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The Baseline Study of Green Freight and Logistics Development in Mekong countries

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Khon Kaen, Thailand

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Executive Summary

With the support of Mekong-Republic of Korea Cooperation Fund, the projected named “Green Freight and Logistics Development in Mekong Countries” has been launched in order to find the ways to improve the carbon emission issue in road transport sector in GMS. The project is made of three components. Component A is composed of Baseline, Curriculum Development and Setting Green Services Quality Standards. Component B is for Trainings. And lastly, Component C is made of Monitoring and Evaluation sections.

The baseline study is the first step of component A, which is to establish baseline information on keys aspects of green freight and logistics among LSPs. In order to support the road freight truck operators in CLMVT in improving the carbon emission problem, MI wants to find out the current level of understanding on carbon emission and green freight among LSPs in the region. By knowing the current situation as precisely as possible, MI can cater the training and further develop software program for self-education purpose according to their levels and needs on improving environment.

According to TOR of the study, it aims to assess the following:

Firm level performance indicators of LSPs (trucking companies, warehouse operators, cold chain, container deport etc.) on energy cost, operation cost, maintenance cost, etc.; National standards on green freight - benchmark study of Thailand G mark; National support programs and policies of green freight logistics; Capacity needs in government and private sectors including the LSPs on green freight; Needs and design key indicators for the Green Logistics Service Quality Standards (GLSQS) in Mekong countries.

In the introduction of study, the background and current status of road freight sector regarding carbon emission issues are stated. The methodology for study are explained followed by the baseline of project indicators. The findings from data collection activities, which were field trip for interview and FGD are laid out according to each country while the limitations on the study are mentioned in lump-sum way without identifying each country. The results of these interview and FGD are analyzed and processed so that those can be used as a basic database and guideline in curriculum development and setting green logistics services quality standards later in the project. Conclusion is made and recommendations are suggested so that this study can set the baseline and direction of the project. In Appendices, questionnaires for interview, green freight policies, programs and measures in GMS, comparison of each group on key category, and basic statistics of interviews are attached for reference.

Abbreviations / Acronyms

| | |
|-----------------|--|
| ADB | Asian Development Bank |
| AEC | ASEAN Economic Community |
| ASEAN | Association of Southeast Asian Nations |
| CAMFFA | Cambodia Freight Forwarders Association |
| CLMVT | Cambodia, Laos, Myanmar, Vietnam and Thailand |
| CO ₂ | Carbon Dioxide |
| DPF | Diesel Particulate Filter |
| DLT | Department of Land Transport, Ministry of Transport, Thailand |
| FGD | Focus Group Discussion |
| GIZ | Gesellschaft für Internationale Zusammenarbeit |
| GHG | Greenhouse Gas |
| GLSQS | Green Logistics Service Quality Standards |
| GMS | Greater Mekong Subregion |
| HATA | Haiphong Automobile and Transport Association |
| ITBS | International Transport and Business School |
| JICA | Japan International Cooperation Agency |
| LIFFA | Laos International Freight Forwarders Association |
| LSP | Logistics Service Provider |
| MCTA | Myanmar Container Truck Association |
| MI | Mekong Institute |
| MHTA | Myanmar Highway Truck Association |
| MIFFA | Myanmar International Freight Forwarders Association |
| MPWT | Ministry of Public Works and Transport, Laos |
| TIFFA | Thailand International Freight Forwarders Association |
| TPQI | Thailand Professional Qualification Institute |
| TOR | Terms of Reference |
| VATA | Vietnam Automobile Transportation Association |
| VLBA | Vietnam Logistics Business Association |

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1. Introduction

Carbon emission has been known as the biggest source of greenhouse gases (GHG) which affects the global climate change¹. Even though there are many other factors affecting climate change, majority in scientist community agree that carbon emission would have a direct impact on climate change and hence on environment. According to the World Bank², about 20% of carbon emission come from transport sector in general, which means transport activity contributes to climate changes significantly. This trend would continue as more economic activities would increase.

With the advent of AEC in 2015, the economic integration of ASEAN will accelerate as the trade barriers will decrease within member countries. In 2016, the intra trade in ASEAN constituted 23.48% of total trade and remained as the largest market for ASEAN³. It will continue to grow since the ASEAN Economic Ministers agreed to reduce 10% of trade transaction cost by 2020⁴ in order to facilitate higher market integration.

However, the opportunity of more economic growth in the region poses an environmental challenge as well. Since the growth in economic activities will lead to increase in transport for moving goods and people, increase in carbon emission which results from higher transport activity will be followed. Especially Greater Mekong Subregion (GMS), bound by the Mekong river and connected with land transport have had greater economic activities in recent years with higher economic growth. Consequently, carbon emission issue has become one of the major environmental issues. MI has acknowledged this problem as a serious threat to sustainable development in the region and tried to find the solution to mitigate carbon emission increase. As a result, MI have initiated the research project on how to reduce carbon emission and launched the project named 'Green Freight and Logistics Development in Mekong Countries'. MI decides to target the freight transport for its research project because it has realized that carbon emissions from the freight transport are increasing faster than those from passenger transport⁵.

From the inception meeting on the formation of Technical Working Group (TWG) on the project in March 2018, the project will be composed of three components:

- Component A: Baseline, Curriculum Development and Setting Green Services Quality Standards (SGSQS);
- Component B: Trainings;
- Component C: Monitoring and Evaluation

¹ Greenhouse Gas Emissions: Overview of Greenhouse Gases. US EPA at <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

² CO2 emission from transport (% of total fuel combustion). World Bank data at <https://data.worldbank.org/indicator/EN.CO2.TRAN.ZS>

³ Regional Economic Outlook: ASEAN Economic Integration Brief (June.2017). http://asean.org/storage/2017/06/AEIB_No.01-June-2017_rev.pdf

⁴ Ibid

⁵ From the report of 1st TWG meeting of project on Green Freight and Logistics Development in Mekong Countries by MI

Baseline study is the first step of executing the project process. The study is conducted from April 26 to June 20, 2018 with experts in Mekong Institute (MI team) and a consultant in transport and logistics. The main objective of study is to:

- Establish the basic database on green logistics and related information from Logistics Service Providers (LSPs);
- Find out the policy aspects, which are rules and regulations on green logistics from government of CLMVT;
- Receive the opinion and interest of LSPs regarding the training program including software package for self-training on green freight for the stakeholders including LSPs and government

During the kick-off meeting, based on the objective, the project indicators for baseline study are identified and reviewed. Many aspects related to green logistics and environment issues are discussed referring to various literature on environmental problems related to carbon emission. Then questionnaires for FGD and interview which is shown in appendix 7.1 are discussed along with the schedule and lists of organizations for interview. Then the MI team was divided into two teams for conducting interview: Cambodia, Vietnam and Thailand for one and Laos and Myanmar for the other. The process took two and half weeks covering 5 countries for meeting and discussion along with survey and interview.

In this report, the results of interview and Focus Group Discussion (FGD) are put together and then analyzed in line with project's performance indicators. The findings from field trips for interview and FGD are explained according to key category of green freight and logistics. And limitations of the study including different situations among CLMVT and conflict of schedule for interview are stated. Based on those findings and limitation, the conclusion is drawn and recommendations are put together in order to summarize the baseline study and refer them in proceeding the next step of the project. The questionnaires for interview, the matrix for green freight policy and program among GMS, Comparison of stakeholders understanding on green freight according to key category and basic statistics of interview questionnaire gathered from the field activities are shown in the appendices section.

2. Methodology

The main goal of methodologies in the baseline study is to gather the information from LSPs, government officers in relevant Ministry, and related stakeholders including logistics and trucking associations of each country regarding their knowledge and understanding about carbon emission and green freight logistics. MI has reviewed several methodologies such as survey, semi-structured interviews, focus group discussions (FGD) and several others. In the end, interview (including Key Informant Interview) and FDG are mainly used methodologies for gathering information.

Interview is a form of conversation with questions and answers. Questions are asked and answers are given for a certain topic or subject. Because it is complementary method to the survey, its characteristics are quite opposite. Both survey and interview ask questions, but

interview is more personal than survey because it involves real communication between two parties, interviewer and interviewee. Therefore, more detail questions can be asked and answer in a bi-directional interaction mode. MI decided to use interview for key informant such as government officers to find out their opinions on green freight.

FGD is another type of qualitative methodology used in the study. It involves gathering people from similar backgrounds or experiences together to discuss a specific topic of interest⁶. Compare with interview, this is an efficient way to collect information because it can save time on information gathering process. Instead of individual meeting, group of participants are gathered at the same time and can deliver multiple opinions on each question. Therefore, the information of multiple respondents is collected simultaneously. Considering that MI has to collect information from various companies and organization from 5 different countries just in 2 weeks, FGD is the most suitable choice. It is primarily used for the members in freight associations, which are the mainly representative from LSPs.

