

LAND USE ANALYSIS OF KOTAGIRI CATHERINE WATERFALLS WATER- SHED AND KOOKALTHORAI STREAM WATERSHED USING GOOGLE EARTH IMAGERY (2012-2018)

Presented by-

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Introduction

- **Land use** is a term that is used to describe human uses of the land, or immediate actions modifying or converting land cover. It includes broad categories such as human settlements, protected areas, and agriculture.
- **Land use analysis** using GIS and remote sensing has been a major tool in assessing and analyzing the major land use changes.
- **Nilgiris** oldest mountain range of Tamil Nadu state of western ghats ,Kotagiri and Kookalthorai are the two study areas of analysis under Catherine water falls catchment area.

Background

Nilgiris Water Portal

Lakshumanan C. *et al.*, 2012 had discussed about past 36 years of data of Nilgiri district by using Remote Sensing and Geographic Information Systems (GIS) techniques. Landsat MSS, Landsat-TM, and IRS-P6- LISS III satellite imageries were used to assess the Landuse and Land cover changes through visual interpretation techniques in their study

Nalina P. *et al.*, 2014 discussed the land use-land cover pattern of Nilgiris District. They mentioned about the land conversion occurring through the replacement of natural forest by settlement, or agriculture.

Mamtha R. *et al.*, 2016 studied the Kotagiri area of Nilgiri district. In their study, they emphasized on deforestation of the area.

Study area



(a) Both the study sites; (b) Catherine waterfalls Catchment; (c) Kookalthorai watershed

Objectives

1. To analyze the land use change of Kotagiri and Kookalthorai.
2. To study community perception towards land use change in their immediate catchment.
3. To document their traditional practices and beliefs towards the water source.

Research methodology



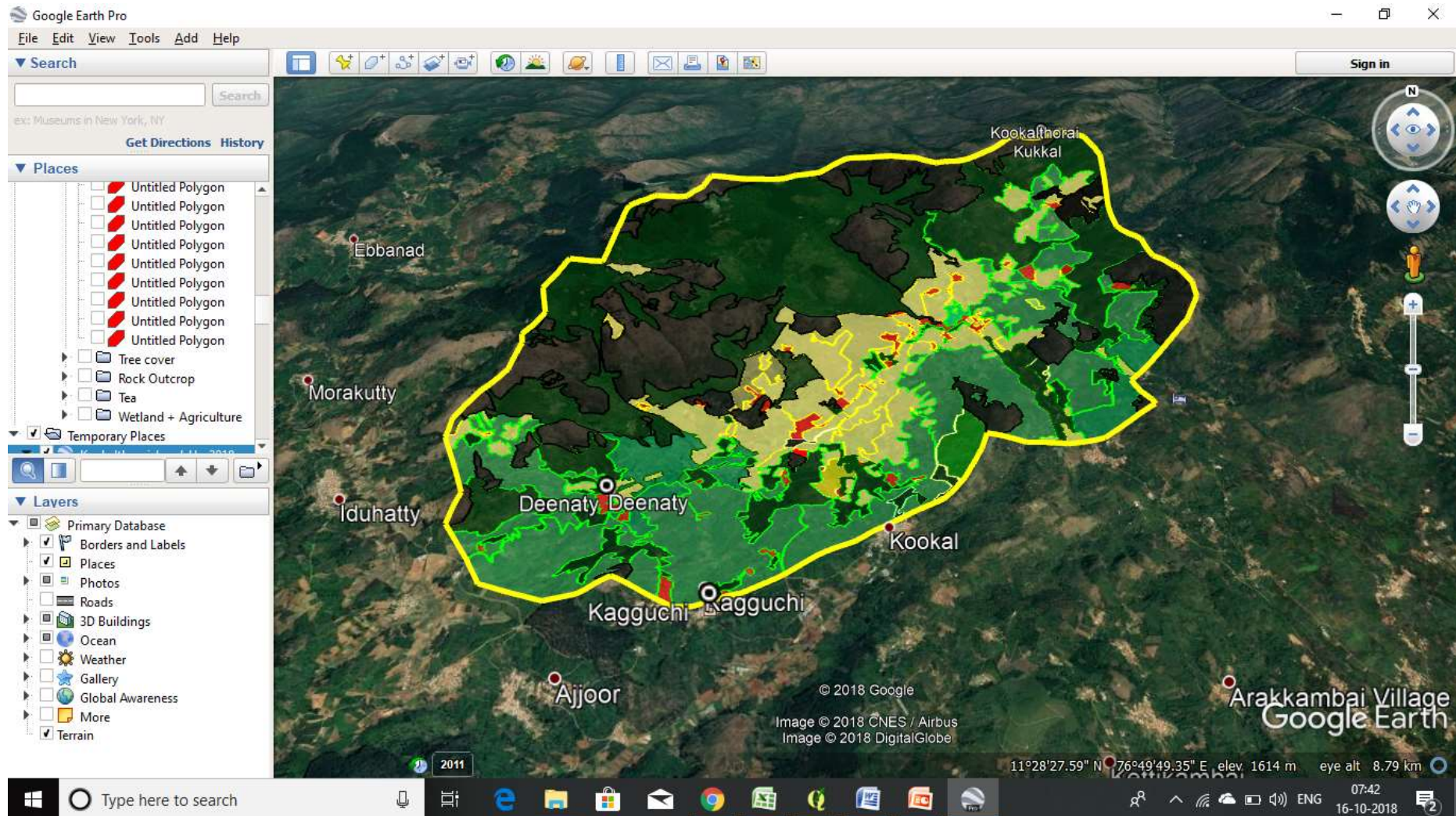
Perception Sur...

What are the possible water sources?

