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ASSESSMENT OF CAPACITIES OF FINANCIAL INSTITUTIONS IN LAO PDR AND MYANMAR

- TO PROVIDE LOANS TO NEW RENEWABLE ENERGY TECHNOLOGIES FOR THE LARGE SCALE PRODUCTION OF ETHANOL FROM CASSAVA

ASSESSMENT OF CAPACITIES OF FINANCIAL INSTITUTIONS IN LAO

UNIDO – UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

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EXECUTIVE SUMMARY

UNIDO is implementing a project supported by the GEF under the Poznan Strategic Programme on Technology Transfer for Climate Change under UN Framework for Climate Change Convention (UNFCCC) in Thailand. The project is called: "*Overcoming Policy, Market and Technological Barriers to Support Technological Innovation and South-South Technology Transfer: The Pilot Case of Ethanol Production from Cassava*" and concerns the transfer of a new Thai technology for the production of ethanol from cassava to Lao PDR, Myanmar and Viet Nam. The particular technology is referred to as: Very High Gravity-Simultaneous Saccharification and Fermentation (VHG-SSF) technology and is developed by King Mongkut University of Technology Thonburi (KMUTT) in Thailand.

As part of this project, an assessment was made to identify the capacities of banks in Lao PDR to provide loans particularly to large industrial facilities producing ethanol from cassava in the country. The conclusion of the assessment was that there are many fundamental barriers in the market for obtaining large loans in Lao PDR in general and in particular for this kind of large investments. Major barriers include: A fiscal and foreign exchange reserve deficit which has a negative effect on the economy and banking sector and ability of banks to provide large amounts of credit, banks are capital constraint and show little interest in renewable energy lending for several reasons including real and perceived unattractive risk-return profile, a weak legal framework, lack of experience in production of ethanol from cassava in general in the country and no existing domestic market for ethanol. In addition, there is no clear timeframe of the government yet whether and when ethanol blending with gasoline might start.

The GEF project has limited sources available to address the barriers in the financial markets in Lao PDR. The main activities focus on training of banks and investors. The conclusion of the assessment is that trainings to banks in Lao PDR are not very likely to address the fundamental barriers and will not improve access to finance for this kind of large investments. Instead, it is suggested that the resources will be used to top up the available resources for support to Lao investors in developing a viable business proposal. This is an area where most progress can be made. The support should include 1) a feasibility study to reduce uncertainty about market information and feasibility of the investment, 2) business support, e.g. on finding the appropriate business partners, both equity investment partners e.g. a Thai company which is already producing ethanol from cassava in Thailand as well as partners to provide debt financing e.g. Thai banks which have already a banking relationship with the Thai equity partners. A small portion of the resources should be reserved to pay for Lao investors, Lao government officials as well as the Lao representatives of the Thai bank to come to Thailand to see an operation facility producing ethanol from cassava. In this way the Lao stakeholders can be familiarized with the particular technology involved. This allocation of the financial resources will have a much higher likelihood of facilitating the realization of the investment in Lao PDR. It should be noted that there are many fundamental barriers and high risks in the market, which need to be addressed/mitigated before banks might be willing to consider providing credit to this kind of large investments.

STRUCTURE OF REPORT

This report is structured as follows: in chapter 1 an introduction to the project and this study is provided. Chapter 2 contains a short background description of Lao PDR, its economy and the financial sector. Chapter 3 describes the general business risks, constraints in the banking sector, barriers for renewable energy investments and current lending practices to renewable energy investments. Chapter 4 describes specific challenges for the realization of ethanol blending with gasoline in Lao PDR. The report ends with an analysis and recommendations for the next steps in chapter 5.

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ACRONYMS

ADB	Asian Development Bank
EE	Energy Efficiency
FSP	Financial Service Provider
GDP	Gross Domestic Product
GEF	Global Environmental Facility
IFC	International Finance Corporation (member of World Bank Group)
IPP	Independent Power Producer
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
MFI	Microfinance Institution
MOST	Ministry of Science and Technology
NAST	National Authority for Sciences and Technolog
NGO	Non-Government Organisation
KMUTT	King Mongkut University of Technology Thonburi Thailand
RE	Renewable Energy
UNCDF	United Nations Capital Development Programme
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organisation
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank

Exchange rate: 8,000 LAK = USD 1 = 32.6 THB

1. INTRODUCTION

In this chapter the background of the GEF funded project on ethanol production from cassava implemented by UNIDO is described followed by the purpose of this study. The last paragraph of this chapter describes, as a reference, the characteristics of a typical ethanol production plant using cassava as feedstock considered by the project as a potential investment.

1.1 INTRODUCTION OF THE PROJECT

UNIDO is implementing a project funded by the Global Environment Facility (GEF) under the Poznan Strategic Programme on Technology Transfer for Climate Change under UN Framework for Climate Change Convention (UNFCCC) in Thailand. The project is called: "*Overcoming Policy, Market and Technological Barriers to Support Technological Innovation and South-South Technology Transfer: The Pilot Case of Ethanol Production from Cassava*" and concerns the transfer of a new Thai technology for the production of ethanol from cassava to Lao PDR, Viet Nam and Myanmar. The particular technology is referred to as: Very High Gravity-Simultaneous Saccharification and Fermentation (VHG-SSF) technology and is developed by KMUTT, Thailand.

Under the project, two pilot scale ethanol production plants, one in Thailand (200 litre/day) and one in Viet Nam (50 litre/day) respectively, will be realized. In addition, an ethanol information hub at KMUTT, Thailand and a technical centre at Food Industries and Research Institute (FIRI), Viet Nam Viet Nam will be established. Efforts will be taken to popularise the use and production of bio-ethanol by creating the necessary awareness and trainings, policy and investment forums, project development assistance. Lao PDR and Myanmar will be included in the project with the aim to convince investors to adopt the technology.

1.2 PURPOSE OF THE STUDY

To support the adoption of the new technology for the production of ethanol from cassava, a study to assess the capacities of the financial institutions in Lao PDR and Myanmar to provide credit to this particular investment was conducted. The below report reflects the findings from the study on the financial institutions in Lao PDR. A detailed TOR for the study can be found in Annex 1. Under the TOR the consultant was requested to do some background research and meet stakeholders such as banks, development partners, etc who are involved in financing renewable energies in Lao PDR or biofuel production and summary the findings in a report.

The international expert was expected to deliver a report describing the situation of financial institutions in Lao PDR and their capacities to provide finance to investment on bioethanol production from cassava. In addition an approach to build capacity of stakeholders such as Lao financial institutions/investors to improve the investment environment for this kind of investment was to be proposed.

1.3 CHARACTERISTICS OF TYPICAL ETHANOL PRODUCTION FACILITY

Ethanol production from cassava needs to have a certain scale to become economically attractive. Experts recommend a typical production facility for the technology concerned of around 200,000 litres of ethanol per day for Lao PDR. A plant of this size has been taken as a reference during the study. Such a plant has the typical characteristics[1] as described in Figure 1.

Figure 1: Typical characteristics of a 200,000 liter/day ethanol production plant using cassava as feedstock[2]

Size of plant:	200,000 litre of ethanol per day
Feedstock:	Cassava root
Total investment cost:	Machinery: THB 1,400 million Other costs for land, building, office, etc.: THB 200 million Total: THB 1,600 million ~ USD 49-50 million
Selling price of ethanol:	Baht/litre: 0.25
Payback period:	4 to 5 years

[1] These figures should be taken as a reference only. The characteristics of each plant are different, depending on the location, market prices, partners involved etc.

[2] http://www.toyo-thai.com/scripts/newsdetail.asp?nNEWSID=143&LG=THAI accessed on 02-07-2014 and http://www.dede.go.th/dede/fileadmin/usr/bers/gasohol_documents/Executive_summary_value_added_to_ethanol_waste.pdf accessed on 02-07-2014.

2. SITUATION ANALYSIS

This chapter begins with a short introduction of the geographic and demographic situation in Lao PDR followed by a description of the situation of the economy. In the last paragraph an overview of the financial/banking sector is provided.

2.1 SHORT OVERVIEW OF LAO PDR

Lao PDR is officially known as the Lao People's Democratic Republic and is a landlocked country in Southeast Asia. The total Southeast Asia. The total landmass is around 236,800 km^2, see Figure 2 and

Figure 3. It is a mountainous country with mountains average 1,500 metres above the sea level. Lao PDR shares borders with Myanmar and People's Republic of China to the Northwest, Viet Nam to the East, Cambodia to the south and Thailand to the West. Lao PDR has 18 provinces. The provinces are divided in to 147 districts. Its population is dispersed across a large number of tiny villages. The total population is estimated at 6.6 million in 2013. The population density is only 27 per sq. km. Vientiane is the capital and largest city, and has about 799,000 residents. More than 70 per cent of the workforce functions in the agricultural sector. World Bank estimates that around one-fourth of the population lives in poverty line of $US 1.25 per day.

After becoming independent in 1975, Lao PDR established control over the economy through a centralized fiscal and socialist government until 1985. The transformation from a central-planning to a market oriented economy was launched in 1986. Since the economic reform was introduced in 1986, the economic development of Lao PDR has shown a strong record of economic growth and poverty alleviation with annual average growth rate of over 6 per cent in 1990s and 6.5-7 per cent in 2000s. The main sectors contributing to economic growth in 2013 are Mining, Energy, Agriculture and Services.

The largest foreign direct investments in Lao PDR are coming from Viet Nam, followed by China and Thailand. The total of Foreign Direct Investment in 2012 was USD 2,700 million.

Figure 2: Main Social and Economic Figures of Lao PDR

Country Area	**236,800 km²**
Population	6,645.827 million (2013)
Population growth rate	1.63% (2013 estimate)
GDP/capita	7.6 (2013)
Most important GDP sectors	Mining (29%), Energy (23%), Agriculture (15%), Service (13%) (2013)

Figure 3: Map of Lao PDR

2.2 ECONOMIC SITUATION

The World Bank regularly publishes an economic outlook for the Lao economy[3]. In the latest outlook it projects the economic growth at 7.2% for 2014, which is a small slowdown compared to 8.1% in 2013. The growth is mainly fuelled by the natural resources sector e.g. gold, copper, etc., FDI financed investments in hydropower and macroeconomic policies.

Lao PDR is currently struggling with a fiscal deficit, which widened in the 2012/2013 fiscal year. The underlying causes of the increasing fiscal deficit were an increase in public sector wages as expenditure on civil service wages nearly doubled and a decline in revenues from mining and a decline in grants. The government is trying to reduce the deficit, by increasing revenues from tax collection and e.g. increasing charges for services such as electricity.

In 2013 the Lao kip weakened slightly against the US dollar and strengthened against the Thai baht. Overall it meant a slight deterioration in the competitiveness of Lao PDR's tradable exports.

Lao is experiencing relatively high inflationary pressures, mainly through increasing food prices. In November 2013 the inflation reached around 7%. In the beginning of 2014 inflation was slightly lower.

Foreign Exchange Reserves

In 2013 Lao PDR started to struggle with low foreign exchange reserves. According to the World Bank it was at its lowest level in a decade, covering around 1.3 months of goods and services imports. This trend was caused by, amongst others, the widening current account deficit. The Lao government uses slightly different

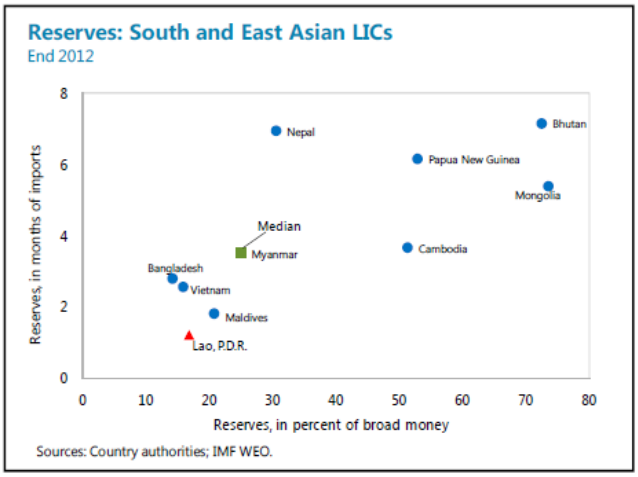
[3] WB Lao PDR Economic Monitor January 2014: Managing Risks for Macroeconomic Stability.

numbers. The BOL indicated in mid-July 2013 to the National Assembly that the foreign exchange reserved dropped and that it had sufficient foreign reserves to secure imports for about 5 months. This was followed by an announcement from the Central bank of Lao PDR in august 2013 to restrict the sale of foreign currency to the public. Anyone who wanted to convert 20 million kip or more was required to prove a 'real need' to do so. In practice, customers in Vientiane were allowed to buy a maximum of USD 50 - 200 per day. The BoL clarified its move by indicating that it wanted to encourage increased used of the Lao kip. Analyst indicated that the most likely underlying reason was a shortage of foreign reserves at commercial banks. By introducing this measure the government hoped to increase the foreign reserves. Foreign reserves are required to repay debts taken for e.g. infrastructure projects.

The Shanghai Daily[4] reported that the central bank in December 2013 announced that it would not provide foreign currency loans to companies which did not generate foreign currency. Also this measure was to shore up the reserve. In April 2014 the central bank governor indicated that the foreign reserve was able to secure imports for about 6 to 7 months, indicating an improvement compared to August 2013.

The IMF has provided a figure comparing the foreign exchange reserves of Lao PDR with other countries in the region. It shows how challenging the situation is for Lao DPR, see figure Figure 4.

Figure 4: Relative foreign exchange reserves of Lao PDR in 2013[5]



These developments are likely to influence the investments flows into the country, though the exact effects are not yet clear. Analysts expect the kip to dollar rate to fall in the future.

2.3 FINANCIAL/BANKING SECTOR

[4] http://www.shanghaidaily.com/article/article_xinhua.aspx?id=214206 accessed on 06062014.

[5] IMF Country Report No. 13/369, Lao PDR, December 2013.

Central Bank and Ministry of Finance

The Ministry of Finance (MOF) is an important institution in the financial system. It has several responsibilities, including: (fiscal) policy making, making decisions related to the financial sector, it is in charge of the accounting framework, it is responsible for the preparation of the government budget to be submitted to the National Assembly and it has a key role in foreign borrowings. In addition, MOF in charge of (a) tax administration; (b) customs duties; (c) managing the investments of the government in state-owned enterprises, (d) management of state property; and (e) government procurement guidelines and regulations.

The Bank of Lao PDR's Law puts the Central Bank of Lao PDR (BOL) in charge of usual central bank functions such as: monetary policy, reserve management, bank supervision and lender of last resort and payment system. The power of BOL is however limited. Main reason for this is the lack of autonomy of the institution, the executive power of the government has significant influence over the BOL. In addition, the effectiveness of monetary policy is limited, as the economy uses Thai Baht and US Dollars for the large transactions. Enforcement of banking regulation is also a challenge.

Issuance of bonds in foreign currency

In May 2013, the Ministry of Finance of Lao PDR successfully completed its first baht-denominated bond offering. Around USD 50 million was raised. The bonds had a maturity of 3 years and a coupon of 4.5% per annum. There was considerable interest for the issue. The Thai TMB Bank Plc. acted as lead arranger[6].

Banking sector

The BOL reported in 2013[7] that at the end of 2012, there were 32 banks with 83 branches across the country, with 301 service units, 35 exchange bureaus and 565 ATM machines. A complete list of the banks in Lao PDR can be found in annex 2. The main banks include:

- three state-owned commercial banks: Banque pour Le Commerce Exterior Lao (BCEL), Lao Development Bank and Agriculture Promotion Bank;
- three joint-venture banks: Joint Development Bank, the Lao-Viet Bank, and a joint venture between BRED Bank of France and BCEL;
- five Thai banks: Bangkok, Siam Commercial, Krungthai, Thai Military and Ayudhya Banks whose activities are mainly limited to providing services to local Thai businesses;
- Two Viet Namese bank: Sacombank and Viet Namese Military.
- six private banks (5 foreign and one domestic): Malaysia - Public Bank (Berhad); ANZ Vientiane Commercial Bank Limited, the Association of Cambodia Local Economic Development Agencies (ACLEDA) Bank Lao

[6] https://www.tmbbank.com/newsroom/news-details-en.php?id=467

[7] The report over 2013 was not yet available when this report was prepared.

Ltd, CIB International Commercial Bank Malaysia, Booyong Lao Bank, and the Indochina Bank. Phongsavanh Bank and ST bank are domestic banks.

From press releases[8] it appears that in 2013/2014 two additional foreign banks were allowed to start operations in Lao PDR, i.e. the Lao Construction Bank (Chinese) and RHB bank (Malaysian). These banks were not yet mentioned in the available annual report. This brings the total number of banks in Lao PDR to 34.

A new banking law passed in 2006 allows private foreign banks to establish branches in all provinces of Lao PDR. Previously, foreign banks could only establish branches in Vientiane. Partly influenced by the new banking law, credit growth in recent years has been rapid. The growth was around 47% in 2012, but overall credit remains low relative to annual GDP.

In March 2014, the BOL announced suspension of the establishment of new commercial banks in Lao PDR.[9] It first wants to evaluate the current situation in the country's banking industry and introduce necessary policies to boost and strengthen the supervision of the operations.

As of March 2014 the total credit provided in the banking sector increased to around 42,000 billion kip (USD 5.25 billion) from just more than 38,000 billion kip in September, 2013. Main credit is provided for (short-term) consumption loans.

Lao PDR is receiving assistance to improve the supervision of the banking sector, but according to the US state department bank supervision of the sector remains somewhat weak. Non-performing loans have decreased significantly since 2003, through work-outs, write-offs, and transfers off balance sheets. The US state department notes that, according to the IMF two state-owned commercial banks (SCBs) remain insolvent.

At the end of December 2012, total assets of banking system amounted to Kip 50,839.80 billion (USD 6.35 billion); which is an increase of 33.03 percent compared to 2011.

In the last few years, rapid developments took place in the microfinance sector. One of the benefits of MFIs is that they provide access to finance to people in rural areas. As end of 2012, there were 97 microfinance institutions registered with the BOL. Thirty-four of them were deposit-taking microfinance (DTMFI) institutions and non-deposit taking MFIs (NDTMFI). There were 20 credit cooperatives and saving deposits in the list. Other organisations in the list include pawnshops, financial leasing companies and money transfer company representatives.

At the end of 2012, there were only 32 out of the 97 MFI institutions which regularly submit financial reports to the BOL. This indicates that in terms of transparency improvements could be made.

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[8] http://www.theborneopost.com/2014/06/07/rhb-bank-expands-regional-footprint-with-lao-presence/ access on 02-07-2014 and http://www.youtube.com/watch?v=L4N7q4ktFEo accessed on 02-07-2014.

[9] http://jclao.com/lao-govt-suspends-approval-new-commercial-banks/

Commercial and specialized banks are concentrated in cities and urban areas, while MFIs principally operate in rural areas. Representative offices do usually not engage in business operations and their main task is to offer information and support to their clients or looking to enter the Lao markets.

Stock market

In 2011 the Lao Securities Exchange (LSX) began its operation. Initially it has drawn a lot of interest from both domestic and foreign investors. In 2011 the securities trading accounts stood at 8,187, while in 2012 it grew to 8,910 accounts. Domestic investors represent around 80% of all accounts.

