



## Summary Assessment

# Background information for Kurunegala city, Sri Lanka

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## Introduction

This summary is one in a series written by the Wastewater Agriculture and Sanitation for Poverty Alleviation in Asia (WASPA Asia) project. The project aims to develop and test solutions for sanitation and wastewater management, to reduce the risks from wastewater use in agriculture. The approach involves the development of stakeholder coalitions at town and national level, called Learning Alliances, which will bring together the main stakeholders into a participatory process through which actions will be planned and implemented.

The WASPA Asia project is funded primarily under the EU Asia Pro Eco II Programme of the European Commission. It is being undertaken in Sri Lanka and Bangladesh by the International Water Management Institute (IWMI) and COSI in Sri Lanka; the International Water and Sanitation Centre in the Netherlands; NGO Forum for Drinking Water Supply and Sanitation in Bangladesh; and the Stockholm Environment Institute (SEI) in Sweden.

## Main Findings

This report provides general information on Kurunegala which is felt to be of relevance to the WASPA project. It identifies what additional information is required if the project is to effectively develop and implement action plans to address wastewater, agriculture and sanitation.

The information covers: demographics; water resources and their quality; sanitation infrastructure; and agriculture.

## Kurunegala District

Kurunegala District, which is situated in North Western Province, is comprised of 30 Divisional Secretariats (DS) and 47 *Grama Niladhari Divisions* (GNDs), of which 12 are within the Municipal area.

## Climate and Geography

Kurunegala District spans part of the dry zone and the intermediate zone of Sri Lanka. The agricultural areas covered in this study are within the area defined as intermediate zone low country 1. Most of the plots that are irrigated with clean water have sandy or mixed soil but in the wastewater area around 60% of plots have highly sandy soil and 40% have clayey soils.

## Water Resources

Currently the city's water demand is calculated to be 7000 m<sup>3</sup>/day, of which 5000-6000 m<sup>3</sup>/day is provided by the Deduru Oya, although this will be increased to 11000 m<sup>3</sup>/day in future with the city expansion (Assistant General Manager, NWSDB 14.09.06). It is commonly believed that Kurunegala Wewa is also a drinking water source but it is only used in emergencies. There are however a number of projects working to reduce pollution in the wewa.

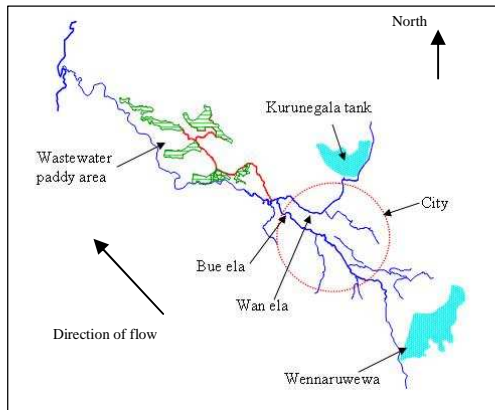


Irrigation water is provided by Wennaru Wewa via Beu Ela. It has a capacity of 1.8 million m<sup>3</sup>.

The Beu Ela and another stream, the Wan Ela, together drain about 78% of the town area of

Kurunegala. These streams flow some 6 km via residential, commercial and cultivated areas, collecting untreated sewage (although officially the drains only receive storm water) and sullage that is discharged into the canals; they join within the city and flow on to the Maguru Oya, just outside the western boundary of the Municipality (NWSDB 2005; ECL 2000). There is an *anicut* located at Wilgoda after the confluence of the drains, and this is operated to provide irrigation water to 93 ha to the east of the city. There is evidence to suggest that the closing of the *anicut* to retain irrigation water results in stagnation and some localized flooding, including flooding of residential areas, and may present a health and environmental hazard (ECL 2000).

#### Schematic diagram of the study site



#### Socio-economic Conditions

The population of the District is just over 1.5 million and Kurunegala City has a population of 28571. The labour force participation rate in Kurunegala District was found to be around 51% with almost twice as many men as women (DCS 2004; DCS 2003). Figures for the DS Division were not available. The literacy rate of the population over 10 years of age in Kurunegala District is 92.7% (<http://www.statistics.gov.lk>).

