

Special Project on identify and minimize industrial pollution as the existing High priority Environmental problem in Pannala divisional secretariat area



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Date: 22/03/2021

EMGT 3252 - Special Project

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- ✓ Impacts

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Introduction - Research Topic

Deforestation, water pollution, air pollution, soil and land degradation, Destruction of environmental aesthetic, pollution of limited resources are adverse impacts from **industrial pollution** as a environmental problem.

- **Purpose** – Solve problem of industrial pollution as high priority environmental issue in Pannala Divisional Secretariat Division.
- **Subject** - Achieve suggest the best solutions for reduce industrial pollution by identify effects to social, economic and environment in Pannala Divisional Secretariat Division.

Research problem

- Environmental issues in the Pannala Divisional Secretariat area as one of the busiest and most densely populated areas in the Kurunegala District.
- Wastes discharge, Noise, soil, land pollution, Remove forest coverage, gases release, Crushing stones, Cutting clay hills, Tourism and Hotel, Making Pipe wells, Heavy vehicles come to near river boundary are environmental issues associated with manufacturing and supplementary industries in Pannala Secretariat Divisional Area as in a high priority.
- Most industries established alone vicinity of Ma Oya and sort of like all villages in this area.
- Recommend low cost environmental technologies and environmental management methods, handle proper legal and institutional background and implement environmental management policies as the solutions for reduce industrial pollution in this area.

Objectives

Specific Objective

- Introduce plans for minimize industrial pollution as a high priority environmental issue in Pannala Divisional Secretariat Area.
- Finding and suggest solutions for reducing industrial pollution, improve quality of environmental life, eco-friendly, less environmental damage, zero pollution area in Pannala DS Division area.

Sub Objectives

- Identifying industrial pollution related activities, issues in different industrial sectors in Pannala Division
- Ensuring natural environment from industrial pollution and controlling environmental, social issues from industrial pollution such as ecological destruction, damage to ecosystem functionalities.
- Introduce effective solutions to minimize industrial pollution with Environmental Management System.