MI has made the questionnaires of interview and FGD for 3 different groups, which are LSPs, freight associations and government officers in related Ministry of each country. The questionnaires are attached in Appendix 7.1. The process for interview and FGD was divided into 2 parts: field trip to Thailand, Vietnam and Cambodia as first part and trip to Laos and Myanmar as second part based on availability and schedule of interviewees and FGD participants. Through interview and FGD, we have gathered the information on knowledge about green freight and (green) technology which reduce carbon emission, policy on green freight through regulation and certification process (green mark), capacity building and training on green freight. As a result, we have collected the baseline information on green freight and logistics in GMS.

3. Baseline of the project indicators

The project indicators are mentioned in the full proposal on green freight and logistics development in Mekong countries. The baseline study should be aligned with these indicators so that the outcome of study can be consistent with the purpose and goal of green freight and logistics development in the GMS.

| Expected result | Indicator |
|---|---|
| Improved logistics services through adoption of sustainable environmental practices | % of companies obtained green mark. |
| | % of companies reduced carbon emission |
| | % of companies increased business operations |
| | % of companies enhanced service image |
| | % of customers satisfied with services of logistics operators |

⁶ Focus Group Discussion at https://www.herd.org.np/uploads/frontend/Publications/PublicationsAttachments1/1485497050-Focus%20Group%20Discussion_0.pdf

| | |
|--|---|
| Enhanced capacities of National Ministries and logistics associations on Green Freight standards and certification | % of government officials applied knowledge and skill on green freight and logistics development |
| | % of logistics companies (project beneficiaries) applied knowledge and skill on green freight and logistics development |
| Improved information access on Green Freight technologies | % of companies obtained new technologies |
| Projects results are reviewed and shared | Results will be utilized for course action |

Table 3.1) The project indicators for baseline study

The questionnaires for interview and FGD are designed to find out the information on project indicator. Therefore, the result of interview and FGD would reflect the indicator and its measurement. For example, in ‘Knowledge on Green Logistic Standards’ section of the interview questionnaire, the following questions are made in order to get the information on “% of companies obtained green mark” (indicator) from LSPs.

- Have you heard of the term “Green Mark” certification?
- Do you believe that getting Green Mark is beneficial for your company?
- Do you think having Green Mark certificate/logo would improve the image of your company?
- Are you aware of any Green Mark certification (process) implemented in other area (industry) in your country?

These questions are directly or indirectly related to the measurement of indicators. By figuring out the results of interview and FGD, MI can find out the measurement on project indicators and hence can understand current situation on green freight and prepare for the next step in the project.

4. Findings

Our findings are laid out in several categories which are consistent with the project indicators. Appendix 7.4 shows the basic statistics of interview and FGD results. The interview and FGD were conducted for all 5 countries. However, numbers of respondents vary among countries from 1 (smallest) to 8 (largest) persons. While at least one freight association has participated in FGD meeting from each country, only two government officers from the Ministry related to transport and logistics did take part in the interview. The result of interview and FGD are stated and summarized. They are described according to each country for the knowledge and understanding about green logistics and related information. In the beginning of each section, summary or conclusion on each category are given to recap the findings. The main purpose of findings is to look for meaningful outcomes what the baseline study intends to. Then, those facts will be evaluated and considered when the training program is designed for LSPs and the government officers later in the project.

4.1 Understanding of Green Freight

It is important to measure how much the people involved in transport and logistics know about environmental issues such as carbon emission and greenhouse gases in order to explain them about the concept of green freight. Knowing about the green freight can be the barometer of interest and concern about environmental issues. By investigating whether respondents acknowledge the terms and the meaning of green freight, we can estimate level of their recognition on environment issues and related business activity in transport and logistics.

As for the understanding of green freight, findings can be summarized as:

The concept of green freight is well recognized in Thailand and Vietnam while it is not well known in the other countries

Cambodia) Most of the companies who participated in the FGD and interviews were not aware of the term green freight. And those who had heard about the term were not fully aware of the different dimensions of the concept. One out of nine respondents who participated in the FGD and interviews had some understanding of the concept of green freight, who had learnt about it in some training she had attended. All the participants admitted that the concept of green freight is something very new for Cambodia. This view was shared by the government official who was aware of the term himself.

While discussing fuel efficiency, respondents from the private companies shared that one of the common practice among majority of the small companies is that give more fuel to the drivers than required for any given business trip. It's some kind of incentive to the drivers who would try to save more fuel and make money for themselves. Companies follow this practice in order to save taxes, which they have to pay if they give the drivers allowances in monetary form.

It was found that the freight association does not play any significant role in improving the environmental performances of the member companies. They do not have any policy in the association in this regard. However, they do cooperate with some government projects or those from donor organizations. Recently, the association facilitated training of 54 truck drivers on eco and safe driving organized by GIZ.

Laos) In case of Laos, the respondent participating in interview was only one company. Other companies contacted were not able to join the interview. Therefore, the information collected is very limited. The interviewee heard about the term green freight. But he did not know about its meaning when asked in detail. In FGD session, the person who attended overseas seminar or workshop on green freight was aware of it. The president of LIFFA, the only association related to transport and logistics in Laos mentioned it wanted to promote the information on green freight. However, the members do not seem to be interested or enthusiastic about adopting the concept of green freight in their business practices.

Myanmar) 3 FGD meetings with 3 freight associations and LSPs interview were held in two days. In general, while two members from one association (MIFFA) showed very clear understanding on the concept of green freight, the majority of participating members did not know or hear the term before. However, most of members was very interested in knowing

about new idea and knowledge in logistics and green freight was no exception. The other associations' main concern was how this new idea of green freight would affect their business situations and wanted to know how they should be prepared for it.

The common aspects regarding the respondents who knows green freight is that they either had a training from international organizations such as GIZ and MI. They also can communicate in English fairly well and have desire to receive more training on other logistics related topics including green freight. Through their experience at the training, they acknowledge that they have to improve the existing ways of thinking by adopting new ideas and information. This is very important mindset for conducting their businesses.

Vietnam) Based on the responses of the FGDs participants from three associations and as well as individual interviews, it can be inferred that the private companies in Vietnam have a good understanding of the concept of green freight and its different components. The interviewed associations had also collaborated in some projects and programs with the government and international donor organizations such as ADB and EU related institution to green freight. Some of the companies had learnt about the concept because of their collaboration with multi-national companies.

Respondent from the government agency was also aware of the concept of green freight and had been responsible for some programs and projects related to Green Freight I in her agency. The respondents also expressed that adopting green freight will improve fuel efficiency in addition to reducing carbon emission. However, not many companies realize it or care about it.

The respondents from both the public and private sector shared that even though there is basic understanding of the concept, only few companies comply with some aspects of the standards as required by their business operations. Most of the companies do not see much benefits from following standards. Some companies also follow environmental friendly practices in their companies. One of the company, Indo Trans corporation, shared that the company has policy to buy new trucks as company policy and there is proper system in place for solid waste management and regular maintenance.

Thailand) Based on the discussion with the board members of Thailand International Freight Forwarders Association (TIFFA), it can be inferred that most of the board members are aware of the concept of green freight. They had knowledge about some of the guidelines and criteria followed in Thailand for the Q-mark, which is green freight certification in Thailand. However, from the individual interviews with companies, it was found that although they have heard the term, they were not fully aware of the different aspects of green freight.

When asked about the importance of green freight for fuel efficiency, the respondents shared they believe that green freight contributes to fuel efficiency. But in practice, it depends on the size of the companies. Big companies are in the position to make more informed decisions when they buy trucks, considering different aspect such as fuel efficiency as well. For small companies, they may not care much about the fuel efficiency that much.

It was found that the association has been collaborating with the government on different projects for the development of freight sector in Thailand. The members shared that TIFFA will sign an MOU with the Department of Land Transport for collaboration and cooperation

on Q-mark project. LSPs also follow some environmental friendly practices in their companies such as recycling of printing papers, solid wastes management, saving electricity and water-use, and encouraging staffs to follow sustainable practices.

4.2 Knowledge about Green Technology

If someone is concerned about environment issues, he'd better know what methods are available to alleviate the problem and hence improve the situation. Knowing about transport related technologies which help to enhance the efficiency of business activities are important so that one can apply those technologies to reduce transport related environment problem such as carbon emission.

Based on the results of interview and FGD, it can be inferred that the level of knowledge about green technology among all respondents is not higher than that of average public except for few big companies in Vietnam.

Cambodia) In general, the respondents in Cambodia were not aware of the technologies which could reduce carbon emission, with the main reason probably being the inadequate understanding of term “technology” and understanding of ‘carbon emission”. However, when they were shared a list of equipment, practices and tools which could reduce carbon emission, the respondents pointed out that regular maintenance and use of lubricants are the two practices they do in their companies. Companies whose drivers have received training on eco driving from GIZ are also trying to follow improved driving practices. However, the respondents acknowledged that the intention of such practices is not to reduce carbon mission, which they do not care about much.