Currently 3 companies are listed on the stock exchange: Banque pour le commerce exterieur Lao Plc., EDL Generation Public Company and Lao World Public Company.

3. BUSINESS RISKS & CAPACITIES OF FINANCIAL INSTITUTIONS FOR RENEWABLE ENERGY LENDING IN LAO PDR

This chapter contains an overview of the risks & challenges business developers/investors in an ethanol from cassava production plant might face in Lao PDR. All these risks are relevant for financial institutions when considering providing credit to this kind of investment proposals.

The description focuses on 1) the general ease of doing business (paragraph 1), 2) challenges & capacities in the banking sector (paragraph 2), 3) specific risks & challenges for renewable energy projects (paragraph 3), 4) debt financing of renewable energy investments in Lao PDR (paragraph 4), 5) general requirements for loan applications.

3.1 EASE OF DOING BUSINESS

Doing business in Lao PDR is considered as relatively risky by several members of the business community. The World Bank Doing Business Report for 2014 provides a ranking for Lao PDR on the 'ease of doing business'. According to this report, Lao PDR is ranked 163 out of 185 countries in the world for overall ease of doing business. Lao PDR is ranked particularly low in terms of the time and cost of resolving insolvency (position 185), protecting investors (184), getting credit (167), trading across borders (160), paying taxes (126), and enforcing contracts (114). The World Bank notes that if Lao PDR wants to create a prosperous market-based economy, structural reforms to enable entrepreneurs to conduct their business activities on an efficient and competitive manner vis a vis other nations are required. These concerns were echoed by the Lao National Chamber of Commerce and Industry's president, who in April 2014 stressed for the need to improve the investment friendly environment.[10]

The current fiscal and foreign currency reserve deficits have their effects on the banking and business sector. The government tends to pay its contractors late, allegedly delays of more than 60 days occur, which makes it harder for contractors to repay their loans back to the banks. The banks in their turn cannot provide new loans to businesses as they are waiting for repayments. In addition, the (government) banks can't take actions against the defaulters as the reason for the late repayments are late payments by the government. The banks prefer now to provide loans to (short-term) consumption loans.

Several stakeholders in Lao pointed towards the challenges around valuing land, which is an important issue if land is provided as collateral for a loan. Currently there is no independent organization in Lao PDR which can provide an independent estimate for the value of land. Banks will value the land offered as collateral, but their assessment seems always at the lower/conservative end. In addition, some foreign investors have experienced problems with the lease of their land. These developments have made banks very conservative in estimating the value of land which is offered as collateral. Often the value attached to it by banks is far below the value attached

[10] http://www.vientianetimes.org.la/FreeContent/freeCont_10-point.htm

to it by the private sector. The value estimated by banks can be 50 to 30% of the value estimated by the private sector. This makes it more difficult for the private sector to obtain loans of sufficient large size.

Regarding contract law, The Mekong Law Group notes in its "Lao Legal & Investment Guide" that according to the contract law:

- A contract can be voided if it is disadvantageous to one party, and
- A contract is void if it conflicts with State or public interests.

General uncertainties around enforcement of contract law in developing countries is common. However these provisions create additional uncertainties for businesses in Lao PDR.

3.2 STATUS AND CAPACITIES IN THE BANKING SECTOR

The capital markets in Lao PDR are not yet well developed and the banking sector is relatively weak. According to the US State Department[11] credit is not available on the local market for large capital investments. This is confirmed by all the stakeholders spoken to. Large capital investments of more than a few million dollars will need to come from foreign investors/foreign banks. IFC indicated that even for smaller hydropower plants which involve a proven technology and relatively secure cash flows credit of a few million dollars is very difficult to obtain. The current fiscal deficit and foreign exchange reserve deficit might have made it even harder in the last year.

Investment projects need approval from the central government. For projects over USD 20 million the approval of the Prime Minister is required as per Prime Minister Decree No. 301, 12 Oct 2005. The Minister for Planning and Investment can approve investments below USD 20 million while the vice Minister of Planning and Investment can approve investments of less than USD 10 million. Loans above USD 10 million require approval from the BOL. In addition, there are restrictions on the loan size which can be provided in relation to the size of the total loan portfolio of a bank.

Commercial banks are required to hold reserves at the BOL for credit provided. At this moment it is 5% for credit in KIP and 10% for credit in foreign currency (mainly USD and THB). Some stakeholders indicated that for very large loans, the reserve requirements are even higher, though this could not be confirmed in the laws/regulations of BOL. Commercial banks are lobbying for lowering the reserve requirements as the high reserves would restrict their operations. The IMF on the other hand recommended in 2012 to increase the reserve requirements to slow down the growth in credit in order to stabilize the economy.

The above means that for an investment in a large ethanol production plant from cassava credit should come from foreign sources.

[11] Investment Climate Statement for Lao PDR 2013, US state department

Annual interest rates for term loans from commercial banks in Lao PDR are currently in the range of 10 to 12% for loans in USD or THB and 14 to 18% for loans in KIP.

3.3 CONSTRAINTS FOR RENEWABLE ENERGY PROJECTS IN LAO PDR

Stakeholders mentioned many challenges for renewable energy project in Lao PDR, which are similar to constraints in many other least developed countries. The main barriers mentioned include:

- Limited experience in Lao PDR concerning the installation, operation and maintenance of renewable energy systems;
- Limited understanding & awareness of consumers of the advantages of renewable energies;
- Insufficient financial incentives of the government for renewable energy investments;
- Renewable energy investments are capital intensive and the required capital is not available in Lao PDR;
- Unclear procedures and long procedures for obtaining licenses to operate renewable energy systems;
- High transaction costs in obtaining licences and concessions;
- Overlapping authority of different government organisations especially at local level, creating potential conflicts;
- Available loan products are not tailored to renewable energy investments. Loan products are usually short (<3 years), while for renewable energy investments longer term loans are required;
- High collateral required (up to 130% of the loan amount);
- Reluctance of banks to consider renewable energy investment proposals as long term loans are required and a (perceived) unattractive risk-return profile.

3.4 DEBT FINANCING OF RENEWABLE ENERGY INVESTMENTS (GAPS, CURRENT PRACTICES AND BEST WAY FORWARD)

The large majority of banks in Lao PDR have not yet been involved in lending to renewable energy investments and did not show much interest during our interviews to provide credit to this kind of investments. The stakeholders consulted indicated that to their knowledge there are no banks in Lao PDR, either local or international, for which renewable energy lending in Lao PDR is a priority. None of the banks have a specific target for renewable energy lending.

State-owned and private Lao banks

Stakeholders indicate that local Lao banks (state-owned or private) are not involved in renewable energy lending because of the following constraints:

- Capital constraints, they simply don't have enough capital to lend; Also the financial position of Lao Development Bank and Agricultural Promotion Bank is a concern (see footnote 12);
- Internal procedures and systems, e.g. because focus is e.g. on lending to state owned enterprises;

- Loan terms, usually they provide loans with a tenure of a few years, while for renewable energy usually a loan of more than 5 years is required;
- Lack of experience with this kind of projects; lending policies tend to be very conservative;
- The current fiscal deficit and foreign exchange reserve deficit has a negative effect on the capacity of banks to provide credit. The government pays its contractors later, which in turn have difficulties repaying their debts on time. Banks can't take actions against the defaulters as the reason for delayed repayments as that the government is paying them late.

Foreign banks

Some foreign banks have been involved in renewable energy lending in Lao PDR, often in consortium with international development banks (WB, IFC, etc.). E.g. the Thai banks: Bangkok Bank, Bank of Ayudhya, Kasikorn Bank, Krung Thai Bank, Siam City Bank, Siam Commercial Bank and Thai Military Bank have been lending to the Nam Theun II project.

ANZ bank seems the most active bank in Lao PDR in the renewable energy sector; it is lending to some small hydropower projects and also provided loans to the Nam Theun II project. Its Singapore office is involved in providing these loans. Currently ANZ, in cooperation with IFC, is sharing its experiences on ensuring environmental & social safeguards for hydropower project to other banks.[12] ANZ's focus in Lao PDR is on financing trade activities.

ACLEDA Bank is active in the microfinance sector in Lao PDR since 2008 and is currently lending in rural areas, including to farmers for agricultural purposes. It has branches in all provinces in Lao PDR except for 2 provinces. Loans are provided for e.g. coffee cultivation, but also cassava cultivation. ACLEDA expressed full willingness to provide loans directly to farmers for cassava cultivation.

General

All banks interviewed indicated that any proposal for a renewable energy project must meet all basic requirements according to their lending policy. For several banks this means that the business should have made profit for at least 2 to 3 years. In addition, they indicated that given the amount of funding required and the relative limited experience they have with the sector, involvement of their headquarters was required. Lloans larger than USD 1 - 3 million need approval from headquarters.

For new loan products e.g. applicable to renewable energy investments approval by the BOL is required. In Lao PDR all loan products need to be approved by BOL.

In general there was a reluctance of banks to meet and speak about renewable energy financing. Most indicated they were not really interested or wanted to see a worked out proposal first.

[12] http://www.ifc.org/wps/wcm/connect/region__ext_content/regions/east+asia+and+the+pacific/countries/eap-hydro-thaibanksworkshops

IFC indicated that even for relatively small hydropower projects which require an investments of around USD 3-10 million and which use proven technology and have a relatively secured cash flow, credit is difficult to obtain in Lao PDR. To address this gap it is currently implementing a project which provides support to foreign banks to support them in their risk assessment of social & environmental issues regarding renewable energy project in Lao PDR.

World Bank is also supporting the hydropower and mining sector. Beginning of June '14 the WB approved a US$8.9 million grant and a US$8.9 million credit for capacity building in the hydropower and mining sectors. The aim of the project is to improve human resource capacity and the performance of government oversight institutions in both the hydropower and mining sectors. Asian Development Bank doesn't have any projects at the moment which target renewable energy investments in Lao PDR.

A summarising comparison between different (types) of banks in Lao PDR regarding their ability to provide credit to large renewable energy projects is made in Figure 5 below. From the comparison below and the description above it is clear that foreign banks are most likely to provide credit to this kind of projects: the financials look good, they do have capital for large investments and do have experience with renewable energy lending. The financials of BCEL look good, but BCEL has no experience with RE lending and shows reluctance to this kind of investments. ANZ is taken as a representative for the group of foreign banks operating in Lao PDR.

Figure 5: Comparison between banks[13]

	Joint Development Bank (Lao joint venture bank)	BCEL (Commercial bank owned by Lao government)[14]	ANZ Lao (Private foreign bank)
Profit in 2013	1,367 LAKm	243,062 LAKm	16,375 LAKm
Total assets	1,049,142 LAKm	17,248,000 LAKm	1,527,000 LAKm
Paid up capital and reserves	360,000 LAKm	1,216,200 LAKm	186,000 LAKm
ROA	0.13%	1,4%	1,07%
ROE	0.38%	20%	8,8%
Credit Rating	Not available	Not available	AA
Capital availability	Limited (IMF indicated that this bank could be insolvent)	Limited	Yes (foreign)
Willingness to talk about RE financing	Reluctant	Reluctant	Willing
Experience with renewable energy lending	No	No	Yes (hydropower)

[13] Based on annual reports over 2013.

[14] The financials of BCEL look relatively strong, with a ROE of around 20%. Possibly it is benefiting from its relative size in the market (1/3 of total assets in banking sector, 1/4th of credit and more than 1/3 of deposits in the country) and its monopoly position in certain banking operations. Originally it was founded as a special branch of the Central Bank of Lao PDR, in 1989 it became a commercial bank. It is the only bank which is allowed to provide pay-roll systems for government staff and certain transactions with international donors. IMF noted in December 2013, that the capital of two state-owned commercial banks (from the three) were well below the regulatory minimum, potentially a fiscal risk. Most likely it is not BCEL, but the two other state-owned banks. It is not clear what this means for BCEL. Possibly the pressure on BCEL to involve in certain activities would increase as their financial position is better. All in all the position of state-owned-banks is reason for some concern. The other two state-owned banks are the Lao Development Bank and Agricultural Promotion Bank.

3.5 REQUIREMENTS & CRITERIA OF BANKS FOR LOAN REQUESTS

Banks in Lao PDR generally require applicants of loans to submit at least the following information (requirements can differ from bank to bank and from case to case, therefore the below should be taken as a reference only):

1) All business/operating licenses required to operate the business (if available - licenses should still be valid) and import-export license if required;
2) Enterprise Registration Certificate and tax registration certificate incl. articles of association/incorporation;
3) Appropriate permits from local authorities;
4) .Audited financial statements, such as balance sheets, profit & loss account and cash flow statements - usually for three financial years including the closest fiscal year;
5) Cash flow projections for the investment project;
6) Proof of payment of taxes, usually for three financial years including the closest fiscal year;
7) Meeting minutes of the Board of Directors;
8) Collateral: e.g. bonds and related documents showing the ownership of land including history on the plot of land;
9) Studies: feasibility studies;
10) Content on the Company Signage and the Company Signage Building Permit;
11) In case there are environmental and/or social effects of the project, reports describing the effects and . mitigation measures should be included;

The above information can be supplemented by pictures of business practices or of the collateral.

In addition, banks usually require that a business has made profit for at least 2-3 years. Some banks required that an investment is 30% underway, before a loan is provided. So first 30% of the investment such as construction of buildings should be financed by equity investments. Equity of more than 40% should be provided.

4. DEVELOPMENT OF A BIOETHANOL MARKETS IN LAO PDR

This chapter contains a description on the steps which need to be taken and current challenges to develop a biofuel from ethanol market in Lao PDR. These aspects are important for bank to assess the risks involved in providing credit, as it can influence the demand for ethanol and with that the cash flow of the investment.

4.1 BARRIERS & GAPS IN THE MARKET

When banks assess the loan request proposals received, they will need to consider the entire market the business is operating in. In particular the (external) factors which can have an influence on the cash flow projections. Relevant factors include: government regulations, demand and price developments of the products produced, incentive schemes, import & export rules, etc.

When we look at the potential use of bio-ethanol in Lao PDR, as described in the project document the most likely demand for ethanol in large quantities will be for blending with fossil fuels The 'Renewable Energy Development Strategy' of Lao PDR aims for a biofuel use of 5% by 2015 and 10% by 2025.

Stakeholders indicated that there is a whole range of issues which need to be addressed before blending of ethanol with fossil fuels can take place in Lao PDR. All these issues have an influence on the viability of an ethanol producing business, so for banks essential to know. Realization of a bioethanol plant in Lao PDR which uses cassava as feedback will be more complicated compared to for instance in Vietnam, as in Lao PDR no large scale production of ethanol from cassava takes place at this moment either for food or fuel. There is no production plant. Only ethanol from sugar cane is produced in the South of Lao PDR. The produced ethanol is exported to Thailand. In addition, no large scale dehydration and blending of ethanol or biodiesel with fossil fuels is taking place. There has been/is some very small scale production of biodiesel from jatropha and from mak kao but this has proved to be not commercially viable. The costs for collecting seeds are very high and the oil-yields are relatively low. In the eyes of banks, these are major risk factors.

Issues raised by stakeholder before blending of ethanol with fossil fuels can take place include:

1) Path forward with clear timeframe

At this moment it is not yet clear when the government of Lao PDR prefers blending of ethanol with gasoline to start. Neither is it clear for the concerned stakeholders when the required infrastructure, policies and guidelines would be ready for implementation.[15] MEM is considering carrying out a feasibility study for biofuels in Lao PDR, using financial resources from the World Bank Rural Electrification Fund. By the time of writing of this report it has not been confirmed.

[15] In the 'Renewable Energy Development Strategy' for Lao PDR the government aims for a biofuel use of 5% by 2015 and 10% by 2025. However, no path forward or incentive schemes are formulated yet. The strategy document mentions that a biofuel decree and biofuel action plan will be formulated, though these documents have not been finalized yet. http://www.lao-ire.org/data/documents/data_research/general/LIRE-Renewable_Energy_Development_Strategy_in_Lao_PDR.pdf

2) Demand/Usage of ethanol

There is no market for bioethanol blends yet in Lao PDR. Stakeholders expect some resistance from users for the new fuel. This could be because they don't know the product, but it could also be because they fear it will damage the engine of their car.

This fear of users appeared to be a realistic fear. In the South of Lao PDR ethanol is being produced from sugar cane molasses. Initially the government and the factory tried to use this ethanol for blending with gasoline for the local market. Local consumers didn't like this idea and the project had to be abandoned. Currently the ethanol is being exported to Thailand. To create a viable market with demand from consumers an awareness raising campaign will be required.

3) (Financial) incentive to producers of ethanol

The government has developed a renewable development energy strategy. In this strategy several potential incentive schemes are mentioned. However, it is not yet clear which incentives will be available to producers of ethanol and how these can be accessed.

4) (Financial) incentive to users of ethanol

To convince users to switch to ethanol blends, probably incentives need to be provided. For instance, the ethanol-gasoline blend should preferably be slightly cheaper than 100% gasoline. At this stage it is not yet clear how this should be implemented and financed.

5) Use f ethanol for other purposes than intended

Ethanol can be used for different purposes, in fuels, but also for human consumption e.g. to produce alcoholic beverages, in perfume, industrial applications, etc. At this stage it is not clear how the government intends to prevent that the produced ethanol is used in other applications than it is intended for when produced. A potential solution, in case it is supposed to be used as fuel, to blend the ethanol with gasoline at the ethanol production site.

6) Sourcing of cassava

Cassava is currently being grown in Lao PDR. Most of it is exported to Viet Nam and China, in the form of cassava chips. There hasn't been an assessment if sufficient feedstock is available for a production plant of ethanol from cassava. In addition, so far no assessment has been made in case not sufficient feedstock is available, whether sufficient land is available for the production of cassava. Land concessions need to be approved by the government and there is a lot of competing demand for land. Food security issues should be considered in this regard. There are several regions in Lao PDR which don't produce sufficient food, such as rice and vegetables. They import food from other countries. It should be carefully considered whether food production should be prioritized above cultivation of cassava for ethanol production.

Recently, two companies involved in processing cassava including Lao-Indochina Group Public Co. went bankrupt. It didn't pay the cassava cultivating famers fully for the cassava delivered. This on the one hand means that there might be a temporary oversupply of cassava in the market and a relatively low price, but on the other

hand the bad experiences with cassava cultivation might have caused some additional resistance with farmers to cultivate cassava.

7) Standards for ethanol blends

There are no standards yet for the quality of ethanol and ethanol blends. Possibly standards from neighboring countries could be used as a basis, after which they need to be adapted to the Lao situation.

8) Testing of ethanol fuels

At this moment there is no certified laboratory able to test regularly the ethanol produced. Possibly National Authority for Sciences and Technology (NAST) under the Ministry of Science and Technology (MOST) could take up this role in the future. This would require an investment in testing equipment, training of staff and possibly a working arrangement with existing certified laboratories in other countries.

9) Environmental & social concerns

Some stakeholders expressed environmental concerns regarding the cultivation of cassava, including the toxicity of the plant and the large area of land required for large scale plantations. This is particularly relevant given that certain areas of Lao PDR have to import food as not sufficient food is produced in the area. A request for a loan for ethanol production from cassava will need to meet the environmental & social safeguard standards of the banks. In particular foreign banks might have strict requirements.