Significance

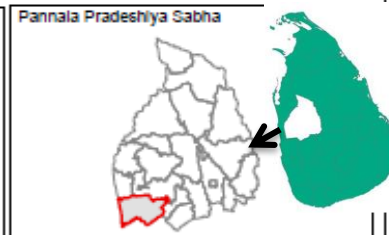
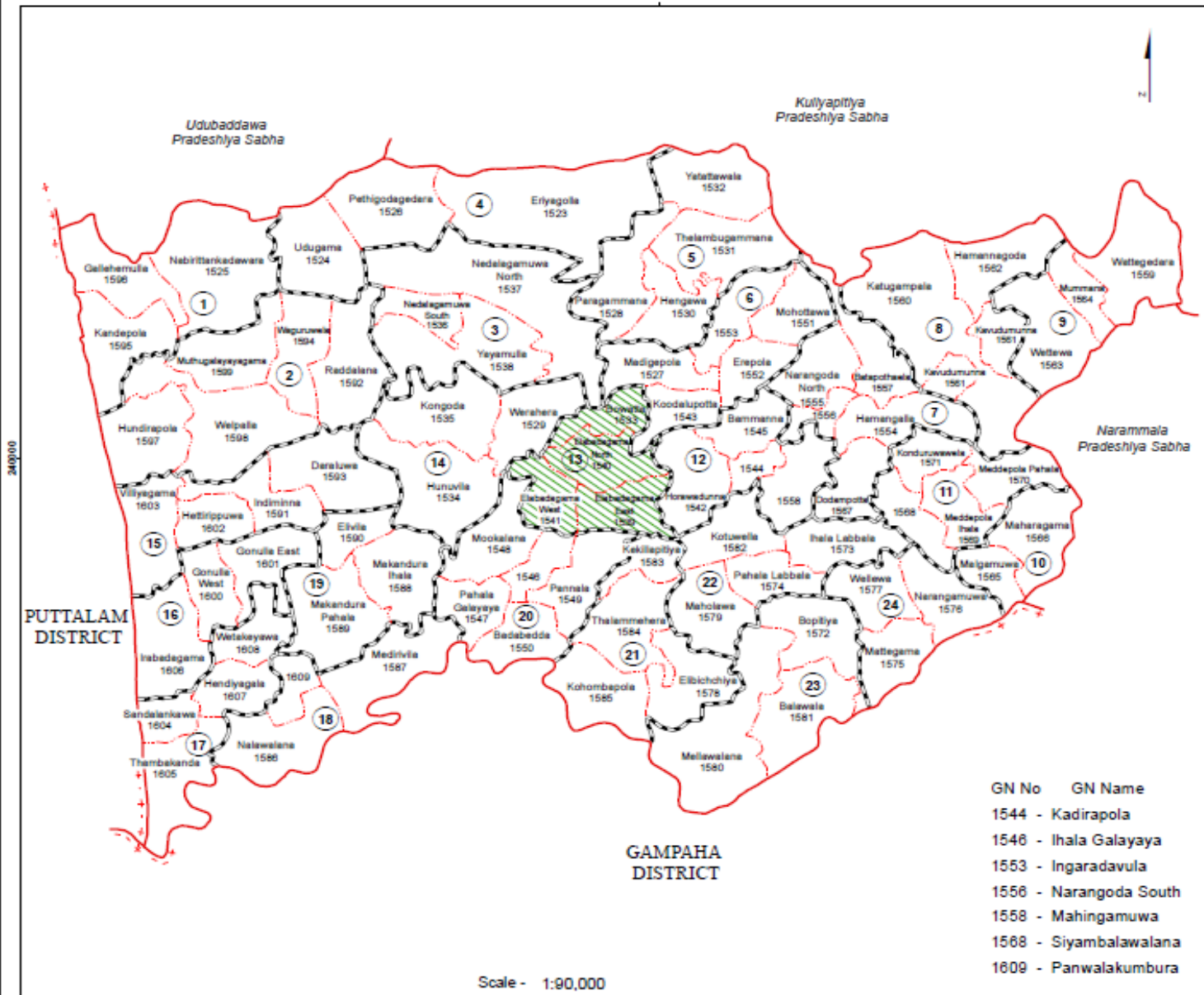
- Can be identify important parties from study such as,
 - ✓ Industries (Stakeholders) located in Pannala Divisional Area
 - ✓ Community
 - ✓ Environment
 - ✓ Divisional Administrative Authorities
- Presenting cost-effective and efficient solutions that are relevant present and future.
- Estimate Environmental Impact Assessment (EIA) reports for identify environmental issues from industrial pollution
- Identify environmental issues, causes, impacts by industrial pollution as main problem
- Discuss the existing industrial zone and agro-ecological zone in the project area
- Introduce effective solutions to minimize industrial pollution with Environmental Management System (EMS)

Methodology

Research Area

Ward Map of Pannala Pradeshiya Sabha - Kurunegala District

Ref. No : NDC / 18 / 14



Pannala Pradeshiya Sabha

WARD No	WARD Name
1	Gallehemulla
2	Welpala
3	Nadalagamawa
4	Eryyagolla
5	Paragammana
6	Ingaradavula
7	Hamangalla
8	Katugampala
9	Wetewa
10	Malgamuwa
11	Meddepola
12	Bammanna
13	Elabadagama
14	Kongoda
15	Daraluwa
16	Gonulla
17	Saddankawa
18	Nalawalana
19	Makadura
20	Pannala
21	Thalammehera
22	Labbala
23	Bopitiya
24	Mattagama

Legend

- Province Boundary
- District Boundary
- DS Boundary
- GN Boundary
- Polling Division Boundary
- PS Boundary
- MC / UG Boundary
- Ward Boundary
- Multi Member Ward

- GN No GN Name
- 1544 - Kadirapola
 - 1546 - Ihala Galayaya
 - 1553 - Ingaradavula
 - 1556 - Narangoda South
 - 1558 - Mahingamuwa
 - 1568 - Siyambalawalana
 - 1609 - Panwalakumbura



