

FINAL REPORT

FUELWOOD RESOURCE SURVEY

PROJECT CONTRACT AGREEMENT NR. 074/15/048/GFF

STARTING DATE: 27 JULY, 2015

DATE OF THE REPORT: 28.03. 2016

Prepared for

THE FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Prepared by

HYDRODYNAMICS AND GEOPHYSICAL SURVEY (PVT.) LIMITED

March, 2016

Conclusion and Recommendation

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Summary of Findings

The present study aims at looking into three key information gap areas, namely (a) existing fuelwood demand and supply, (b) availability, and (c) potential to increase the supply. The present study collected data both from secondary and primary sources. In order to fill the gaps in secondary data, a survey was conducted in collecting information on aforementioned three key information areas during the period of September 2015-Jan 2016. In each surveyed district, a semi-structured questionnaire was administered on 500 household units using a multistage sampling procedure. Land use types, identified at 1:10,000 maps - updated for 2015 for each district -, were used to stratify secondary sampling units in selecting households. The primary sampling units were the administrative districts. Similarly, information was gathered from a number of purposively selected business enterprises in such a way the selected business enterprises represent the industrial structure in each district. A number of focus group and key informant discussions were held at selected locations in each district primarily to identify the availability of fuelwood sources and resources as well as the potentials to increase fuelwood supply in a sustainable manner. This study employs simple descriptive methods in reporting and analyzing collected information. Among other techniques, mapping is widely used in showing spatial variation in key variables such as fuelwood production, availability and potential areas for fuelwood growing.

Following discussion provides a brief summary on key findings related to 11 districts in which surveys were administered. In each district, household survey covers around 500 household units and, on average, household size varies from 3 to 4 members. . A greater fraction of the labour force work as employees while unemployment ranges from 5-10 per cent of the district labour force. Moreover own account workers and unpaid family workers accounts for a sizable portion in labour force in each districts reflecting the size of the informal economy is substantial in surveying districts. In national level, informal employment accounts for 60-65 percent of total employed persons. Our survey results closely tally with this figure. Economically inactive persons accounts for around 35-40 percent of the total persons of 15-65 age group.

Survey results indicate, other than in few districts such as Nuwara Eliya, Puttlam, Kurunegala and Ratnapura, house holders live in houses that are relatively large (over 250 square feet) and constructed using modern construction materials (roof-tile/asbestos, wall-brick/cement

block, room-4-5, floor-tile/cement). These features reflect a sizable portion of households are economically powerful enough to use alternative energy sources which are relatively expensive. Similarly, these household level facilities make fuelwood less attractive as an energy source. As in other countries, fuelwood as an energy source in house hold level will be an inferior source for many households in near future. Implication of such trend is the availability of additional fuelwood, which currently consume at household level, for industrial use in future. Hence, it is important to have a mechanism in place in collecting unused fuelwood at household use for the purpose of industrial use. One of the draw backs of this initiative would be the suitability of fuelwood currently used by households for industrial use. As found in the survey, currently, households largely consume twigs and small branches that are harvested as residues. In contrast, many fuelwood using industries prefer to use logs and big branches.

In terms of landownership, size of the home garden of nearly 50-60 per cents of the households is less than one-fourth of average in different districts while nearly 80-90 per cent of the households own less than a half an acre. Nevertheless, size of the home garden is quite large in districts such as Puttalam and Kurunagala. In most districts, home gardens consist of trees which provide both timber and food, accounting nearly 70-85 per cent. The ownership on paddy and tree crop plantation is quite limited in the districts covered by the survey. It was observed that respondents in all districts are quite reluctant in providing information on number of different lands owned by the households partly due to suspicion over information collection. In terms of land ownership distribution, it is found that the land ownership is largely skewed towards male in all districts. This is true for all types of lands in different land use types. In contrast, females largely involve in clearing and maintaining home garden as well as tree crop plantation when the size of those are relatively small. This might be partly due to the fact that females are generally economically inactive and stay most of their time at home.

The three energy sources - fuelwood, gas, and electricity – emerged as main energy mix for cooking, hotwater preparation, and heating & drying purposes. It was evident that householders use those three energy sources as an energy mix to minimize the total costs (including opportunity cost). According to survey estimation, on average, a fuelwood using household unit collects around 60-100 Kg of fuelwood per month. However, there are cases where a large quantities (around 200-300 Kg) are collected by households in some land-use categories in different districts. In all districts, homegarden has become the main fuelwood

collecting source (50-65%) followed by tree crop plantations. In addition, householders collect fuelwood from reserved land and state forest whenever such sources are accessible and locate nearby. In terms of harvesting methods, in all districts, households tend to collect residues (fallen parts of trees and branches) followed by pruning and cutting. In terms of frequency of use, home garden and tree crop plantation are used more frequently than reserved lands and state forests. In terms of environmental impact of fuelwood use, this is a good tradition. However, quite strangely, in some districts households have employed pruning and cutting methods in collecting fuelwood from state forest and reserved lands. Moreover, in surveying districts, household members mostly collect twigs (65-80%) and branches (35-50%) while only a small fraction of households keep collecting logs (2-6%). This finding reflects the fact that household-level use of fuelwood does not compromise the availability of fuelwood for industrial use. In other words, an increase in industrial fuelwood demand may not adversely affect the availability of fuelwood for household use. It is also found that a sizable portion of households have stopped using fuelwood in recent years due to number of reasons. Among those reasons, difficulties in accessing fuelwood, dirtiness due to use of fuelwood and improvement in purchasing power have been prominent factors in shifting to other energy sources.