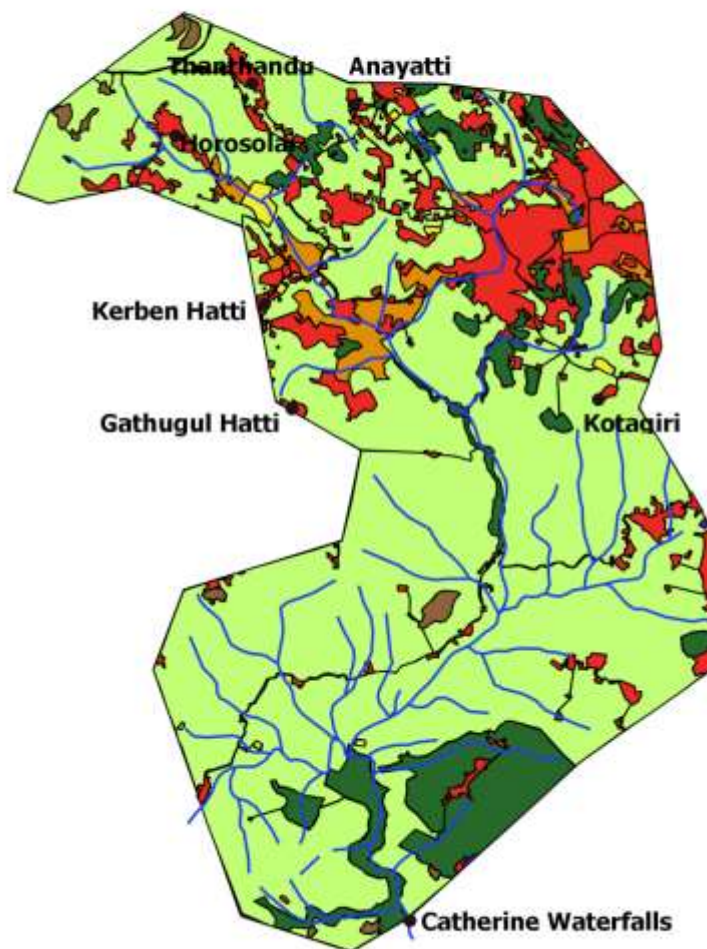
- ☐ Springs
- ☐ Streams
- ☐ Bore wells
- ☐ Open Wells
- ☐ government supplied
- ☐ Others



Mapping



Catherine Falls Catchment Land Use in 2012

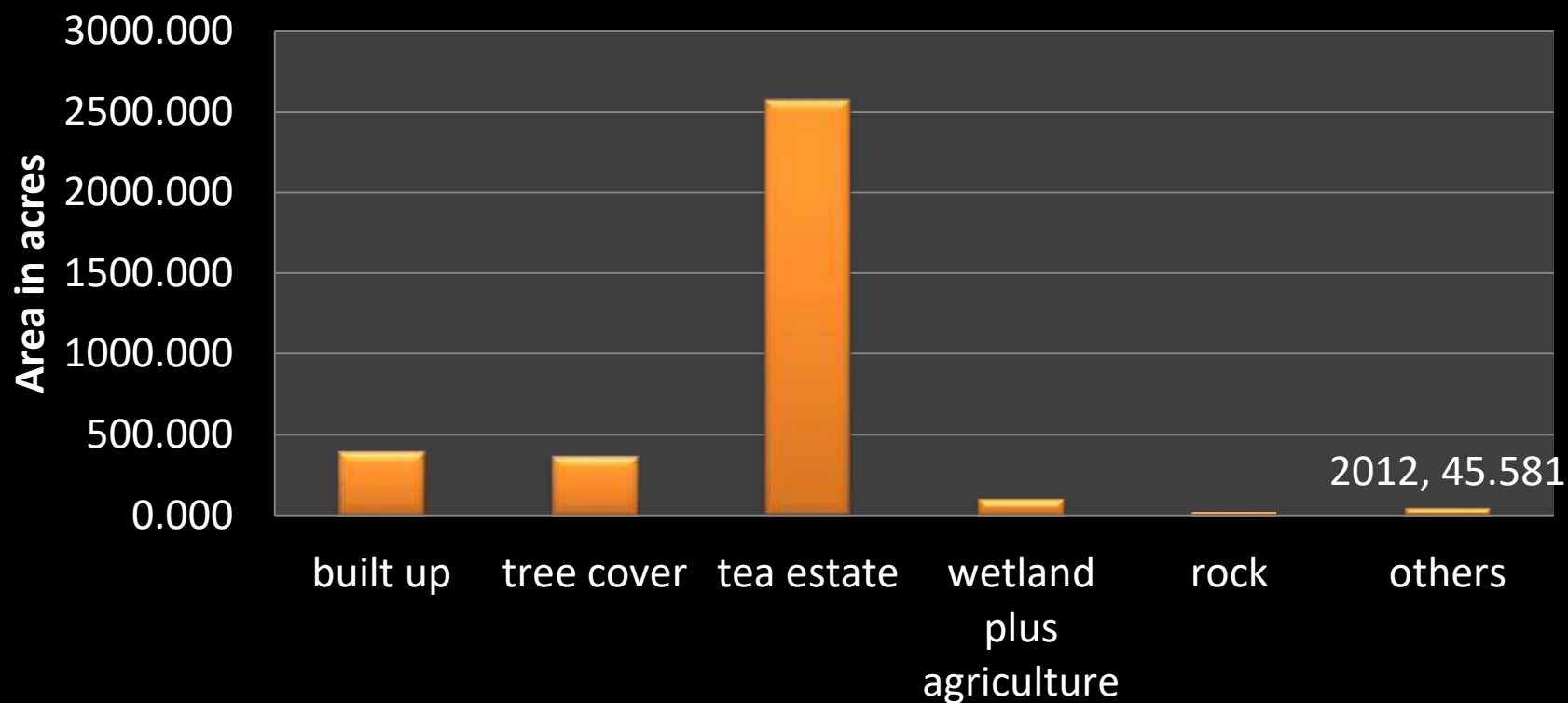


Legend

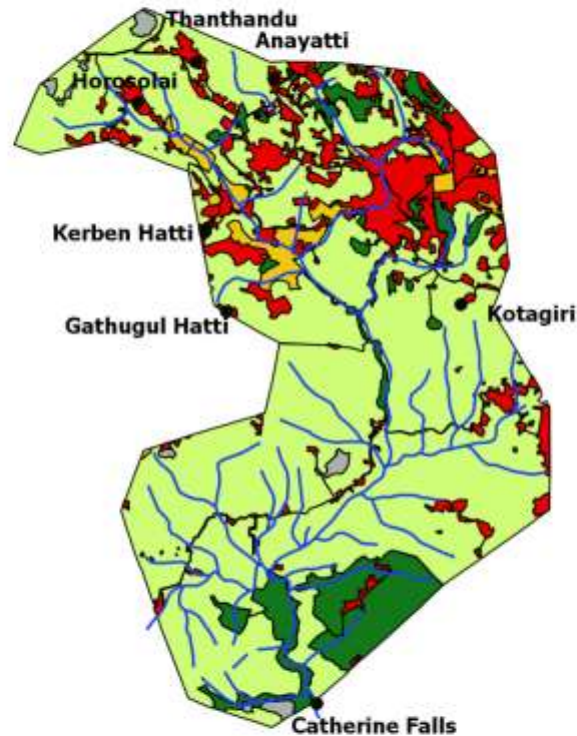
- Location Points
- Drainage Network
- Built Up
- Floriculture
- Rock Outcrop
- Tea Estate
- Tree Cover
- Wetland and Agriculture