Prepared by Survey Department of Sri Lanka
 Date Source: National Delimitation Committee for Local Authorities - 2013 / 2015
 Ministry of Local Government and Provincial Councils

Scale - 1:90,000

Data Collection

Primary Data

- Questionnaire - Industrial pollution in area
- Interviews - Impacts, cause, issues
- Observation - clay excavation in Ma Oya
- Letters - Permission letter
- Photographs - clay hills, industries, social, environmental effects

Secondary Data

- News papers
- Books
- Articles
- Internet - Industrial zone
- Government Institutions - Pannala Divisional Secretariat office and Pradeshiya Sabha

Data Collection

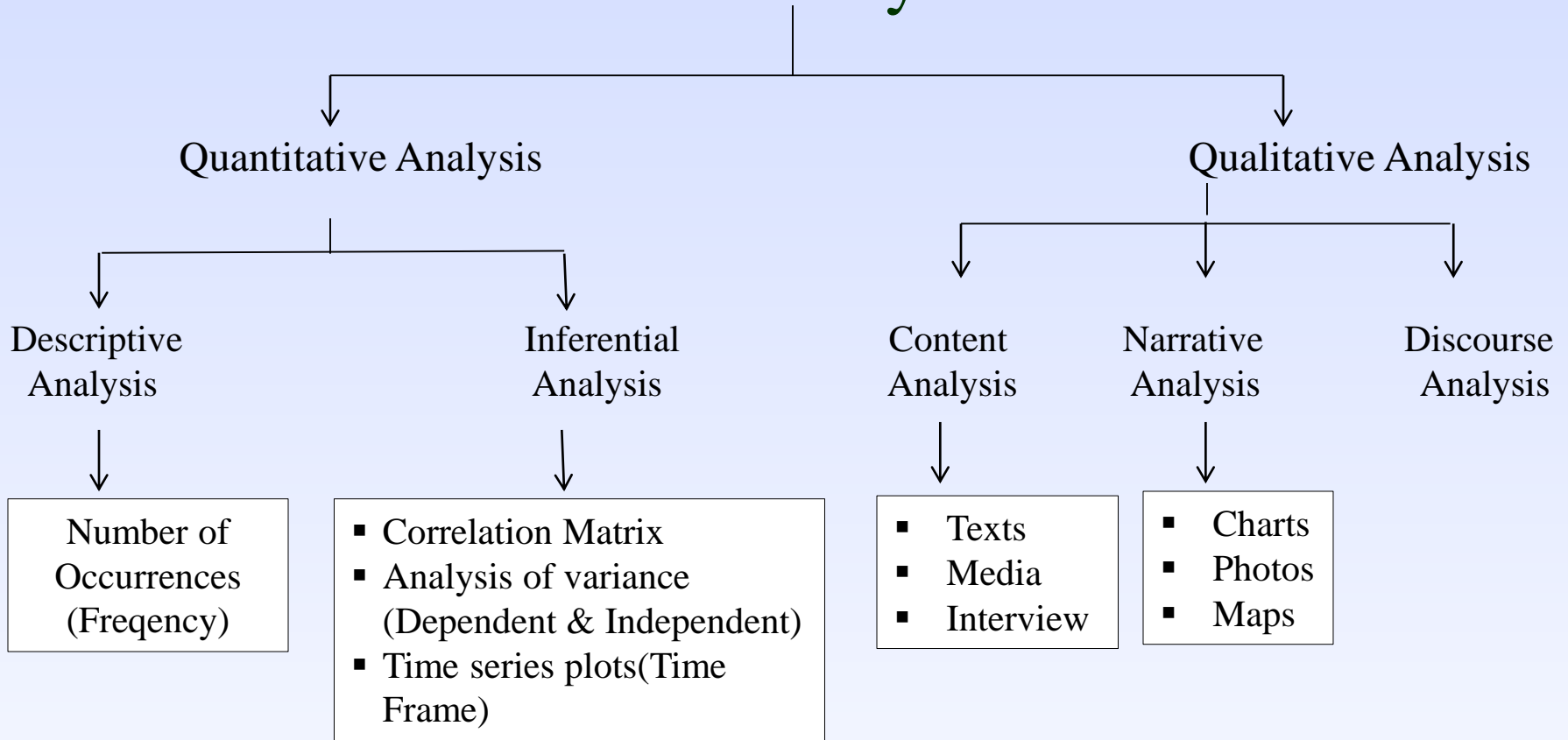
Qualitative

- Oral histories - Good and bad features of people
- Questionnaire - Nature of pollution
- Focus groups - Experience of environmental change
- Observation - Industrial pollution, social, environmental effects