It was found that given their lack of knowledge and understanding, the respondents were not sure whether it will be useful for them to adopt technologies. And they could not respond to the questions related to technology needs for green freight.

Laos) The respondents have general idea related to green technology but it was basic knowledge which general public also can answer. Instead of each and detail technology, they seem to be more interested in new technology of diesel engine (truck) and higher emission standard (EURO IV). In general, they have limited knowledge and narrow perspective on green technology. For example, few respondents think tire and wheel equipment is not considered green technology. Also, they believe that other factors such as training drivers and other factors are more important in green freight although they could not mention what other factors are specifically.

Myanmar) The findings were interesting. Overall, the respondents had a variety of answers on green technology questions. Among them, technologies related to driving pattern improvement and truck maintenance had the most attention as carbon reducing technology. According to Myanmar Highway Truck Association (MHTA), most of its member trucks are equipped with GPS device and the driver of truck can find the best route for its destination. Also, the company can track the location of its trucks whether they are moving on the right direction.

The other technologies that Myanmar Container Truck Association (MCTA) finds it effective

in reducing carbon emission are high quality gasoline or lubricant used for commercial vehicle such as diesel trucks. The association believed high quality gasoline with a more advanced engine can reduce carbon emission significantly. However, many of truck operators do not know the difference or cannot distinguish the different level of gasoline quality.

Vietnam) It was found that some of the big companies are aware of and use some kinds of technologies in their companies which can reduce carbon emissions. It was shared by one of the companies, Indo trans Logistics which is leading logistic service provider in Vietnam, that they follow different types of equipment, tools and practices in their companies which can contribute to reduce carbon emission. These include enhanced maintenance, tire and wheel technologies and equipment and improved driving pattern. This company has not received green mark certification yet. However, according to the respondents in Hai Phong, smaller companies with only few trucks do not care much about the carbon emission. It was found that companies of small size do not actively search for green freight technologies as they do not have such plans to adopt to adopt better technologies in their companies for reducing carbon emission.

A number of companies in Vietnam use Trucking Management System for managing truck operations of their companies. It is also shared by one of the company that there is a startup in Vietnam that has developed an application for providing services like Uber truck and its getting popularity among those who use and provide logistic services. The application has proved to be useful in efficiently managing trucking space for service providers. All the companies said that they will be willing to adopt an integrated Management Information system if MI provides one. Some respondents shared that it will be more useful for the small companies if the system has other functions which could be useful for general management of their companies including human resource and finance as well.

Thailand) It was found that companies use different kinds of tools and practices in their companies which contribute to reduce carbon emission. These include regular maintenance, tire and wheel technologies, improved driving patterns, and using better fuel and lubricants. According to the association members, most of trucks in Thailand follow EURO 3 and for new trucks EURO 4 standards are applied.

The respondents shared that they believed that using appropriate technologies can contribute to reduce carbon emission. But mostly companies do not care much about adopting such tools and practices as they do not see benefits for the companies. Some of the big companies use different resources to get information about the latest development and technologies in the logistics and transport sector. It was found that TIFFA also disseminates information among its members through newsletters. Some members of the associations expressed that information about emission control technologies will be beneficial for the companies.

4.3 Capacity building for Green Freight

Capacity building of human resource is the main purpose of baseline study in order to support them to gain the knowledge on the transport related environment issues from carbon emission to fuel efficiency. The green freight is the main theme of reducing environment problems in transport and logistics. It is important to inform various stakeholders in the field what green

freight is about and provide them with a quality training to understand the concept so that they can apply the concept of green freight in their business practices. In the area of capacity building, it can be concluded that

- international organizations such as GIZ and ADB have been playing a significant role in providing the necessary resources and
- freight associations have also played a supporting role in capacity building for their member companies

Cambodia) According to the companies in Cambodia, they are not aware of any government or private organization providing regular capacity building programs related to green freight. The government officials from department of road and transport also acknowledged this point of view. However, drivers of some of the member companies had received training on eco and safe driving from GIZ and the drivers had been certified as well, acknowledged by the government official as well. Some members of CAMFFA had also attended training on logistics organized by Mekong Institute including the Certified Masters Logistics Program.

Some of the big companies who were interviewed shared that they have internal training programs for their truck drivers.

When asked what kind of capacity development needs for adopting green freight standards, the respondents shared that they need to know about the regulations and policies of the government if there are such policies. Secondly, they would also like to know about the technologies which they can follow in their companies if they have to adopt green freight standards. Some of the respondents expressed that they would like to learn about pre-maintenance practices including, about tires, brake and other components of trucks. Companies also shared that most of the companies have zero-accident policy, but they are not aware of strategies to ensure zero accidents and would like to learn about it.

According to the government's point of view, trainings related to safe driving for companies and those related to policies and regulations for government officials could be useful. The government agencies will be interested to know about policies and regulations in place in other countries including GMS.

It was shared by the respondents that capacity building programs should target different types of staffs including directors, managers and trucking supervisors from the logistics and transport companies as they are in the position to bring changes in the companies' practices. In addition, drivers and other technical staffs should be trained on topics related to trucks and driving. For government official, it was proposed that Director and Deputy Director of departments of Land and Transport and Custom officials also need to be involved in capacity building programs.

Laos) The respondents believe that capacity building is very important in adopting green freight in Laos. They mentioned training program for truck drivers and supervisor can be desirable so that the truck (fleet) management can be improved. In order to do that, they think government should take a strong initiative in promoting green technology and providing training program. According to green logistics activity report presented by the officer of MPWT during EST Forum organized by UNCRD in 2017, the Ministry conducted green

freight and logistics project with the support of ADB⁷. The Ministry organized the training of eco-driving for 90 truck drivers on driving technique to reduce fuel consumption and good driving behavior.

When asked which organization should provide the training for capacity building, government needs to approve about the training first and then support the funding. Because individual company or association does not have enough capability to support the training, especially financial resource, the government should provide the funding for training and discuss with association how to proceed the training. The best scenario would be to get support from international organizations like the case of green freight by ADB project.

Myanmar) Like the case of Cambodia, GIZ has played a very important role in the capacity building of transport and logistics in Myanmar transport and logistics community. It has provided selected companies and their drivers with the training program so-called “Eco-Defensive Driving” focusing on environment friendly and safe driving of trucks. Many companies from logistics related association and organizations have participated in the training program and the feedback was overwhelmingly positive.

Among associations, MIFFA has been very active in providing capacity building program to other companies and organizations. It is also interested in providing the training for green freight if it can get the support from international organization in the beginning. The other associations claim that they can provide seminar and workshop for their members but acknowledge that they can only provide basic level of information.

Vietnam) Respondents from the companies and associations shared that GIZ had recently provided training to drivers of some of the companies on eco and safe driving. It was also found that ADB had also organized some trainings and workshops in collaboration with the associations and Government departments such as DRVN. Under the ADB program around 100 drivers were trained on safe and eco-driving and they were also provided some financial assistance for upgrading their trucks. Some companies have attended training related to logistics organized by Mekong Institute as well.

One of the association, Vietnam Logistics Association (VLA), has its own training institute under the association and it has been providing different types of short and long-term trainings to member companies related to logistics. The board members of VLA shared that VLA has signed MOUs/agreement with eleven universities for training on logistics. Moreover, students and employees of the universities can work with the companies for some time to experience the practical side of the logistic sector and some can even get employment with the companies. The institute has not yet organized any training related to green freight specifically.

The members of associations, Vietnam Automobile Transport Association (VATA) and Vietnam Logistics Associations (VLA), showed interest in developing knowledge and skills of their member companies on green freight. They proposed that companies need to know about the green logistic standards and realize the benefits and necessity of following those

⁷ Green Freight and Logistics Development in Lao PDR at

http://www.uncrd.or.jp/content/documents/503059_Mr.%20Sonephet%20Somekhit.pdf

standards. In addition, Companies should be educated on policies and regulations related to green freight in the country and those used in other advanced countries. Moreover, companies should be trained on operations of companies including trucks and how to optimize empty spaces of the trucks. They expressed that companies will be very eager to learn about the green technologies and e-logistics as well. However, member of Hai Phong Automobile Transport Association (HATA) were less enthusiastic about the prospect of training for the association members. Board members of HATA shared that with most of the members of being small companies with less number of staffs, they are reluctant to send staffs for trainings for something they do not feel the need for. Moreover, they think the business environment is not conducive for the small companies who are more worried about their survival.

The respondents from associations and private companies suggested that people staff from management, supervisors and drivers should participate in the trainings. According to the Deputy Director of the Directorate of Roads, relevant people from both the public and private sector need to know about the concept of green freight as currently it is not completely understood. According to her, there should be customized trainings for mid-level officials and those government officials who are involved in policy making. She suggested that training on green freight should also include modules on operations management, financial mechanism for upgrading fleet and eco-driving.

Thailand) A number of respondents shared that had attended trainings on some aspects of green freights in Thailand and other countries such as Singapore. Some of them had also attended trainings organized in MI on logistics.