Land Use in the Catherine Waterfalls catchment area in 2012



Catherine Falls Catchment Land Use in 2018

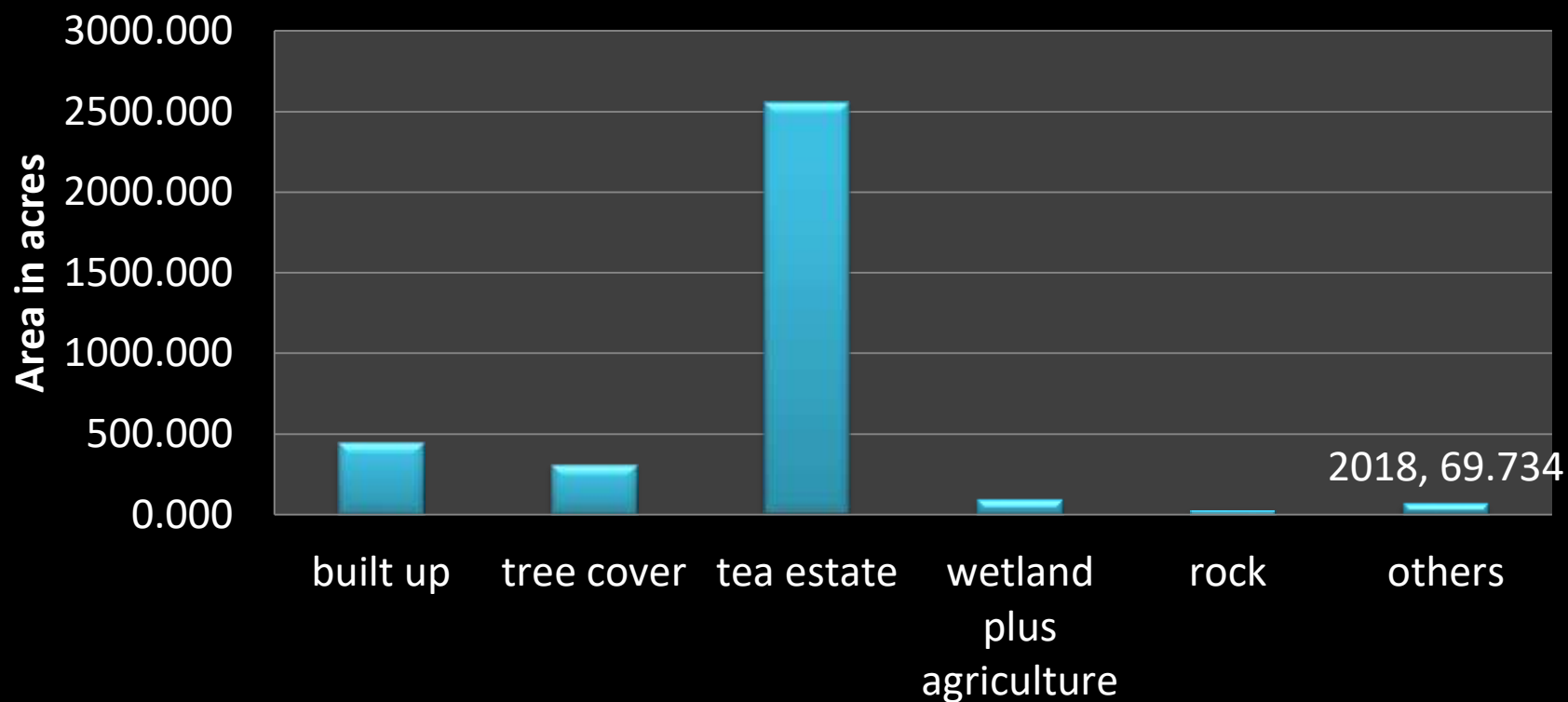


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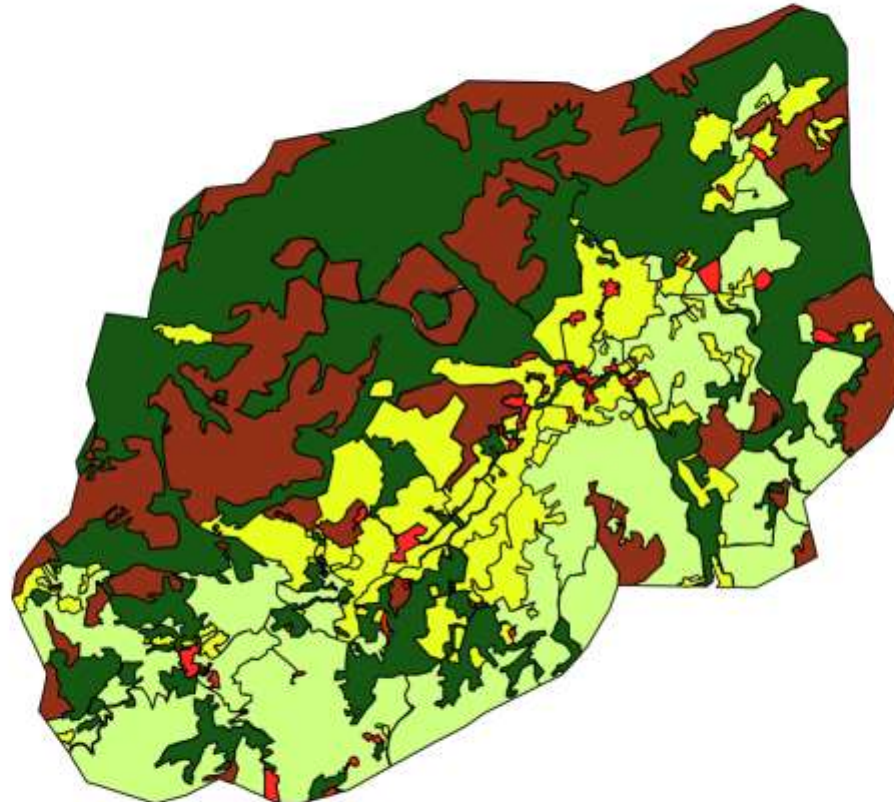
- Location Points
- Drainage Pattern
- Built up
- Rock Outcrop
- Tea Estate
- Tree Cover
- Wetland and Agriculture



