

Proceedings of the Symposium on Pinga Oya

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**The Foundation for Environment, Climate & Technology
c/o Mahaweli Authority of Sri Lanka
Digana Village
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Overview of the Symposium

The Foundation for Environment, Climate and Technology organized the “Symposium on Pinga Oya” to bring together researchers from multiple disciplines for interaction, to help build a compendium of relevant research and identify avenues for research and collaboration on Pinga Oya.

The overall objective of the Symposium is to raise awareness and to improve the wellbeing of the general public, especially people in and around Akurana. The group of participants consisted of Researchers, University Academics, Teachers, Students, Women’s Organizations, Policy Makers, and a local Media Organisation in Akurana. The strategy consisted of key areas of work:

1. To raise awareness
2. To foster an effective and enduring partnership among the various organizations
3. To encourage appropriate policy responses
4. To promote sustainability of the natural environment

This collection of papers is the proceedings of this one-day Symposium on Pinga Oya held at the Department of Geography in the University of Peradeniya on 19 February 2013. The event focused to generate and share information on the social and environmental significance of Pinga Oya, and also to form an alliance among proponents that would assist future plans for Pinga Oya.

The presentations drew a complex picture of Pinga Oya. The debate that followed the presentations attempted to capture some of the existing and most relevant social, environmental, and policy issues; and many different types of recommendations were drawn from the break-out sessions. The Symposium concluded an invaluable opportunity to raise the profile of the current issues related to Pinga Oya that would allow to effectively implement a joint strategy as a whole.

Pinga Oya Catchment Area

The total land area covered by Pinga Oya catchment is 14,467 Ha. It consists of a number of sub tributaries, mainly Hunnan Oya, Owissa Oya, Balapitiya Oya, Kurugoda Oya and Wahagalla Oya. The main stream connecting Hunnan Oya, Owissa Oya and Kurugoda Oya, is named as the Pinga Oya and it flows to the Mahaweli river at Katugastota.