The respondents proposed that if there is a training program on green freight, considering that the concept of green freight is new for majority of the companies operating in Thailand, it should cover all the important related topics. Moreover, it was put forwarded by the association members that training should be organized for different levels of staff including management staff, operations staff and for drivers. There was also suggestion that it will be useful for the companies if they are trained on how to calculate their carbon footprint which will help them make more informed decisions.

The other suggestions include the case studies in the training from advanced countries such as Singapore and how green freight standards have benefited the logistic and transport sector of the country, so that training participants will better understand the importance of green freight.

It was found that there is an International Transport and Business School (ITBS), operating under TIFFA, which offers different courses on transport and business. TIFFA has also strong collaboration with Thailand Professional Qualification Institute (TPQI) which develops capacities and promotes the use of professional qualifications and standard systems. TIFFA also plans to establish a center for developing capacities related to logistics for logistics and transport companies in ASEAN.

4.4 Green Freight Certification

According to the basic statistics of interview in Appendix 7.4, 45% of respondents is aware of green freight certification (green mark). While almost half of respondents know about the certification, only Thailand has the program for certification process in place and Vietnam is currently developing the program. Also, while many respondents believe that receiving the certification would be beneficial to the company, they could not be sure of the direct effect in terms of any quantitative measure. The main findings in this section are:

- Respondents are positive of potential benefit of certification, but want to receive a more detail financial incentive for their efforts in receiving the certification process:
- Certification program has not been introduced in the countries of Cambodia, Laos and Myanmar

Cambodia) None of the companies interviewed in Cambodia were aware of the green mark certification applied in the logistic sector or in any other industries. However, when they were explained, four out of five companies agreed that green mark could be beneficial for their companies and may also contribute to improve their services and image of the companies. The respondents also contemplated that their companies could have enhanced the business opportunities of they obtained green mark certification in future.

Laos) At the moment, the respondents are not aware of any certification or initiative related to green freight. Nor they have any knowledge of environmental certification in other industry. Again, they believe if such certification can be realized, government should get involved in making decision on certification process. The company is not sure whether green freight certification is necessary for its business.

Myanmar) Some of respondents are aware of environment friendly campaign and certification in manufacturing industry called “zero carbon footprint”. According to MCTA, Citymart (the biggest supermarket chain in Myanmar) promotes using the basket instead of vinyl bag for shopping in its stores as an environment concern campaign. Also, they heard of Q mark of Thailand. However, they do not know any such certification in transport and logistics area in Myanmar. MHTA believe that green mark, if realized, can be used as a priority or benchmark consideration in any selection process such as bidding at the government procurement process.

In general, the respondents seem to agree that implementing green freight certification can appeal a positive image to the logistics industry. However, they are not sure whether it is their role to promote the idea because they do not know how much benefit they can get from the receiving certification. That should be the scope of government activity. The respondents emphasize there should be an incentive from government by complying for the certification.

Vietnam) From interviews and discussions with the companies, associations and government officials, it can be inferred that there are some initiatives and programs for developing and promoting green freight certifications in Vietnam. According to the Deputy Director of DRVN, under the ADB program, two companies have been facilitated by the Government in getting Green Freight Asia Certification from Singapore as a pilot case on green logistics

standards.

It was found that the Directorate of Roads, supported by GIZ has also developed green freight criteria for road transport companies in Vietnam, which will be adopted in coming months. After adoption, the criteria will be piloted in some companies.

According to the president of Vietnam Automobile Transport Association (VATA), the association will collaborate with the Government in certification of companies in Green Freight, which has been agreed by the two parties. One of the interviewed company, Green Star Lines which is based in Hai Phong, shared that the company has applied for Green Freight Asia certification through its mother company, Viconship Corporation, and expecting to get the certification soon.

Some companies do believe that following green logistic standards may enhance the companies' service image and in some cases business opportunities. However, in general, currently, most of the companies do not see much benefits of getting green freight certification from business point of view. One respondent shared that green freight certification is not required while bidding for different business tenders from the government, international and local agencies. Secondly, unless the consumers understand the importance and usefulness of green mark certification and prefer to use services of companies with green mark certificates, companies may not consider it important either. According to the members of HATA in Hai Phong, the company members who are mostly small enterprises, will not be willing to get green mark certification unless its mandatory and they receive some incentives.

Thailand) The DLT has established a "Service Quality Standard for Truck Operation" which is commonly known as the 'Q Mark'. The standard provides guidelines to improve each transport service activity to an acceptable level, with the dual goals of ensuring compliance as well as satisfying the customers. The Q Mark certification is not mandatory but companies are encouraged to get the Q Mark certification voluntarily by DLT.

From the discussion with individual companies and members of the associations, it was found that not many companies are aware about the benefits of the Q Mark. Moreover, most of the companies are also not aware of the incentives provided by the government to the companies who get the Q Mark certification, such as priority for international road transport permit, promoting the quality certified truck operators via the Geographical Database among others.

The TIFFA members shared that may be less than 10% of its members have received the Q Mark certification so far. The members also expressed that although TIFFA works with the government, they still don't get adequate financial support for different activities. It was found that some of the companies who believed that green logistic standards could contribute to improve companies 'service image and may also enhance business opportunities, had not yet received Q Mark certification. This could be primarily because Q Mark certification is not required by the customers who use their services at the moment. Secondly, its only voluntary and the companies may not be well aware of the benefits they could get from the Q Mark certification. Respondents from TIFFA suggested that considering there is already Q Mark certification process in place, MI can work on it as part of its green freight project.

4.5 Green Freight Regulations, Policies and Programs

The role of government or authority dealing with policy on transport and logistics is very crucial in improving the environment problems. It has set the rules and regulations which industry has to follow. Also, it supervises whether private companies to comply those rules in business activities. If green freight is to be adopted by companies and successful in achieving its purpose, the government's direction and guidelines of policy on green freight is the most important precondition. The main points found regarding regulations and policies are:

- Regulation and policies focusing on green freight has not been established except for Thailand:
- However, all the other countries are preparing for the green freight related regulations and policies

Cambodia) According to the respondent from the government, there are some policies, measures or isolated programs related to green freight, such as traffic management, inspection and maintenance, vehicle size and weight restriction, eco-driving training and parking spaces for trucks. It was shared that the government is working with JICA for modernization of vehicle registration and inspection process. However, other important aspects of green freight are largely missing in policy and regulatory framework.

It was found that some of the existing regulations do not provide any incentives to the logistic service providers to make investment in their companies that could contribute to promoting Green freight. For instance, import tax on new trucks is more than 100% of the value of the truck which, which is the same as that for importing used trucks. As a result, companies are more likely to import used trucks. The respondent shared that the ministry of road and transport is working with the ministry of commerce (customs department) to review the law so that private companies can be encouraged to bring in new vehicles.

According to the logistic service providers they know some of the policies and regulations related to trucking such as size of the trucks/containers, how much weight to carry, and what is the speed limit. And they try to follow these rules as they are enforced by the government. However, they are not aware of other policies/rules specifically related to green freight.

Both representatives of the public and private sector agreed that the concept of green freight could be suitable for Cambodia as other countries in the region are already following some practices or standards.

Laos) There is not any policy specifically dealing with green freight. The government is aware of the green freight and can consider its policy toward green freight. The government officer who was interviewed acknowledges that Laos will and should have the policy on green freight. However, he is not certain how urgent the policy making regarding the green freight is in terms of priority in the Ministry. Surely, there are many issues happening in transport and logistics and they should be addressed and processed into government system in order to be make as rules and regulations. Likewise, the issue of green freight needs to be addressed and discussed within the Ministry for possible policy making, but we do not know when this could happen yet.

LSPs and association will have to wait until the government decides to have the policy on green freight and make the rules and regulation related to it. Because LSPs and association in Laos feel that they simply have to follow the guidelines of government on this issue rather than take an initiative to express their opinions and then discuss with them with the government. They believe they do not have enough resource to conduct such activities.

Myanmar) The government of Myanmar starts to realize the concept of green freight and try to prepare for a comprehensive policy on it. One of the general regulations related to transport now is that the government requires any trucks with more than 2 tons in weight to install GPS device. The policy related to green freight in specific has not been legislated yet and stakeholders including associations have been actively communicating with the government in order to express their opinions and concern on behalf of their members so that the policy can be made to support the interest of their member companies not to impact negatively in their business environment.

Vietnam) According to the Deputy Director of the Directorate of Roads, there are a number of programs and initiatives under the Ministry of Transport for promoting green practices in transports and logistics and to reduce carbon emission. A steering group has been formed consisting of representatives from different subsectors and have developed a number of action plans, including green labeling. There are also efforts underway to shift transport of goods from roads to other modes of transport such as railways and waterways.

The Government official also shared that there are some policies, regulations, program or initiatives related to different aspects of green freight such as infrastructure development, traffic management, inspection and maintenance, regulations for vehicle size and weights, eco-driving training and certification programs (Appendix 7.2).