Land Use in the Catherine Waterfalls catchment area in 2018



Land use Map of Kookalthorai in 2012

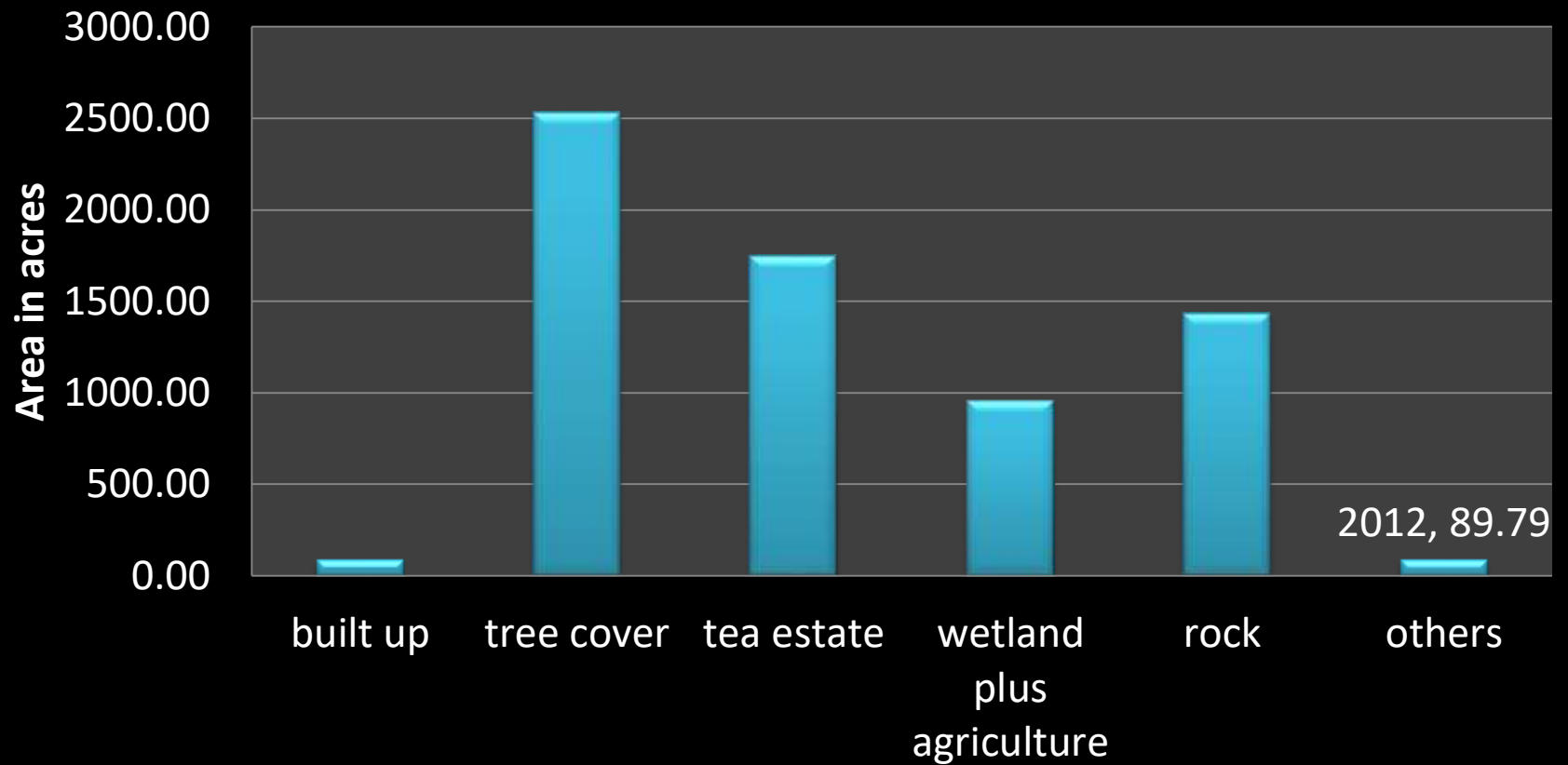


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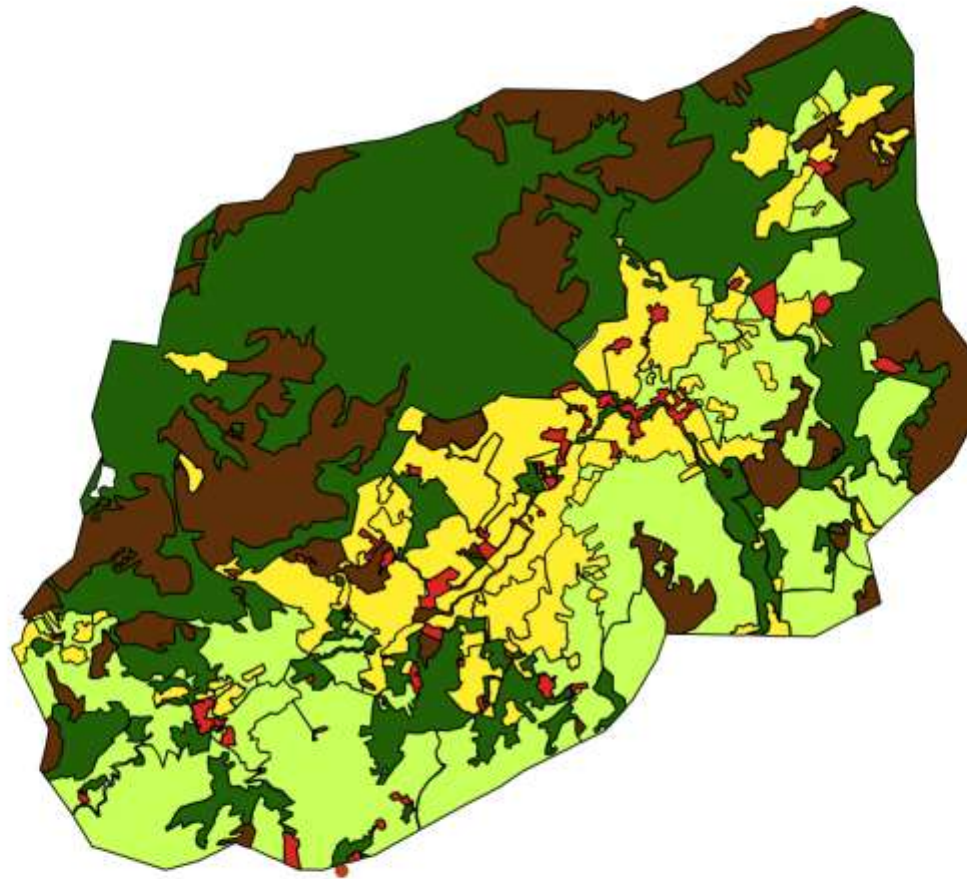
- Agriculture
- Built up
- Rock outcrop
- Tea Estate
- Tree Cover