The Lao State Fuel Company has signed around 1 year ago a MOU with Korea to conduct research on bioethanol production in Lao PDR, for instance research on blending limits and standards. However, till date not much has happened yet under this MOU.

4.2 ADDRESSING THE IDENTIFIED BARRIERS & GAPS

The above barriers add uncertainty to the business proposal and the anticipated revenues/cash flows. Banks don't like uncertainty/risks. When there are too many factors which cannot be controlled, banks will be reluctant to provide loans. Banks need a clear business proposal in which most uncertainties are mitigated. Some of the uncertainties mentioned above can be addressed, however not all.

The uncertainties regarding a stable demand for ethanol can be overcome by initially exporting the produced ethanol to neighbouring countries, such as Thailand, Korea or China. In other countries there is a constant demand for ethanol for blending with fossil fuels. Over time and slowly, demand for ethanol in the Lao market can be developed.

5. RECOMMENDATIONS

This chapter contains a discussion of the results from previous chapters followed by recommendations on how UNIDO could add value, given its limited budget and the present persistent and fundamental barriers in the market and support access to finance for large scale ethanol production from cassava. Further, this chapter contains suggested next steps and the TOR for the technical assistance activities in next steps.

5.1 ANALYSIS

From the analysis in the above chapters it can be derived that:

1) In general obtaining debt financing for large investments from a bank in Lao PDR is very challenging. Lao PDR is facing a fiscal deficit and a foreign exchange reserve deficit, which have its effects on the economy and banking sector;
2) Obtaining large loans from local banks is particularly hard. Common sources of large scale financing are foreign banks/foreign investors;
3) Loans for renewable energy are difficult to obtain in Lao PDR, as most banks are not familiar with the sector. Even for 'established renewable energy technologies' such as small hydropower, it is challenging. IFC & WB are therefore supporting the sector;
4) Obtaining a loan for a large investment in an ethanol production plant from cassava is expected to face many hurdles. A main hurdle is that ethanol production from cassava is not yet done in Lao PDR, there is no experience. This will make banks very cautious. This barrier can be (partly) addressed by involving a foreign investor with experience producing ethanol from cassava;
5) Introducing a new advanced technology for ethanol production from cassava will add additional technology risk, as the technology is not proven yet in the Lao context.

There are many potential solutions for improving access to finance for renewable energy projects. Potential solutions which would address the needs of banks applied in other countries include amongst others:

1) Providing concessional loans in case of capital shortages;
2) Providing (partial) risk guarantees for investments in case of high real or perceived risks;
3) Providing technical expertise in assessing loan applications;
4) Strengthening the policy and regulatory framework;
5) Increasing financial discipline and governance of banks;
6) Strengthening the legal environment to make PPP structures more attractive;
7) Providing financial incentive schemes for renewable energy investments;
8) Etc.

This underlying UNIDO project has reserved financial resources for the following activities related to capacity building for banks and investors:

- 1-day training to banks and investors in Lao PDR to familiarize them with the risks of the specific ethanol from cassava technology (C13);

- Formal financing consultation workshop with banks (C18);
- Resources for investor forum. Tthis is for representatives from 3 countries: Myanmar, Lao PDR and Viet Nam.

The resources for above activities are very limited given the many obstacles and risks in the market. It is unlikely that providing trainings to banks in Lao PDR with the limited budget available will have a tangible effect on improving access to debt financing. Trainings can familiarize banks with the real and perceived risks associated with the specific technology. The challenges in the market are however more fundamental and cannot be addressed with a training.

The most cost-effective way forward is to use the resources reserved for trainings to bank for 1) a detailed feasibility study and 2) a mentoring technical assistance programme to the Lao investors. This will allow them to prepare a better business plan and to find the right partners, which will increase their chance of obtaining a loan from a foreign bank. Foreign banks have the appropriate mechanisms in place to assess loan applications for technologies they are not familiar with. Most large foreign banks have technical specialists in their headquarters or have arrangements in place with engineers/engineering firms to assist in the due diligence. Most importantly, the business plan/loan application in itself should be sound and strong. It is therefore recommended to focus on this aspect. The Lao government might soon commission a feasibility study for biofuels.

5.2 RECOMMENDATIONS/WAY FORWARD

Based on the analysis the following recommendations are made:

1) To overcome the barrier of a not yet existing ethanol market in Lao PDR, it is recommended to assume that initially that ethanol will be exported to neighboring countries, such as Thailand;
2) To overcome the barrier of lack of experience in Lao with the production of ethanol from cassava either with a generic or advanced technology, it is suggested a foreign business partner is sought which is currently producing ethanol from cassava;
3) To overcome the barrier of lack of capital at banks in Lao PDR to provide credit, it is suggested to focus on foreign banks, for instance a Thai bank which aims to promote trade between Thailand and Lao PDR. Some of these banks have experience in renewable energy financing and do have sufficient capital;
4) A feasible business structure could involve a consortium/joint venture in which both a Lao investor and a foreign investor take an equity stake, while debt financing is provided by a foreign bank. Preferably there should be an existing banking relationship between the foreign investor and the foreign bank. The foreign investor could also provide the appropriate guarantees to the foreign bank;
5) UNIDO can add value to this process by providing a mentoring service to the Lao investor on business and financial issues, supporting the Lao investors particularly on:
    a. Carrying out a detailed feasibility study;
    b. In finding the right business partner with experience in ethanol production from cassava, preferably a partner already applying the advanced technology;

c. Developing a business plan, including cash flow projections;
d. Identifying the best business structure;
e. Conducting all required studies, such as cassava resource study, feasibility study, gathering market intelligence;
f. Options to mitigation remaining business risks;
g. Signing of MOUs with suppliers and buyers;
h. Comparing different financing options and financing structures;
i. Contract negotiations;
j. Investment pitch preparations;
k. Growth strategy projections;
l. Connecting Lao investor to foreign banks for credit and venture funds.

Based on the above the following next steps are proposed:

1) Carrying out a detailed feasibility study[16];
2) Identify Lao investors with a credible interest in investing in bioethanol production, which are preferably already operation in the fuel or agricultural markets;
2) Supporting the Lao investor to work out a viable business plan (see paragraph 5.3 with detailed support) in order to stand stronger in the negotiations with potential partners;
3) Identify ethanol producing companies (e.g. Thai) interesting in expanding their business in Lao PDR and connecting them to the Lao investors;
4) Supporting the Lao investor in approaching banks and venture capital funds;
5) Arrange for visits to operating ethanol plants for the banks which are seriously interested, in order to increase their understanding of the particular technology.

5.3 DETAILS ON METHODOLOGIES FOR CAPACITY BUILDING

It is suggested that UNIDO provide a mentoring service to the Lao investor on business and financial issues, supporting the Lao investor:

- In finding the right business partner with experience in ethanol production from cassava, preferably with experience with the advanced technology;
- Developing a viable business plan including supporting conducting the required studies, such as feasibility study, resources study, cash flow projections, growth strategy projections, etc.;
- Identifying the best business structure;
- Comparing different financing options and financing structures;
- Contract negotiations;
- Signing MOUs/LOI with suppliers and buyers;

[16] The Lao Government is considering conducting a feasibility study for biofuels with support from the WB.

- Preparing investment pitches;
- Options to mitigate remaining business/financial risks;
- Connecting Lao investor to banks and venture funds;
- Obtaining the required approvals from the Lao government.

It should be stressed that the mentor should not do the work for the Lao investor, but provide guidance on how things can be done, give examples and provide comments on draft documents. A TOR for these services can be found in Annex 3. In addition, if there are two different Lao investors, then two different mentors/coaches should be found, because of confidentiality/competition reasons.

Potential service providers who can offer this kind of services in the region include:

Name:	Strengths:	Weakness:	Other:
International Institute for Energy Conservation (IIEC Thailand)	Has implemented several renewable energy and energy efficiency projects (including on biofuels) and working experience in Lao PDR and Thailand.	Limited experience in business coaching	www.iiec.org
CTI PFAN Thailand	Supported by USAID, managing a network of organisations/people involved in business coaching	Is trying to become independent from support from USAID. This might make them more expensive.	Willing to cooperate with this UNIDO project on cost sharing basis. http://www.cti-pfan.net/
NIDAS	Has experience on biofuels and business coaching.	Has only a small team in the region.	http://www.niras.com/
KPMG Thailand	Experts on finance and business plan development	Expensive.	http://www.kpmg.com/th/en/pages/default.aspx

After carrying out the feasibility studies and determining whether ethanol production from cassava is feasible in Lao PDR and Myanmar and making sure there are serious Lao and Myanmar investors, it is suggested UNIDO meets CTI PFAN to see how can be cooperated. CTI PFAN is managing a network of companies and individuals who can provide business coaching support. In addition, CTI PFAN is willing to cooperate with UNIDO.

ANNEX 1: TOR FOR THE ASSIGNMENT TO ASSESS THE FINANCIAL INSTITUTIONS IN LAO PDR

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

Title:	International Expert on GEF
Main Duty Station and Location:	Bangkok

ORGANIZATIONAL CONTEXT

The Programme Development and Technical Cooperation Division (PTC) is responsible for providing technical cooperation services on technological and economic issues covered by UNIDO's mandate in developing countries and countries with economies in transition.

The Energy and Climate Change Branch (PTC/ECC) is responsible for the promotion of access to energy for productive uses while at the same time supporting patterns of energy use by industry that mitigate climate change and are otherwise environmentally sustainable. This involves promoting energy efficiency and the adoption of renewable energy sources in the formal industrial sector, enhancing energy access primarily in rural areas as the fundamental means to reduce rural poverty, and championing industrial energy perspectives in the global debates about climate change and other energy-related global trends.

The Renewable and Rural Energy Unit (PTC/ECC/RRE) is responsible for promoting the adoption of renewable energy sources in the formal industrial sector, enhancing energy access primarily in rural areas as the fundamental means to reduce rural poverty and championing industrial energy perspectives in the global debates about climate change and other energy-related global trends.

The international expert will work under the supervision of the Project Manager at UNIDO, PTC/ECC/RRE and in close consultations with UNIDO Regional Office in Thailand.

PROJECT CONTEXT

"Overcoming Policy, Market and Technological Barriers to Support Technological Innovation and South-South Technology Transfer: The Pilot Case of Ethanol Production from Cassava"

UNIDO has been implementing a project funded by the Global Environment Facility (GEF) under Poznan Strategic Programme on Technology Transfer for Climate Change under UN Framework for

Climate Change Convention (UNFCCC) in Thailand.

The international expert is expected to undertake the following tasks:

Meet and consult with financial institutions, banks, relevant development partners, and concerned agencies financing renewable energies in Lao PDR and the Union of Republic of Myanmar. The international expert is expected to undertake 1 mission each to Lao PDR and Myanmar. UNIDO through its Regional Office in Thailand will facilitate in arranging both missions. A local officer or personal provided by UNIDO will help i) coordinate and arrange meetings with relevant agencies, ii) prepare documents required before the missions, iii) arrange logistic such as renting car, and iii) accompany the international expert for translation during the mission.

The international expert is expected to deliver following outputs:

Report: Status, Gap and Needs of financial institutions in Lao PDR and Myanmar for them to provide finance investment on bioethanol production for at least 400,000 litres per day production capacity. The report must be written in clear and succinct manner with a maximum of 50 pages.

Proposed various methodologies to build capacity of financial institutions in Lao PDR and Myanmar to achieve bettered financial investment on bioethanol production

Terms of Reference for a subcontractor to undertake activities and realize selected methodologies proposed in item 2.

List of potential consultancy firms and development partners based in Thailand, Lao PDR and Myanmar to be the subcontractor executing the TOR.

Specifically, s/he is expected to carry out the duties and activities listed in the Table below:

Main Duties	Expected Location	Duration	Concrete/ measurable Outputs to be achieved

II. Analysis in Lao PDR a) Analyse an overview of current banking situation in the country; b) Research in the capacity of the financial institutes and banks from published documents such as balance sheets; c) Interview with the banks and financial institutions to identify their capacities, their existing/suggested incentives; d) Identify banks with lending schemes to support renewable energy or related initiatives; e) Identify the department/lending window renewable energy project fall under and what the criteria are for lending to renewable energy projects; f) Compare and select the financial institutes from different criterion such as their financial strengths, local understanding of the support of renewable energy; g) Identify gaps of financial institute to giving out loans to potential investors bioethanol production producers; h) Identify planned and ongoing development projects, providing support to banks to improve their capacities to lend to renewable energy investments; i) Where possible, sensitize with the banks and financial institutes about their potential in providing loans to ethanol producers; and j) Identify the potential consultancy firms for organizing financial trainings and investment forums.	Bangkok with Mission to Lao PDR	-	Information gathered, consulted with target groups and ready to write the report
III. Deliverables: a) Draft reports for internal review (refer to above) (separate for Lao PDR and Myanmar): ○ The report, ○ Proposed various capacity building methodologies, ○ The TOR, and ○ The list of potential consultancy firms and partners b) Final reports incorporating comments by UNIDO.			

<u>REQUIREDCOMPETENCIES</u>

Core values:

1. Integrity
2. Professionalism
3. Respect for diversity

Core competencies:

1. Results orientation and accountability
2. Planning and organizing
3. Communication and trust

4. Team orientation
5. Client orientation
6. Organizational development and innovation

Managerial competencies (as applicable):
1. Strategy and direction
2. Managing people and performance
3. Judgement and decision making
4. Conflict resolution

MINIMUMORGANIZATIONALREQUIREMENTS

Education: Advanced university degree in Master's degree in finance with undergraduate degree in engineering, or other related discipline or other relevant discipline with a specialization in financing renewable energy technologies.

Technical and Functional Experience:
A minimum of 5 years practical experience in the field of financing renewable energies including experience at the international level involving technical cooperation in developing countries. At least 10 years of professional experience in renewable energy technologies and climate change (finance) in South East Asia Region
Exposure to the needs, conditions and problems in developing countries. Knowledge in lending policies, procedures and documentation ,

Experience in working with a UN agency in particular on GEF projects is preferable. Excellent writing

and editing skills are required, and knowledge of UNIDO or UN technical
reports, and terminology is highly desirable.
Familiarity with UN's project design namely Result Based Management and Logical Framework
Negotiation skills and outstanding communication skills with people of all levels and ability to work with individuals from different cultural/national backgrounds

Excellent presentation skills, both orally (for marketing presentations and for seminar presentations) and in writing.

Languages: Fluency in written and spoken English is required.

ANNEX 2: LIST OF BANKS IN LAO PDR

ລ/ດ	ຊື່ທະນາຄານເປັນພາສາລາວ Name and Form of Banks	ຊື່ທະນາຄານເປັນພາສາອັງກິດ	ເບີໂທ ຕິດຕໍ່	ທີ່ຢູ່
State- Owned Commercial Banks				
1	ທະນາຄານ ການຄ້າຕ່າງປະເທດລາວ ມະຫາຊົນ	Banque pour le Commerce Exterieur Lao	(856-21) 213200	www.bcel.com.la
2	ທະນາຄານ ພັດທະນາລາວ	Lao Development Bank	(856-21) 21300-04	www.ldb.org.la
3	ທະນາຄານ ສົ່ງເສີມກະສິກຳ	Agriculture Promotion Bank	(856-21) 212024	www.apb.com.la
Specialized Bank				
4	ທະນາຄານ ນະໂຍບາຍ	Nayoby Bank	(856-21) 264407-21	www.nayobybank.org
Joint State Commercial Banks				
5	ທະນາຄານຮ່ວມທຸລະກິດ ລາວ-ຫວຽດ	Lao Viet Bank	(856-21) 251416	www.lao-vietbank.com
6	ທະນາຄານລາວ-ຝຣັ່ງ	Banque Franco Œlao Ltd	(856-21) 285111	www.banquefrancolao.com
Private Banks				

7	ທະນາຄານຮ່ວມພັດທະນາ	Joint Development Bank	(856-21) 213531-6	www.jdbbank.com
8	ທະນາຄານ ພົງສະຫວັນ ຈຳກັດ	Phongsavanh Bank Ltd	(856-21) 212666	www.phongsavanhbank.com
9	ທະນາຄານ ເອັສທີ ຈຳກັດ	ST Bank Ltd	(856-21) 241559-62	www.stbankLao PDR.com
10	ທະນາຄານ ອິນໂດຈີນ	Indochina Bank Ltd	(856-21) 455000	www.indochinabank.com
11	ທະນາຄານ ບູຍອງລາວ ຈຳກັດ	Booyong Lao Bank Ltd	(856-21) 454500-2	
12	ທະນາຄານ ລາວກໍ່ສ້າງ ຈຳກັດ	Lao Construction Bank	(856-21) 285555	www.lc-bank.com
13	ທະນາຄານ ມາຣຸຮານ ເຈ ແປນລາວ ຈຳກັດ	Maruhan Japan Bank Lao Co.,ltd	(856-21) 266000	www.maruhanjapanbanklao.com
Subsidiary Bank				
14	ທະນາຄານ ເອເອັນແຊ໊ດ ລາວ ຈຳກັດ	ANZ Bank (Lao) Ltd	(856-21) 222700	www.anz.com/laos
15	ທະນາຄານ ເອຊີລິດາລາວ ຈຳກັດ	ACLEDA Bank Lao Ltd	(856-21) 264994	www.acledabank.com.la
16	ທະນາຄານ ການຄ້າສາກົນ ລາວ ຈຳກັດ	International Commerce Bank Lao Ltd	(856-21) 250388	www.icb-lao.com
Foreign commercial Bank Branches				
17	ທະນາຄານ ກຸງເທບ ຈຳກັດ(ມະຫາຊົນ)	BangKok Bank Pcl , Vientiane Branch	(856-21) 213560	
18	ທະນາຄານ ກຸງໄທ ຈຳກັດ	Krung Thai Bank Pcl,	(856-21) 213480	

	(ມະຫາຊົນ)	Vientiane Branch		
19	ທະນາຄານ ກຸງສີອະຍຸດທະຍາ ຈຳກັດ (ມະຫາຊົນ)	Bank of Ayudha Pcl Vientiane Branch	(856-21) 213521	
20	ທະນາຄານ ທະຫານໄທ ຈຳກັດ (ມະຫາຊົນ)	Thai Military Bank pcl Vientiane Branch	(856-21) 216486	
21	ທະນາຄານ ໄທພານິດ ຈຳກັດ (ມະຫາຊົນ)	Siam Commercial Bank Pcl Vientiane Branch	(856-21) 213500	
22	ທະນາຄານ ພາບລິກ ເບີຮາດ	Public Berhad Bank Ltd , Vientiane Branch	(856-21) 223394	
23	ທະນາຄານ ພາບລິກ ສາຂາ ສີໄຄ	Public Berhad Bank Ltd , Sikhai Branch	(856-21) 219868	
24	ທະນາຄານ ພາບລິກ ສາຂາ ສະຫວັນນະເຂດ	Public Berhad Bank Ltd , Savannakhet Branch	(856-41) 252131	
25	ທະນາຄານ ກຸງສີອາຍຸດທະຍາ ຈຳກັດ(ມະຫາຊົນ) ສາຂາ ສະຫວັນນະເຂດ	Bank of Ayudha Pcl Savannakhet Branch	(856-41) 252360	
26	ທະນາຄານ ໄຊ່ອນເທື່ອງ ຕິ່ນ ສາຂາລາວ	Sacom Bank , Lao Branch	(856-21) 260400	www.sacombank.com.la
27	ທະນາຄານ ຫຸ້ນສ່ວນການ ຄ້າທະຫານ ສາຂາລາວ	Military Commercial Joint StockBank-Lao Branch	(856-21) 990901	
28	ທະນາຄານ ອຸດສະຫະກຳ ແລະ ການຄ້າ ສາຂາ ນະຄອນຫຼວງ (ໄອຊີບີຊີ)	Industrial and Commercial Bank of China Limited Vientiane Branch	(856-21) 258888	
29	ທະນາຄານ ອຸດສະຫະກຳ-ການຄ້າ ຫວຽດນາມ	Vietin Bank Vientiane Branch	(856-21) 263997	

	ສາຂາລາວ(Vietin)			
30	ທະນາຄານ ການຄ້າໄຊ ງ່ອນ-ຮ້ານ້ອຍ(ມະຫາຊົນ) ສາຂາລາວ	Saigon-Hanoi Commercial Joint Stock Bank-lao Branch	(856-31) 257167	
31	ທະນາຄານ ພາບລິກ ຈຳ ກັດ ສາຂາປາກເຊ	Public bank Pakse Branch	(856-31) 218111	
32	ທະນາຄານ ເມເບັ້ງ ສາຂາ ລາວ	May Bank Branch	(856-21) 263100	

ANNEX 3: TOR FOR FURTHER CAPACITY BUILDING ACTIVITIES

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO/GEF: Providing investment mentoring services to Lao and Myanmar investors in advanced ethanol from cassava production facilities

TERMS OF REFERENCE FOR CONSULTANT

ORGANIZATIONAL CONTEXT

The Programme Development and Technical Cooperation Division (PTC) is responsible for providing technical cooperation services on technological and economic issues covered by UNIDO's mandate in developing countries and countries with economies in transition.

