

*The Promotional Seminar for JDS Program 2019*

# WRITING A RESEARCH PLAN

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# About Myself

## ■ Education

- PhD (Integrated River Basin Management), 2010, **JAPAN**
- M. Eng. (Water Eng. & Management), 2007, Thailand
- B. Eng. (Civil), 2004, IoE/TU, Nepal

## ■ Professionally

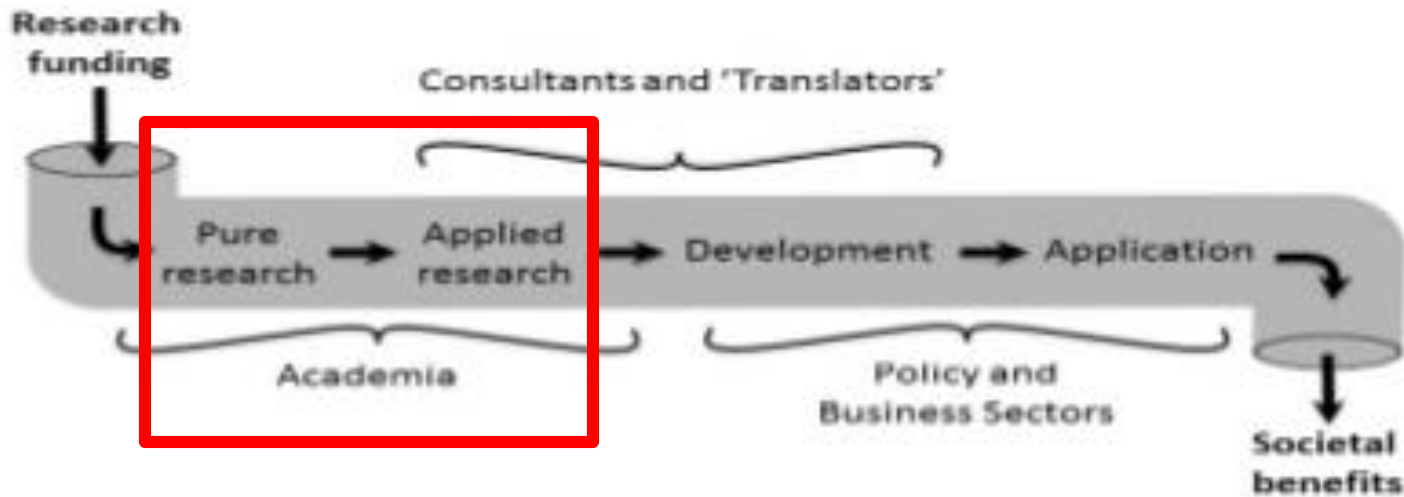
- Researcher – Hydrology/Water Resources Management
  - International Water Management Institute (IWMI)
- Research Fellow/Affiliated Faculty
  - Asian Institute of Technology (AIT), Thailand
- Research Faculty
  - Asian Institute of Technology & Management (AITM), Nepal
- Post. Doc.
  - Interdisciplinary Center for River Basin Env. (ICRE), **JAPAN**

# Contents

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- Getting started
- 3 questions in Application Form [JDS Fellow]
- Research Plan/Proposal – Contents
- Research Types
- Considerations for Writing

# Getting Started



- Concerns for scientist/academician?
  - Scientific facts; methods used; assumptions; interpretations
- Concerns for policy-makers?
  - Quantify immediate & long-term impacts (in \$ terms!)
- Concerns for society/public?
  - Advisory; what should they do?

# 3 Questions in Application Form (AF) – JDS Fellow

## ■ Q5-6: Work Experience

- What were/are key areas of your work/responsibilities?
- What areas do you feel need improvement?
- How are they linked to broader development issues?

## ■ Q7: Research Plan

- What are research questions to address that gap/lacking?
- What could be your objectives to fill that gap?

## ■ Q8: Using Knowledge for Development of Nepal?

- How your research contributes in – i) Advancing your personal career; ii) Institutional Development of your organization; iii) Developing your country

## 3 Questions in Application Form (AF) – JDS Fellow

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- Whether your research plan is in-line with solving development issues/target areas?
- Whether your research plan is in-line with the Graduate School program that you are applying for?
- What are your motivation for the proposed research
  - Try to link with learnings from challenges in your current job and try to link research plan with that?