It was found that in collaboration with GIZ, the Directorate of Roads has developed green freight criteria for labelling and certification of carriers which will be adopted by the Government soon. After adoption of the criteria, it will be piloted in some selected companies. And as proposed by GIZ project staff, MI could play some role in this regard under its project.

The companies and association members expressed that they are aware of some of the regulations related to trucking such as size and weight restrictions and speed limit, as they will get penalized if they do not follow them. However, they are not well aware of other regulations and programs. Members of one of the association shared that the government is encouraging the companies to use bio-fuel instead of fossil fuel. Now mostly companies use Euro 2 and are planning to switch to Euro 3 and Euro 4. Members of two of the associations, VATA and VLA expressed that they will be willing to work with the government and other agencies and companies to follow the green freight standards if they are adopted.

Thailand) As mentioned earlier, Thailand has already introduced service quality standard for truck operation which is commonly known as the Q Mark. And the government is also providing some incentives to the companies for getting the Q Mark certification.

There are also a number of policies, programs and measures in place in Thailand related to green freight such as infrastructure development, traffic management, regulations on vehicle size and weight restrictions, eco driving training programs, measures for inspections and maintenance and promotion of alternate fuels and vehicles (UNCRD Discussion paper).

Moreover, Thailand promotes freight online exchanges and technologies related to aerodynamics, telematics and tires. It was found that respondents from the individual companies were aware of some of the policies and regulations of the government related to green freight. Whereas, members of the associations appeared to be better informed regarding the regulations and policies. All the respondents were aware of the Q Mark certification. TIFFA will also be involved in the promotion of Q Mark certification among its members.

4.6 Constraints in implementing Green Freight Standards

The constraints in green freight standard implementation can be summarized as

- The majority of companies do not understand the concept and effects of green freight:
- There is lack of motivation for companies to implement the standards due to uncertain rewards

Cambodia) According to the companies, lack of awareness and knowledge about the Green Logistics Standards and practices is one of the principal constraint in following such practices. In addition, companies do not see any benefits for following standards which are not yet valued or required in the market they are operating. The companies also expressed that it is something the government can take a lead on and provide an enabling environment for the companies to follow such standard practices through regulations and incentives.

According to the respondent from government agency, the concept of green freight is new to Cambodia. In addition to knowledge, people from both the public and private sector lack required capacities. There is not a proper information management system in place which could be important for adopting and promoting such standards.

Laos) The respondents consider lack of quality human resource as a big challenge in implementing green freight. Most of staff and managers of LSPs except for few executives who had experience oversea seminar or workshop about green freight are not aware of the concept. Build their capacity through education and training on green freight is the first step toward implementing the standard.

The lack of financial resource is another obstacle that keep LSPs from following the standard. Adopting green freight standard requires investment for the company such as new maintenance equipment or training expense for its employee. It is difficult to justify such investment if the company do not understand and see the benefit from adopting the standard. But, the biggest constraints would be the absence of policy on green freight standard. In Laos, any policy regarding green freight is yet to be legislated and without proper rules, it is not possible to follow any standard except for the one already established in the other countries.

Myanmar) When asked about constraints in implementing green freight standard, the respondents addressed poor infrastructure (including roads), lack of quality driver training and driving system, and the issue of road traffic regulations (sometimes, the government policy is not consistent with the situation of other GMS) as major problems. The other issues mentioned were the mindset of truck owners and old-style management system.

The issue of government standardization was the last one pointed out as a constraint. Some of standard made by government is not up-to-date. For example, newly imported trucks with new type of engines are required to have a specific quality grade of diesel fuel. However, such standard has not ben established yet and the drivers have to rely on existing standard which cannot be applied.

Vietnam) According to the respondents from association and individual companies, most of the companies do not see the benefits of getting green freight certification. They do not consider that following standards is necessary to expand their business operations at the moment or near future. They believe that promoting green logistic standards or certification will be challenging without providing proper incentives to the companies.

Companies also lack financial and human resources required to comply with the standards if such standards are adopted. And with the lack of access to finance they may deem it even more difficult. Some of the small companies already find the current business competition very challenging where they have to compete with big companies. And they are reluctant to invest in something they are not sure about its business benefits.

The government officer participating in the interview also agree that companies will have to be provided incentives in order to change their practices and behaviors. Moreover, the current infrastructure condition may also pose some challenges.

Thailand) According to the companies' respondents, one of the challenge for Q Mark certification is that companies still do not understand how it could be beneficial for their business operations. Companies need to be enlightened on the importance and benefits of Q Mark certification. Secondly, unless it is demanded by the customers, companies will not feel obliged to get the Q Mark certification.

According to respondents from TIFFA, government will have to allocate sufficient financial resources for promotion of Q Mark certification as well. Moreover, companies should be given incentives in form of access to finance which is one of the obstacles for companies who want to make investment in their companies.

5. Limitations

There were many obstacles in conducting information gathering process not to mention the arrangement of meeting and travel schedule. The major ones need to be addressed are mentioned here and should be taken into consideration for future activities.

5.1 Differences between CLMVT

While research has been conducted for CLMVT which have many common grounds in terms of culture and business practices, the situation and social system are varied among them. This issue has made the process of gathering information rather challenging for several reasons. First, rules and regulations regarding environment issues in transport and logistics are different among CLMVT. Thailand and Vietnam have established the policy on green freight

whereas the other countries have very basic policy related to carbon emission or requirement for reducing pollution. Appendix 7.2 shows different level of policy measures in GMS. While the associations and LSPs in one country are very active and enthusiastic about getting to know and share the opinions on green freight, the other country's counterpart is not so interested in participating in the process of interview and FGD because of lack of information and understanding on green freight. These characteristics can create the unbalance of data in each country and produce biased results for reflecting the situation of a particular country if we only apply one standard measure.

5.2 Differences among LSPs

There are different types of logistics service providers: truck operator, (international) freight forwarder, customs broker, ICD operator, etc. Although they are all involved in transport and logistics activity, their characteristics in conducting businesses are quite diverse. In case of truck operators, they own and handle the trucks for their business activity. Naturally, they are more interested in the issues of fuel efficiency, maintenance and technology. However, the other LSPs do not deal with truck fleets directly and may not consider them their concern. As a result, truck operators may feel that they are directly related to the issues such as carbon emission and fuel efficiency. However, freight forwarder and customs broker may think they are not directly related to the main point of green freight and they don't necessarily feel that they need to know and get involved in green freight. Because of this problem, we need to develop the strategy that make them feel and understand they are part of logistics process and should be aware of the issue of carbon emission.

5.3 Communication and Language

When interview and survey conducted, English was used for communication. For those who do not fluent in English, a person with high English proficiency translates the questionnaires in each language. While most of participants in interview and survey have solid understanding of each questionnaire, few of them show misunderstanding of questions or simply do not know the meaning of questions. This could happen because of language barrier. English is not a native language for all of respondents as well as interviewer. Even if they can understand the basic level of English well, some of vocabulary written in questionnaire could be difficult for them to understand. For example, some respondents asked the meaning of words such as 'aerodynamic and anti-idling' during FDG session.

Those misunderstanding of questionnaire can lead to the wrong answer to the questions and hence the result of data become less reliable and diminish the accuracy of interview and survey. A more careful selection of vocabulary considering the level of interviewee in English is necessary.

5.4 Conflict of Schedule

Overall, the schedule of interview and survey were very challenging. MI project team

members have to cover CLMVT government, associations and LSPs for 2 weeks. The process was divided into 2 steps: the first interview trip was for Thailand, Vietnam and Cambodia and the second one was for Laos and Myanmar. While most LSPs and association we conducted interview were very cooperative and interested in the activity, the number of participants was not substantial enough to make the study more meaningful. Many of LSPs were busy for their business operations and simply could not join the interview sessions. The government officers were occupied as well with many meetings and events. It was very difficult to arrange the meeting with them for only a 30 minutes interview. One of the ways to improve the efficiency of conducting interview, we could send the questionnaires in advance so that the interviewee can be aware of them before interview. Then, we can save the interview time or we may get the interview responses in the detail since the interviewee already acknowledge the questionnaires and have time to think about them.

6. Conclusion and Recommendations

From the findings and limitation, which we have collected through the survey and interview, we can draw the following conclusions.

The concept of green freight is still a new idea for the government and private enterprise of transport and logistics sector in Cambodia, Laos and Myanmar. Thailand and Vietnam have a better understanding about it and have prepared for policy and regulations to implement green freight standards. For those who have known and heard of green freight, they have gained the knowledge from either seminar or training program organized by international organizations such as GIZ and MI. Especially, the activity of GIZ on the eco driving training program, which is not exactly about green freight but somewhat related, has play a very important role in initiating interest and concern on environment issues related to the road freight transport.

Because of the lack of understanding on green freight, their knowledge on green technology is somewhat limited as well. From the survey results in Appendices 7.4, we can see that many respondents do not know the technology clearly, which can reduce carbon emission. Especially, they are not aware of newly developed technology, which could indicate they do not learn or don't have recent information on green technology.