The Energy and Climate Change Branch (PTC/ECC) is responsible for the promotion of access to energy for productive uses while at the same time supporting patterns of energy use by industry that mitigate climate change and are otherwise environmentally sustainable. This involves promoting energy efficiency and the adoption of renewable energy sources in the formal industrial sector, enhancing energy access primarily in rural areas as the fundamental means to reduce rural poverty, and championing industrial energy perspectives in the global debates about climate change and other energy-related global trends.

The Renewable and Rural Energy Unit (PTC/ECC/RRE) is responsible for promoting the adoption of renewable energy sources in the formal industrial sector, enhancing energy access primarily in rural areas as the fundamental means to reduce rural poverty and championing industrial energy perspectives in the global debates about climate change and other energy-related global trends.

The consultant will work under the supervision of the Project Manager at UNIDO, PTC/ECC/RRE and in close consultations with UNIDO Regional Office in Thailand.

PROJECT CONTEXT

"Overcoming Policy, Market and Technological Barriers to Support Technological Innovation and South-South Technology Transfer: The Pilot Case of Ethanol Production from Cassava"

UNIDO has been implementing a project funded by the Global Environment Facility (GEF) under Poznan Strategic Programme on Technology Transfer for Climate Change under UN Framework for

Climate Change Convention (UNFCCC) in Thailand.

1. Aim of the Project

This project aims to promote the adoption of advanced ethanol production technologies using cassava as feedstock in Lao PDR, Vietnam and Myanmar. The technology will enable agro-industries to reduce water and energy consumption, which will offset GHG emissions. The services under this contract will focus on Lao PDR and Myanmar.

2. The Scope of the proposed Contracted Services

The Scope of this proposed contracted services include providing business mentoring services to Lao and Myanmar investors in ethanol from cassava technology on the aspects mentioned in the table below.

Main Duties and Activities	Location	Time
1. Provide business mentoring/coaching services to Lao and Myanmar investors on: 1) Finding the right business partner with experience in ethanol production from cassava, preferably a partner already applying the advanced technology; 2) Developing a business plan, including cash flow projections; 3) Identifying the best business structure; 4) Conducting all required studies, such as cassava resource study, feasibility study, gathering market intelligence; 5) Options to mitigation remaining business risks; 6) Signing of MOUs with cassava suppliers and ethanol buyers; 7) Comparing different financing options and financing structures; 8) Contract negotiations; 9) Investment pitch preparations; 10) Growth strategy projections; 11) Connecting investors to foreign banks for credit	Vientiane or other locations within Lao PDR and Yangon or other locations within Myanmar.	It is expected that the consultant will need to stay 1 week per 2 months in Lao PDR and 1 week per 2 months in Myanmar. In addition, time need to be allocated home-based.

3. General Time Schedule

It is expected that the consultant will need to stay 1 week per 2 months in Lao PDR and 1 week per 2 months in Myanmar. In addition, time need to be allocated home-based.

The contract will run from 1 January 2015 till 31 December 2015 (one year). After each 3 months the progress will be evaluated. If the investments are not feasible or there is lack of interest from the investors, the contract will be terminated.

Every month the consultant is expected to provide a report detailing the progress made.

4. Methodology

The contractor is required to propose feasible and strategic methodology to achieve the Scope of Work included under 2.

5. Personnel in the Field

The contractor shall possess following qualifications:

- MBA or Master degree in finance, or other related discipline
- At least 10 years of professional working experience in finance and investment, including providing business coaching/mentoring services
- A good knowledge of issues related to investments in Lao PDR and Myanmar
- Prior experience with biofuel investments is an asset
- Prior experience working for development projects of the UN is an asset
- Excellent communication and coaching skills

6. Language Requirements

The working language: English
Knowledge of Lao or Myanmar language would be an asset
The reporting language requirements: English only

7. Deliverables & Reports

The contractor must submit each month a progress report in English detailing the progress made, activities conducted and the challenges faced.

8. Technical Evaluation Criteria for Selection of the Contractor

Proposals submitted will be evaluated against the following criteria:

1. Experience in providing business mentoring/coaching services (this is the most important criteria);
2. Proposed methodology, timeline, and work plan;
3. Contribution to the project at level of expertise;
4. Working experience in Lao PDR, Thailand and Myanmar;
5. Experience in working with UN agencies;
6. Experience working on biofuel investments.

UNIDO general standards require that all work submitted to the Organization must comply with copyright law. Use of ICT resources or data in violation of applicable contracts, licensing agreements and copyright law is prohibited by UNIDO. Issues of copyright infringement would be taken very seriously by UNIDO and could result in a termination of services. Academic sources (journals, government documents, authorized publications, databases, etc.) are accepted for the purpose of conducting studies and analysis under contract with UNIDO. The contractor must maintain confidentiality of the information received from the industry at all times.

ASSESSMENT OF CAPACITIES OF FINANCIAL INSTITUTIONS IN MYANMAR

UNIDO – UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

JUNE-SEPTEMBER 2014

EXECUTIVE SUMMARY

UNIDO is implementing a project supported by the GEF under the Poznan Strategic Programme on Technology Transfer for Climate Change under UN Framework for Climate Change Convention (UNFCCC) in Thailand. The particular technology is referred to as: Very High Gravity-Simultaneous Saccharification and Fermentation (VHG-SSF) technology and is developed by King Mongkut University of Technology Thonburi (KMUTT) in Thailand.

As part of this project, an assessment was made to identify the capacities of banks in Myanmar to provide loans particularly to large industrial facilities producing ethanol from cassava in the country. The conclusion of the assessment was that the banking sector in Myanmar is least developed compared to other countries in South-East Asia. Obtaining loans for large investments is very hard or nearly impossible. Only large business groups which control many assets and which are already active in the cassava/ethanol or fuel market might be able to obtain the required financial resources for the investment. Often a private bank is part of such a business group. These business groups have usually very good connections with the government. Besides the financial barriers, other barriers include: lack of experience in production of ethanol from cassava in general in the country and a small domestic market for ethanol. In addition, there is no clear guidance from the government whether ethanol blending with gasoline is a priority and no incentive schemes to support it are available. Incentive schemes are also not expected in the near future.

The UNIDO GEF project has limited sources available to address the barriers in the financial markets in Myanmar. The main planned activities focus on training of banks and investors. The conclusion of the assessment is that providing trainings to banks in Myanmar are not very likely to address the fundamental barriers and will not improve access to finance for this kind of large investments. Instead, it is suggested that the resources will be used to top up the available resources for support to the Myanmar investors in developing a viable business proposal. This is an area where most progress can be made. The support should include a detailed feasibility study including a market and cassava resource assessment study and support in finding the appropriate business partners, both equity investment partners e.g. a Thai company which is already producing ethanol from cassava in Thailand as well as partners to provide debt financing e.g. Thai banks which have already a banking relationship with the Thai equity partners. A small portion of the resources should be reserved to pay for Myanmar investors, Myanmar government officials as well as the Myanmar representatives of foreign bank to come to Thailand to see an operation facility producing ethanol from cassava. In this way the Myanmar stakeholders can be familiarized with the particular technology involved. This allocation of the financial resources will have a much higher likelihood of facilitating the realization of the investment in Myanmar.

It should be noted though that the number of potential Myanmar investors is small, only large business groups which control many assets and are already active in the cassava/ethanol or fuel industry could potentially realize such a large investment. In addition there are many fundamental barriers and high risks in the market, which need to be addressed/ mitigated before investors/banks might be willing to consider investing/providing

credit to this kind of large investments. Any support from the UNIDO/GEF project to Myanmar should regularly being evaluated on its feasibility. If it is clear that no investments will be made/investments are not feasible, the financial resources should be shifted to other countries with a larger likelihood of success.

STRUCTURE OF REPORT

This report is structured as follows: in chapter 1 an introduction to the project and this study is provided. Chapter 2 contains a short background description of Myanmar, its economy and the financial sector. Chapter 3 describes the general business risks, constraints in the banking sector, barriers for renewable energy investments and current lending practices to renewable energy investments. Chapter 4 describes specific challenges for the realization of ethanol blending with gasoline in Myanmar. The report ends with an analysis and recommendations for the next steps in chapter 5.

Note:

While reading this report, one should consider that data in Myanmar is scarce, not always reliable, and often difficult to compare, as information is barely prepared in a consistent manner. This is especially true for the financial sector.

In addition, Myanmar and its economic and financial sectors are quickly changing. Information presented in this report might be quickly outdated.

TABLE OF CONTENTS

ACRONYMS

ADB	Asian Development Bank
EE	Energy Efficiency
FSP	Financial Service Provider
GDP	Gross Domestic Product
GEF	Global Environmental Facility
IFC	International Finance Corporation (member of World Bank Group)
IPP	Independent Power Producer
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
MFI	Microfinance Institution
NGO	Non-Government Organisation
KMUTT	King Mongkut University of Technology Thonburi Thailand
RE	Renewable Energy
UNCDF	United Nations Capital Development Programme
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organisation
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank

Exchange rate: 1,000 MMK (Myanmar Kyat) = USD 1 = 32.6 THB

6. INTRODUCTION

In this chapter the background of the GEF funded project on ethanol production from cassava implemented by UNIDO is described followed by the purpose of this study. The last paragraph of this chapter describes, as a reference, the characteristics of a typical ethanol production plant using cassava as feedstock considered by the project as a potential investment.

1.1 INTRODUCTION OF THE PROJECT

UNIDO is implementing a project funded by the Global Environment Facility (GEF) under the Poznan Strategic Programme on Technology Transfer for Climate Change under UN Framework for Climate Change Convention (UNFCCC) in Thailand. The project is called: "*Overcoming Policy, Market and Technological Barriers to Support Technological Innovation and South-South Technology Transfer: The Pilot Case of Ethanol Production from Cassava*" and concerns the transfer of a new Thai technology for the production of ethanol from cassava to Lao PDR, Viet Nam and Myanmar. The particular technology is referred to as: Very High Gravity-Simultaneous Saccharification and Fermentation (VHG-SSF) technology and is developed by KMUTT, Thailand.

Under the project, two pilot scale ethanol production plants, one in Thailand (200 litre/day) and one in Viet Nam (50 litre/day) respectively, will be realized. In addition, an ethanol information hub at KMUTT, Thailand and a technical centre at Food Industries and Research Institute (FIRI), Viet Nam Viet Nam will be established. Efforts will be taken to popularise the use and production of bio-ethanol by creating the necessary awareness and trainings, policy and investment forums, project development assistance. Lao PDR and Myanmar will be included in the project with the aim to convince investors to adopt the technology.

1.2 PURPOSE OF THE STUDY

To support the adoption of the new technology for the production of ethanol from cassava, a study to assess the capacities of the financial institutions in Lao PDR and Myanmar to provide credit to this particular investment was conducted. The below report reflects the findings from the study on the financial institutions in Myanmar. A detailed TOR for the study can be found in Annex 1. Under the TOR the consultant was requested to do some background research and meet stakeholders such as banks, development partners, etc who are involved in financing renewable energies in Myanmar or biofuel production and summary the findings in a report.

The international expert was expected to deliver a report describing the situation of financial institutions in Myanmar and their capacities to provide finance to investment on bioethanol production from cassava. In addition an approach to build capacity of stakeholders such as Myanmar financial institutions/investors to improve the investment environment for this kind of investment was to be proposed.

1.3 CHARACTERISTICS OF TYPICAL ETHANOL PRODUCTION FACILITY

Ethanol production from cassava needs to have a certain scale to become economically attractive. Experts recommend a typical production facility for the technology concerned of around 200,000 litres of ethanol per day for Myanmar. A plant of this size has been taken as a reference during the study. Such a plant has the typical characteristics[17] as described in Figure 1.

Figure 6: Typical characteristics of a 200,000 liter/day ethanol production plant using cassava as feedstock[18]

Size of plant:	200,000 litre of ethanol per day
Feedstock:	Cassava root
Total investment cost:	Machinery: THB 1,400 million Other costs for land, building, office, etc.: THB 200 million Total: THB 1,600 million ~ USD 49-50 million – MMK 50 billion.
Selling price of ethanol:	Baht/litre: 0.25
Payback period:	4 to 5 years

[17] These figures should be taken as a reference only. The characteristics of each plant are different, depending on the location, market prices, partners involved etc.

[18] http://www.toyo-thai.com/scripts/newsdetail.asp?nNEWSID=143&LG=THAI accessed on 02-07-2014 and http://www.dede.go.th/dede/fileadmin/usr/bers/gasohol_documents/Executive_summary_value_added_to_ethanol_waste.pdf accessed on 02-07-2014.

7. SITUATION ANALYSIS

This chapter begins with a short introduction of the geographic and demographic situation in Myanmar followed by a description of the situation of the economy. In the last paragraph an overview of the financial/banking sector is provided.

2.1 SHORT OVERVIEW OF MYANMAR

The official name of Myanmar is Republic of the Union of Myanmar. Around 53 million people live in Myanmar, with Nay Pyi Taw as its capital. The landscape is diverse; its central plains are surrounded by high mountain ranges. Off-shore there are many large islands and hundreds of small islands.

Myanmar has a tropical monsoon climate in the lowlands while in the highlands the climate varies depending on the elevation, ranging from subtropical climate in lower areas and arctic climate at the highest elevations. Rainfall varies between less than 700 mm per year in the dry-zone in the central areas till more than 5,0000 mm per year in Southern coastal areas.

Around 90% of the people in Myanmar are Buddhist, 5% Christian and around 4% Muslim. There are around 135 recognized ethnic groups, including Myanmar (69%), Shan (8.5%), Kayin (6.2%), Rakhine (4.5%), Mon (2.4%), Chin (2.2%), Kachin (1.4%) and Kayah (0.4%).

There are twenty-one administrative subdivisions including seven states (Chin, Kachin, Kayah, Kayin, Mon, Rakhine, Shan), seven regions (Ayeyarwady, Bago, Magway, Mandalay, Sagaing, Taninthayi, Yangon), five self-administered zones, one self-administered division and the Union Territory of Nay Pyi Taw. Myanmar's states and regions are sub-divided into districts, then townships, then towns, wards (urban) and Village tracts (rural).

Myanmar's rich agricultural resources made it a rich rice producer a half century ago. However, rice production is currently at much lower levels. As a percentage of total land area; arable land is only slightly above 15%, roughly half of that of Thailand. However, given the sheer size of the country and low population density, the amount of arable land in per capita terms is large.

Water is the source of three-quarters of Myanmar's electricity. Myanmar has huge hydropower potential in its upland border regions, estimated to be more than 100,000 MW. Minerals, hydrocarbons and other non-renewable natural resources are found in a diversity rarely seen elsewhere. The country's reserves of natural gas are estimated at 410 billion cubic feet onshore and 11 trillion offshore (37th highest in the world).

Around 54 percent of the population involved in agriculture and around three million people from Myanmar working abroad.

2.2 ECONOMIC SITUATION

Myanmar is one of the poorest countries in Southeast Asia. IFC estimated the per capita income at around US$ 832 in 2011. It further notes that the economy is influenced by an unstable inflation, a rigid interest rate regime and a distorted exchange rate. However, due to the current reforms implemented the situation is improving.

The Government of Myanmar is currently implementing large economic and social reforms in the country. As a consequence, the country is changing rapidly. At the same moment the reforms are constraint by the capacity of the bureaucracy to implement all these changes. An important event in the future will be the 2015 elections. People are hoping for some political reforms before and after these elections. The uncertainty around the elections and the results, leads many investors to take a wait & see approach. After opening up of the country, many investors rushed to Myanmar. However, foreign investments have not been as much as some expected due to the uncertainty around new laws and the elections. Myanmar people jokingly already refer to foreign investors as: 'they come, they look around and they go'.

To stabilize the country, the government is negotiating a comprehensive national ceasefire with armed groups in the country. However ethnic and religious violence against the Muslim minority is continuing.

In the last years, the economy of Myanmar grew significantly. The World Bank reports in its Myanmar Economic Monitor of October 2013[19] that in 2012/2013 the economic growth was 6.5%. The main drivers of the economic growth were the natural gas production and export, construction, foreign direct investment and commodity exports.

Inflation has been rising last year, in August 2013 inflation reached 7.3. In particular rents for real estate have been rising in the last couple of years, with some extreme cases like UNICEF which is paying USD 87,000 a month for their office in Yangon.[20]

Other indicators show some improvements, like the budget deficit declined to 3.7% of GDP in 2012/2013 from 4.6% in 2011/2012. Also the gross international reserves increased, from USD 4 billion in 2011/2012 to US$4.6 billion at the end of 2012/13.

Many people have very positive expectations of the economy of Myanmar; some predict economic growth of around 7% in the coming years.

China has surpassed Thailand to become the largest foreign investor in Myanmar in FY10 - FY11, when approximately US$20 billion of energy and infrastructure development projects were announced.

[19] Myanmar Economic Monitor, World Bank, October 2013.

[20] http://www.irrawaddy.org/burma/unicef-confirms-87000-month-rent-rangoon-office.html accessed on 06-07-2014.