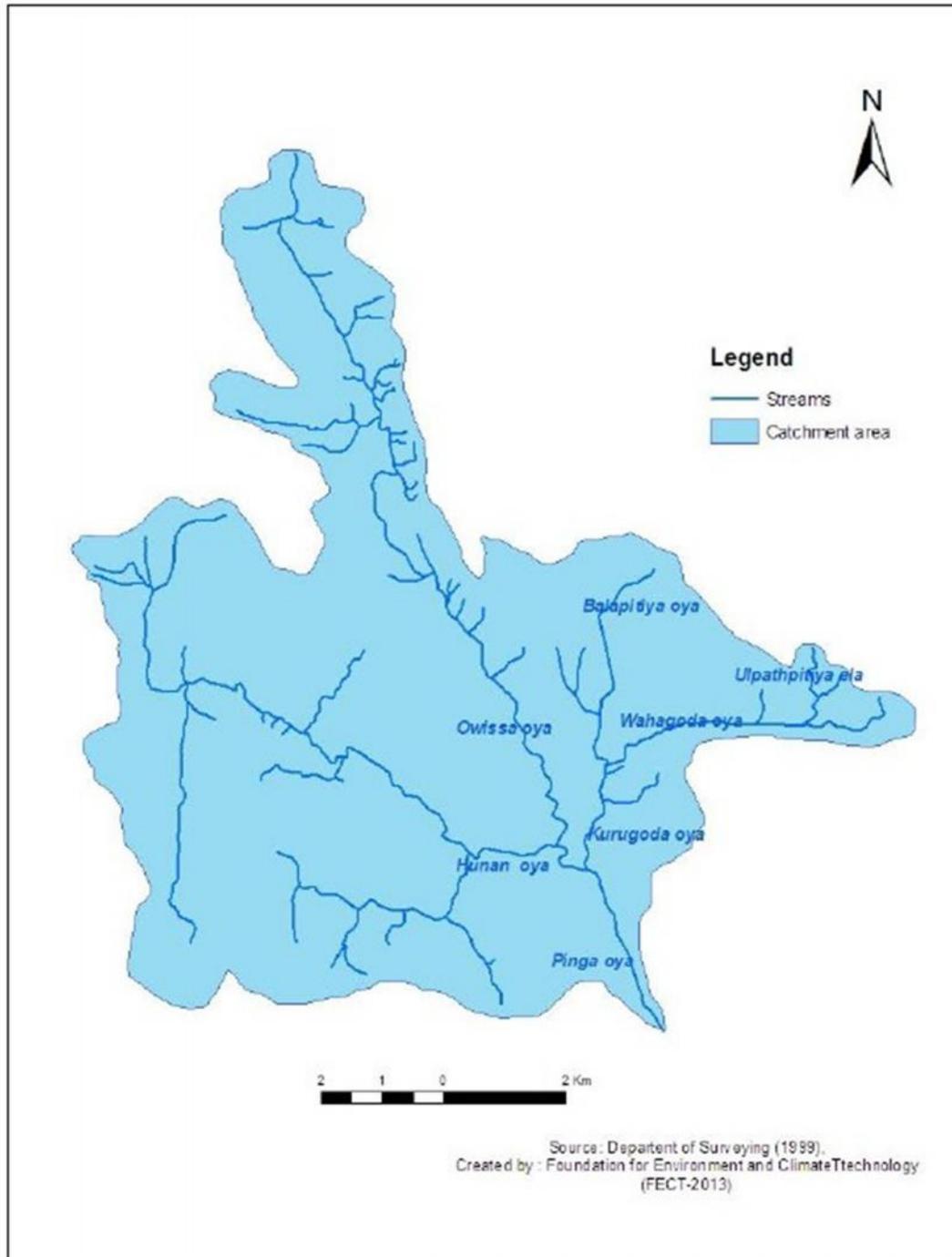


Figure 1.1.2. Pinga Oya Catchment Area

Administrative Boundaries of Pinga Oya Catchment

The main Divisional Secretariat Divisions covered by the Pinga Oya catchment are Akurana, Poojapitiya, Pathadumbara and Harispattuwa, which also includes small areas of Ukuwela and Galagedara Divisional Secretariat Divisions. The boundaries of Poojapitiya, Harispaththuwa, Akurana and Pathadumbara go parallel to the tributaries of Pinga Oya.