Poverty levels can be calculated using the headcount ratio, defined as “the percentage of the population whose monthly per capita total consumption expenditure falls below the district level poverty line” (DCS 2004). The official poverty line for Sri Lanka in 2002 was Rs. 1423 and the headcount ratio for the District is around the national average at 25%

with a much lower percentage in Kurunegala DS Division.

#### Water Supply, Sanitation and Drainage

In Kurunegala District 43% of households have protected wells within their premises, 35% have protected wells outside their premises and 13% have unprotected wells. Only 4% have mainline water supplies. The percentage of households in Kurunegala DS Division with mainline supplies is higher than the District at 14%: a further 52% and 25% have protected wells respectively within and outside their premises. In the GNDs selected for the project 54% have protected wells and 40% have mainline connections; although this is much lower in the agriculture areas and Wilgoda Line where a total of 15 households have access to mainline supplies (Nishanka et al. 2006).

According to the census 70% of the households in Kurunegala District have access to improved sanitation and 86% to improved water sources, compared to the national averages of 78% and 82% respectively.

#### Access to improved sanitation and water sources in 2001

Administrative level	Households (%)	
	Sanitation	Water sources
Sri Lanka	67.5	82.0
Urban	77.8	95.9
Rural	67.5	81.2
NWP	69.6	87.9
Kurunegala District	70.5	86.2

Source: DCS, 2005

According to the 2001 Census, 93% of households in Kurunegala District have access to some form of sanitation facilities based on the sum of all available toilet facilities including: those exclusively for the household (79%); those sharing a toilet (8%); and those using a public toilet (6%). Another 6% did not use a toilet and 1% did not give a response.

It is estimated that the wastewater generated by Kurunegala city is 4620 m<sup>3</sup>/day, of which 68% is generated by households and 29% by industries (Ranaweera 2005).

Kurunegala City also generates more than 50 tonnes of solid waste per day (Kurunegala MC 2004). Although most of this is collected by Kurunegala MC and dumped at Sundarapola, a small but un-quantified proportion ends up in the drains. This exacerbates the water logging problems in Wilgoda anicut by impeding the flow of the water.

The Beu Ela directly receives un-treated hospital waste because the treatment plant at the Kurunegala Teaching Hospital is no longer functioning (NWSDB 2005). Analysis of waste entering the Beu Ela from the hospital showed that: the pH was below the national discharge quality standards on two of the three sampling occasions; that BOD<sub>5</sub> was 10-20 times the standard at 328-667 mg l<sup>-1</sup>; total phosphate was as much as 40 times the limit of 2.0 mg l<sup>-1</sup>; and both total coliform and faecal coliform counts were more than 500 per 100 ml (NWSDB 2005). The NWSDB Initial Environmental Examination Report in Respect of Greater Kurunegala Sewerage Project (2005) concludes that the surface water of Beu Ela is extremely polluted and has identified the Kurunegala Teaching Hospital as a significant source of pollution.

**Land Utilization, Agriculture and Marketing**

In Kurunegala District 272072 ha of land are cultivated, of which 133635 ha are under coconut cultivation and 62516 ha are under paddy cultivation. These lands are sometimes cultivated with paddy in *maha* season and other field crops such as chillies, mung bean and ginger in *yala* season, especially if they are raid-fed.

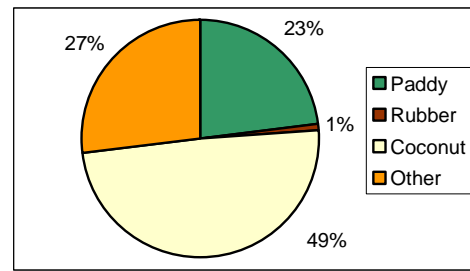


Tenure arrangements depend on the use to which the land is being put, for example paddy, *chena* and home gardens; and the

involvement of landlords in the supply of inputs.

The total area cultivated under Wennaru Wewa is 460 acres of which 70 acres are within the project area as the project works in three GN Divisions: Kaudawatta, Dematagahapelassa and Asweduma. Within the project area there are a total of 188 farmers of which 145 use this water to cultivate 56 ha and the remaining farmers use water from the nearby Thithhawella irrigation scheme. The land area cultivated by each of the households varies from as little as 0.06 ha to 1.39 ha. The majority of households (63%) have between 0.19 ha and 0.31 ha.