Land Use in Kookalthorai in 2012



Land Use of Kookalthorai in 2018

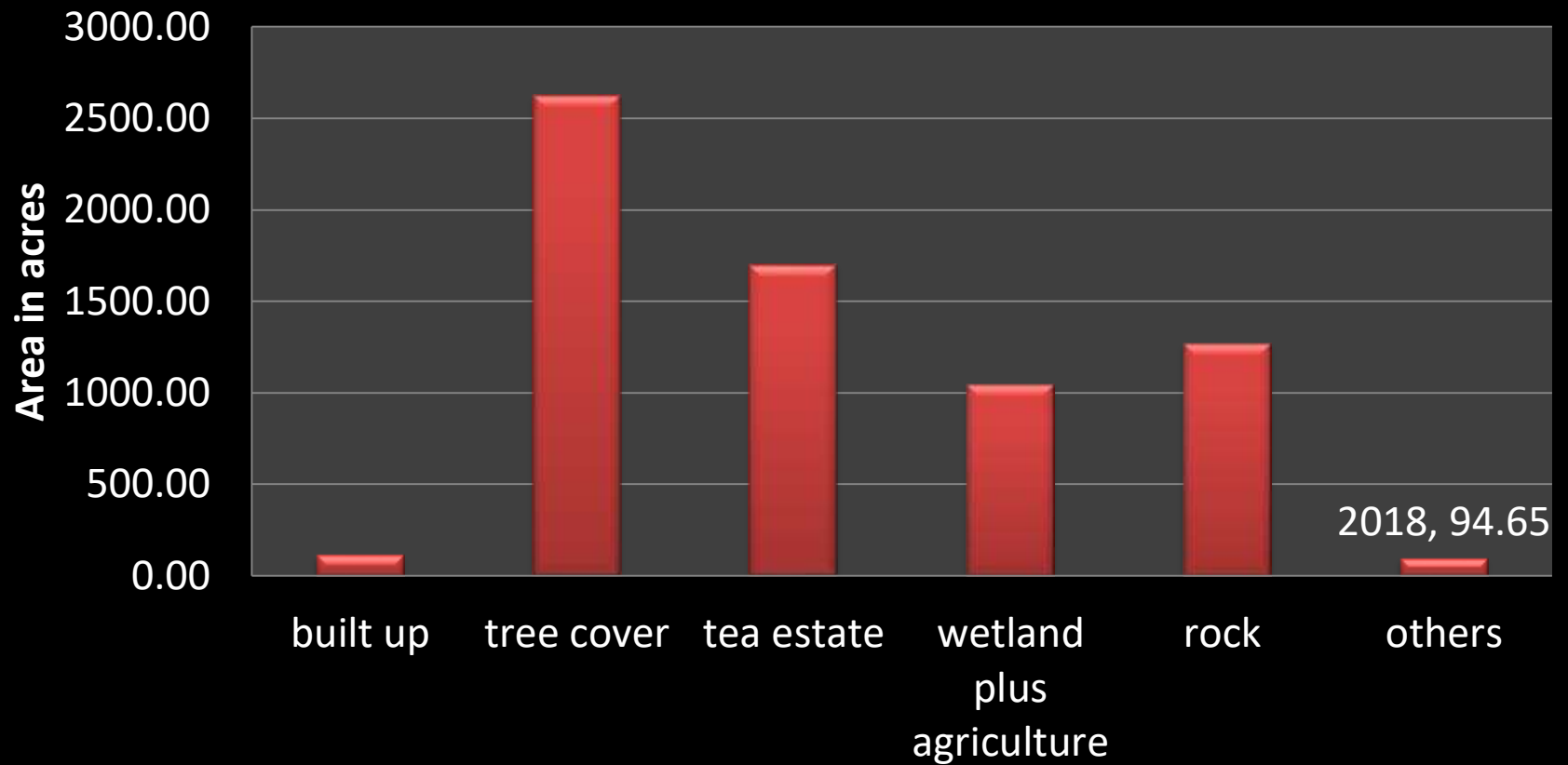


Legend

-  Agriculture
-  Built Up
-  Rock Outcrop
-  Tea Estate
-  Tree Cover