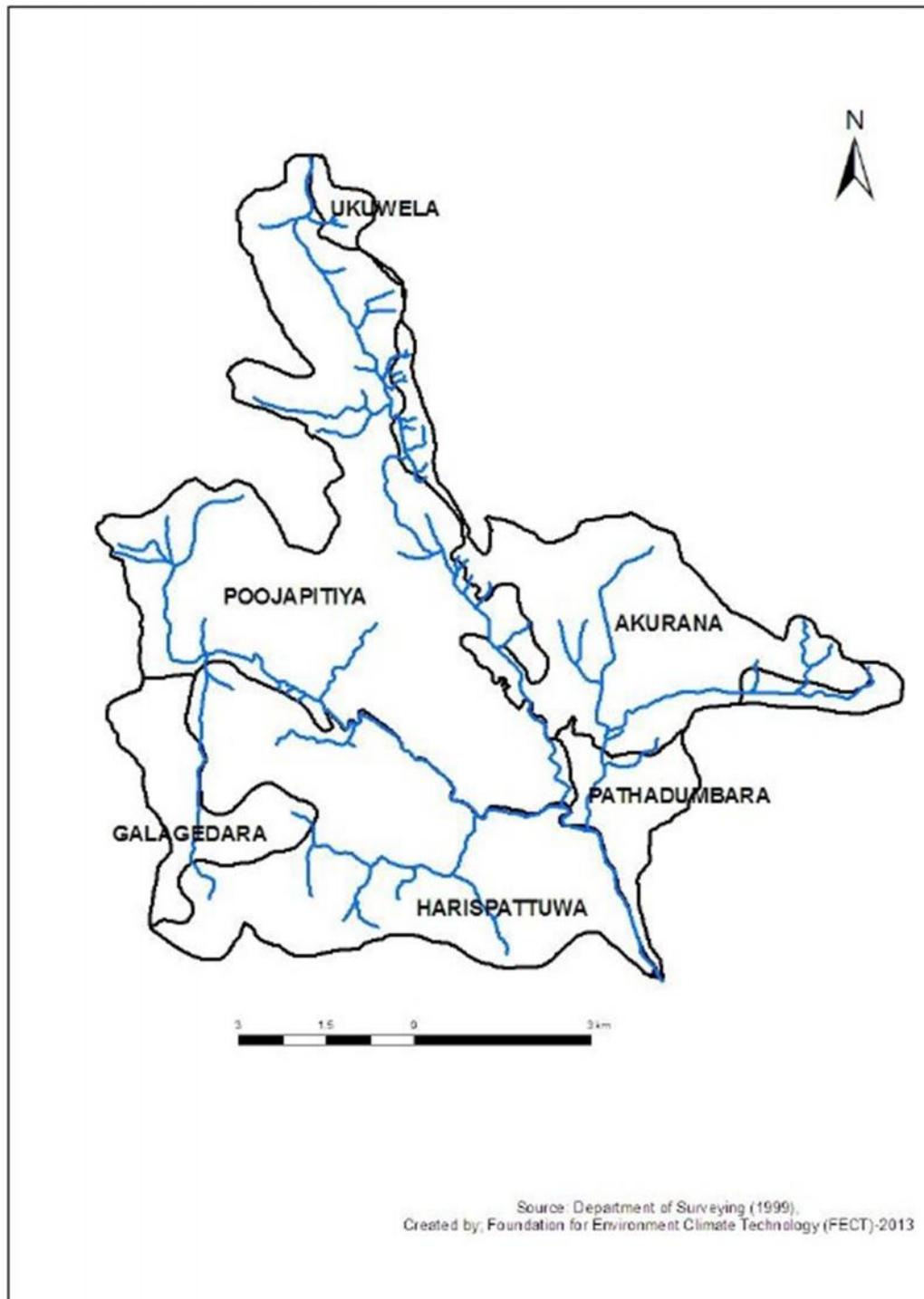


Figure 1.1.3. Administrative Boundaries superimposed on the Pinga Oya Catchment

