Synopsis of thesis problem of postgraduate studies

Post Graduate Degree Programme	Doctor of philosophy
Faculty	Faculty of forestry
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Major subject	Forestry
Minor subjects	Silviculture and Agroforestry

Proposed Title



Degradation of Lakes in Kashmir Valley: Analysis of Economic Dimensions for Better Governance

INTRODUCTION:

- Kashmir valley, along with the region of Jammu forms the UT of Jammu & Kashmir
- The Kashmir Valley is a fertile, verdant region enclosed by the high snow capped ridges of the Pir - Panjal to the west and south and the main Himalaya range to the East.
- Kashmir valley has attracted tourists from all over world due to its **serene and scenic features.**
- **Lake tourism** has become a passion world over and is regarded as a biggest revenue generating industry.
- There are about **1248 major and minor lakes**, out of which **Dal lake**, an urban lake has an immense importance.
- Most of the popular destinations in Kashmir **are being thronged by tourists above their respective carrying capacities.**

- It is noticed that more than **70%** of the tourists are not environment conscious. They litter everywhere they visit within or around the lakes.
- As stated by **Hawkins**, tourism is a goose that not only lays a golden egg (economic benefits), but also has the potential to foul its own nest (environmental degradation).
- Steady population growth coupled with increasing waste disposal accentuate these problems and led to lake degradation.
- Kitchen wastes, disposals from toilets, washrooms or bathrooms from big hotels and other places are **directly thrown in the lakes**.
- Many lakes of valley once with crystal clear waters have lost their charm due to drastic **anthropogenic activities** and invasion of many other invasive noxious weeds.
- **It is imperative to investigate the extent of degradation of lakes in relationship with causing factor to arrive at options for better water use governance.**

SCARCE EVIDENCES ON DEGREDATION OF WATER RESOURCES IN KASHMIR VALLEY, J&K

AUTHOR	WORK DONE	AEA OF STUDY
Hongming He *et.al* (2007)	Estimating Water Quality Pollution Impacts Based on Economic Loss Models in Urbanization Process.	Xi'an, China.
S. S. K. Chandrasekara *et al.,* (2021)	A review on water governance in Sri Lanka: the lessons learnt for future water policy formulation.	Sri lanka.
Haddouch Moha *et. al* (2017)	Socio-Economics and Governance of Water Resources in the Souss-Massa River Basin.	Morocco.
Dinesh K. Marothia (2003)	Enhancing Sustainable Management of Water Resource in Agriculture Sector: The Role of Institutions.	India.
Thomas George & Shaju K John (2015)	Water pollution and its impact on rural Health; a micro analysis based on river Pampa.	Kerala, India.
C. P. Kumar (2018)	Water Resources Issues and Management in India	River Ganga, India
Shakil A. Romshoo *et. al* (2017)	Climatic, geomorphic and anthropogenic drivers of the 2014 extreme flooding in the Jhelum basin.	Kashmir, India.
Farhet A. Shaheen & Farhed A. Shah (2017)	Climate Change, Economic Growth, and Cooperative Management of Indus River Basin	J&K, India
M. H. Wani *et. al* (2019)	Economic appraisal of water ecosystem in J&K: India	Srinagar, J&K

Objectives

- To assess the extent of degradation of lakes and to estimate the magnitude of loss of ecological values,
- To quantify the determinants of lake degradation, and
- To examine the perception of different stakeholders regarding restoration of lakes.

Methodology:

Study Area & Data Collection:

The study will be carried out on different lakes of Kashmir Valley. The lakes will be selected on the basis of **Area and Trophic State Index (TSI).**

S. No	Lake	Area Status	
		Then	Now
01	Dal	32 km^2 (1895)	24 km^2 (2017)
02	Anchar	19.54 km^2 (1893-94)	4.26 km^2 (2017)
03	Wular	217.8 km^2 (1911)	80 km^2 (2019)
04	Manasbal	3.12 km^2 (1922)	2.81 km^2 (2019)
05	Hokersar	18.75 km^2 (1969)	13.00 km^2 (2014)
06	Gill Sar & Khushhall Sar	1.55 km^2 (1911)	1.06km^2 (2019)