Several policy reforms are being and have been implemented to clarify certain issues, liberalize the economy in certain cases and increase trade & investment, for instance:

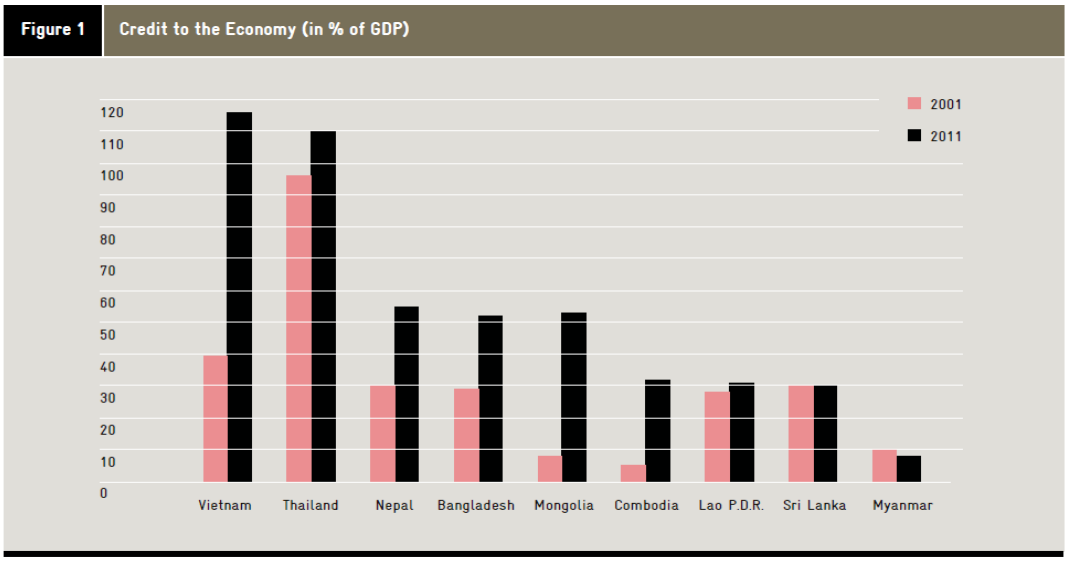
- The requirement for import and export license was recently removed on some 600 products;
- Parliament approved new regulations on foreign investment in March 2013. This regulations permit 20 percent foreign ownership, if a citizen of Myanmar owns the remaining 80 percent;
- In July 2013 a law was passed paving the way for a more autonomous Central Bank;
- Preparations to amend the Financial Institutions Law are underway. The changes would include rules and regulations to govern joint ventures in the banking sector. Many investors are looking forward to this new law;
- A new Telecommunications Law was recently enacted. The approval of the Act paved the way for the issuance of operating licenses to two foreign companies, Telenor from Norway, and Ooreedoo from Qatar to provide telecommunication services in Myanmar.

2.3 FINANCIAL/BANKING SECTOR

In short, the financial sector in Myanmar is small and the least developed compared to the financial sector in other Southeast Asia countries. Some stakeholders indicate that the financial sector is not able to adequate fulfil its role as financial intermediary and significant changes are required to serve the quickly growing economy. However, following the opening up of the country, recent reforms have already changed the financial sector significantly. Important changes include the establishment of a stock market and liberalization of the insurance market.

Below Figure 7 shows the relative limited financial intermediating role the banking sector in Myanmar plays compared to the banking sector in other Asian nations. Credit as percentage of GDP is the lowest and has not increased in 2011 compared to 2001.

Figure 7: Credit as percentage of GDP for 2001 and 2011



Reference: IMF (2013)

There are many reasons for this limited intermediating role of the banking sector including:

- Loan terms: A bank loan is in principle for 1 year and can be rolled over twice. So a loan is in total maximally for 3 years);
- Collateral requirements: banks require high collateral. Only fixed assets such as houses and land can be used as collateral. The maximum loan amount is 40 to 50% of the value of the asset under distress situation (emergency sale). With other words, the banks are nearly completely secured;
- Fixed interest rates. Interest rates are set by the government;
- Concerns about transparency.

The 4 state-owned banks are still the main players in the financial and banking sector. However, private banks are becoming more important as they are quicker in adapting to the changing environment. State owned banks in particular have difficulties keeping good staff and train their staff so they are able to deal with and implement all the changes. Other challenges for the financial and banking sector include the underdeveloped but quickly changing legal framework there are operating under and the financial infrastructure. For example, until 2012 there were no ATMs in Myanmar.[21] A last area of concern is the governance of banks and other financial institutions. Observers note that there is still significant room for improvement in this area.

Mid 2014 the following banks were registered with the Central Bank of Myanmar[22]:

*** 4 State-Owned Banks:**

1. Myanmar Foreign Trade Bank;
2. Myanmar Investment and Commercial Bank;
3. Myanmar Economic Bank (MEB);
4. Myanmar Agriculture and Development Bank.

*** 1 Finance Company:**

1. Oriental Leasing Company Ltd

*** 22 Private banks:**

1. Myanmar Citizens Bank Ltd
2. First Private Bank Ltd

[21] http://www.dvb.no/analysis/crawling-walking-but-not-yet-running-atms-in-burma-myanmar/34828 accessed on 06-07-2014

[22] https://www.cbm.gov.mm/content/state-owned-banks, accessed on 08-07-2014. Other sources mention a different number of banks. As the Central Bank is the main authority, the information mentioned on their website is taken here. The annual report over the year 2012/2013 was not yet available at the time of writing of this report.

3. Yadanabon Bank Ltd
4. Myawaddy Bank Ltd
5. Yangon City Bank Ltd
6. Yoma Bank Ltd
7. Myanmar Oriental Bank Ltd
8. Asia Yangon Bank Ltd
9. Tun Foundation Bank Ltd
10. Kanbawza Bank Ltd
11. Small & Medium Industrial Development Bank Ltd
12. Global Treasure Bank Ltd
13. Rural Development Bank Ltd
14. Innwa Bank Ltd
15. Co-operative Bank Ltd
16. Asia Green Development Bank Ltd
17. Ayeyarwaddy Bank Ltd
18. United Amara Bank Ltd
19. Myanma Apex Bank Ltd
20. Myanmar Microfinance Bank Limited
21. Naypyitaw Sibin Bank Limited
22. Construction and Housing Development Bank Limited

- **35 representative offices of foreign banks:**

Sr.N0	Name of Bank	Date of Licence Issued	Date of Commencement
1.	DBS Bank Ltd	10.11.92	29.3.94
2.	United Overseas Bank Ltd.	10.11.93	2.8.94
3.	Oversea-Chinese Banking Corporation Ltd.	8.2.94	15.11.94
4.	Malayan Banking Berhad (MAYBANK), Malaysia	12.8.94	11.4.95
5.	Bangkok Bank Public Company Ltd.	24.10.94	18.8.95
6.	National Bank Ltd.	6.7.95	16.7.96

7.	Brunei Investment Bank (BIB)	18.9.95	1.7.96
8.	First Overseas Bank Ltd.	30.4.96	15.5.96
9.	CIMB Bank Berhad (New Licence for Name of Merger)	19.2.2008	19.2.2008
10.	Sumitomo Mitsui Banking Corporation(New Licence for Name of Merger	18.4.2001	18.4.2001
11.	The Bank of Tokoyo -Mitsubishi UFJ,Ltd(New Licence for Name of Merger)	17.3.2006	17.3.2006
12.	Bank for Investment and Development of Vietnam	1.3.2010	3.4.2010
13.	AB Bank Limited	10.12.2010	6.6.2012
14.	Industrial and Commercial Bank of China Ltd	16.9.2011	2.12.2011
15.	Mizuho Corporate Bank Ltd	19.1.2012	6.4.2012
16.	Siam Commercial Bank Public Company Ltd	23.4.2012	23.12.2012
17.	MARUHAN Japan Bank PLC	7.5.2012	28.7.2012
18.	Krung Thai Bank Public Company Ltd	14.6.2012	20.12.2012
19.	United Bank of India	19.6.2012	5.12.2012
20.	KASIKORNBANK Public Company Ltd	18.7.2012	9.1.2013
21.	AEON Credit Service Company	20.7.2012	21.9.2012
22.	Hana Bank	20.9.2012	7.11.2012
23.	Woori Bank	25.10.2012	-

24.	ANZ Bank	6.12.2012	5.4.2013
25.	Vietin Bank	12.12.2012	-
26.	Korea Development Bank	27.12.2012	12.6.2013
27.	Standard Chartered Bank	27.12.2012	5.2.2013
28.	Shinhan Bank	13.3.2013	9.4.2013
29.	Industrial Bank of Korea	14.3.2013	23.4.2013
30.	First Commercial Bank (New Licence for Change of Management Office)	18.3.2013	30.4.2013
31.	E.SUN Commercial Bank, Singapore Branch	1.4.2013	17.7.2013
32.	Bank of India (BOI)	7.5.2013	-
33.	Kookmin Bank	4.6.2013	-
34.	Export-Import Bank of India	14.6.2013	9.9.2013
35.	Export-Import Bank of Korea	16.12.2013	20.1.2014

The total value of the assets on the bank balances were around MMK 23 trillion at the end of March 2013. The outreach is however still low, with around two bank branches per 100,000 Myanmar people.

Myanmar Economic Bank (MEB) is Myanmar's largest bank in terms of number of branches (325). It evolved from State Commercial Bank (SCB), established in 1954, which provided a wide range of commercial banking services across the country. MEB is owned and supervised by the Ministry of National Planning and Economic Development. MEB's focus is on urban areas. MEB provides commercial banking services as well as development banking services to both of the private sector and the state sector (it e.g. provides subsidized funding to Myanmar Agriculture Development Bank). Government bonds represented about 20 percent of total assets in 2011, with loans representing only 8.3 percent. The bank has limited growth potential because of its small capital base, and it is not allowed to keep the profits.

The state owned banks have difficulties in operating. They are faced with many issues, including:

- The interest rates are set by the government. For specific sectors the state-owned banks have to provide loans at a rate of 8% (subsidized rate), while commercial banks can charge 13%;
- High operational costs, in particular in rural areas;
- Non-performing loans as the result of loans provided for political purposes/political pressure in the past;
- in 2012 the state owned banks suffered major deposit withdrawals as the interest rate on deposits (8%) were lower than the inflation rate;
- Difficulties in attracting wholesale loans from foreign markets due to the high currency risk.

Currently the Financial Institutions Law (FI Law) is being amended which would include rules and regulations to govern joint ventures in the banking sector. To date, foreign banks have only been allowed to open representative offices in Myanmar for purposes of conducting research but not to carry out any banking operations. It is expected that foreign banks will be allowed to enter the market in 2015 via joint ventures and foreign bank licences.

Banks operating in Myanmar are currently up-scaling their operations in terms of branches, staff and assets. In addition, they are trying to professionalize their operations, to prepare for potential increased competition when foreign banks are allowed to enter the market. As noted earlier, in particular attracting and keeping good staff and training of staff are a challenge.

The speed at which to implement the changes in the country is a challenge for policy and law makers. It should consider the capacity of the markets to absorb and adjust to the changes. Lawmakers try to keep this flexibility by keeping the text in many changed laws general while operationalizing the changes in more detailed regulations. Besides changing the laws, also the capacities and legal powers of the Central bank should be enhanced. All the new laws need to be enforced to ensure management of the increased risks in the market. With liberalization and connection to the international financial markets come increased risks.

Another challenged faced by the banking sector is to gain trust. In particular trust in the sector was diminished by the banking crisis in 2003. This crisis led to the closure of a number of banks and losses for depositors.

The Wold Bank Economic Monitor notes that Myanmar has a small over-the-counter stock exchange known as “the Myanmar Securities Exchange Centre” (MSEC) which was established in 1996 and is in Yangon. The MSEC is a 50-50 joint venture between the state-owned Myanmar Economic Bank and the Daiwa Securities Group. Only two securities are listed, both of which are rarely traded. The two listed companies are Forest Products Joint Venture Corporation and Myanmar Citizens Bank. The passage of the new securities exchange law will facilitate the establishment of a fully-fledged modern stock exchange by 2015.

Recently the government lifted some of the restrictions on the withdrawal of foreign exchange by foreign nationals. In particular, foreign nationals can now withdraw from their foreign-currency bank accounts every

week-day, instead of only two days a week. However, foreign nationals are still not allowed to open savings accounts at state-owned or private banks.

Several stakeholders noted that there are significant risks in the banking sector. For instance, most deposits are time deposits and not term deposits. So people could withdraw their money quickly if they wish to do so, which could lead to liquidity problems for banks. In addition, Myanmar people still carry great weights to rumours and act on it. This in absence of reliable information. The latest bank run happened at the end of 2012, when people withdrew savings of in total more than USD 10 million in one day from the Kanbawza Bank Ltd (KB). KB bank is the largest private bank in Myanmar. The bank run was based on rumours which proved untrue later on.

Another risk in the banking sector is the reliability of information. GIZ in its report titled "Myanmar's Financial Sector, A Challenging Environment for Banks" of 2013[23] notes that: "*Data in Myanmar is scarce, not always reliable, and often difficult to compare, as information is barely prepared in a consistent manner. This is especially true for the financial sector. Most banks do not publish annual reports or disclose their financial data. Transparency is, however, increasing as well as efforts towards improving financial data. For example, the Central Bank of Myanmar just recently started to publish key banking data in its annual report. Legal reforms shall, furthermore, help to ensure the consistent application of international financial reporting standards.*"

Microfinance

The microfinance sector has experienced rapid developments in the last few years. Following the UNDP development Initiative in the late 1990 and the new legal framework for MFIs in 2011, the MFI sector has grown significantly. Demand for micro loans is high in Myanmar, partly because banks are not able to provide services in many rural areas. A challenge for the MFI sector is a lack of control and supervision.

IFC estimates that less than 20% of the population has access to formal financial services. In addition few institutions are able to provide microcredit.[24] The unmet demand is estimated at USD 1 billion. The development of the microfinance sector is also hampered by the past crises in the banking sector. As a consequence of the limited availability of the formal banking services and limited trust in the formal sector, informal credit is widespread, despite the high interest rates of 10 to 20% per month. There around 2.8 million microfinance clients in Myanmar.

After the approval of the new microfinance law, 118 new MFI registered between November 2011 and November 2012. The requirements in the law for new MFIs were quite lenient, for instance capital requirements were low. At this moment, several banks are setting up MFIs, e.g. including SMIDB and KB bank.

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[23] "Myanmar's Financial Sector, A Challenging Environment for Banks", GIZ, 2013.

[24] Microfinance in Myanmar Sector Assessment, IFC, By Eric Duflos, Paul Luchtenburg, Li Ren, and Li Yan Chen

January 2013

The IFC report concludes that: *"In summary, the microfinance sector is at the earliest stages of development in Myanmar. There are great opportunities alongside great challenges for growth. Any successful intervention will require a rapid dissemination of international good practices and a high level of donor coordination."*

8. BUSINESS RISKS & CAPACITIES OF FINANCIAL INSTITUTIONS FOR RENEWABLE ENERGY LENDING IN MYANMAR

This chapter contains an overview of the risks & challenges business developers/investors in an ethanol from cassava production plant might face in Myanmar. All these risks are relevant for financial institutions when considering providing credit to this kind of investment proposals.

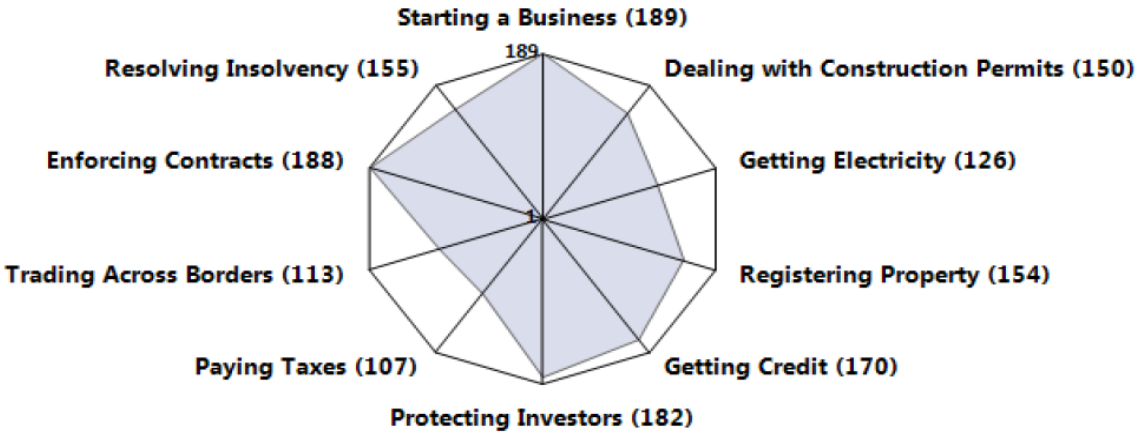
The description focuses on 1) the general ease of doing business (paragraph 1), 2) challenges & capacities in the banking sector (paragraph 2), 3) specific risks & challenges for renewable energy projects (paragraph 3), 4) debt financing of renewable energy investments in Myanmar (paragraph 4), 5) general requirements for loan applications.

3.1 EASE OF DOING BUSINESS

The World Bank publishes information on the relatively ease of doing business in a country.[25] The publication tries to shed light on how easy or difficult it is for a local entrepreneur to open and run a business when complying with relevant regulations. It measures and tracks changes in regulations affecting 11 areas in the life cycle of a business: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts, resolving insolvency and employing workers. The publications of the World Bank cover 189 countries. From the figures below, it is clear that doing business in Myanmar can be very very challenging. Except for some well-connected people, called "cronies", doing business is difficult. In particular investor protection, ease of getting credit and enforcing contracts are a concern, see Figure 8,

Figure 9 and Figure 10.

Figure 8: Overview ease of doing business



[25] Doing Business 2014, Myanmar. World Bank

Figure 9: Easy of getting credit

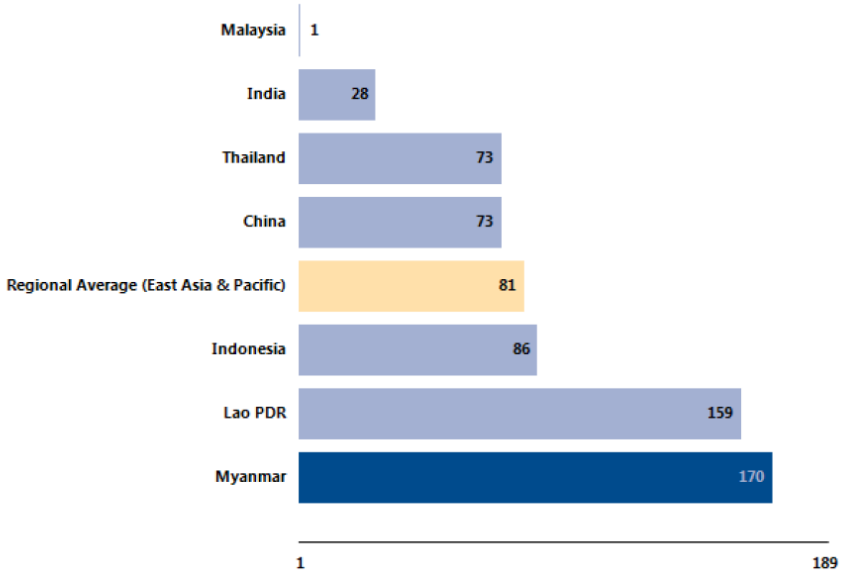


Figure 10: credit information scoring

Summary of scoring for the getting credit indicators in Myanmar

Indicator	Myanmar	East Asia & Pacific average	OECD high income average
Strength of legal rights index (0-10)	4	7	7
Depth of credit information index (0-6)	0	4	5
Public registry coverage (% of adults)	0.0	35.6	42.9
Private bureau coverage (% of adults)	0.0	44.8	73.9

These findings are confirmed by stakeholders met in Myanmar. They indicate that credit is hardly/not available. Only large business groups with good connections to the government, often with their own bank to finance their activities are able to do large scale investments.