Relative Location of Pinga Oya Catchment

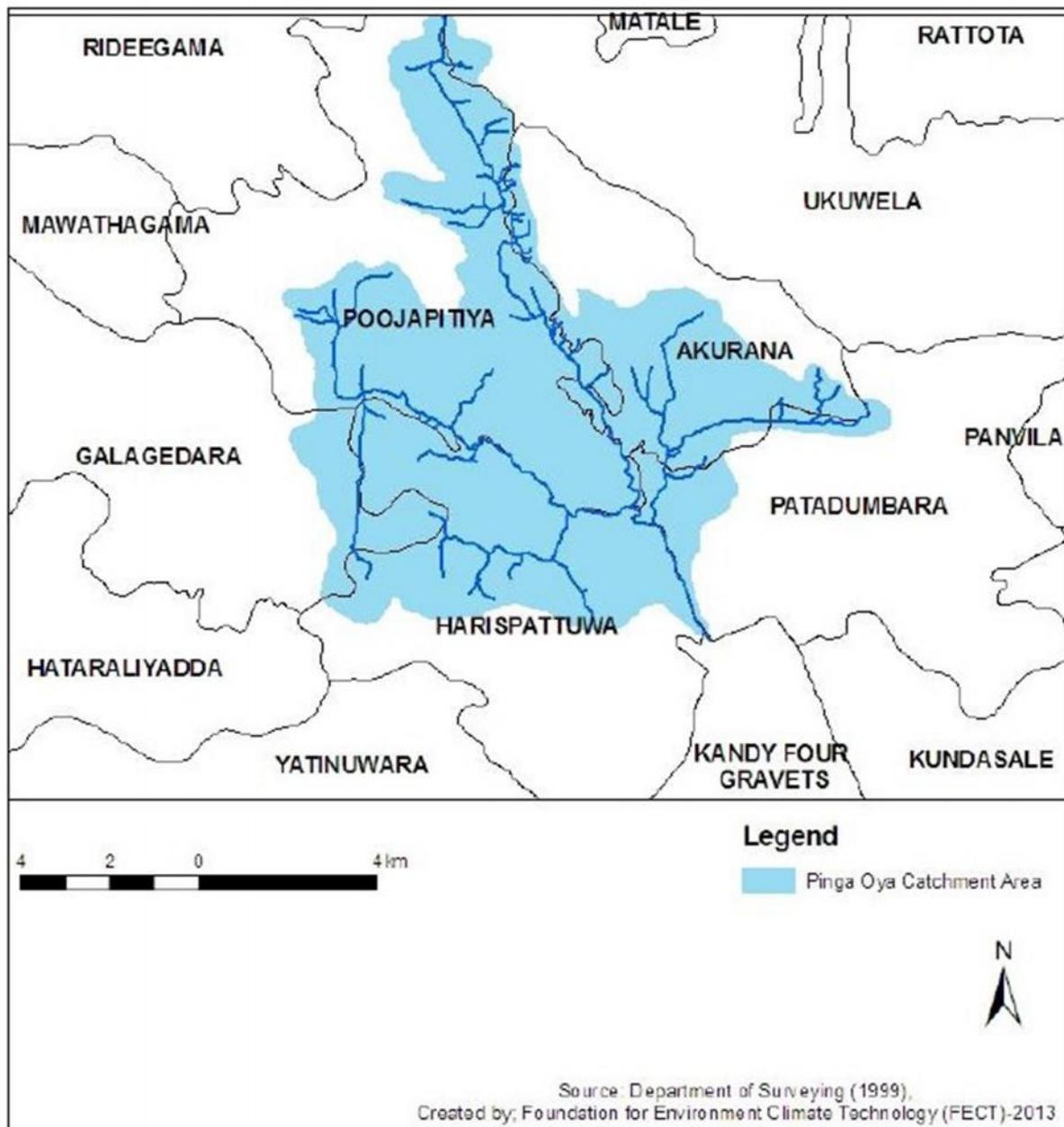
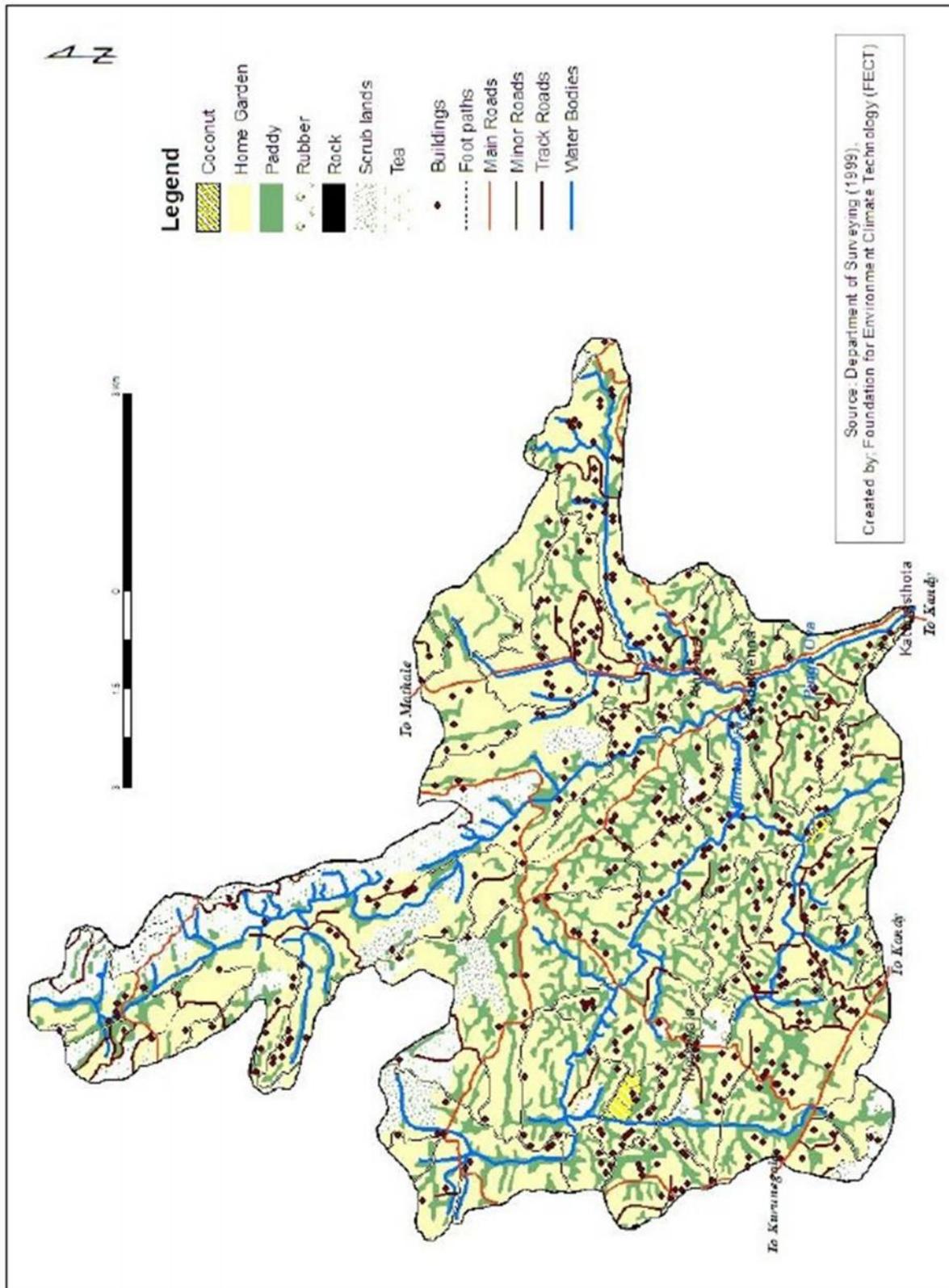


