June 18, 2012

Draft Report

Green Jobs Asia Project-National Consultancy in Sri Lanka for Supplementary Data Collection
ILO Service contract No. 2012-4052418

1. Introduction

The overall objective of the project of the Green Jobs Asia project is to promote employment in the waste management sector that is both decent[1] and environment friendly.

The tasks assigned in the subject contract are to work in close coordination with the ILO project management and:

- Engage with the Waste Management Authority (WMA) and other relevant local and central government bodies (including email and phone correspondence and, where necessary, site visits) to collect and validate data on waste volumes, waste composition, locations of waste generation and disposal, and public employment within the sector. This may include the oorganization and supervision of site-level waste audits at selected sites in coordination with the WMA.
- Engage with selected value chain actors (including email and phone correspondence and, where necessary, site visits) to collect and validate data on the existing status of the sector, including information on volumes and values of waste handled, employment levels, enterprise and sector-level financial data, and environmental and Decent Work deficits.
- Other field-level data gathering and verification activities as required.

2. Method

A preliminary data collection by ILO is summarized in a report titled "Value Chain Development in Solid Waste Management: Promoting Green Jobs[2] in Sri Lanka, 2011". Although the report outlines a value chain that maps out collection and processing steps by actors outside of the local we felt that it was both more useful and practical to limit the scope of the data collection to 48 local authorities in the Western Province.

To initiate the project we consulted with the Waste Management Authority (WMA) of the Western Province. They cited a data collection effort done by them as per request from the National solid Waste Support Center (NSWSC) at the Ministry for Local government and Provincial Councils. After examining the lengthy questionnaire used by the NSWSC we felt that a simpler questionnaire with a value-chain focus was needed for the tasks at hand. The director general of the WMA kindly provided us with a supporting letter for the purpose.

Present survey is based on the premise that increased value addition to waste generated in the country will lead to decent work in green jobs for more people.

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[1] Decent work is defined by ILO as "the availability of employment in conditions of freedom, equity, human security and dignity". Decent Work involves opportunities for work that is productive and delivers (a) a fair income (b) security in the workplace and social protection for families (c) better prospects for personal development and social integration (d) freedom for people to express their concerns, organize and participate in the decisions that affect their lives and (e) equality of opportunity and treatment for all women and men".

[2] Green jobs is broadly defined in the report as "direct employment in economic sectors and activities which reduces their net environmental impact and ultimately reduces it to levels that are environmentally sustainable, green jobs help to reduce consumption of energy and raw materials, de-carbonize the economy, protect and restore ecosystems and biodiversity and minimize the production of waste and pollution".

After a preliminary survey of 3- local authorities, the following steps were identified as value chains as found in local authorities. The steps are further abbreviated and categorized as follows:

i.	COLLECT & TRANSPORT[3]:	1-Collection-Mixed 2-Collection-Bio 3-Collection-Non-Bio
ii.	RECYCLE[4]:	4-Recycle-Bio-Compost 5-Recycle-Bio-Gas; 6-Recycle-Non-Bio
iii.	DISPOSE RESIDUES:	7-Dump (Although disposal is not a value addition per se it is included here because of its importance in the sequence of activities by a local authority.)

A set of 27+ questions regarding Basics of solid waste management and another set of 35 questions regarding value chain specific question were prepared by the consultant, with the support of the field officer Ms. Nirosha Nissanka. The questions were modified as the data collection progressed. The finalized questions are presented here along with the count, average, minimum and maximum values for the data set (Appendices 1 and 2).

Since we felt that a questionnaire can sometimes intimidate personnel in local government, it was decided that the field officer would visit each local authority and make notes while informally asking questions that are relevant to the questionnaire. After the visit the data were entered into an Excel spreadsheet prepared for the purpose. The approach worked out very well and full set of data included in the excel file labeled Data_Gamage2ILO_2012_Jun20.xlx.

The data in the spreadsheet are organized into three categories

- Basic Waste Management
  - Demographics such population and area of each local authority
  - Occurrence and success of (a) composting of bio-waste and recycling of non-bio waste
  - Observations on management by officers and leadership by political authorities
  - Amount waste collected (As reported by solid waste manager at each LA and observed by field officer)
  - Locations of waste generation and waste disposal
- Value Chain Information (information specific to each of the seven steps in the VC)
  - Amount waste processed and amount of output
  - Number of laborers employed
  - Remuneration for laborers
  - Working conditions for laborers, WC (rating from 1-10)
  - ES or Environmental stewardship, ES (rating from 1-10 for the management) Management, MN (rating from 1-10)
- Waste Composition

[3] Bio: bio-degradable waste including both short term and long-term biodegradable; Non-Bio: Non-bio-degradadable waste such as Polythene, Plastic, Glass, Metal, Paper, Cardboard and Other

[4] To recycle means to produce compost or bio gas from biodegradables and retrieve, sort and bale non-biodegradables. Local authorities elsewhere have begin to further process non-biodegradables by pelleting them but not in the Western Province.