3.2 STATUS AND CAPACITIES IN THE BANKING SECTOR

The banking and financial sector in Myanmar are relatively underdeveloped. But changes are taking place. In particular once the new banking law will come into effect, the banking sector might change significantly. For more details see chapter 2.

In summary, several factors have influenced and are still influencing the development of the banking sector and services to its clients:

- Interest rates are set by the Central Bank. In January 2012, the Central Bank lowered the minimum deposit rate from 10 percent to 8 percent, while the maximum loan rate was lowered

from 15 percent to 13 percent. These percentages are still being used (July 2014). There is a narrow spread of 5%. This discourages banks to provide services in rural areas as the transaction costs are high;

- Deposits can be maximally 25 times the paid up capital. This discourages banks of attracting new depositors;
- Banks can only lend out 80% of the deposits received, so need to keep a liquidity rate of 20%. This is high. It makes banks to focus on profitable segments, such as large trade and construction companies and reduces access to credit for smaller companies and small clients. So the amount of capital for lending is limited and there is little incentives for banks to provide loans in new areas.
- Banks use a 50% loan-to-value ratio for collateral (collateral value under distress), which is a relatively conservative value. Eligible collateral include land, buildings, gold, exportable crops and bank deposits.
- Limited transparency. Many banks don't publish annual reports, and even if they do so, some stakeholders express doubts about the figures published;
- Solvability concerns: the limited transparency, past losses and political interference in the banking sector makes it difficult to assess the solvability of banks;
- Limited availability of insurance products. The recent opening up of the insurance market might improve the situation soon. As far as we could establish there are no insurance products for agricultural sector activities, such as flood, crop and livestock insurance.
- Private banks are starting now with international banking businesses. At least 11 private banks are in the process of installing SWIFT to start international remittance operations.
- Loan terms are short. A loan is in principle for one year and can be rolled over twice (so maximally 3 years).
- Corruption is a major concern. The limited oversight in the banking sector has provided opportunities for corruption.
- Recently two foreign mobile phone operators obtained approval to start operations in Myanmar. This might provide opportunities for branchless banking.

3.3 CONSTRAINTS FOR RENEWABLE ENERGY PROJECTS IN MYANMAR

Stakeholders mentioned many challenges for renewable energy project in Myanmar, which are similar to constraints in many other least developed countries. The main barriers mentioned include:

- Limited experience in Myanmar concerning the installation, operation and maintenance of renewable energy systems;
- Limited understanding & awareness of consumers of the advantages of renewable energies;
- Insufficient financial incentives of the government for renewable energy investments;
- Renewable energy investments are capital intensive and the required capital is difficult to obtain/not available in Myanmar;
- Unclear procedures and long procedures for obtaining licenses to operate renewable energy systems;

- High transaction costs in obtaining licences and concessions;
- Overlapping authority of different government organisations especially at local level, creating potential conflicts;
- Available loan products are not tailored to renewable energy investments. Loan products are usually short (<3 years), while for renewable energy investments longer term loans are required;
- High collateral required;
- Reluctance of banks to consider renewable energy investment proposals as long term loans are required and a (perceived) unattractive risk-return profile.

3.4 DEBT FINANCING OF RENEWABLE ENERGY INVESTMENTS (GAPS, CURRENT PRACTICES AND BEST WAY FORWARD)

The large majority of banks in Myanmar have not yet been involved in lending to renewable energy investments except for hydropower, nor is it likely that they will show much interest in the coming years due to the challenges in the banking sector. Also the lack of clear policy guidance from the government makes banks not very interested in the sector. In Myanmar guidance from the government regarding priority sectors is still an important factor. The stakeholders consulted indicated that to their knowledge there are no banks in Myanmar for which renewable energy lending in Myanmar is a priority. None of the banks have a specific target for renewable energy lending.

The credit which is provided by banks to renewable energy projects are for hydropower projects and for the conversion of busses in Yangon from diesel to LPG/CNG. For the conversion of busses KB is providing credit to the bus companies on request from the government.

The Chinese government, Chinese companies and Chinese banks are main stakeholders involved in the hydropower business. Currently Chinese companies are involved in more than 15 hydropower projects and most projects involve sell of electricity to China. The Expert-Import Bank of China plays an important role in the facilitation of this trade. Recently, China signed a special $200 million loan agreement for the purchase of equipment for a 790 MW hydroelectric power project, the country's largest, under construction at Ye-ywa, 50 kilometers southeast of the central Myanmar city of Mandalay.[26]

End of August 2014[27] the first-ever solar energy project in Myanmar was announced. It involves an investment of about US$480 million for two 150 MW solar farms. When completed in 2016, the project is expected to account for 10-12 per cent of the country's power generation. The US based ACO Investment Group provided the investment required for it.

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[26] https://global.factiva.com/aa/?ref=KYODO000020030816dz8g000gq&pp=1&fcpil=en&napc=S&sa_from=. Accessed on 20 september 2014.

[27] http://www.nationmultimedia.com/aec/First-solar-energy-plants-planned-30242014.html accessed 090914.

KB bank expressed interest to be involved in renewable energy projects in the future. This also relates to the natural gas business they are involved in.

Stakeholders indicated that finding debt finance for hydropower projects should be most easy in Myanmar compared to other renewable energy investments.

It should be noted that several renewable energy projects were announced in the past and some companies had big plans for renewable energy. When inquiring about the plans and the realization of renewable energy projects on the ground, not much seem to have happened.

3.5 REQUIREMENTS & CRITERIA OF BANKS FOR LOAN REQUESTS

Banks in Myanmar generally require applicants of loans to submit at least the following information (requirements can differ from bank to bank and from case to case, therefore the below should be taken as a reference only):

12) All business/operating licenses required to operate the business (if available - licenses should still be valid) and import-export license if required;
13) Enterprise Registration Certificate and tax registration certificate incl. articles of association/incorporation;
14) Appropriate permits from local authorities;
15) .Audited financial statements, such as balance sheets, profit & loss account and cash flow statements - usually for three financial years including the closest fiscal year;
16) Cash flow projections for the investment project;
17) Proof of payment of taxes, usually for three financial years including the closest fiscal year;
18) Meeting minutes of the Board of Directors;
19) Collateral: e.g. bonds and related documents showing the ownership of land including history on the plot of land;
20) Studies: feasibility studies;
21) Content on the Company Signage and the Company Signage Building Permit;
22) In case there are environmental and/or social effects of the project, reports describing the effects and mitigation measures should be included;

9. DEVELOPMENT OF A BIOETHANOL MARKETS IN MYANMAR

This chapter contains a description on the steps which need to be taken and current challenges to develop a biofuel from ethanol market in Myanmar. These aspects are important for bank to assess the risks involved in providing credit, as it can influence the demand for ethanol and with that the cash flow of the investment.

4.1 BARRIERS & GAPS IN THE MARKET

When banks assess the loan request proposals received, they will need to consider the entire market the business is operating in. In particular the (external) factors which can have an influence on the cash flow projections. Relevant factors include: government regulations, demand and price developments of the products produced, incentive schemes, import & export rules, etc.

Current production of ethanol in Myanmar

When we look at the potential use of bio-ethanol in Myanmar, as described in the project document the most likely demand for ethanol in large quantities will be for blending with fossil fuels. Alternatively, ethanol could be exported to countries like China, Korea or Thailand for fuel or human consumption.

Stakeholders indicated that there are various issues which need to be addressed before production of ethanol and blending of ethanol with fossil fuels can take place inside Myanmar. All these issues have an influence on the viability of an ethanol producing business in Myanmar, so for banks essential to know.

Realization of a bioethanol plant in Myanmar which uses cassava as feedback will be more complicated compared to for instance in Vietnam, as in Myanmar no large scale production of ethanol from cassava takes place at this moment. Until a few years back, there were 5 plants[28] producing anhydrous ethanol from molasses in sugar mills in Myanmar. All these plants have been closed because of several reasons:

a) Environmental pollution due to disposal of distillery waste water in relation to the new Myanmar law on waste water treatment;
b) Poor management in storage, handling and mixing of anhydrous ethanol, leading to re-hydration
c) Sugar imported from neighbouring countries is cheaper and better quality than the sugar produced in these mills;
d) Business viability. The sugar mills were relatively old and inefficient.

It was reported that there is currently one large bioethanol plant from molasses in the North of Myanmar. The ethanol produced is exported to China.

[28] 1) Ethanol Distillery (Semi-Government), Taungsinaye Sugar Mill, MEC (Azeotropic System, Myanmar); 2) Ethanol Distillery (Private), Maunggone Sugar Mill, Great Wall Company (Molecular Sieve Syatem, China); 3) Ethanol Distillery (Semi-Government), Inngagwah Sugar Mill, MEHL (Molecular Sieve System, China); 4) Ethanol Distillery (Government), No. 2, Sugar Mill, MSE (Azeotropic System, Myanmar); 5) Ethanol Distillery (Semi-Government). Kantbalu Sugar Mill, MEC (Azeotropic System, Myanmar).

It should be noted that the establishment of several biofuel plants using different kinds of feedstock were announced in the news in the last few years. When inquiring about the plants in Myanmar, none appear to have been realized.

There seem to be a few plants in Myanmar which produce starch from cassava. These plants could potentially add a production line to produce ethanol from the cassava. However, information on the starch producing plants is difficult to obtain. It is clear there were a few starch factories under the Ministry of Industry in the past, but all of them have been closed.

Past trials with biofuels

Past trials with biodiesel and ethanol were not successful and might have undermined the trust in biofuels.

A) For instance in 2006 the government aimed to completely replace the country's oil imports of 40,000 barrels a day with home-brewed, jatropha-derived biofuel[29]. For that 8 million acres of jatropha plants were to be planted by 2009. These plans led to non-farmers being pressed into service, forced to plant jatropha on every inch of available land and even in some areas which weren't available, such as fields being used to grow rice paddy. After one year, the project folded as a failure.

B) In Mandalay the use of bioethanol in vehicles was tried out a few years ago. The project failed as the engines of the vehicles were damaged by the ethanol. Many cars in Myanmar are old and use carburettors which are damaged by ethanol. The moisture in the ethanol can cause corrosion of materials in the engine. Several stakeholders we consulted were aware of this failure.

Current use of biofuels

Currently gasoline blended with a small quantity of ethanol is being sold in Myanmar. The fuel is directly imported from Thailand over land from PTT or Bangchak and contains only a few percent ethanol. The signs at the gasoline stations however don't mention that the fuel contains ethanol, but refer to it as Gasoline 95. Ethanol in this blend serves as an enhancer of the quality of the fuel and increases the octane number. The price of this fuel is higher than e.g. gasoline 91, which consists of 100% gasoline. The reason people are prepared to pay more for it, is the higher octane number and therefore the power of the fuel. In particular the engine of new cars can handle Gasoline 95 well. When used in old engines technical problems might occur.

Challenges ahead for creation of ethanol blend market

Issues raised by stakeholder before blending of ethanol with fossil fuels can take place include:

1) Path forward with clear timeframe

[29] http://www.dvb.no/news/jatropha-fuel-plan-stalled-on-road-to-nowhere-burma-myanmar/35876 accessed on 09-09-14.

At this moment it is not clear whether the government of Myanmar supports blending of ethanol with gasoline at a significant scale. No policy has been formulated and no plans have been made to draft a regulation.

In 2006 the government of Myanmar prepared a plan for the promotion of biofuels. But after the opening-up of the country the government is not pursuing this plan any longer, according to stakeholders spoken to.

2) Demand/Usage of ethanol

There is no large market for bioethanol blends yet in Myanmar. When the percentage of ethanol in the blend further rises, gasoline stations will need to clearly mention that. Some stakeholders expect some resistance from users for this new fuel with more ethanol. This could be because they don't know the product, but it could also be because they fear it will damage the engine of their car. At the same time, demand for gasoline 95 which includes a few percent of ethanol is rising.

3) (Financial) incentive to producers and users of ethanol

Several stakeholders indicated that to create a viable market for ethanol blends incentive schemes are required. This is because the cost of production of ethanol is higher than the production cost of gasoline. Also the users need to be convinced to use the ethanol blend. The government could consider incentives for the production of ethanol or incentives for consumers to lower the price of ethanol blends. It is clear that the government is not considering such schemes at the moment, it has many other priorities. Nor has the government the financial resources for it.

5) Use of ethanol for other purposes than intended

Ethanol can be used for different purposes, in fuels, but also for human consumption e.g. to produce alcoholic beverages, in perfume, industrial applications, etc. At this stage it is not clear how the government intends to prevent that the produced ethanol is used in other applications than it is intended for when produced. A potential solution, in case it is supposed to be used as fuel, to blend the ethanol with gasoline at the ethanol production site.

6) Sourcing of cassava

Cassava is currently being grown in Myanmar. Most of it is exported to Thailand and China, in the form of cassava chips or powder (tapioca). There hasn't been an assessment if sufficient feedstock is available for a production plant of ethanol from cassava. Nor has it been assessed whether current tapioca factories are interested in switching to ethanol production from cassava and whether it makes business sense to do so. In addition, so far no assessment has been made in case not sufficient feedstock is available, whether sufficient land is available for the production of cassava. Land concessions need to be approved by the government and there is a lot of competing demand for land. Food security issues should be considered in this regard.

8) Testing of ethanol fuels

At this moment there is no certified laboratory able to test regularly the ethanol produced. This would require an investment in testing equipment, training of staff and possibly a working arrangement with existing certified laboratories in other countries.

In 2009 the government issued an order (Order Number 13/2009) regarding specifications for bio-ethanol production, transportation, storage and distribution. It also clarified that the official test method for quality of bio-ethanol is ASTM (American Society for Testing and Materials). The government order might need further clarification/working out to make it easy to apply on the ground. Most laws/regulations issued in Myanmar tend to create a framework, but need further clarification over time by the government in the form of more detailed guidance documents.

9) Environmental & social concerns

Some stakeholders expressed environmental concerns regarding the cultivation of cassava, including the toxicity of the plant and the large area of land required for large scale plantations. A request for a loan for ethanol production from cassava will need to meet the environmental & social safeguard standards of the banks. In particular foreign banks might have strict requirements.

4.2 ADDRESSING THE IDENTIFIED BARRIERS & GAPS

The above barriers add uncertainty to the business proposal and the anticipated revenues/cash flows. Banks don't like uncertainty/risks. When there are too many factors which cannot be controlled, banks will be reluctant to provide loans. Banks need a clear business proposal in which most uncertainties are mitigated. Some of the uncertainties mentioned above can be addressed, however not all.

The uncertainties regarding a stable demand for ethanol can be overcome by initially exporting the produced ethanol to neighbouring countries, such as Thailand, Korea or China. Over time and slowly, demand for ethanol in the Myanmar market can be developed. Transport of ethanol to foreign countries might however add up to the cost.

10. RECOMMENDATIONS

This chapter contains a discussion of the results from previous chapters followed by recommendations on how UNIDO could add value, given its limited budget and the present persistent and fundamental barriers in the market and support access to finance for large scale ethanol production from cassava. Further, this chapter contains suggested next steps and the TOR for the technical assistance activities in next steps.

5.1 ANALYSIS

From the analysis in the above chapters it can be derived that:

6) In general obtaining debt financing for a large scale investments from a bank in Myanmar is very challenging or nearly impossible.
7) Only large business groups which control many assets and (natural) resources with good connections to the government will potentially be able to generate sufficient financial resources for such large investments. The financial resources will be from cash generated from other businesses or from a bank which is part of their business group. For these business groups, cash for the investments in itself is most likely not the main challenge. Their main consideration will be the profitability of the investment compared to the profitability of other business opportunities they have. They will only invest in case of high rates of return on equity (> 30%). The business horizon is generally very short in Myanmar with a payback period of maximally 1 – 3 years.
8) Banks in Myanmar are not familiar with the renewable energy sector. Relatively speaking, hydropower projects are most likely to secure a bank loan with support from foreign banks and potentially via an offshore account;
9) Obtaining a loan for a large investment in a new ethanol production plant from cassava is expected to face many hurdles. A main hurdle is that ethanol production from cassava is not done in Myanmar, because the domestic demand for ethanol is limited. Also several ethanol producing plants from molasses have closed down in recent years. This will make banks very cautious. This barrier can be (partly) addressed by exporting the ethanol to other countries such as China, Korea or Thailand and involving a foreign investor with experience producing ethanol from cassava;
10) Introducing a new advanced technology for ethanol production from cassava will add additional technology risk, as the technology is not proven yet in the Myanmar context.

There are many potential solutions for improving access to finance for renewable energy projects. Potential solutions which would address the needs of banks applied in other countries include amongst others:

9) Providing concessional loans in case of capital shortages;
10) Providing (partial) risk guarantees for investments in case of high real or perceived risks;
11) Providing technical expertise in assessing loan applications;
12) Strengthening the policy and regulatory framework;
13) Increasing financial discipline and governance of banks;
14) Strengthening the legal environment to make PPP structures more attractive;

15) Providing financial incentive schemes for renewable energy investments;
16) Etc.

This underlying UNIDO project has reserved financial resources for the following activities related to capacity building for banks and investors:

- 1-day training to banks and investors in Myanmar to familiarize them with the risks of the specific ethanol from cassava technology (C13);
- Formal financing consultation workshop with banks (C18);
- Resources for investor forum. This is for representatives from 3 countries: Lao PDR, Myanmar and Viet Nam.

The resources for above activities are very limited given the many obstacles and risks in the market. It is unlikely that providing trainings to banks in Myanmar with the current situation of the bank sector will have a tangible effect on improving access to debt financing. Trainings can familiarize banks with the real and perceived risks associated with the specific technology. The challenges in the market are however more fundamental and cannot be addressed with a training.

The most cost-effective way forward is to use the resources which are allocated for trainings to bank instead for a detailed feasibility study including a cassava resource and market assessment as well as a mentoring technical assistance programme to the Myanmar investors. This will allow to:

a) Determine whether a factory to produce ethanol from cassava makes business sense in Myanmar;
b) Determine whether the main players in the market (e.g. starch factories) are interested to add an additional production line for the production of ethanol from cassava;
c) Whether sufficient cassava is grown or can be grown;
d) Prepare potential investors to make a good business plan and to find the right partners.

It should be noted that the number of potential investors in limited in Myanmar. Only large groups which control many assets and natural resources e.g. including starch factories would be able to realize the establishment of an ethanol from cassava plant/production line.