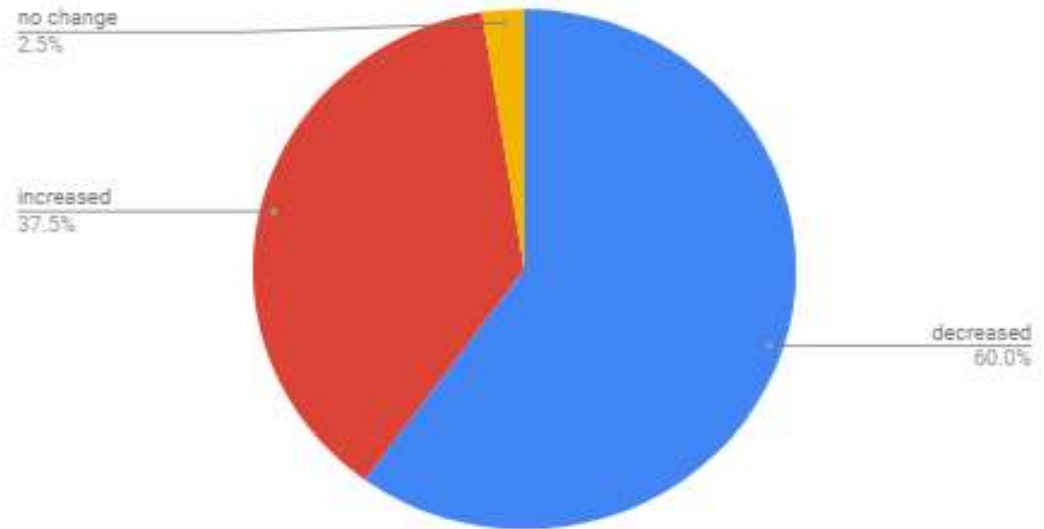


Land Use Kookalthorai in 2018

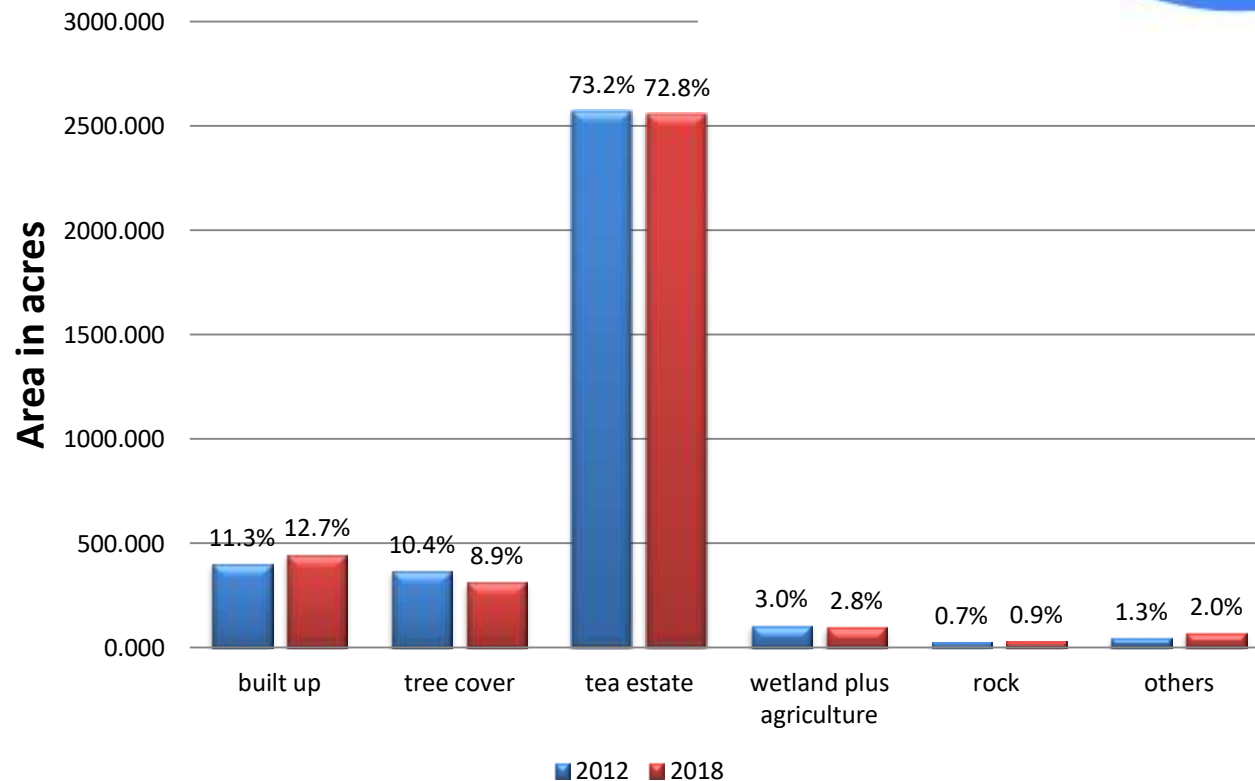


Analysis

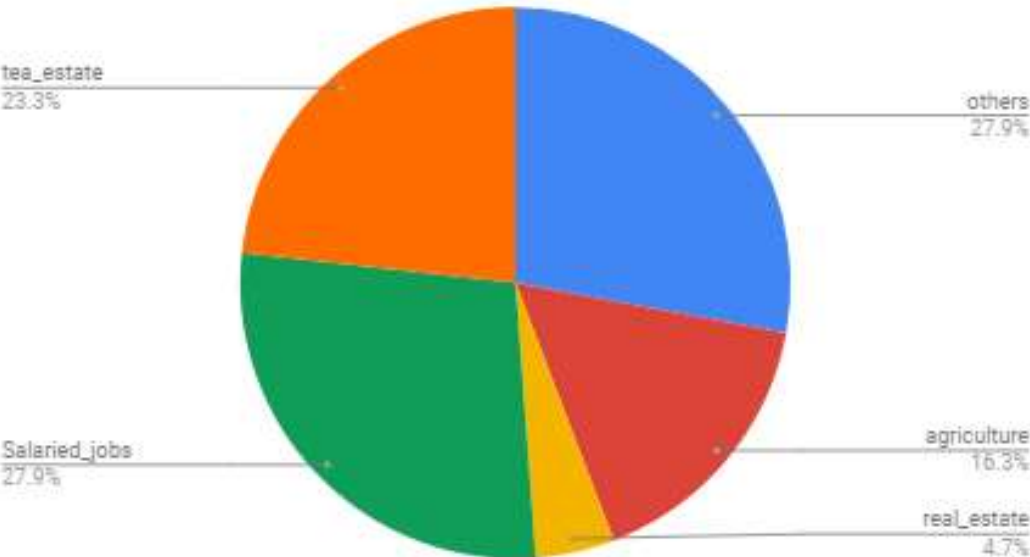
Change in the tea estate area in past 5-6 years