As mentioned above, the green freight is still a new subject for LSPs in Cambodia, Laos and Myanmar. Yet, in general, they are concerned of environmental issues including carbon emission and want to know about them once they found out that the purpose of green logistics aims to reduce carbon emission. Capacity building can play a very important role in this regard because it can improve their understanding and knowledge about the green logistics. Even though the level of interest is not identical among CLMVT, capacity building for the green logistics is an important matter and necessary subject in the region to deal with carbon emission issue.

We found out that the green freight certification can be a challenging subject for LSPs and association to consider because of the following reasons: the government policy for certification has to established first and the incentive to get the certification needs to be clear. The policy and rules on green freight have not been established by the governments except

for Thailand and Vietnam. Government officers of the other countries we interviewed said that their governments have been reviewing the policy. Likewise, the certification process of green freight has not legislated in any form of policy and regulation. Without any policy process set up, it is not possible to apply for the certification. Another issue is regarding the benefit which LSPs would have by receiving the certification. They may have to invest their capitals in following the certification process and once they receive the certification, they want to get the benefit from having the certification. Without such tangible outcome, the LSPs would find it difficult to apply for the green freight certification because their investment would not be justified.

Based on the above conclusion, the recommendations for the project “Green Freight and Logistics Development in Mekong countries” are suggested as follows.

- Need to have more promotional activities for informing green freight and its ideas

In order for LSPs and government officers to know and understand better about the concept of green freight, they need to have an opportunity to learn it. Most of LSPs have limited resources on training their employees for new knowledge and MI can support those companies wishing to improve their human resource. It should be linked to capacity building plan including seminar, workshop and training program. The findings and limitation of this report including data analysis can give some guidelines how the capacity building should be prepared and conducted.

- Make the capacity building program for specific target group

Considering that the countries are at different level development related to green freight including understanding, use of green technologies, and policy or regulatory framework, its recommended that each of the project countries should have specific interventions under the project. Also, it should be reminded that there are various types of logistics service providers: truck operator, (international) freight forwarder, customs broker, ICD operator. Their business objective and interest are not necessarily the same. Therefore, those different types of logistics service providers should require the training programs pertaining to their unique business characteristics and environment.

- Work together with other organizations

MI project can also build on the work done by other organizations in the region such as ADB and GIZ programs. Especially, GIZ has trained around 350 companies in all the target countries on eco and safe driving. In addition, they have worked on promoting policy instruments for the freight transport and logistics sector. In Vietnam, GIZ and the Ministry of Transport have developed green freight criteria for road transport companies in Vietnam. The criteria will be approved and adopted soon by the ministry. After adoption, the criteria will be piloted in some selected companies. GIZ recommended that MI can play a role in piloting of the approved criteria in selected companies.

As observed, some of the associations such as MIFFA, TIFFA and VLA are involved very actively in capacity building of their member companies and have recognized training institutes operating under the associations offering different courses related to transports and logistics. Where required, MI can collaborate with those institutes as well. In

Thailand, for example, the department of land transport has developed a master plan and set target of companies for Q Mark certification. It was found that the department has also signed MOU with TIFFA for promoting Q mark certification. MI project team can discuss with DLT and TIFFA for potential role of green freight project in this regard.

7. Appendices

7.1 Questionnaire for interview and FDG

Questionnaire for GMS LSPs

Company Profile:

| | | |
|-----------------------------------|-----------------------------------|---|
| Name of company: | | Country: |
| Address of company: | Company operational since (year): | Type of logistics business operations: (specify) |
| Total number of employees: | | Total number of cargo trucks/vehicles owned/operated by: |
| Name of respondent: | | # of old vehicles: # of new vehicles: |
| Designation of the respondent: | | Type of logistics services provided (market): |
| Contact number of the respondent: | | Domestic <input type="checkbox"/> Cross-border <input type="checkbox"/> |
| Email address of the respondent: | | Remarks/Observation of interviewer: |

Would you please spend few minutes to respond to the following questions regarding Green Freight⁸ to the best of your knowledge and understanding?

| Questions | Yes | No |
|---|-----|----|
| Understanding of Green Freight | | |
| Driving trucks in high speed can save more fuel than regular speed. | | |

⁸ Green freight refers to a collection of technologies and practices that improve the efficiency of the freight sector and provide a means to benchmark and track performance. Green freight programs promote these technologies and practices across the freight sector to help cut costs, track carbon, and benefit the environment.

| Questions | Yes | No |
|--|-----|----|
| Trucks with overload can save more money for the company because they can carry more freight. | | |
| Have you ever heard of exhaustion reducing device called Diesel Particulate Filter (DPF)? | | |
| Which types of engines a typical heavy truck is equipped with? | | |
| Gasoline engine | | |
| Diesel engine | | |
| Electric engine | | |
| Hybrid engine | | |
| Others (specify) | | |
| | | |
| Which chemical is harmful for people? | | |
| CO2 (Carbon Dioxide) | | |
| CO (Carbon Monoxide) | | |
| H2O (Dihydrogen Oxide) | | |
| NO (Nitrogen Oxide) | | |
| Others (specify) | | |
| | | |
| Can you name some of the technologies which can reduce Carbon emissions? (<i>multiple options</i>) | | |
| Vehicle activity and driving pattern improvement | | |
| Enhanced maintenance | | |
| Tire and wheel technologies and equipment | | |
| Aerodynamics technologies and equipment | | |
| Idling control through technologies and behavior | | |
| Fuel, oil and lubricant improvement | | |
| Oil by-pass filtration system | | |
| Emissions control technologies | | |
| Are you aware of the term "Green Freight"? If yes, do you know the meaning? | | |
| | | |
| Currently, what are the different sources of information on Green Freight technologies you use? (<i>multiple options</i>) | | |
| Internet | | |
| Technology Database | | |
| Print and Electronic Media | | |
| Business Association | | |
| Showroom of Truck Dealers/Companies | | |
| Government Information Sources/websites | | |
| Social Media | | |

| Questions | Yes | No |
|--|-----|----|
| Advertisement | | |
| Seminar/Workshop/Training/Exhibition | | |
| Others (<i>please specify</i> _____) The respondent doesn't use any source for information. | | |
| Do you have any software systems/methods to track carbon emissions in your company? | | |
| If no, do you have any plan to adopt software for tracking carbon emission in future? Please tell more. | | |
| Do you follow any software/Information management System in your company? | | |
| If no, do you have any plan to adopt software/information management system for your company? | | |
| If MI offers you an integrated management information system for tracking carbon emission (if applicable) and management of the company, would you like to use it in your company? | | |
| | | |
| Knowledge on Green Logistic Standards | | |
| Does your company follow any practice that relates to improving environmental performance of your company? If yes, could you please share more? | | |
| | | |
| Do you believe that adopting better technologies can improve environmental performances in your company? If yes, then how? | | |
| | | |
| Have you heard of the term "Green Mark" certification? | | |
| Do you believe that getting Green Mark is beneficial for your company? | | |
| Do you think having Green Mark certificate/logo would improve the image of your company? | | |
| Are you aware of any Green Mark certification (process) implemented in other area (⁹ industry) in | | |

⁹ Such as building and infrastructure

| Questions | Yes | No |
|--|-----|----|
| your country? | | |
| | | |
| Capacity Building | | |
| <p>Have you or anyone in your company attended any training or capacity building event related to Green freight?</p> <p>If yes, who provided the training and when was it provided?</p> <p>..... and</p> | | |
| <p>If there is training program on Green Freight, what department/type of employees do you suggest for the training on green freight?</p> | | |
| <p>What are the different topics related to Green Freight that you would like to attend training on to build your capacities?</p> | | |
| | | |
| For Sustainable Development | | |
| <p>Do you know the government regulations on emissions of diesel vehicle for your country and/or countries which you are currently running the operation of fleet?</p> | | |
| <p>Do you know if your government has any policy regarding Green Freight?</p> | | |
| | | |
| Business Operations | | |
| <p>Does your company collaborate with any international logistics companies to provide local services?</p> | | |
| <p>Do you think introduction of Green Logistics Standards will help in improving your company's services?</p> | | |
| <p>Do you foresee any enhanced business opportunities if you obtain/comply green logistics standards?</p> | | |
| <p>If your company decides to adopt Green Logistic Standards, do you have any idea what you have to do? What kinds of challenges you foresee in establishing green logistics standards?</p> | | |
| <p>How can you work with government and related organization such as logistics association in order to promote Green Freight (Green logistics standards)?</p> | | |

| Questions | Yes | No |
|--|-----|----|
| | | |
| How many customers did your company have in 2017? (in number) | | |
| What was the average annual retention rate of customers for 2017?% | | |

Which options for the questions below which suit you most?

| | | | | | |
|--|-------------------------|-------------------------|-----------------------------|-----------------------|------------------|
| How well is your business performing since the formation of ASEAN Economic Community since 2015? | Highly Increased | Mostly Increased | Moderately Increased | No Improvement | Decreased |
| | | | | | |
| How would you rate your company's service image related to environmental issues? | Excellent | Good | Fair | Poor | Very Poor |
| | | | | | |

FGD Tool for GMS Transport and Logistics Association

| | |
|--|---|
| Name of Association: | Country: |
| Address: | Total number of the member companies in the association: |
| Name of the President/Chairperson of the association: | Contact number and email address of the association: |

| | |
|--|---|
| Name of the companies from where participants came: 1. 2. 3. 4. 5. 6. 7. 8. | 9. 10. 11. 12. 13. 14. 15. 16. |
| Observation of interviewer: | |

Note for Interviewer: If additional space requires, please use notebook or blank sheet, but complete the tool.