Quantitative

- Interviews
- Documents - population density, statistics of area
- Records - Number of industries

Data Analysis



- ❖ List of Industries in Pannala Secretariat Area
- ❖ Environmental problems
- ❖ Socio-economic, environmental, ecological issues
- ❖ GIS map
- ❖ Leopold Matrix and Lohani & Tanh
- ❖ create graphs

Results & Findings

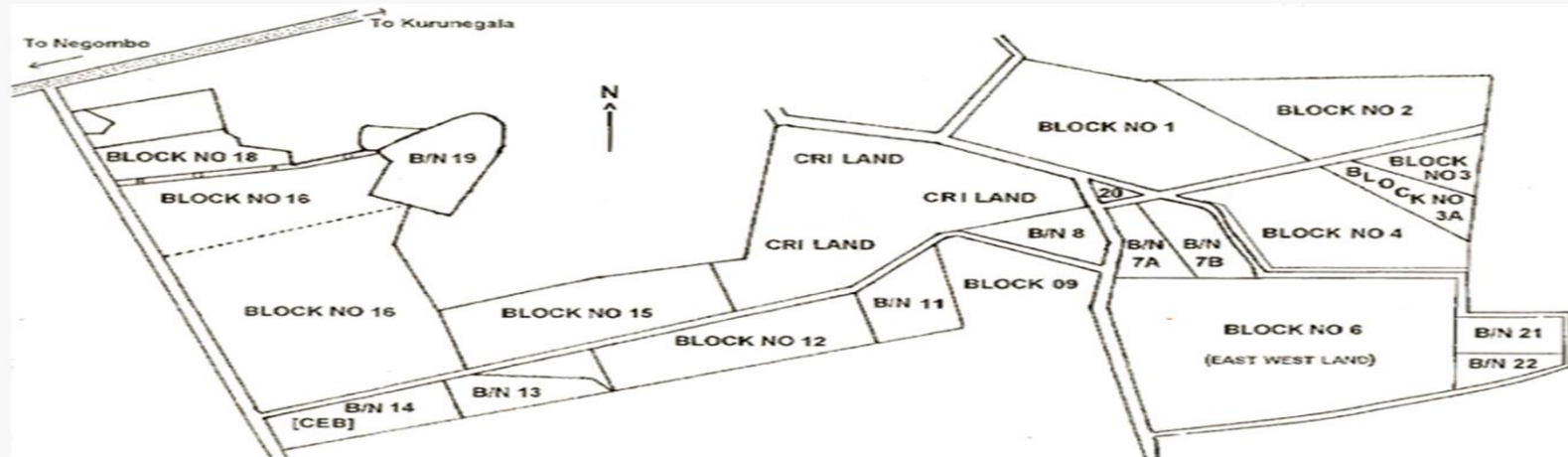
Issues of problem	Causes	Impacts
Clay excavating and Boring, Digging soils from river side	Building, roads Construction activities, political interventions	Land degradation, soil erosion, remove forest cap, landslides, flooding river area,
Heavy vehicles come to near river boundary	Transport clay, river soil	Soil erosion, noise & air pollution, increase social problems , damage plants species
Hotel construction	Social lift, Money base life	Forest cover remove(Dikkale reserve, Kankaniyam Mukalana)
Wastes discharge (water, solid, E-wastes from industries)	manufacturing factories, hotels	Land and soil pollution, damage natural beauty, spread health diseases, pollution water sources
Noise, land, soil pollution by industries (Industrial pollution)	Water bottle, Fiber, Coconut oil, Textiles, Fabrics, Milk production, Manufacturing industries	Remove forest cover, land degradation, damage soil quality
Remove forest coverage	Hotels, encroachment	Decreasing water ways, removing forest cap, soil erosion, ecosystem functions,
Industrial gases release (air pollution)	outdoor air pollution by industrial zones	Damage air quality, Increase cancer disease, Decrease transparency of air in the evening
Decrease Ground water Level	manufacturing companies get ground water from pipe wells	Water scarcity, pollution, decrease water for trees, water springs losses
Cutting clay hills	Pocilen, Bricks & tile factories, political interventions	Damage bridges by transportation, loss of lands and minerals, damage landscape
Making Pipe wells (ground water pollution)	Industries, water transportation, selling water	River water decrease, Increase risk of Sea water mixed with river water
Construction filling land	Businesses, Building constructions	loss of economic and environmental value
Increase Use chemicals to land activities	Paddy & Coconut cultivation, vehicle repairs & Car wash stations	Increase Kidney disease, yellow fever, and any other health effects