Figure I.1.4. Location of Pinga Oya Catchment in relation to Administrative Units

Land Use of Pinga Oya Catchment



Elevation Model for Pinga Oya Catchment

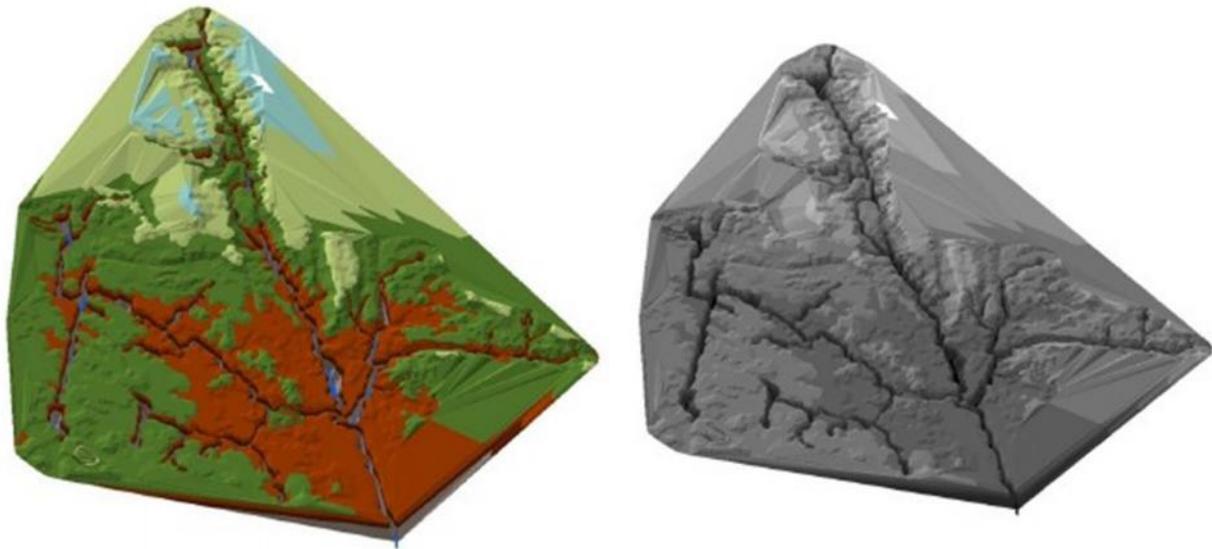
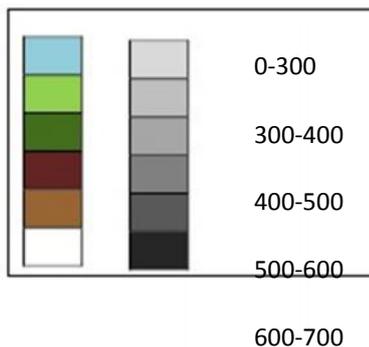


Figure 1.1.6. Elevation Model for Pinga Oya Catchment

Source: Department of Surveying (1999);
Created by: Foundation for Environment Climate and Technology



Population in Pinga Oya Catchment and Economic Activities

The Pinga Oya catchment spreads throughout the Divisional Secretariat divisions of Akurana, Poojapitiya, Pathadumbara and Harispattuwa. The boundaries of the catchment and the four Divisional Secretariat Divisions differ from each other. As it flows through highly populated multi ethnic areas the population too differs from one DS Division to the other. The upper part of the *Pinga Oya* catchment belongs to the *Pujapitiya* division which is a mildly populated rural and sub-urban area with a largely agricultural land use, whereas the downstream part belongs to the densely populated *Akurana* division (Census & Statistics Department, 2007).