**Distribution of crop by area in Kurunegala District**



Source: DCS, 2002

In Sri Lanka the average rice yield varies from 4 to 5 tons/ha in the IL1 agro-ecological zone under good management (RRDI 2001). A study conducted in Kurunegala district found *maha* yields to be 4.6 tons/ha in major irrigated areas, 3.2 tons/ha in minor irrigated areas and 3.6 tons/ha in rain fed areas (Aheeyar, Henegedara and Rupasena 2005).

**Industry**

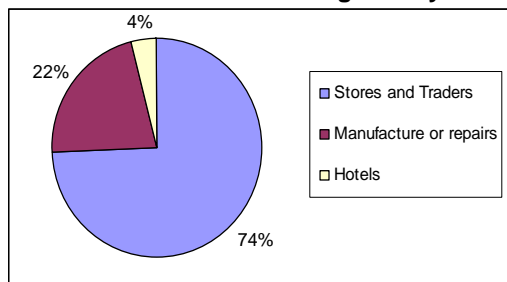
There are roughly 425 registered industries and commercial units in the city which 315 can be described as stores and traders. A further 94 commercial properties can be categorized as manufacturing or repairing units. These premises are likely to contribute more waste than the trading premises; but there may be exceptions.

The hospitals, vehicle service stations, slaughter houses and meat shops, hotels and restaurants, schools and college are identified as significant sources of pollution in the area,



although domestic waste remains the dominant wastewater type entering the two *elas*. There are a total of 35 inlets along Wan Ela and 21 inlets along Beu Ela.

### Commercial units in Kurunegala City



Source: Municipal Council Assessment Section, 2006

### Implications for WASPA

There are a number of issues that the WASPA project team needs to further investigate including: water quality, wastewater sources, health and hygiene, agricultural practices and institutional responsibilities.

What this report most clearly identifies is the lack of publically available data at the city level and below. This is partially related to data collection and also to access to data. In some cases authorities that require data in order to plan and implement appropriate interventions are not the same as those with access to the required data.

The outcome of this study was the development of a series of assessments to fill data gaps. These assessments have also been summarized.

### References

DCS. 2002. *Census of Agriculture – Sri Lanka: Agricultural Holdings, Extent under Major Crops and Livestock Statistics by District and DS/AGA Division* based on Operator's Residence Small Holding Sector, Preliminary Release – No. 2. Sri Lanka: Department of Census and Statistics (DCS).

DCS. 2003. *Population and Housing Data, Kurunegala District, Results from Sample Tabulations*. Sri Lanka: DCS.

DCS. 2004. *Annual Report of the Sri Lanka Labour Force Survey*. Sri Lanka: DCS.

DCS. 2005. *Selected Millennium Development Goals Indicators*. Sri Lanka: Department of Census and Statistics.

ECL-Engineering Consultants Limited. 2000. *Final Feasibility Report. Urban Development and Low Income Housing (Sector) Project*. Consultancy Services for Feasibility, Design and Supervision of storm water drainage in Kurunegala. Kurunegala, Sri Lanka: Ministry of Urban Development, Housing and Construction Project Co-ordination Unit.

Government of Sri Lanka. <http://www.gov.lk> accessed on 26<sup>th</sup> November, 2007.

[http://www.statistics.gov.lk/Abstract\\_2006/Tables/chap14/AB14-1.pdf](http://www.statistics.gov.lk/Abstract_2006/Tables/chap14/AB14-1.pdf) accessed on 25<sup>th</sup> November, 2007.

National Water Supply and Drainage Board (NWSDB). 2005. *Initial Environmental Examination Report: In Respect of Greater Kurunegala Sewerage Project*. Sri Lanka: Ministry of Urban Development and Water Supply.

Nishshanka, R., de Silva, S. and A. Clemett. 2006. *Wilgoda Line Community Survey Summary Report*. WASPA Asia Project Report 3. Sri Lanka: IWMI.

Ranaweera, R.A.D.U.P. 2005. *Wastewater Generation, Its Quality and Conjunctive use for Paddy Irrigation in Kurunegala*. Sri Lanka: University of Peradeniya.

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