Leopold matrix & Lohani & Thanh of Environmental Impact Identification in Pannala divisional

Activity / Issue	Affected Resources	Clay excavating And Boring Digging soils from river side	Hotel Construction	Wastes discharge (water, solid, E-wastes from industries)	Manufacturing industries (noise, land, soil pollution) (Water bottle, Fiber, Coconut oil, etc)	Remove forest coverage	Industrial gases release (Ramco, Asbastes, Nestle, Keells) from garment industry	Decrease ground water level	Cutting clay hills	Making Pipe wells for industries (ground water pollution)	Heavy vehicles come to near river boundary	Construction filling land	Use chemicals to land activities	Leopold Method (Total)	Priority Value	Lohani & Thanh (Total)
P H Y S I C A L	Climate	2 5	3 6	7 8	1 4	7 8	9 9	3 5	2 4			3 5	4 6	56 80	12	3444
	Hydrology	2 4	6 7	7 8	7 8	4 7		5 6		9 9	5 7	2 5	4 5	51 66	5	1830
	Water quality/ water sources	7 9	4 6	7 9	6 4	3 5	7 2	5 7	6 8	9 9	7 8	4 5	5 6	70 78	4	1892
	Geology/soil	6 7	6 6	5 6	8 9	6 7		2 4	6 8	8 9	7 8	6 7	3 4	63 75	6	2472
	Air			6 7		5 7	9 9		2 4		3 5	4 6	3 5	33 43	2	440
	Noise	6 7	4 6		8 9	2 3	7 9	6 7	4 5		4 6	6 7		34 43	7	2345
B I O L O G I C A L	Forest	5 7	6 8	7 8	8 9	8 9				4 6	5 8	3 5	3 4	66 85	11	4026
	Wild life		6 7			6 7	5 7		4 6		6 7		6 7	33 41	13	2951
	Aquatic life	7 8	5 8	8 9		4 5		5 7				3 6	6 7	38 50	8	2264
	Biodiversity	6 7	7 8	8 9	8 9	9 9			5 7		6 9	7 9	7 8	63 76	15	7965
	Education		3 5											3 5	17	1190
		Economy	5 8	6 8	5 6	6 7		8 8	7 8	5 7	7 8	7 8	4 5	6 7	66 78	9
S O C I A L	Institutions	4 6	6 8	8 9	7 8		8 9	7 8	4 7	6 8		5 6		55 69	3	1302
	Culture	7 8	8 9	8 9	7 8	6 7		3 5	5 6	6 8	4 7	5 7	7 9	65 85	1	517
	Population	4 5		5 7	6 8			6 8		2 8	4 8	4 7	8 9	39 60	14	4186
	Health	2 5	2 5	5 8	7 8		9 9	5 8	4 6	5 8	2 4		9 9	50 70	16	6240
	Land Use	7 8	6 8	8 9	7 8	5 8		4 6	7 8	8 9	4 5	6 7	4 5	66 81	10	5060
	Leopold Method (Total)	71 92	78 96	94 111	86 94	65 83	62 62	58 79	58 81	64 82	58 91	62 87	77 82			
Lohani and Thanh (Total)	504	553	768	590	479	491	404	364	522	466	404	531				