During the March 1, 2012 to June 15, 2012 period, the field officer visited 36 local authorities in person and collected data over the phone from 7, and made further phone calls to clarify the data. Data for five LAs –i.e. Dehiwela-Mt. Lavinia MC, Kesbewa UC, Moratuwa MC, Panadura PS and Panadura UC—are pending.

The Solid waste manager from Balangoda UC was interviewed to get data for that local authority, in order that we may use their data to benchmark the performance of similar local authorities in the Western Province.

Waste composition data from a 2010 study by LIRNEasia are collated and presented in the accompanying dataset. This set includes data for 7 Las from the Western Province for a total of 39 LAs. The 39 LAs consist of 5 MCs, 10 UCs and 14 PSs.

3. Results and discussions

In order to make the data more meaningful we clustered LAS according to the land area under their jurisdiction.

	Definition	#	Benchmark
Cluster A	All the Pradeshiya Sabhas with land area more than 60 Sq Km (except Biyagama PS[5])	22	Bulthasinhala PS
Cluster B	All the UCs, and PS's with land area less than or equal to 60 Sq Km, plus Biyagama PS	19	Balangoda UC
Cluster C	All the MCs in the Western Province	7	-
All Local authorities in the Western Province		48	-

The values for the benchmark institutions were used as the maximum value addition possible for the other institutions in the sector. We also found it more useful to focus on the amount of waste collected and the final output as compost, bio-gas or recyclable non-biodegradable waste as a group. At this stage of waste management in the Western Province where most LAS are performing poorly (see later), we believe it is unnecessary to go into details about the composition of non-biodegradable waste and the processing of those as separate categories. This benchmark approach proved to be much more practical than attempting to derive a theoretical value for the amount of recyclable waste produced in each LA jurisdiction.[6] The benchmarking approach also made the waste composition data redundant.

3.1. Current Levels of Value Addition

Current levels of value addition are measured in terms of three major steps in a value chain-namely, Collection and Transport, Processing, and Selling. Since selling of retrieved or processed items is a thorny issue for many local authorities we address that in a separate section.

WASTE COLLECTION:

Cluster A: Collection and transportation of waste can be considered a value addition to waste generated in an LA jurisdiction if there is a process in place to recycle the collected waste. The Pradeshiya Sabhas in cluster A reported collecting 1-2 MT per month pr 1000 with only Homagama PS reporting 3MT per month per 1000. Since better managed Sabhas like Bulthsinhala PS too

[5] Biyagama PS is a border line case but fits better into UC category because of its higher solid waste collection per capita.

[6] The literature does not give sufficient information to calculate the wate generated in a given local authority jurisdiction using demographic information such as population and income

reported only 2MT per month per 1000, we assume that measure to be a reasonable benchmark for waste collection for local authorities in cluster A (or the set of Pradeshiya Sabhas in the Western Province with land area less than 60 sq. km). That means that there is essentially no value addition gap in Cluster A in terms of collection of waste (Line 1, Table)

Cluster B: Balangoda Urban Council, which has an efficiently managed collection system in place, collects 682 MT of waste for a population of 35,870 (i.e. 19 MT per month per 1000). Using Balangoda as a benchmark institution for Cluster B (or UCS or Pradeshiya Sabhas with a land area less than 60 Sq Km) we set our performance target or benchmark for waste collection by UCs at 19 MT per month per 1000 in the population. But the provincial average for Cluster B is only 7 MT per month per 1000, showing a value addition gap of 63% or 12MT per month 1000 on average (Line 2, Table) or

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TABLE: Current Levels of Value Addition per LA in the Western Province compared to Selected Benchmarks

	Benchmark Value	Provincial Average	Value addition S A Percent Of Optimum
Amount waste collected per month per capita*1000, Cluster A	2 MT	2 MT	100%
Amount waste collected per month per capita*1000, Cluster B	19 MT	7 MT	37%
Num Institutions producing compost from bio-waste	48	18	38%
Num Institutions recycling non-bio waste	48	20	18%
Amount Compost per month per 1000 MT of Waste	103 MT	6 MT	6%
Amount Non-Bio recyclables per month per 1000 MT of Waste	16	2	13%

3.1.1. Compost Production:

Ideally, all 48 local authorities in the Western Province should be turning their bio-degradable waste into compost or bio-gas. In practice, only 18 engage in composting at least some of the waste generated in the LA area.[7] The performance gap for the province is 30 institutions of 63% of all institutions. As regards the amount of compost produced, Balangoda UC reports producing 70 MT from 682 MT of waste collected per month or 103 MT per 1000 MT of waste collected. In contrast, the LAs in the Western province produced only 37 MT of compost for a waste collection of 4825 MT or 6.0 MT per 1000 MT of waste. The value-addition in compost making as a percent of the optimum is only 6%.