About 75% of Pinga Oya catchment is covered by home gardens and paddy fields. The right side of the upper catchment is covered by tea lands, and the North western corner consists of scrub lands. This watershed has a range of highly polluting economic activities such as paddy mills, saw mills, service stations, and factories. There are several large multi-storied buildings built in the stream reservation with some on the stream bed.

The table below shows the population changes in the four Divisional Secretariat Divisions of Pinga Oya between 2008 and 2011.

Table 1.2.2. Population changes from 2008 to 2011 in DS divisions overlapping with Pinga Oya Catchment

DS Division	Total Population (2008)	Total Population (2011)
Akurana	59317	63195
Poojapitiya	57644	57879
Pathadumbara	85721	88599
Harispattuwa	83935	88002

Water Quality of Pinga Oya

Many people residing in the area use the water of Pinga Oya for bathing, washing, agricultural purposes and industrial purposes. With the increase in population and urbanisation many industries, houses, restaurants and shops have been built along the river reservations and in the vicinity of the Pinga Oya. Population growth, urbanization and social and cultural habits have increased the amount of domestic, agricultural, industrial and commercial solid waste disposal, and untreated industrial dumping into the Pinga Oya watershed areas significantly. Pinga Oya has shown significant changes in water quality and discharge.

Table 1.3.1. Water quality indicators in Pinga Oya (Dissanayake, 2012)

Point	Total Suspended Solid	pH ₁	Turbidity ₂	BOD ₃	Oil and Grease ₄	Temperature	DO ₅	COD
Tolerance Limit		6-9	2-8	5>	0.1(mg/l)		4.0<	
Malgamandeniya	3	8.06	25	5	861	26	11	10
Akurana Town	11	7.56	50	7	645.25	25.7	9.75	35
Bollegoda	50	7.28	175	9	16	25.6	8.5	35
Katugastota	53	7.31	210	12	0	26.3	8.55	55

Flood Events of Pinga Oya

As the surroundings of Pinga Oya experienced flood events several times in the past few decades, this catchment has long been identified as a problem area that needs immediate action in creating public awareness. The first recorded flood in Akurana was experienced in 1947; and ever since this area was prone to heavy flooding which resulted in environmental damage as well as disruption to the economy of the community. Although the flood of early 1997 didn't cause serious damages, the frequency of flash floods has increased during the past years due to high levels of river abuse in and around the river. In the last thirty years, constructions have been increased beside the A9 road from 8th milepost on to Kudugala and along the tributaries that flow into the Balapitiya Oya. Many buildings have encroached the flood plains which is reserved for the flow and spreading of the river at the times of heavy rains. In the late 1970's, in view of expanding roads, the Road Development Authority started filling into the river and the flood plains. This led to illicit construction on the other side of the river: buildings and roads have been built with bridges strung across the river. Some of

these building have toilets and septic systems that have been diverted to the river. These constructions have reduced the opportunity that the river has to spread rather than to rise. One of the major floods was experienced in Akurana on 30th January 2001. In 2012 Akurana experienced another serious flood event due to the over flowing of Pinga Oya which caused serious damages to the Akurana town. During this flood event the Balapitiya oya that passes through Akurana and merges with Owissa Oya to form Pinga Oya has risen about 6 feet above the road level at its peak near the Dunuwila road intersection. Although there was no flooding a few kilometers to the North and to the South, the 6th mile post of Akurana bazaar was flooded from the Telumbugahawatte Road upto the Dunuwila road. Due to flooding in Akurana all vehicles that had to pass through the A9 highway have been held up or re-routed via Wattagama.

References

- Census & Statistic Department (2007). Kandy Census Handbook, Regional Office, Kandy, Sri Lanka.
- Mahees, M.T.M., Sivayoganathan, C., and Basnayake, B.F.A. (2011). Consumption, Solid Waste Generation and Water Pollution in Pinga Oya Catchment area. Tropical Agricultural Research, Vol. 22 (3): 239 – 250.