Source: Created by Researcher (C. M. Weerasinghe, 2021)

Makandura (West) Industrial Estate



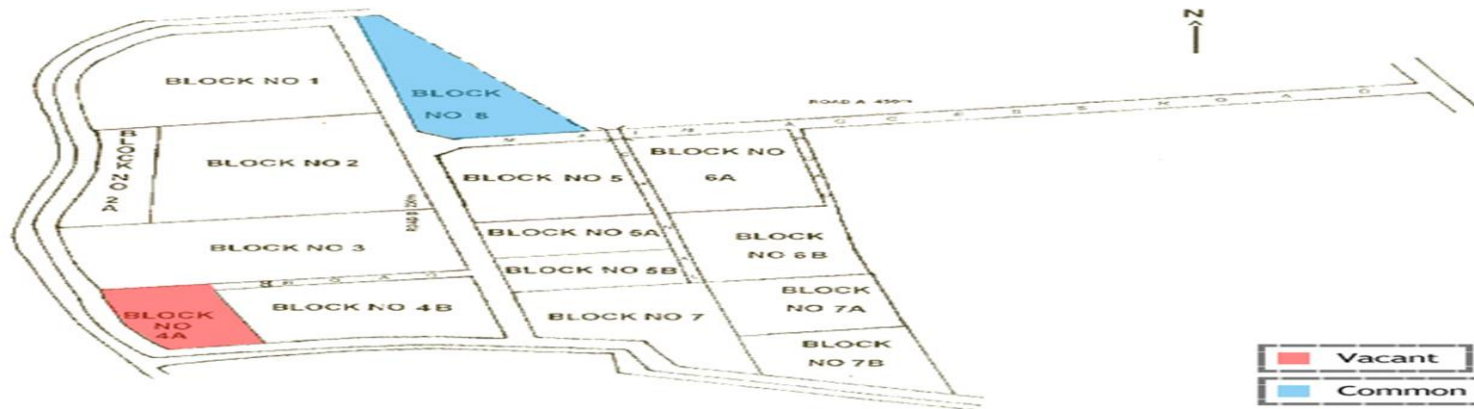
Block No. Present User

04	Acme Packaging Solutions (Pvt) Ltd.
03	Chakra (Pvt) Ltd.
03A	Enine (Pvt) Ltd.
18	Global Vinyl (Pvt) Ltd.
15	Hemnet Aluminium Extrusion (Pvt) Ltd.
21	Krishna Auto Engineering (Pvt) Ltd.
16	Sri Ramco Lanka (Pvt) Ltd.
20	Sihimiu Packaging

Block No. Present User

02	Boceang Cey Latex (Pvt) Ltd.
19	D and W Foods (Pvt) Ltd.
07A	Furni Kids (Pvt) Ltd.
01	GTB Colombo Corporation (Pvt) Ltd.
07B	Jit Holdings
12	Lankem Ceylon PLC
22	N M Mohamed Mohideen Ltd.

Makandura (East) Industrial Estate



Block No. Present User

6B+7A+7B	American and Efirid Lanka (Pvt) Ltd.
4B	Cocotech Exports (Pvt) Ltd.
1	Pheonix Industries (Pvt) Ltd.
3	Peonix Industries (Pvt) Ltd - II
5A	Peonix Industries (Pvt) Ltd - III
08	Common

Block No. Present User

7+5B	Brandix Hangers (Pvt) Ltd.
6A	Hebal Heritage (Pvt) Ltd.
2	Pheonix Industries (Pvt) Ltd.
5	Peonix Industries (Pvt) Ltd - III
2A	Wirads AustranLanka furniture P/L
4A	Vacant

Industrial pollution at Pannala Divisional Secretariat Area

Industrial Pollution

Wastes discharge



Solid wastes

Waste water

E waste

Noise pollution

Gases release

(Outdoor Air pollution)



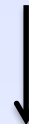
Transparent gas

Non transparent gas

Particles

Non Particles

Land degradation



Soil Pollution

Land pollution



Conclusion

- The industrial zone centered on Makandura town and Pannala town is the root cause of this industrial pollution.
- Water pollution, soil pollution, noise pollution and land pollution like all pollutions are caused by industrial pollution which is the main feature that can be identified from the environmental problems of the Pannala Divisional Secretariat.
- As industrial pollution increases, land degradation can be identified as an effect of electronic waste effluent solid waste, air visibility decreases, long term air deposition and health problems caused by particles and non-particles.
- The solutions and suggestions presented by this research, contribute to minimizing industrial pollution in this area.