3.1.2. Retrieving recyclables

Ideally, all 48 local authorities in the Western Province should be retrieving recyclables from their non-bio-degradable waste but only 20 do so, leading to a value addition gap of 28 institutions[7]. Balangoda UC retrieves 10 MT of recyclable non-biodegradable for 682 MT of waste collected per month for a 16 MT per 1000 MT of waste. In contrast, the LAs in the Western province retrieved only 15 MT of recyclables from 4825 MT of waste collected for a retrieval rate of only 2 MT per month per 1000 MT of waste. The value-addition in retrieving non-biodegradables from waste as a percent of the optimum is only 13%.

3.1.3. Selling recyclables

[7] Some institutions send their waste to central dumping sites maintained by WMA where composting or retrieving of recyclables take place. This might actually be a more viable approach for some or all of the LAs. We have not taken this aspect into consideration in the present study,

Although 50% of the institutions surveyed did some form of non-bio recycling only 30% found markets for their products.

3.2. Value Addition and Decent Work

Value addition is a necessary condition for green jobs and putting money in people's hands. Our survey shows that if political leaders and/or managers in local authorities take an effort to turn at least some of their waste into cash by recycling, they can provide better working conditions for their workers. In fact almost all local authorities that recycled at least some of their waste provided some form of additional benefits such as decent work quarters, tea, milk or even meals. Some authorities set –aside 25% or so of the earnings for worker welfare, taking them on paid-excursions or giving them festival allowances.

Worker remuneration did not vary from Collection to Recycling (Appendix, Lines 39-45). Since none of the local authorities had properly maintained dumping sites the working conditions were worst at the dumping stage of solid waste management. Working conditions for laborers too did not vary significantly from an average of 6, except for those who worked in dumping sites. (Appendix, Lines 46-52). The average rating for working conditions at dumping was 5 while other ratings were at 6 out of 10.

3.3. Obstacles to Value Addition

Why aren't the LAS moving to more value addition? The 2011 ILO report on Value-chains cites cost of collection and lack of source separation. We feel that the lack of a political leadership is the main cause. According to our observations 76% of managers can be considered competent and committed or have the potential to be so. In contrast only 54% of the political leadership seemed disinterested or even counter-productive.

3.4. Approaches to Encourage Value Addition by LAs

In order to encourage more value addition to waste by local authorities it is essential to impress upon the political leaders the critical role they play in giving vision and leadership to solid waste management in their jurisdictions. We see two ways of achieving this:

- Empower managers in the 48 local authorities by helping them to network with their peers to improve their knowledge and learn how to work with the political leadership
- Empower citizen's groups to work with the political leadership to improve the working conditions of solid waste workers while improving the SWM practices in their local authorities.

3.5. Suggestions for further work

The TOR concerned the compilation of a dataset. The analysis is presented here in draft form. Both the data and the analysis need to be validated through consultations with the leadership and the zonal managers of the Waste Management Authority.

APPENDIX 1

Descriptive Statistics for the Data Collected on 48 Local authorities in the Western Province
March 1, 2012-June 15, 2012-06-18 (Excludes the Colombo MC because of its outlier nature)