5.2 RECOMMENDATIONS/WAY FORWARD

Based on the analysis the following recommendations are made:

6) To overcome the barrier of a not yet existing large ethanol market in Myanmar, it is recommended to assume that initially that ethanol will be exported to neighboring countries, such as Korea, China or Thailand;
7) To determine the business and financial feasibility of an ethanol from cassava factory or production line, it is recommended to prepare a detailed feasibility study including a market analysis and cassava resource study;

8) To overcome the barrier of lack of experience in Myanmar with the production of ethanol from cassava either with a generic or advanced technology, it is suggested a foreign business partner is sought which is currently producing ethanol from cassava;
9) To overcome the many barriers in the banking sector in Myanmar to provide credit, it is suggested to focus on large business groups which might have sufficient cash for the investment or include a bank which supports the business group;
10) A feasible business structure could involve a consortium/joint venture in which both a Myanmar investor and a foreign investor take an equity stake, while debt financing is provided by the bank of the business group or a foreign bank. Preferably there should be an existing banking relationship between the foreign investor and the foreign bank. The foreign investor could also provide the appropriate guarantees to the foreign bank;
11) UNIDO can add value to this process by providing resources to conduct a detailed feasibility study including market and cassava resource assessment, and a mentoring service to the Myanmar investor on business and financial issues. The Myanmar investors could be supported on:
    a. In finding the right business partner with experience in ethanol production from cassava, preferably a partner already applying the advanced technology;
    b. Developing a business plan, including cash flow projections. Tthe results of the detailed feasibility study including market assessment and cassava resource assessment will be an important input to the business plan;
    c. Identifying the best business structure;
    d. Options to mitigation remaining business risks;
    e. Signing of MOUs with suppliers and buyers;
    f. Comparing different financing options and financing structures;
    g. Contract negotiations;
    h. Investment pitch preparations;
    i. Growth strategy projections;
    j. Connecting Myanmar investor to foreign banks for credit and venture funds.

Based on the above the following next steps are proposed:

1) Conduct a detailed feasibility study including market assessment and cassava resource assessment;

2) Identify potential Myanmar investors with a credible interest in investing in bioethanol production, which are preferably already operating in the fuel or agricultural markets e.g. owners of starch factories. The potential group of investors will probably be limited;

3) Supporting the Myanmar investor to work out a viable business plan (see paragraph 5.3 with detailed support) in order to stand stronger in the negotiations with potential partners;

3) Identify foreign ethanol producing companies interesting in expanding their business in Myanmar and connecting them to the Myanmar investors;

4) Supporting the Myanmar investor in developing a financing plan, including approaching banks;

5) Arrange for visits to operating ethanol plants for the stakeholders which are seriously interested, in order to increase their understanding of the particular technology.

5.3 DETAILS ON METHODOLOGIES FOR CAPACITY BUILDING

It is suggested that UNIDO provide a mentoring service to the Myanmar investor on business and financial issues, supporting the Myanmar investor:

- Conducting a detailed feasibility study, including ethanol market assessment and cassava resource assessment;
- In finding the right business partner with experience in ethanol production from cassava, preferably with experience with the advanced technology;
- Developing a viable business plan including supporting conducting the required studies, such as cash flow projections, growth strategy projections, etc.;
- Identifying the best business structure;
- Comparing different financing options and financing structures;
- Contract negotiations;
- Signing MOUs/LOI with suppliers and buyers;
- Preparing investment pitches;
- Options to mitigate remaining business/financial risks;
- Connecting Myanmar investor to banks and venture funds;
- Obtaining the required approvals from the Myanmar government.

It should be stressed that the mentor should not do the work for the Myanmar investor, but provide guidance on how things can be done, give examples and provide comments on draft documents. A TOR for these services can be found in Annex 2. In addition, if there are more than one potential investor, then different mentors/coaches should be found, because of confidentiality/competition reasons.

Potential service providers who can offer this kind of services in the region include:

Name:	Strengths:	Weakness:	Other:
International Institute for Energy Conservation (IIEC Thailand)	Has implemented several renewable energy and energy efficiency projects including on biofuels and working experience in Lao PDR and	Limited experience in business coaching	www.iiec.org

	Thailand.		
CTI PFAN Thailand	Supported by USAID, managing a network of organisations/people involved in business coaching	Is trying to become independent from support from USAID. This might make them more expensive.	Willing to cooperate with this UNIDO project on cost sharing basis. http://www.cti-pfan.net/
NIDAS	Has experience on biofuels and business coaching.	Has only a small team in the region.	http://www.niras.com/
KPMG Thailand	Experts on finance and business plan development	Expensive.	http://www.kpmg.com/th/en/pages/default.aspx

After carrying out the feasibility studies and determining whether ethanol production from cassava is feasible in Lao PDR and Myanmar and making sure there are serious Lao and Myanmar investors, it is suggested UNIDO meets CTI PFAN to see how can be cooperated. CTI PFAN is managing a network of companies and individuals who can provide business coaching support. In addition, CTI PFAN is willing to cooperate with UNIDO.

ANNEX 1: TOR FOR THE ASSIGNMENT TO ASSESS THE FINANCIAL INSTITUTIONS IN MYANMAR

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

Title:	International Expert on GEF
Main Duty Station and Location:	Bangkok

ORGANIZATIONAL CONTEXT

The Programme Development and Technical Cooperation Division (PTC) is responsible for providing technical cooperation services on technological and economic issues covered by UNIDO's mandate in developing countries and countries with economies in transition.

The Energy and Climate Change Branch (PTC/ECC) is responsible for the promotion of access to energy for productive uses while at the same time supporting patterns of energy use by industry that mitigate climate change and are otherwise environmentally sustainable. This involves promoting energy efficiency and the adoption of renewable energy sources in the formal industrial sector, enhancing energy access primarily in rural areas as the fundamental means to reduce rural poverty, and championing industrial energy perspectives in the global debates about climate change and other energy-related global trends.

The Renewable and Rural Energy Unit (PTC/ECC/RRE) is responsible for promoting the adoption of renewable energy sources in the formal industrial sector, enhancing energy access primarily in rural areas as the fundamental means to reduce rural poverty and championing industrial energy perspectives in the global debates about climate change and other energy-related global trends.

The international expert will work under the supervision of the Project Manager at UNIDO, PTC/ECC/RRE and in close consultations with UNIDO Regional Office in Thailand.

PROJECT CONTEXT

"Overcoming Policy, Market and Technological Barriers to Support Technological Innovation and South-South Technology Transfer: The Pilot Case of Ethanol Production from Cassava"

UNIDO has been implementing a project funded by the Global Environment Facility (GEF) under Poznan Strategic Programme on Technology Transfer for Climate Change under UN Framework for

Climate Change Convention (UNFCCC) in Thailand.

The international expert is expected to undertake the following tasks:

Meet and consult with financial institutions, banks, relevant development partners, and concerned agencies financing renewable energies in Myanmar and the Union of Republic of Myanmar. The international expert is expected to undertake 1 mission each to Myanmar and Myanmar. UNIDO through its Regional Office in Thailand will facilitate in arranging both missions. A local officer or personal provided by UNIDO will help i) coordinate and arrange meetings with relevant agencies, ii) prepare documents required before the missions, iii) arrange logistic such as renting car, and iii) accompany the international expert for translation during the mission.

The international expert is expected to deliver following outputs:

Report: Status, Gap and Needs of financial institutions in Myanmar and Myanmar for them to provide finance investment on bioethanol production for at least 400,000 litres per day production capacity. The report must be written in clear and succinct manner with a maximum of 50 pages.

Proposed various methodologies to build capacity of financial institutions in Myanmar and Myanmar to achieve bettered financial investment on bioethanol production

Terms of Reference for a subcontractor to undertake activities and realize selected methodologies proposed in item 2.

List of potential consultancy firms and development partners based in Thailand, Myanmar and Myanmar to be the subcontractor executing the TOR.

Specifically, s/he is expected to carry out the duties and activities listed in the Table below:

Main Duties	Expected Location	Duration	Concrete/ measurable Outputs to be achieved

II. Analysis in Myanmar a) Analyse an overview of current banking situation in the country; b) Research in the capacity of the financial institutes and banks from published documents such as balance sheets; c) Interview with the banks and financial institutions to identify their capacities, their existing/suggested incentives; d) Identify banks with lending schemes to support renewable energy or related initiatives; e) Identify the department/lending window renewable energy project fall under and what the criteria are for lending to renewable energy projects; f) Compare and select the financial institutes from different criterion such as their financial strengths, local understanding of the support of renewable energy; g) Identify gaps of financial institute to giving out loans to potential investors bioethanol production producers; h) Identify planned and ongoing development projects, providing support to banks to improve their capacities to lend to renewable energy investments; i) Where possible, sensitize with the banks and financial institutes about their potential in providing loans to ethanol producers; and j) Identify the potential consultancy firms for organizing financial trainings and investment forums.	Bangkok with Mission to Myanmar	-	Information gathered, consulted with target groups and ready to write the report
III. Deliverables: a) Draft reports for internal review (refer to above) (separate for Lao PDR and Myanmar): ○ The report, ○ Proposed various capacity building methodologies, ○ The TOR, and ○ The list of potential consultancy firms and partners b) Final reports incorporating comments by UNIDO.			

<u>REQUIREDCOMPETENCIES</u>

Core values:
1. Integrity
2. Professionalism
3. Respect for diversity

Core competencies:
1. Results orientation and accountability
2. Planning and organizing
3. Communication and trust

4. Team orientation
5. Client orientation
6. Organizational development and innovation

Managerial competencies (as applicable):
1. Strategy and direction
2. Managing people and performance
3. Judgement and decision making
4. Conflict resolution

MINIMUMORGANIZATIONALREQUIREMENTS

Education: Advanced university degree in Master's degree in finance with undergraduate degree in engineering, or other related discipline or other relevant discipline with a specialization in financing renewable energy technologies.

Technical and Functional Experience:
A minimum of 5 years practical experience in the field of financing renewable energies including experience at the international level involving technical cooperation in developing countries. At least 10 years of professional experience in renewable energy technologies and climate change (finance) in South East Asia Region
Exposure to the needs, conditions and problems in developing countries. Knowledge in lending policies, procedures and documentation ,

Experience in working with a UN agency in particular on GEF projects is preferable. Excellent writing

and editing skills are required, and knowledge of UNIDO or UN technical
reports, and terminology is highly desirable.
Familiarity with UN's project design namely Result Based Management and Logical Framework
Negotiation skills and outstanding communication skills with people of all levels and ability to work with individuals from different cultural/national backgrounds

Excellent presentation skills, both orally (for marketing presentations and for seminar presentations) and in writing.

Languages: Fluency in written and spoken English is required.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO/GEF: Providing investment mentoring services to Lao and Myanmar investors in advanced ethanol from cassava production facilities

TERMS OF REFERENCE FOR CONSULTANT

ORGANIZATIONAL CONTEXT

The Programme Development and Technical Cooperation Division (PTC) is responsible for providing technical cooperation services on technological and economic issues covered by UNIDO's mandate in developing countries and countries with economies in transition.

The Energy and Climate Change Branch (PTC/ECC) is responsible for the promotion of access to energy for productive uses while at the same time supporting patterns of energy use by industry that mitigate climate change and are otherwise environmentally sustainable. This involves promoting energy efficiency and the adoption of renewable energy sources in the formal industrial sector, enhancing energy access primarily in rural areas as the fundamental means to reduce rural poverty, and championing industrial energy perspectives in the global debates about climate change and other energy-related global trends.

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The consultant will work under the supervision of the Project Manager at UNIDO, PTC/ECC/RRE and in close consultations with UNIDO Regional Office in Thailand.

PROJECT CONTEXT

"Overcoming Policy, Market and Technological Barriers to Support Technological Innovation and South-South Technology Transfer: The Pilot Case of Ethanol Production from Cassava"

UNIDO has been implementing a project funded by the Global Environment Facility (GEF) under Poznan Strategic Programme on Technology Transfer for Climate Change under UN Framework for

Climate Change Convention (UNFCCC) in Thailand.

9. Aim of the Project

This project aims to promote the adoption of advanced ethanol production technologies using cassava as feedstock in Lao PDR, Vietnam and Myanmar. The technology will enable agro-industries to reduce water and energy consumption, which will offset GHG emissions. The services under this contract will focus on Lao PDR and Myanmar.

10. The Scope of the proposed Contracted Services

The Scope of this proposed contracted services include providing business mentoring services to Lao and Myanmar investors in ethanol from cassava technology on the aspects mentioned in the table below.

Main Duties and Activities	Location	Time
1. Provide business mentoring/coaching services to Lao and Myanmar investors on: 12) Finding the right business partner with experience in ethanol production from cassava, preferably a partner already applying the advanced technology; 13) Developing a business plan, including cash flow projections; 14) Identifying the best business structure; 15) Conducting all required studies, such as cassava resource study, feasibility study, gathering market intelligence; 16) Options to mitigation remaining business risks; 17) Signing of MOUs with cassava suppliers and ethanol buyers; 18) Comparing different financing options and financing structures; 19) Contract negotiations; 20) Investment pitch preparations; 21) Growth strategy projections; 22) Connecting investors to foreign banks for credit	Vientiane or other locations within Lao PDR and Yangon or other locations within Myanmar.	It is expected that the consultant will need to stay 1 week per 2 months in Lao PDR and 1 week per 2 months in Myanmar. In addition, time need to be allocated home-based.

11. General Time Schedule

It is expected that the consultant will need to stay 1 week per 2 months in Lao PDR and 1 week per 2 months in Myanmar. In addition, time need to be allocated home-based.

The contract will run from 1 January 2015 till 31 December 2015 (one year). After each 3 months the progress will be evaluated. If the investments are not feasible or there is lack of interest from the investors, the contract will be terminated.

Every month the consultant is expected to provide a report detailing the progress made.

12. Methodology

The contractor is required to propose feasible and strategic methodology to achieve the Scope of Work included under 2.

13. Personnel in the Field

The contractor shall possess following qualifications:

- MBA or Master degree in finance, or other related discipline
- At least 10 years of professional working experience in finance and investment, including providing business coaching/mentoring services
- A good knowledge of issues related to investments in Lao PDR and Myanmar
- Prior experience with biofuel investments is an asset
- Prior experience working for development projects of the UN is an asset
- Excellent communication and coaching skills

14. Language Requirements

The working language: English
Knowledge of Lao or Myanmar language would be an asset
The reporting language requirements: English only

15. Deliverables & Reports

The contractor must submit each month a progress report in English detailing the progress made, activities conducted and the challenges faced.

16. Technical Evaluation Criteria for Selection of the Contractor

Proposals submitted will be evaluated against the following criteria:

7. Experience in providing business mentoring/coaching services (this is the most important criteria);
8. Proposed methodology, timeline, and work plan;
9. Contribution to the project at level of expertise;
10. Working experience in Lao PDR, Thailand and Myanmar;
11. Experience in working with UN agencies;
12. Experience working on biofuel investments.

UNIDO general standards require that all work submitted to the Organization must comply with copyright law. Use of ICT resources or data in violation of applicable contracts, licensing agreements and copyright law is prohibited by UNIDO. Issues of copyright infringement would be taken very seriously by UNIDO and could result in a termination of services. Academic sources (journals, government documents, authorized publications, databases, etc.) are accepted for the purpose of

conducting studies and analysis under contract with UNIDO. The contractor must maintain confidentiaity of the information received from the industry at all times.

Capacity assessment of banks in Lao PDR and Myanmar to provide credit to large scale investments in ethanol production from cassava

By: Ivo Besselink
ibesselink@hotmail.com
UNIDO Finance Consultant

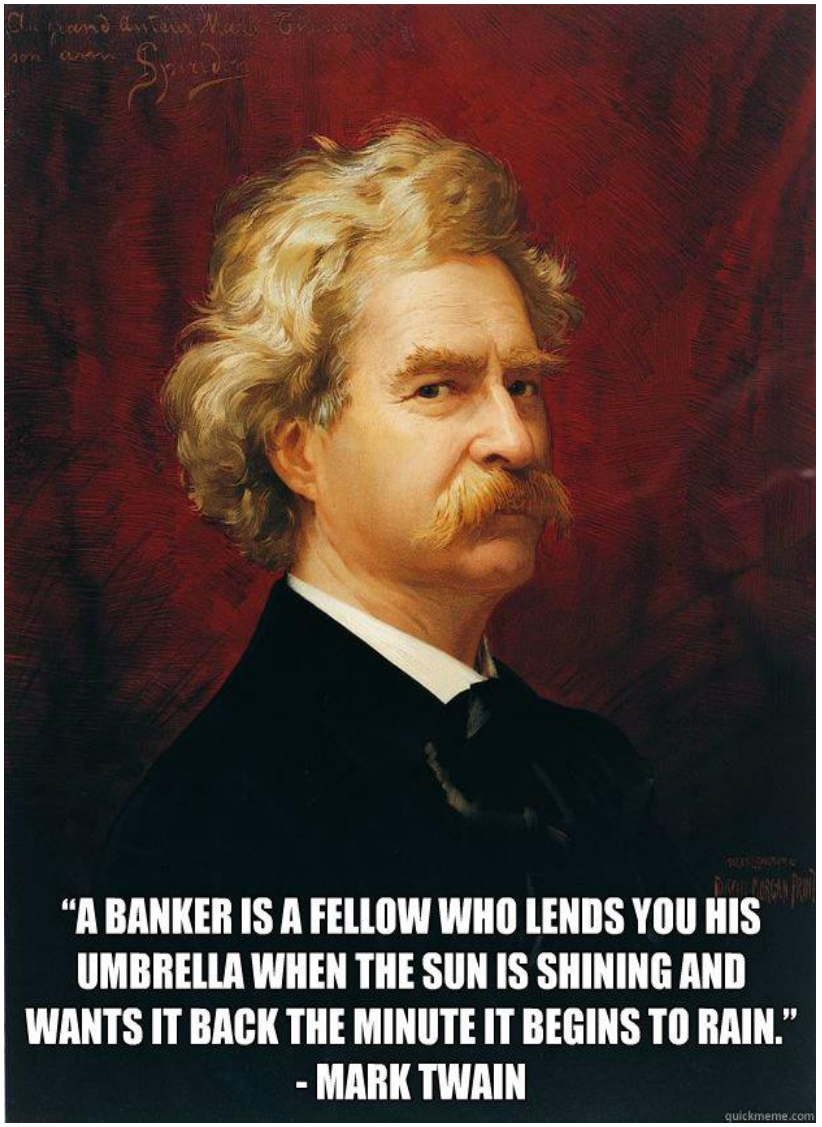
Contents:

- Banker's logic
- Findings in Myanmar and Lao PDR
- Recommended next steps

Quotes about the banking sector

“If you owe the bank $100 that's your problem. If you owe the bank $100 million, that's the bank's problem.”

J. Paul Getty



Banker's logic (1):

- Sharpe: *"The key insight of the Capital Asset Pricing Model is that higher expected returns go with the greater risk of doing badly in bad times"*

⇒Interest is (amongst other things) a reward for the risk taken that you don't get your money back

Banker's logic (2):

A bank/investor requires a rate of return that compensates for taking on risk

Banks look at the risk-return profile (seek for highest return divided by risk).

They don't like uncertainty / risk

They do like high return and stability

Any uncertainty (=risk) lead to higher expected rate of return.

Alternatively: lender should provide guarantees (collateral, etc.)