Recommendations

1) Minimization strategies for waste water discharge

- **Use of Environmental Technologies** - Establish water treatment plant (Activated Carbon filter, Aero Waste water Treatment Plant)
- **Precautionary Principles**

2) Minimization strategies for Solid wastes discharge

- **use industrial solid waste management Technologies** - 3R concept, Sanitary Landfills
- **Solid wastes management Laws and Policies**
 - ✓ Urban Councils Ordinance- No. 61 -1939 – Section 118,119,120
 - ✓ Pradeshiya Sabha Act - No. 15 – 1987 – Section 93, 94, 95
 - ✓ National Waste Management Policy (2018)
- **Introduce Environmental Management System to all industries**
- **Manage solid wastes in industries and associated area by principles – hierarchy of management of wastes**

3) Minimization strategies for Noise pollution

- **Control Noise pollution by following 3P's (Precautionary, Polluter Pay, Prevention Principles)**
- **legal measurements** - Low Noise Implementation Plan
- **Engineering measures**
- **awareness**

4) Minimization strategies for Outdoor Air Pollution discharge

- **Use technologies** – Experimental Tower
- **Controlling Methods** – Rooftop Planting

5) Solutions and suggestions for reduce industrial pollution to community – clean own properties

6) Solutions and suggestions for reduce industrial pollution to industries

GLOBAL FABRICS PVT.LTD
ENVIRONMENTAL MANAGEMENT SYSTEM FOR WASTE MANAGEMENT

1.0 SCOPE

1.1 Contribute to the local economy by exporting textiles while maintaining a good industrial and environmentally friendly industrial environment

2.0 RESPONSIBILITY

2.1 Engineering, finance, human resources, production and/or service, contractors, suppliers or other external parties as part of the project team

2.2 Maintaining a good nature through management by controlling risks and creating improvements

3.0 Imitating followings for proper waste management

3.1 Hire a Professional Waste Management Business

- ✓ Promote recycling in business. Place signs telling people to recycle their waste.
- ✓ Try reducing the amount of general waste bins in workplace and place recycling bins in more beneficial locations.
- ✓ Whilst recycling plastic bottles
- ✓ There are three steps above recycling, prevention, minimization and reuse.
- ✓ By switching from bottled water to drinking glasses can prevent plastic bottles from becoming waste, or at the least reduce the amount of waste plastic bottles that business produces. Business could also promote the use of reusable bottles within the workplace for drinks within the workplace.

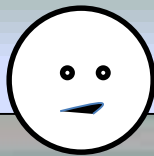
3.2 Measure Waste

- ✓ Review manufacturing process.
- ✓ Industrial waste, look at the waste that our business produces and discover waste can be utilized as a resource in another business's manufacturing process. By exchanging wastes in this manner instead of disposing of it, we are preventing waste from becoming waste, which is the first step in the waste hierarchy.
- ✓ Reduce the amount of packaging on the products that we produce.
- ✓ Compare the packaging of any products purchase. Many products have reduced packaging when bought in bulk, so this can be a fantastic way of reducing the amount of waste you produce.

3.3 About Food Waste

- ✓ Food wastes from employees produce in workplace's 'breakout rom' or wherever employees eat their food.
- ✓ A fantastic way of reducing the amount of waste going to landfill is by recycling food waste. Food waste in landfill emits methane gas when it decomposes. Methane gas is a very powerful greenhouse gas.

3.4 Hire a Professional Waste Management Business



ECO FRIENDLY INDUSTRY



Thank you