In terms of the purpose of fuelwood collection, it is quite clear that the collection is mainly for household level cooking purpose. In all districts, covered by the survey, nearly 90-95 per cent of total collection is used for cooking purpose. Fuelwood collection for selling and home-based industrial use remain relatively low. This reflects the fact that fuelwood collection is not a profitable economic activity for many given the low price per Kg of fuelwood in the market. Hence, a large quantity of fuelwood, especially in rural and semi-urban areas, is un-utilized or under-utilized. If a proper mechanism is put in place, along with reasonably a higher price, it may be possible to encourage, at least unemployed and/or economically inactive household members, to engage in the fuelwood industry. Ranging from 10 per cent to 30 per cent of total fuelwood using households meet their fuelwood need through the market. Some households, even located in remote areas, buy fuelwood due to difficulties in accessing to fuelwood sources due to bad weather conditions, illness, and difficulties in transporting. In general, fuelwood buying is relatively high in urban and semi-urban in all districts. However, in each district, more than 50% of the fuelwood buyers are in built up areas. Other than in two districts, namely Kurunagala and Kegalle, access to fuelwood has become relatively difficult during last few years. In terms of land use types,

access difficulty is more pronounced in built-up areas in most districts. In almost all districts, households prefer to buy small bundle, small branches, cut & split whereas demand for logs, roots, saw dust remain relatively weak. In most cases, householders buy these items at nearby vendors or fuelwood sellers arrange home delivery. On average, fuelwood purchasing households spend around Rs.800-1000 per month on fuelwood.

In terms of composition of tree in homegardens, Coconut, Jack, Mango, Rambutan, and Mahogani, could mostly be seen in most districts while Tekka, Kohomba, and Siyambala could be found in districts such as Puttalm and Kurunagala. During the survey, it was observed that 5-35 percent of the households are willing to grow fuelwood if there is a sufficient demand. Out of those who willing to grow fuelwood have mentioned that they are willing to grow economic crop such as Rubber, Coconut, Cinnamon, Rambutan, Gliricedia and Alstonia (Ginikooru gas). Mostly highlighted reason for not willing to grow fuelwood is the lack of or limited land availability and labour scarcity.

Business enterprise survey revealed that many medium and large-scale users, such as tea and Rubber factories depend on Rubber wood amidst growing demand for Rubber as timber source in recent years. As a result, many large scale users are increasingly using other fuelwood species such as Glisiria and saw dust. Small scale users, such a bakeries and road-side eating houses depend on left-over from rubber as well as off-cuts from saw mills and large scale timber users operating in the district. In each district, all business enterprises recognized the increase in prices owing to increasing scarcity in fuelwood due to increasing demand and limited supply. As a result, small and medium size business enterprises have already switched into other energy sources such as electricity and gas while some other are planning do so in near future.

Focus group and key informant discussions revealed a number of interesting facts on the current operations as well as potential from promoting fuelwood growing. It is widely recognized that pressure on environment is very high if present demand and supply patterns keep continuing without a policy intervention in increasing supply and/or limiting demand. Moreover, participants pointed out the existing laws preventing fuelwood trade, therefore, formalizing fuelwood market need several key changes into existing laws and regulations. In terms of promoting fuelwood planting, the participants highlighted several failed attempts in the past and cast skepticism over such project unless government takes a policy decision in promoting energy crop plantation. The participants highlighted the possibility of promoting