1. What is the role of the association in Transport and Logistics?

2. Are you aware of Green Freight? Can you tell more about that?

3. What is your perception on Green Freight in terms of fuel efficiency?

4. Can you name some of the technologies which can reduce Carbon emissions? *(multiple options)*
(i) Vehicle activity and driving pattern improvement, (ii) Enhanced maintenance, (iii) Tire and wheel technologies and equipment, (iv) Aerodynamics technologies and equipment, (v) Idling control through technologies and behavior, (vi) Fuel, oil and lubricant improvement, (vii) Oil by-pass filtration system, (viii) Emissions control technologies, (ix) Fleet and engine modernization, (x) Others (specify below)

- 5. Does the association play any role to improve environmental performance of the member companies? If yes, what are they?**

- 6. Do you believe that adopting better technologies can improve environmental performances of the member companies? If yes, then how?**

- 7. What regulations or policies or standards does your government have regarding Green Freight?**

- 8. If you don't have any regulations/policies/standards in place, are you planning to advocate for such policies or regulations?**

- 9. What are the constraints in implementing Green Logistic Standards/Certification in this country and in the GMS?**

- 10. Is the government, association or any other agencies providing capacities building to promote green logistics practices in your country? If yes, who provides the training?**

- 11. Have you or any of your Ministries/Department received any training on Green Freight? If yes, from where and how many members?**

- 12. Considering our project's theme, what are the technology needs for developing and implementing green logistics standards?**

- 13. Considering our project's theme, what are the capacity building needs for developing and implementing green logistics standards?**

- 14. If there is training program on Green Freight, whom do you suggest for the training on green freight?**

- 15. Can you suggest topics that are essential for developing green freight training curriculum?**

- 16. How can you work with your member organization or companies to implement the policy and practices on Green Freight?**

- 17. Are you aware of any Green Mark certification (process) implemented in other area (industry) in (your) country?**

- 18. Do you think the idea of Green Freight is suitable for your country? If yes, how?**

- 19. How can you work with companies and your government in order to promote the policy on Green Freight?**

| | |
|--|---|
| Name of Ministry/Department: | Country: |
| Address: | Type of logistics business operations: (specify) |
| Name of respondent: | Designation of the respondent: |
| Contact number of the respondent: | Email address of the respondent: |
| Remarks/Observation of interviewer: | |

Note for Interviewer: If additional space requires, please use notebook or blank sheet, but complete the tool.

1. What roles your ministry/department play related to Transports and Logistics?

2. Are you aware of Green Freight?

3. Are there policies, regulations or measures in place in your country regarding Green Freight?
(Read put the identified areas as below and mark “yes”, “No” or “Not Sure”)

| Areas | Yes | No | Not Sure |
|--|-----|----|----------|
| Infrastructure | | | |
| Traffic management | | | |
| Vehicle size/weight restrictions | | | |
| Eco-driving training | | | |
| Inspection & maintenance | | | |
| Alternative fuels/vehicles | | | |
| Enhanced building codes | | | |
| Truck stops/parking outside metropolitan areas | | | |
| Relocation of large traffic generators | | | |
| Emission standard (EURO IV+) | | | |
| Low emission zones | | | |
| Congestion charging | | | |
| Anti-idling program | | | |
| Removing diesel subsidy | | | |
| Freight online exchanges | | | |
| Truck fuel economy standard | | | |

| | | | |
|--|--|--|--|
| Sustainable urban freight policy/plan | | | |
| Freight operators certification programs | | | |
| Developing green freight programs | | | |
| Aerodynamic, telematics and tyre technology | | | |

4. **If you don't have any regulations/policies/standards in place, are you planning to develop and implement such policies or regulations?**

5. **Considering the many ways in which Green Freight supports or influences the achievement of SDGs, is your government/department taking any special initiatives in this context? If yes, what are the initiatives being taken?**

6. **What are the constraints in implementing Green logistic Standards/certification in this country and in the GMS?**

7. **Is the Government or any other agencies providing capacities building to promote green logistics practices in your country?**

8. **Have you or any officials from your ministries/department received any training on Green Freight? If yes, who?**

9. **Considering our project's theme, what are the capacity building needs for developing and implementing green logistics standards?**

10. **If there is training program on Green Freight, whom do you suggest for the training on green**

freight?

11. Can you suggest topics that are essential for developing green freight training curriculum?

12. How can you work with related organization such as logistics association or companies to promote the policy and practices on Green Freight?

13. If your government decides to have a policy on Green Freight, do you prefer independent policy to joint policy with the other GMS?

14. Do you think the idea of Green Freight is suitable for your country? If yes, how?

7.2 Green Freight Policies, Programs and Measures in GMS

| Areas | Cambodia | Laos | Myanmar | Thailand | Vietnam |
|---|----------|------|---------|----------|---------|
| Infrastructure | | | | X | X |
| Traffic management | X | X | X | X | X |
| Vehicle size/weight restrictions | X | X | X | X | X |
| Eco-driving training | X | | X | X | X |
| Inspection & maintenance | X | X | X | X | X |
| Alternative fuels/vehicles | | | | | |
| Land use: | | | | | |
| a) Truck stops/parking outside metropolitan | X | | X | | X |

| | | | | | |
|---|---|--|---|---|---|
| areas | | | | | |
| Emission standard (EURO IV+) | | | | | |
| Congestion charging | | | | | |
| Anti-idling programs | | | | | |
| Removing diesel subsidy | | | | | |
| Freight online exchanges | | | | X | |
| Truck fuel economy standard | | | | | |
| Sustainable urban freight policy/plan | | | | | X |
| Freight operators certification programs | | | X | X | X |
| Developing green freight programs | | | | X | X |
| Aerodynamic, telematics and tyre technology | X | | | X | x |

7.3 Comparison of each group for key category

| | LSP | Association | Government |
|---|----------|----------------|------------|
| Understanding on green freight | Moderate | High Awareness | Moderate |
| Knowledge about green technology | Moderate | High Awareness | Moderate |
| Awareness on green freight certification/green mark | Low | Moderate | Low |
| Training on green freight | Moderate | High Awareness | Moderate |
| Policy and regulation on green freight | Low | Moderate | Moderate |

7.4 Basic Statistics of Interview and FGD

Summary on LSPs Survey

Country wise number of individual survey

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------|-----------|---------|---------------|--------------------|
| Valid | Cambodia | 5 | 25.0 | 25.0 | 25.0 |
| | Lao PDR | 1 | 5.0 | 5.0 | 30.0 |
| | Myanmar | 8 | 40.0 | 40.0 | 70.0 |
| | Thailand | 4 | 20.0 | 20.0 | 90.0 |
| | Vietnam | 2 | 10.0 | 10.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Descriptive Statistics

| | N | Minimum | Maximum | Mean |
|---|----|---------|---------|-------|
| Number of employees | 19 | 4 | 600 | 96.89 |
| Number of vehicles owned by the company | 19 | 0 | 250 | 28.05 |
| Number of old vehicles | 10 | 0 | 200 | 36.30 |
| Number of new vehicles | 10 | 0 | 50 | 9.50 |
| Valid N (listwise) | 10 | | | |

Type of logistic services provided by company

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------|-----------|---------|---------------|--------------------|
| Valid | Domestic | 5 | 25.0 | 26.3 | 26.3 |
| | Both | 14 | 70.0 | 73.7 | 100.0 |
| | Total | 19 | 95.0 | 100.0 | |
| Missing | System | 1 | 5.0 | | |
| Total | | 20 | 100.0 | | |

Driving truck in high speed can save fuel

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 9 | 45.0 | 45.0 | 45.0 |
| | No | 11 | 55.0 | 55.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Trucks with overload can save money

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 4 | 20.0 | 20.0 | 20.0 |
| | No | 16 | 80.0 | 80.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Type of engine in a typical heavy truck

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------------|-----------|---------|---------------|--------------------|
| Valid | Gasoline engine | 3 | 15.0 | 15.0 | 15.0 |
| | Diesel engine | 16 | 80.0 | 80.0 | 95.0 |
| | Electric engine | 1 | 5.0 | 5.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Know about Diesel Particulate Filter (DPF) device

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 9 | 45.0 | 45.0 | 45.0 |
| | No | 11 | 55.0 | 55.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Harmful chemical for people