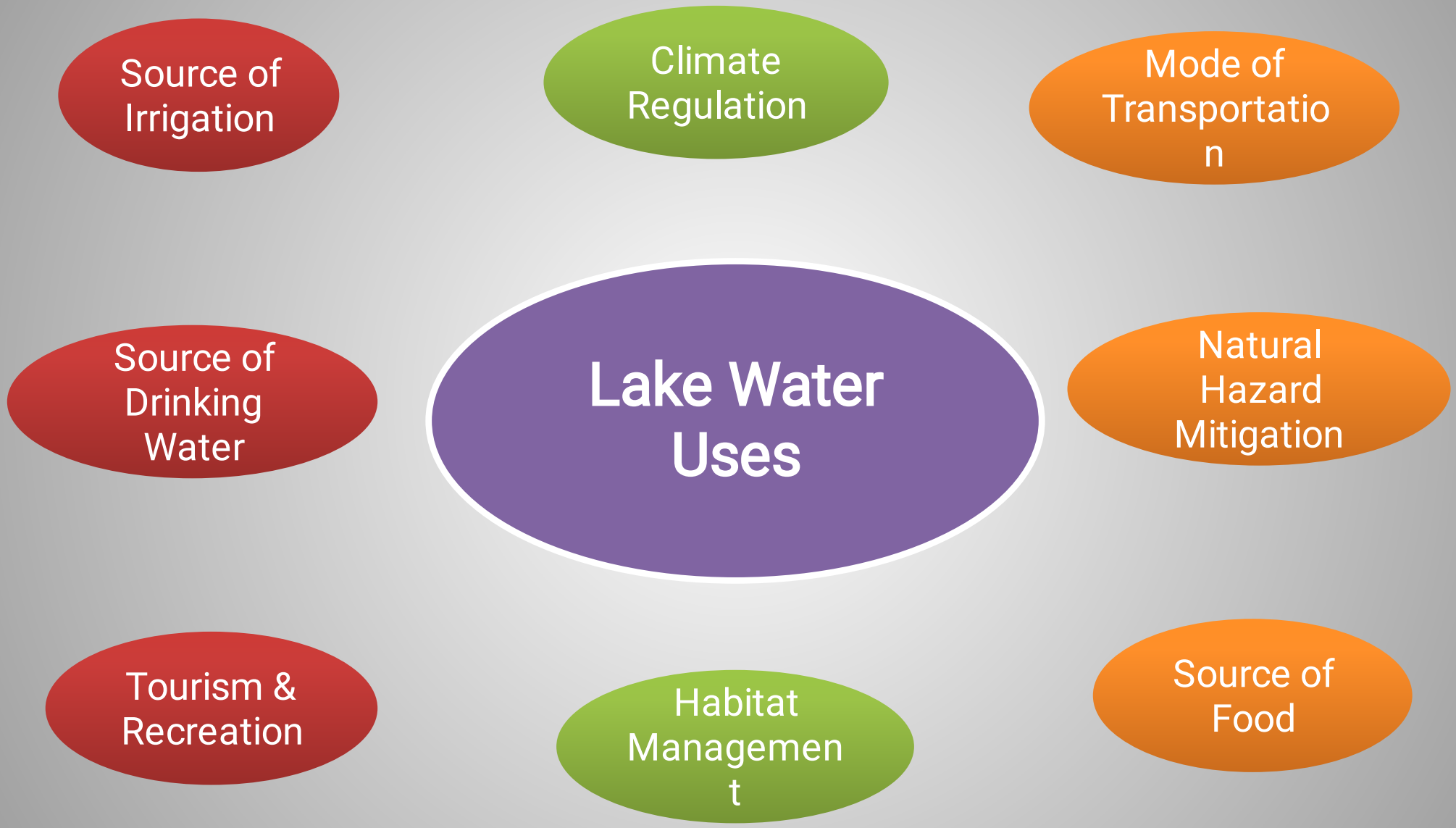
Trophic State Index (TSI)	Lakes
Oligotrophic	Gangbal/Sheshnag/Kausarnag
Mesotrophic	Manasbal/Nilnag
Eutrophic	Dal/Wular
Hyper eutrophic	Anchar/Gilsar

Primary data will be collected regarding:

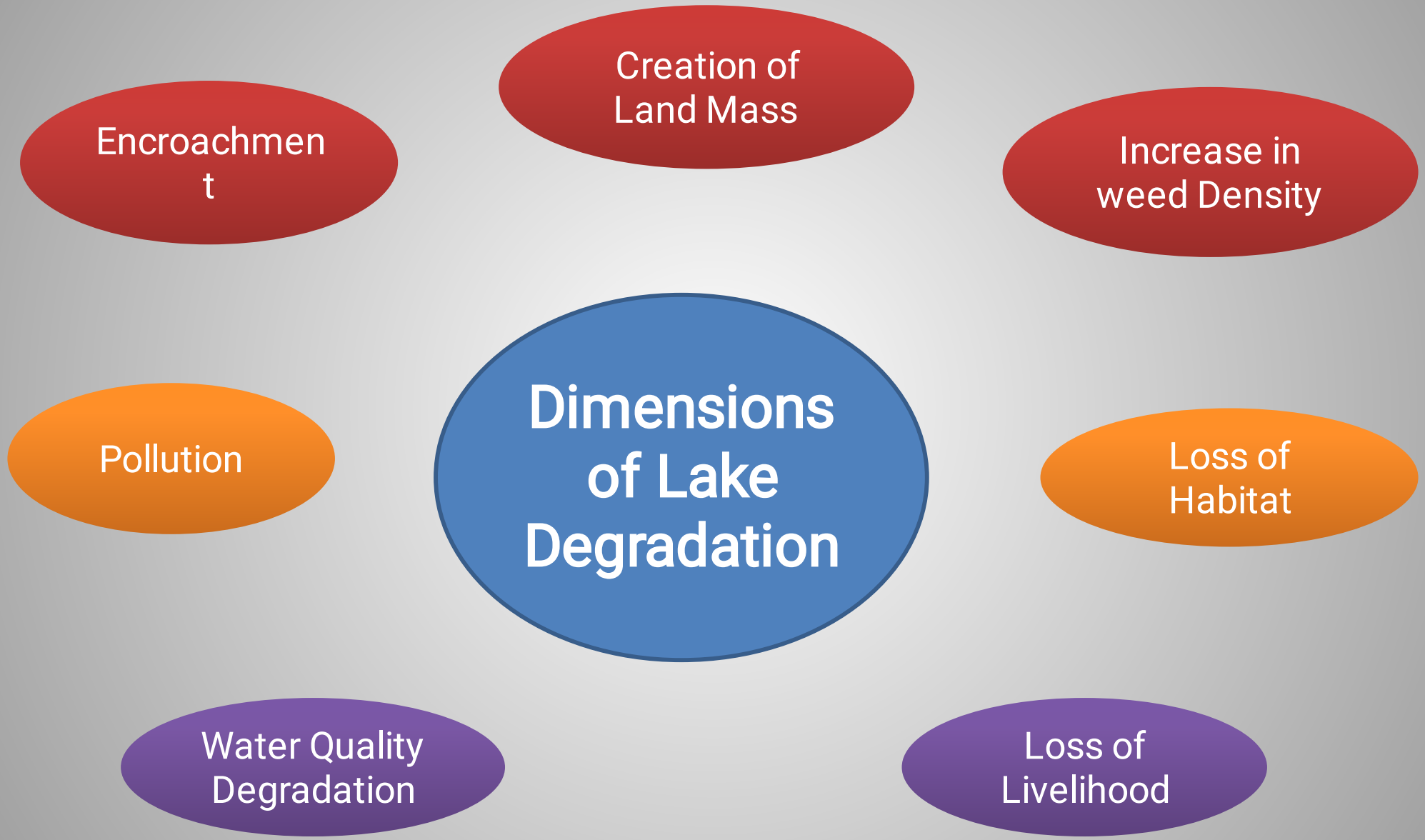
- Uses of water resources.
- Causes of degradation.
- Impacts of degradation.
- Institutional impact on water resources.
- Impact of tourism on water resources Etc.

Secondary data regarding **area, physio chemistry, loss of habitat, institutional investment, faulty policies** etc. will be collected from **various departments, agencies, journals, research articles** etc.

Lake Water Uses:



Dimension of Lake Degradation:



Selection Of Respondents:

Lake	Respondents	Total
Oligotrophic Lake	Local Residents (30) Other Stakeholders (30) Tourists (15)	75
Mesotrophic Lake	Local Residents (30) Other Stakeholders (30) Tourists (15)	75
Eutrophic Lake	Local Residents (30) Other Stakeholders (30) Tourists (15)	75
Hyper Eutrophic lake	Local Residents (30) Other Stakeholders (30) Tourists (15)	75

Total Number of Respondents = 300

Analytical Tools:

To determine the **factors of degradation** etc. following Economic function will be applied;

$$L_d = f\,(\,Pop_d, T_f, W_d, A_a, U_d, \ldots\ldots U)$$

Where:

L_d = Lake degradation.

Pop_d = Population density.

T_f = Tourist flow.

W_d = Waste disposal.

A_a = Agricultural activities.

U_d = Urban development.

S. No	Dimensions	Indicators
01	Social Dimension	• Family Size • Household Income • Committee Size • Water resource Services. Etc.
02	Economic Dimension	• Efficient water use. • Economic Growth. • Different income sources. Etc.
03	Political Dimension	• Role of Government Institutions. • Role of stakeholders. • Role of local citizens. Etc.
04	Environmental Dimension	• Sustainable water use and ecosystem services. Etc.

Besides these, various statistical and mathematical tools will be used to carry out the analysis of data.