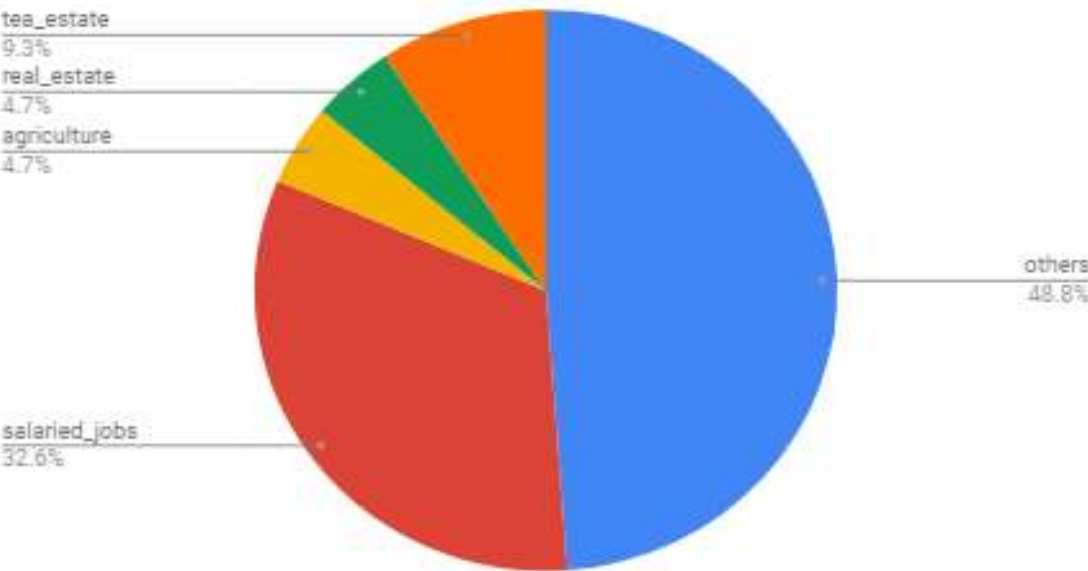
Change in the land use a Waterfalls catchment are



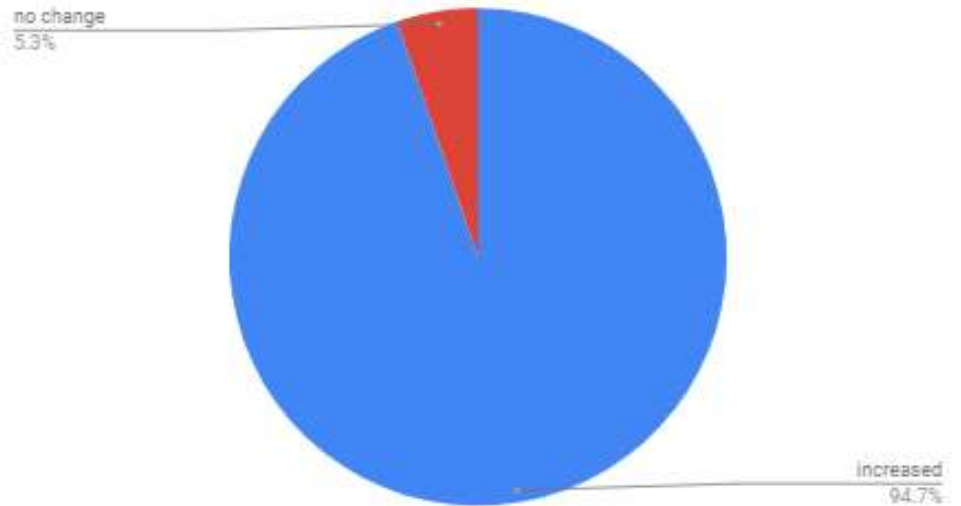
Proportion of the major occupation 5-10 years back



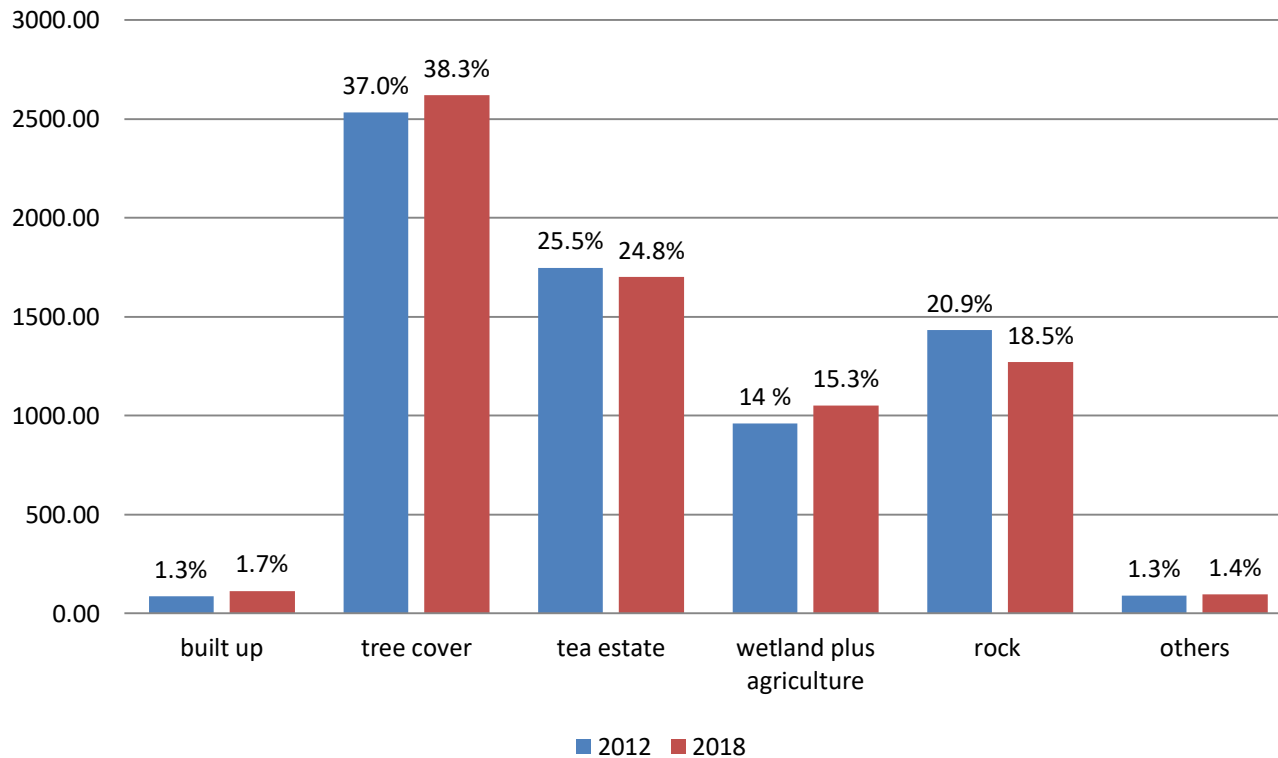
Proportion of the major occupation at present