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|--|--|-----------|---------|---------------|--------------------|
|--|--|-----------|---------|---------------|--------------------|

| | | | | | |
|-------|----------------------|----|-------|-------|-------|
| Valid | CO2 (Carbon Dioxide) | 19 | 95.0 | 95.0 | 95.0 |
| | CO (Carbon Monoxide) | 1 | 5.0 | 5.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Awareness on technologies which can reduce carbon emission (multiple responses)

| Awareness on technologies ^a | | Responses | | Percent of Cases |
|--|--|-----------|---------|------------------|
| | | N | Percent | |
| | Vehicle activity and driving pattern improvement | 15 | 15.5% | 88.2% |
| | Enhanced maintenance | 16 | 16.5% | 94.1% |
| | Tire and wheel technologies and equipment | 13 | 13.4% | 76.5% |
| | Aerodynamics technologies and equipment | 12 | 12.4% | 70.6% |
| | Idling control through technologies and behavior | 9 | 9.3% | 52.9% |
| | Fuel, oil and lubricant improvement | 15 | 15.5% | 88.2% |
| | Oil by-pass filtration system | 9 | 9.3% | 52.9% |
| | Emissions control technologies | 8 | 8.2% | 47.1% |
| Total | | 97 | 100.0% | 570.6% |

a. Dichotomy group tabulated at value 1.

Sources of information (used by the companies) on Green Freight technologies (multiple response)

| Sources of information on GF ^a | | Responses | | Percent of Cases |
|---|---|-----------|---------|------------------|
| | | N | Percent | |
| Sources of information on GF ^a | Internet | 6 | 13.6% | 50.0% |
| | Technology Database | 3 | 6.8% | 25.0% |
| | Print and Electronic Media | 4 | 9.1% | 33.3% |
| | Business Association | 5 | 11.4% | 41.7% |
| | Showroom of Truck Dealers/Companies | 2 | 4.5% | 16.7% |
| | Government Information Sources/websites | 5 | 11.4% | 41.7% |
| | Social Media | 3 | 6.8% | 25.0% |
| | Advertisement | 4 | 9.1% | 33.3% |
| | Seminar/Workshop/Training/Exhibition | 11 | 25.0% | 91.7% |
| | Others | 1 | 2.3% | 8.3% |
| Total | | 44 | 100.0% | 366.7% |

a. Dichotomy group tabulated at value 1.

Have software systems/methods to track carbon emissions in the company

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----|-----------|---------|---------------|--------------------|
| Valid | No | 20 | 100.0 | 100.0 | 100.0 |

Have plan to adopt software for tracking carbon emission in future

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|--|--|-----------|---------|---------------|--------------------|
|--|--|-----------|---------|---------------|--------------------|

| | | | | | |
|-------|-------|----|-------|-------|-------|
| Valid | Yes | 3 | 15.0 | 15.0 | 15.0 |
| | No | 17 | 85.0 | 85.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Willingness to use an integrated MIS system for tracking carbon emission, if offered by MI

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid | Yes | 11 | 55.0 | 84.6 | 84.6 |
| | No | 2 | 10.0 | 15.4 | 100.0 |
| | Total | 13 | 65.0 | 100.0 | |
| Missing | System | 7 | 35.0 | | |
| Total | | 20 | 100.0 | | |

Company follows any practice related to improving environmental performance

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 14 | 70.0 | 70.0 | 70.0 |
| | No | 6 | 30.0 | 30.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Believe in adopting better technologies to improve environmental performance

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid | Yes | 17 | 85.0 | 94.4 | 94.4 |
| | No | 1 | 5.0 | 5.6 | 100.0 |
| | Total | 18 | 90.0 | 100.0 | |
| Missing | System | 2 | 10.0 | | |

| | | | | | |
|-------|--|----|-------|--|--|
| Total | | 20 | 100.0 | | |
|-------|--|----|-------|--|--|

Heard about Green Mark certification

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 9 | 45.0 | 45.0 | 45.0 |
| | No | 11 | 55.0 | 55.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Believe on having Green Mark for the benefit of the company

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 16 | 80.0 | 80.0 | 80.0 |
| | No | 4 | 20.0 | 20.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Perception of having Green Mark certificate/logo in improving the image of the company

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 17 | 85.0 | 85.0 | 85.0 |
| | No | 3 | 15.0 | 15.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Awareness on implementation of Green Mark certification in other area/industry of the country

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 5 | 25.0 | 26.3 | 26.3 |
| | No | 14 | 70.0 | 73.7 | 100.0 |
| | Total | 19 | 95.0 | 100.0 | |

| | | | | |
|----------------|----|-------|--|--|
| Missing System | 1 | 5.0 | | |
| Total | 20 | 100.0 | | |

Participation of staffs of the company in any training on Green Freight

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 13 | 65.0 | 65.0 | 65.0 |
| | No | 7 | 35.0 | 35.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Awareness on government regulation on emissions of diesel vehicle

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 7 | 35.0 | 35.0 | 35.0 |
| | No | 13 | 65.0 | 65.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Awareness on government policy regarding Green Freight

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 4 | 20.0 | 20.0 | 20.0 |
| | No | 16 | 80.0 | 80.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Procurement from suppliers who maintain Environmental Management System (EMS)

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----|-----------|---------|---------------|--------------------|
| Valid | Yes | 2 | 10.0 | 10.0 | 10.0 |
| | No | 18 | 90.0 | 90.0 | 100.0 |

| | | | | |
|-------|----|-------|-------|--|
| Total | 20 | 100.0 | 100.0 | |
|-------|----|-------|-------|--|

Collaborate with international logistic companies to provide local services

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----|-----------|---------|---------------|--------------------|
| Valid | Yes | 20 | 100.0 | 100.0 | 100.0 |

Perception of introducing Green Logistics Standards in improving company's services

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 19 | 95.0 | 95.0 | 95.0 |
| | No | 1 | 5.0 | 5.0 | 100.0 |
| | Total | 20 | 100.0 | 100.0 | |

Foreseeing enhanced business opportunities through complying green logistics standards

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid | Yes | 13 | 65.0 | 68.4 | 68.4 |
| | No | 6 | 30.0 | 31.6 | 100.0 |
| | Total | 19 | 95.0 | 100.0 | |
| Missing | System | 1 | 5.0 | | |
| Total | | 20 | 100.0 | | |

Business performance since ASEAN Economic Community (2015)

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------------------|-----------|---------|---------------|--------------------|
| Valid | Moderately increased | 16 | 80.0 | 88.9 | 88.9 |
| | No improvement | 1 | 5.0 | 5.6 | 94.4 |

| | | | | | |
|---------|-----------|----|-------|-------|-------|
| | Decreased | 1 | 5.0 | 5.6 | 100.0 |
| | Total | 18 | 90.0 | 100.0 | |
| Missing | System | 2 | 10.0 | | |
| Total | | 20 | 100.0 | | |

Rating of company's service image related to environmental issues

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid | Fair | 7 | 35.0 | 38.9 | 38.9 |
| | Poor | 11 | 55.0 | 61.1 | 100.0 |
| | Total | 18 | 90.0 | 100.0 | |
| Missing | System | 2 | 10.0 | | |
| Total | | 20 | 100.0 | | |

Summary on FGD

Country wise number of FGDs conducted with Associations

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------|-----------|---------|---------------|--------------------|
| Valid | Cambodia | 1 | 11.1 | 11.1 | 11.1 |
| | Lao PDR | 1 | 11.1 | 11.1 | 22.2 |
| | Myanmar | 3 | 33.3 | 33.3 | 55.6 |
| | Thailand | 1 | 11.1 | 11.1 | 66.7 |
| | Vietnam | 3 | 33.3 | 33.3 | 100.0 |
| | Total | 9 | 100.0 | 100.0 | |

Awareness of technologies which can reduce carbon emissions (multiple response)

| Responses | Percent | Percent of Cases |
|-----------|---------|------------------|
|-----------|---------|------------------|

| | | | | |
|---|--|---------------|---------------|-------|
| Awareness of technologies reducing C ^a | Vehicle activity and driving pattern improvement | 4 | 8.7% | 44.4% |
| | Enhanced maintenance | 8 | 17.4% | 88.9% |
| | Tire and wheel technologies and equipment | 5 | 10.9% | 55.6% |
| | Aerodynamics technologies and equipment | 4 | 8.7% | 44.4% |
| | Idling control through technologies and behavior | 4 | 8.7% | 44.4% |
| | Fuel, oil and lubricant improvement | 7 | 15.2% | 77.8% |
| | Oil by-pass filtration system | 2 | 4.3% | 22.2% |
| | Emissions control technologies | 3 | 6.5% | 33.3% |
| | Fleet and engine modernization | 7 | 15.2% | 77.8% |
| | Others | 2 | 4.3% | 22.2% |
| Total | 46 | 100.0% | 511.1% | |

a. Dichotomy group tabulated at value 1.