Many people want a loan from a bank,
-but bank can only lend money once
- or if the risk is too high, they prefer not to lend it out at all

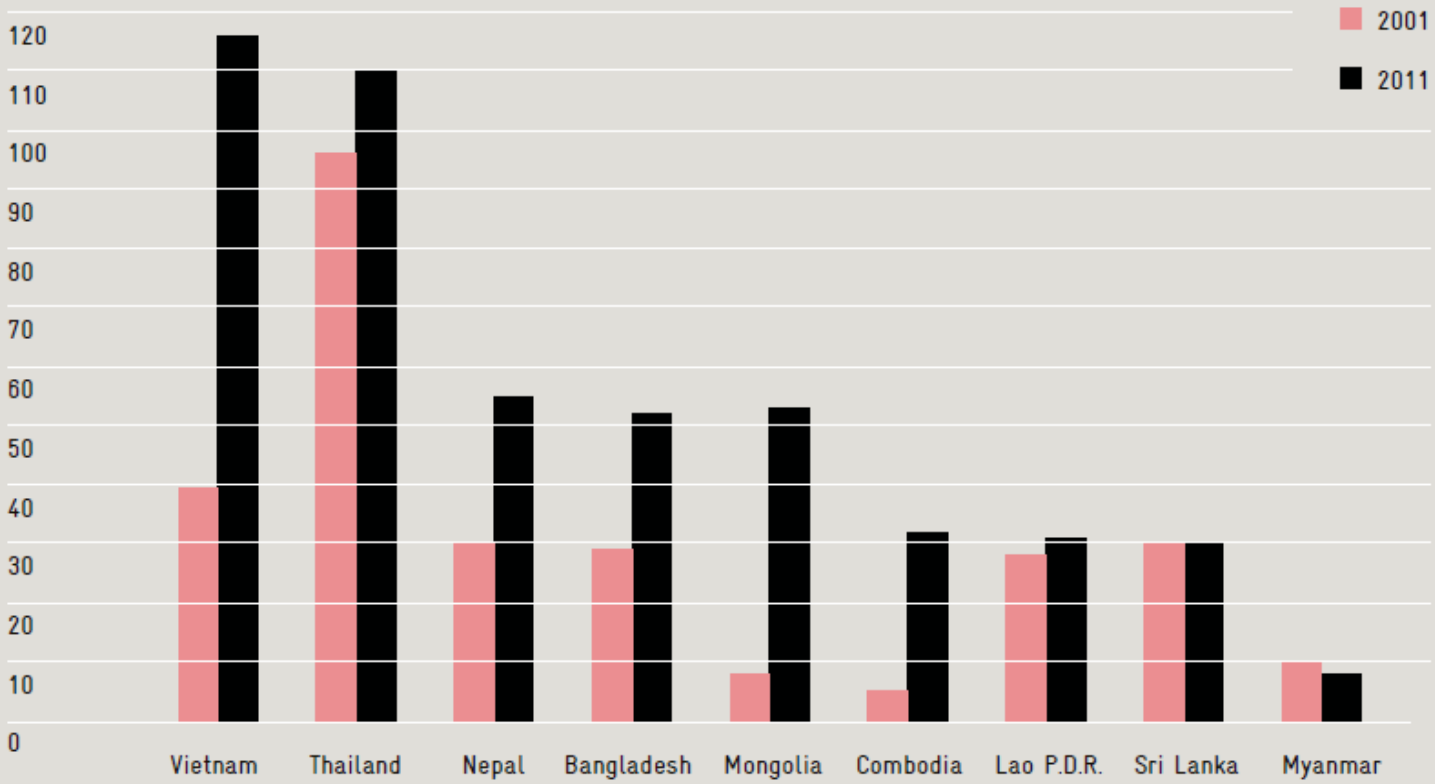
Level of financing required (new ethanol from cassava plant)

Size of plant:	200,000 litre of ethanol per day
Feedstock:	Cassava root
Total investment cost:	Machinery: THB 1,400 million Other costs for land, building, office, etc.: THB 200 million Total: THB 1,600 million ~ USD 49-50 million 40% equity= USD 20 million 60% loan= USD 30 million
Selling price of ethanol:	Baht/litre: 0.25
Payback period:	4 to 5 years

Findings in Lao PDR & Myanmar

General Functioning of banking sector

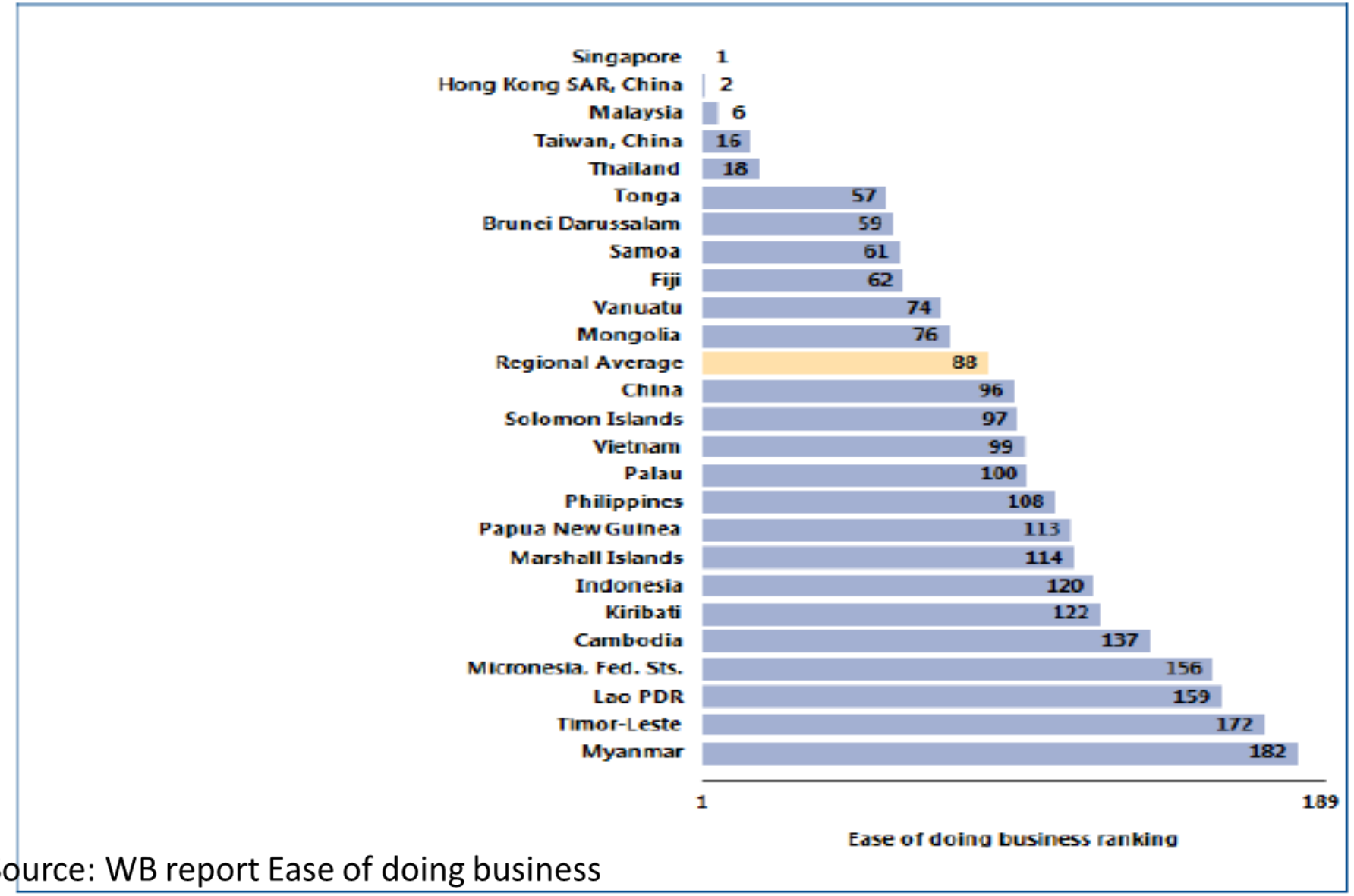
Figure 1 Credit to the Economy (in % of GDP)



Reference: IMF (2013)

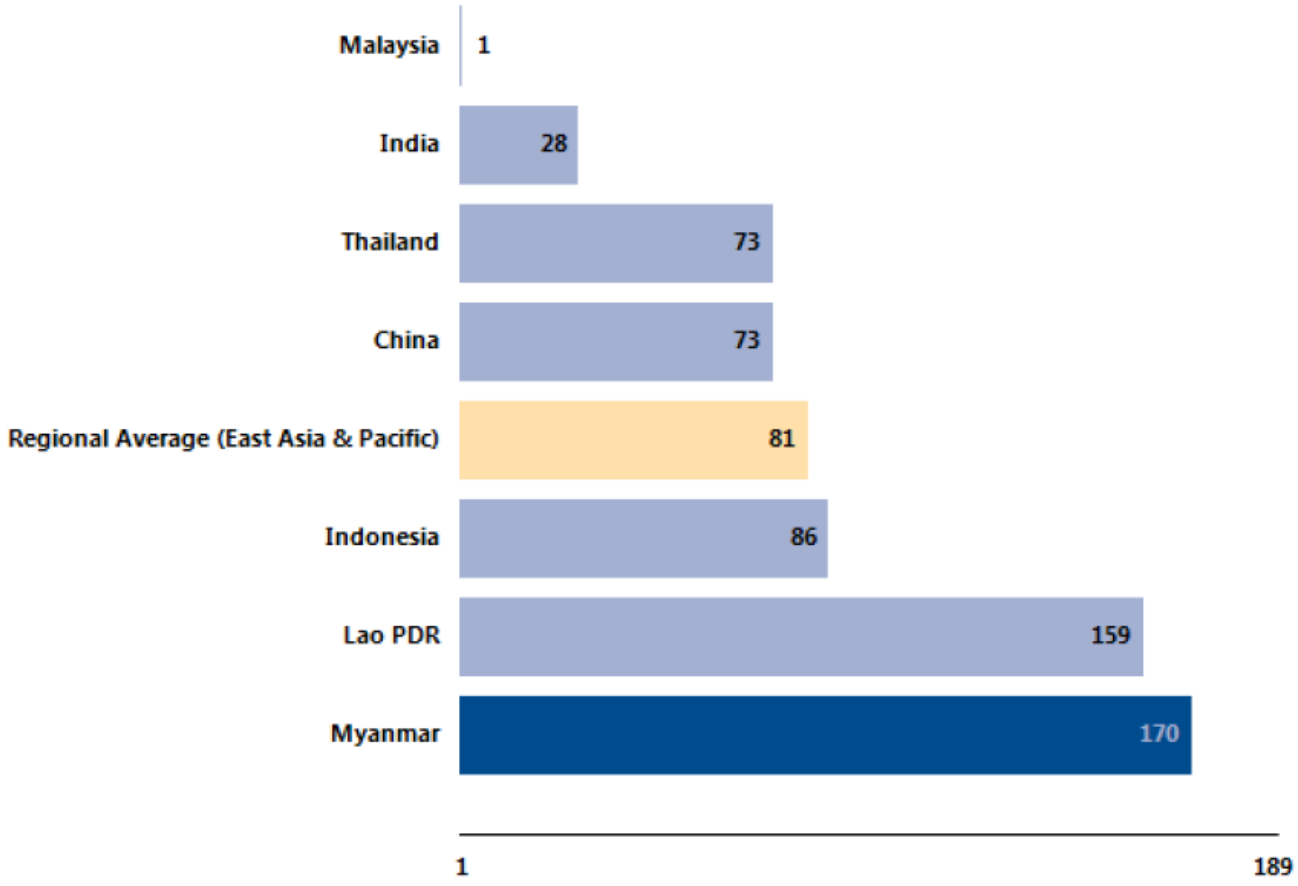
Ease of doing business

Figure 1.2 How economies in East Asia and the Pacific (EAP) rank on the ease of doing business



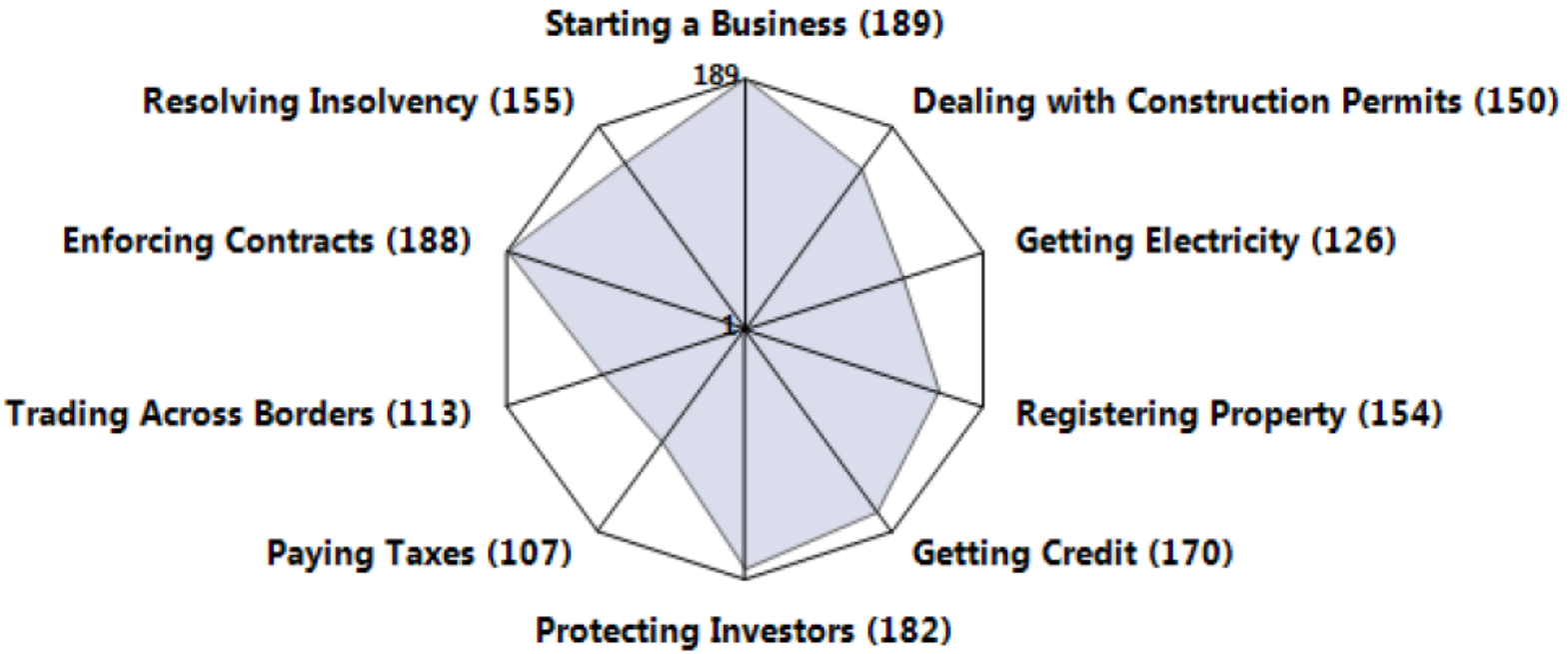
Source: WB report Ease of doing business

Easy of getting credit (189 countries)



Source: WB report Ease of doing business

Ease of doing business (Myanmar)



Source: WB report Ease of doing business

General Economic/Banking challenges

Lao PDR

- Fiscal deficit
- Foreign exchange deficit
- Steady economic growth (7%)
- 7% inflation
- Interest rate for credit

(10-12% USD and 14-18% Kip)

Myanmar

- Lack of laws and regulations
- 6.5% economic growth
- 7% inflation
- Interest rates fixed by gov.: max 13%
- “They come, they see and they go”

Availability of credit

Lao PDR

- 32 banks (3 state, 5 Thai, 6 private, etc.)
- Main credit for short term consumption loans
- Large credit not available domestic banks
- Domestic banks lack of capital, questionable solvability, transparency and focus on lending to government
- Foreign banks can operate

Most likely source credit: foreign banks

Myanmar

- 27 banks, and 35 rep offices
- Foreign banks not allowed to operate (only representative offices)
- Transparency, solvability concerns
- 1 year loans (extend twice for a year) => max 3 year loans
- Collateral high: loan amount up to 50% of emergency sale value of asset (so basically 100% secured)

large business groups have enough cash/capital or via bank (part of group or foreign)

Investment horizon LDCs

- Investors in LDCs have usually a short investment horizon of 1 – 2 years because of many uncertainties:
  - Change in government regulations;
  - Seizure of assets;
  - Price uncertainty;
  - High interest rates;
  - Etc.

- In terms of RoE: > 30%

RE lending

Lao PDR

- Hydropower, though credit for even small hydro is difficult to obtain in local market
- Foreign banks
- Limited interest Lao banks
- Foreign banks: strict environmental and social safeguards

Myanmar

- Hydropower
- Chinese companies/banks
- Limited interest

Experiences with using ethanol blends in cars - sentiments

Lao PDR

- Tried out in South => not success, people didn't trust the new fuel (gasohol => ethanol from molasses) => now export ethanol to Thailand

Myanmar

- Tried out in Mandalay => not success, engines of old cars couldn't handle, carburettors got plugged

However, in both countries Gasoline 95 is sold, directly imported from Thailand, contains few percent ethanol, but not recognizable for consumer

Current production of ethanol in country

Lao PDR

- Ethanol from molasses in South => export Thailand
- No ethanol production from cassava
- 2 cassava processing factories went bankrupt recently

Myanmar

- In past ethanol production from molasses. Now not clear.
- No ethanol production from cassava
- At least 1 starch factory, but information is difficult to obtain

Main uncertainty: no clear policy from the government

Lao PDR

- As per 'Renewable Energy Development Strategy' Lao government aims for a biofuel use of 5% by 2015 and 10% by 2025
- But no timeframe or incentive schemes
- Demand for ethanol unclear

Myanmar

- No policy/strategy or incentive schemes
- Many other priorities for the government now
- Demand for ethanol unclear

Demand uncertainty can be addressed by exporting ethanol to neighboring countries

Recommended next steps

Current main barriers/risks:

Strategy: reduce risk

- Information risk: Lack of market information (feedstock, pricing) => gathered detailed market information to assess the feasibility of domestic ethanol production from cassava and whether the high returns required (ref: investment horizon, high interest rates) are achievable
- Technology risk: No experience ethanol production from cassava in countries => need strong equity partner
- Advanced technology risk: advanced technology for ethanol production => project provide technical information/equity partner
- Market risk: limited domestic demand for ethanol => export to neighboring countries

Recommended next steps (1):

- Carry out feasibility study to reduce uncertainty around:
  - Availability feedstock and land for cultivation of cassava;
  - Negative effects on environment and social (land grabbing, deforestation)
  - Pricing of cassava and ethanol
  - Etc.

- If feasible, support investors on preparing business plan (coaching approach):
  - Financial feasibility
  - Find equity partner
  - Contract negotiations
  - Approach banks
  - Etc.

Recommended next steps (2):

- Include regular evaluation (every 2 months). If:
  - Limited serious interest of investors;
  - Not feasible;
  - Etc.

=> quickly deploy financial resources of the project for other countries (Vietnam, Cambodia, etc.)

⇒Risk of dragging on (enjoying visits to BKK)

- High risks in the market => personal quick assessment: small chance investment will generate the returns expected/required