many species. Results suggest that it may not be possible to promote a crop dedicated for fuelwood. In other words, results in several districts suggest energy crops should be promoted along with other economic crops or crops should be promoted whose by products (residues) enhance fuelwood supply capacity. Our secondary data revealed that there are potential lands as well as other arrangements to promote fuelwood growing. One should be cautious in interpreting available unutilized or underutilized lands as potential fuelwood growing areas since many such areas might be left ideal due to various reasons. Hence, it is required to carry out a comprehensive study on identifying under and unutilized lands that could be effectively utilized or promoting economic tree crops including plants intending to utilized as fuelwood. A number of government officials who participated in focused group discussions highlighted the need for planting trees which could satisfied fuelwood needs in industrial sector. This is because, reserved lands, estate forests in several districts have been under threat of illegal tree felling to meet growing demand for timber and industrial fuelwood. In this context, it is imperative to encourage government to take a policy stance before launching a project to promote fuelwood growing. This stance was repeatedly maintained by both focused group participants and key informants in all districts covered by the survey. Equally important area for fuelwood growing is the greater awareness campaign on future prices, marketing channels, buyers, sustainability, benefits, and different growing models among general public and public officials engaging with grass-root level development and administrative activities. At present, people do not give a serious thought on foulwood as an energy source though they depend on it at household level. Although the secondary data analysis highlights the availability of a large quantity of fuelwood in districts covered by the survey. It is important to mention that a sizable amount of that channel into timber thereby facing a severe shortage of fuelwood provided a sizable increasing industrial fuelwood demand. Any significant increasing industrial fuelwood demand at present scenario would shoot up prices resulting negative pressure on environment. This process has already been taking place in Puttlam and kurunegala districts. In conclusion, it is imperative to recognize that the findings of this report must be treated as suggestive and a detailed and rigorous analyses should be conducted in identifying important policy implications and recommendations. The databases developed in this research project are rich in capturing many facets of ‘fuelwood economy’ thereby providing a foundation for such analyses.

Recommendations on Addressing Supply-Side Bottlenecks

1. According to many participants, it is imperative that government take a policy stance on fuelwood growing and such policy to be clear consistent and continuous.
2. It is also found a number of attempts have been made in the past to grow fuelwood. A fresh attempt is viewed with some suspicion, hence, it is highlighted that either government or respected private plantation companies/industries should come forward and give the necessary confidence to planters. Some even suggest to have a guaranteed price and other subsidies so that people tend to view that such plantation is important.
3. Relative profitability plays a key role in promoting fuelwood growing. At present, a sizable amount of fuelwood is left without collecting mainly due to low profitability (high opportunity cost) in engaging in collecting. On the other hand, leftovers from timber collections do not come to market due to various legal barriers. According to the participants, these should be addressed simultaneously.
4. Encouraging plantation companies to initiate fuelwood growing : Historically, it could be observed that plantation companies have played a key role in not just promoting certain crops, but also creating physical infrastructure and trained required human resources for those sectors. Involvement of plantation companies certainly increase the confidence of household producers on price, market, profitability. According to some unpublished sources, at present, nearly 30 percent of lands in major plantations remain un or underutilized due to various reasons.
5. Household survey revealed householders, ranging from 5-35 percent in different districts, are willing to engage in fuelwood growing provided such economic activity is relatively profitable and sustainable. Hence, such house holders could be encourage to engage in fuelwood growing. It is recommended to carry out an in depth study in identifying and recommending suitable fuelwood growing models and incentive packages before such an initiative is launched. Moreover it could be important evaluate the value of fuelwood as a resource given emphasis on social and environmental benefits of fuelwood growing as a venture. Identification of the willingness to accept and production of green fuelwood through certification together

with their determinants would be helpful in the policy context and decision making for promoting fuelwood as a source of renewable energy.

6. Comprehensive awareness programme: A number of key informants and focus group participants highlighted the fact that it is required to carry out specific awareness programme mainly highlighting the economic benefits of fuelwood plantation if initiatives are taken to encourage small holders to grow fuelwood in home garden and tree crops.
7. A number of key informants highlighted the fact that it is possible to find some un or underutilized lands (small plots) and hedges available for fuelwood growing after carrying out awareness campaign and giving some funds available at the beginning.
8. The discussions revealed that forest plantation and fuelwood growing could be carried out hand in hand if relevant authorities could be encourage to involve in such projects. It is recommended to initiate a dialogue with relevant stake holders to carry out the feasibility of such an initiative.
9. The surveys found that there are number of species which could be promoted for growing. In districts such as Kalutara, Galle, Ratnapura, Matara and Matale Gliricidia could be promoted as shade trees and or trees in hedges. Similarly tekka and kadju could be promoted in districts such as Puttlam and Kurunegala. Coconut, rubber and other species could be promoted in most districts. It was found that some fuelwood users hide the fact that Gliricidia is a good fuelwood. If, Gliricidia is given due price, possibility is high that small tea and pepper planters produce considerable amount of production (They can cut old trees and replant).
10. A number of key informant highlighted the fact that householders may have reservations on dedicated fuelwood growing models, rather fuelwood growing should be promoted along with other tree crops where growers receive an additional income in involving fuelwood growing.
11. The prevailing price for fuelwood to be used for industrial sector is far too low to attract fuelwood cultivation as an economically viable activity. In respect of crops like Gliricidia, this short coming could be resolved by developing a market for Gliricidia

foliage to be used as cattle feed and or organic fertilizer. This approach is in conformity with the following two major policy directions being implemented by the government: (a) Self-sufficiency in milk production. (b) Promotion of organic agriculture. It is therefore strongly recommended that fuelwood cultivation should be integrated with the marketing of foliage as a cattle feed and or organic fertilizer.