuate the positive and mitigate the negative consequences of agroenergy development in Thailand and the Mekong region. There is scope for the sustainable development of a Thai and Mekong agroenergy narrative within this framework.

The data are also examined in consideration of the causal chain of environmental impacts in the agricultural sector illustrated in the table below. This will enable an assessment of the changes in agricultural activities in Thailand in terms of the socio-environmental impacts and responses.

Table 12: Causal chain for socio-environmental impacts in agroenergy

Agroindustrial activity		Pressure	Impact	Response
Increased agricultural production (e.g., <i>ethanol</i> (cassava, sugarcane) & <i>biodiesel</i> (oil palm, oil seeds, such as <i>Jatropha</i>))	Monoculture cropping systems	2 changes in land use 2 changes to ecosystems 2 changes to watersheds (flood control functions)	2 vulnerability to pests 2 biodiversity loss 2 soil erosion 2 contribution to climate change	2 commodity support schemes encouraging diversified cropping 2 credit schemes
	Shifting cultivation	2 deforestation and land clearance 2 change in land use 2 soil erosion 2 changes to watershed (reduced flood control functions)	2 increased risk of flooding 2 biodiversity loss 2 reduced forest cover 2 contribution to climate change	2 changes to land tenure 2 land ownership rights 2 conversion of shifting cultivation land into permanent cultivated land 2 compensation schemes for afforestation projects
	Use of chemical pesticides and fertilisers	2 pest resistance 2 changes to soil composition 2 water contamination from runoff 2 human exposure to contaminants	2 loss of wildlife 2 biodiversity loss 2 worker contamination 2 higher incidence of diseases 2 limited water resources	2 integrated pest management systems 2 restricted use of chemicals 2 alternating cropping systems 2 higher tax and rebates on inorganic fertilisers 2 introduction of certification schemes

In order to assess the policy options for biofuels development in Thailand and the Mekong region, this investigation develops the following three types of bioenergy development through six case narratives in Chapter V.

- ❖❖Type A: community biodiesel to revitalise rural development and build resilience in food and energy systems at the local level
- ❖❖Type B: commercialisation of ethanol and biodiesel production for domestic use, with the potential to export tapioca-based ethanol
- ❖❖Type C: Thai investment in agroenergy in neighbouring Mekong countries (Cambodia, Lao PDR, Myanmar, Vietnam)

Chapter VI expands on the analysis with the use of the above analytical tools. In order to build the case linking theory to the practice, and to situate the case narratives, the next chapter outlines current agroenergy policies in Thailand and the Mekong region.