	VARIABLE	Count	Min	Avg	Max
1	Ongoing composting (0/1)?	43	0.42	**0.42**	1
2	Current Success of composting (1,5,10)	43	0.26	**2.60**	10
3	Ongoing non-bio collection (0/1)?	40	0.50	**0.50**	1
4	Current Success of non-bio selling (1,5,10)	40	0.38	**3.83**	10
5	Manager competence, commitment or potential (0/1)	42	0.76	**0.76**	1
6	Political Leadership (0/1)?	41	0.54	**0.54**	1
7	Additional income for workers (0/1)?	36	0.08	**0.08**	1
8	Some welfare for workers (0/1)?	33	0.30	**0.30**	1
9	open burning	38	0.29	**0.29**	1
10	final dumping close to water bodies	38	0.53	**0.53**	1
11	Area, Square KM	45	2	**79**	341
12	Population	45	7,793	**111,128**	210,000
13	Collection, Mixed, MT per month	42	-	**537**	2,100
14	Collection per Capita	45	-	**0.1**	36
15	Baled/sold, Compost, MT per month	16	-	**2.9**	10
16	Baled/sold, Compost, MT perm per 1000MT waste	16		**5.5**	
17	Baled/Sold, Non-bio, MT per month	21	0	**1.2**	4
18	Baled/Sold, Non-bio, MT perm per 1000 MT Waste	21	0	**2.3**	4
19	Number of households that received compost bins	24	100	**1,313**	6,000
20	Collection, Mixed, MT per Day	41	1	**19**	70
21	Collection, Bio, MT per month	13	-	**53**	360
22	Collection, Non-bio, MT per month	24	0	**1**	5
23	Used for Bio-gas, MT per month	5	-	**6**	30
24	Disposed, MT per day	40	0	**17**	70
25	Volume Disposed, MT per month	40	9	**535**	2,100
26	Number of Supervisors	40	1	**3**	20
27	Number of laborers	40	8	**48**	155
28	Number females	32	-	**6**	27
29	Percent laborers, Female	31	-	**13**	77
30	Percent laborers, permanent	38	2	**64**	100
31	Remuneration, Casual laborers, per day	38	390	**541**	700
32	Number of laborers involved in 1-Collect-Mixed	36	5	**40**	145
33	Number of laborers involved in 2-Collect-Bio	7	1	**2**	4
34	Number of laborers involved in 3-Collect-non-Bio	14	1	**3**	6
35	Number of laborers involved in 4-Recycle-Compost	16	3	**10**	18
36	Number of laborers involved in 5-Recycle-Bio-Gas	2	1	**-**	1
37	Number of laborers involved in 6-Collect-non-Bio	1	3	**-**	3
38	Number of laborers involved in 7-dumping	0	-	**-**	-
39	Monthly Remuneration for laborers involved in 1-Collect-Mixed	19	11,000	**16,134**	17,580
40	Monthly Remuneration for laborers involved in 2-Collect-Bio	5	11,000	**13,960**	16,800
41	Monthly Remuneration for laborers involved in 3-Collect-non-Bio	11	11,000	**14,283**	18,200

42	Monthly Remuneration for laborers involved in 4-Recycle-Compost	15	10,516	**14,929**	24,000
43	Monthly Remuneration for laborers involved in 5-Recycle-Non-Bio	3	14,400	**-**	29,400
44	Monthly Remuneration for laborers involved in 6-Collect-non-Bio	2	11,000	**-**	11,000
45	Monthly Remuneration for laborers involved in 7-dumping	2	11,000	**-**	11,000
46	Working Conditions for laborers in 1-Collection-Mixed	39	3	**6**	7
47	Working Conditions for laborers in 2-Collection-Bio	19	-	**4**	7
48	Working Conditions for laborers in 3-Collection-Non-Bio	27	-	**4**	7
49	Working Conditions for laborers in 4-Recycle-Bio-Compost	16	4	**6**	7
50	Working Conditions for laborers in 5-Recycle-Bio-Gas	2	6	**6**	7
51	Working Conditions for laborers in 6-Recycle-Non-Bio	9	4	**6**	7
52	Working Conditions for laborers in 7-Dumping	38	2	**4**	7
53	Environmental Stewardship of management in 1-Collection-Mixed	39	1	**5**	8
54	Environmental Stewardship of management in 2-Collection-Bio	13	4	**5**	8
55	Environmental Stewardship of management in 3-Collection-Non-Bio	18	4	**6**	8
56	Environmental Stewardship of management in 4-Recycle-Bio-Compost	16	5	**6**	8
57	Environmental Stewardship of management in 5-Recycle-Bio-Gas	2	7	**7**	7
58	Environmental Stewardship of management in 6-Recycle-Non-Bio	6	6	**7**	9
59	Environmental Stewardship of management in 7-Dumping	39	1	**4**	7
60	Management practices in 1-Collection-Mixed	39	3	**5**	7
61	Management practices in 2-Collection-Bio	17	4	**5**	6
62	Management practices in 3-Collection-Non-Bio	27	4	**5**	10
63	Management practices in 4-Recycle-Bio-Compost	22	4	**5**	7
64	Management practices in 5-Recycle-Bio-Gas	8	4	**5**	7
65	Management practices in 6-Recycle-Non-Bio	10	4	**5**	7
66	Management practices in 7-Dumping	38	3	**4**	6