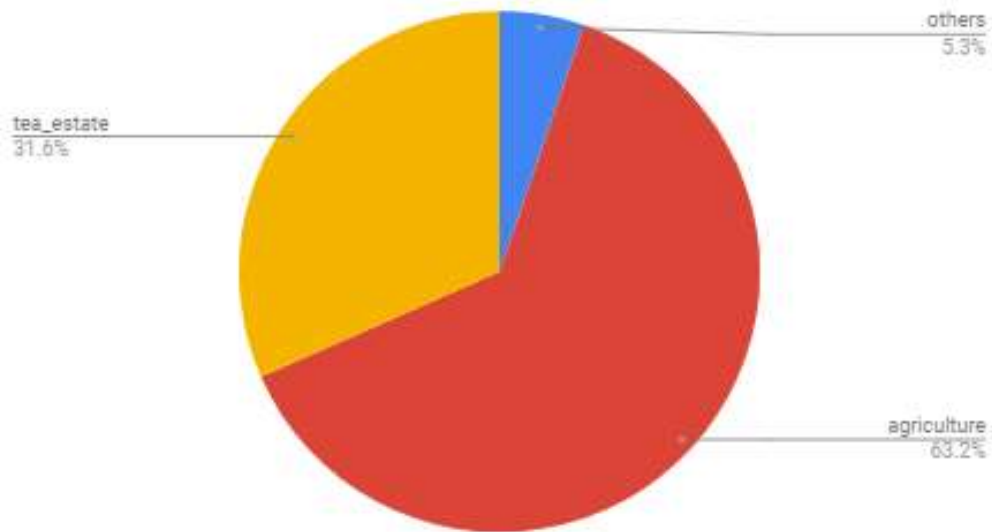
Change in the agriculture field in past 5-10 years



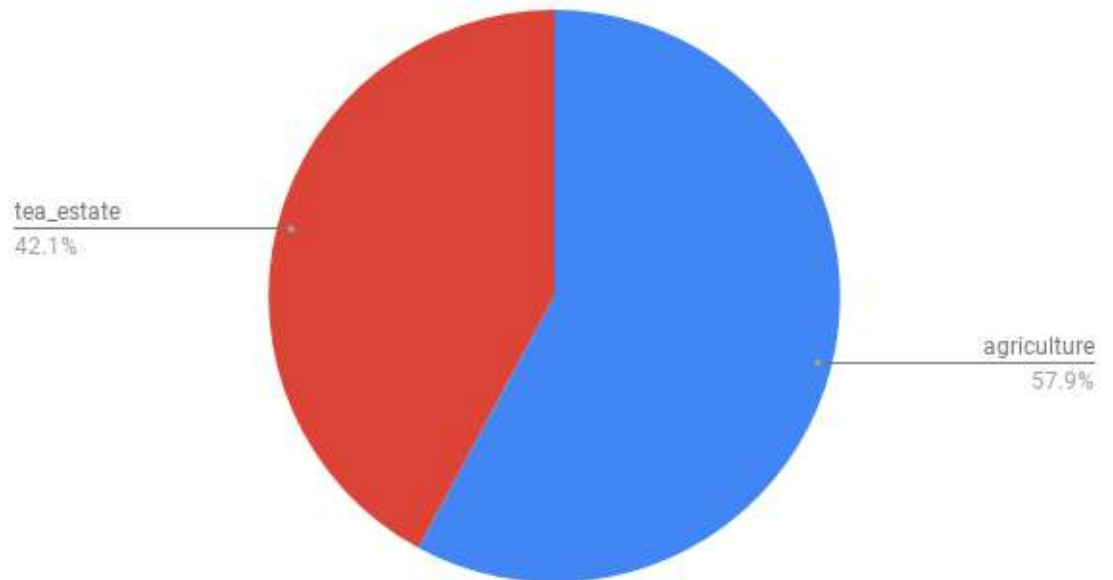
Land Use change in Kookalthorai from 2012-2018



Proportion of the major occupation at present



Proportion of major occupation 5-6 years back



Traditional practices



Conclusion

- Land use change analysis helped us to observe the changes over the 6-10 years in the given study area.
- Following the perception of respondents resulted in the findings that a major increase has been in the built-up areas due to flourishing tourism.
- There is major reduction in the Tea business .
- Tree cover has decreased in the Kotagiri area.
- Kookalthorai there hasn't been much change in the human settlements.
- Agricultural field area has increased as most of the tea estate is getting converted to agriculture fields.
- Water availability is one of the major problem over the past few years due to less rain, reduced tree cover (People's perception)
- Increased pesticides used reducing the productivity of the land and other resources.

Learning's

- Methodology to design questionnaire and conduct survey.
- Community engagement.
- Learning to use tools like Google Earth Pro, ODK Build, ODK Collect and QGIS

References

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Acknowledgement

We are extremely indebted to Dr. Parul Rishi, M.Phil Chairperson, our field trip coordinator Dr. Sandeep Tambe and Dr. C.P. Kala of Indian Institute of Forest Management, Bhopal, for their guidance, encouragement and continuous support. We would like to express my gratitude towards Dr. Pankaj Srivastava for providing us with this opportunity and support to complete our research project.

We are indebted to the Keystone Foundation, Kotagiri, and Tamil Nadu. We would like to express our deepest appreciation to Subin Sir, Jyotsana Ma'am and Shiney Ma'am, who have invested their full effort and knowledge to guide us in our field. Furthermore we would like to acknowledge with much appreciation the crucial role of the Water Monitoring Team. The extensive knowledge, vision, and creative thinking of Gokul and Thanvish have been the source of inspiration for us through this work. We are also thankful to Moorthy and Kannan for helping us during our field work.

We duly acknowledge all the staff members of the Keystone Foundation, and our friends for their love and encouragement throughout the period.

THANK YOU