# Research Plan/Proposal - Contents

## ■ Introduction

- Context (**issues**); Problem Statement; **literature review**
- Purpose/**Rationale** of research;
- Research questions & objectives

## ■ Methodology

- Activities/Research procedure
- Data sources & collection techniques/approaches
- **Ethical** consideration (for social-science research)
- Analytical techniques

## ■ Expected Outputs

- Expected finding; ways to use the results to solve the **issues**; how can they be useful for development of country

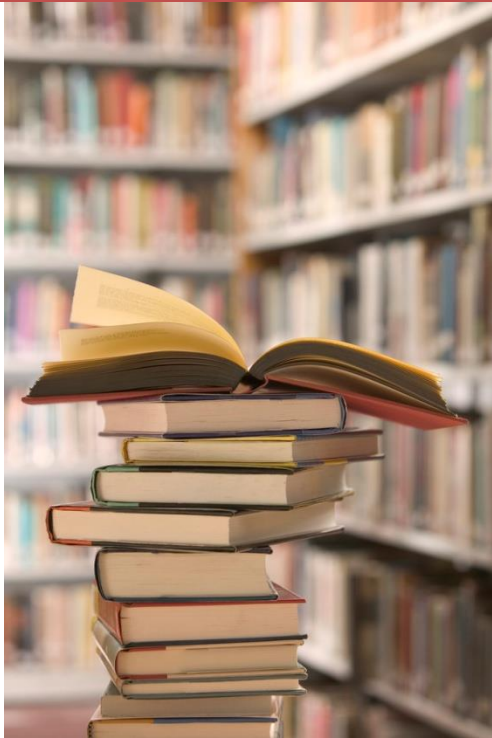
## ■ References

**DEPTH  
rather than  
BREADTH!**



# Research Plan/Proposal - Contents

## Literature Review – What to Review?



- How **other scholars** have written about your topic
- The range of **theories** used to **analyze** materials or data
- How other scholars **connect** their specific research topics **to larger issues**, questions, or practices within the field
- The best **methodologies** and research techniques for your particular topic.

# Research Plan/Proposal - Contents

- Contributions or usefulness or benefits (or rationale)
  - methodological
  - practical and/or theoretical
  - highlighting issues (or awareness)
  - to study area & other areas
  - to research community & outside world

Significance/  
Implications



## Research Plan/Proposal – Objective/Scope

- Link each objective to key problems identified
  - Broad objective & specific objectives (3-5)
  - Appropriate statement for objectives
  
- Use appropriate research questions
  - to link key problems & corresponding Objectives
  
- State limitations of the research
  - Be clear about what the study will **NOT** address

# Research Plan/Proposal – Objective [Example]

Key Problems	Research Questions	Objectives
<ul style="list-style-type: none"><li>• Climate is changing over time</li></ul>	<ul style="list-style-type: none"><li>• What are the Historical trends (spatial &amp; temporal) in climatic variables?</li></ul>	<ul style="list-style-type: none"><li>• To assess historical trends in climatic variables</li></ul>

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# Research Types – Fundamental vs Action Research

## ■ Fundamental Research

- Create basic/scientific understanding
- Hydrological Process (e.g. recharge process, Evaporation, etc);
- Biological Process;
- ???

## ■ Action Research

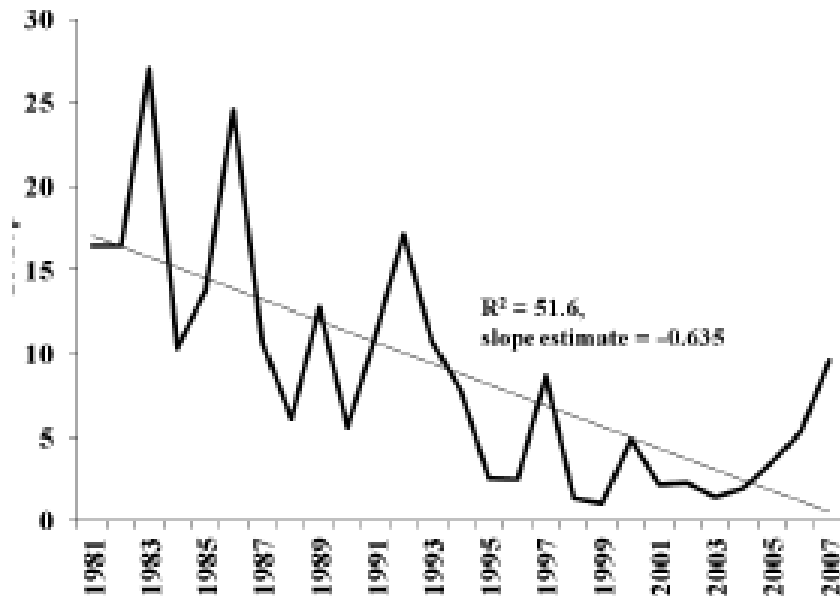
- Application of fundamental knowledge for useful purpose
- Providing agro-advisory to farmers
- Livelihood security
- Water security
- Energy-efficiency
- ???



# Research Types - Quantitative vs Qualitative

Quantitative

- Is climate change taking place?
  - Identify parameters & plot the time-series [e.g., TXx – Maximum of daily Tmax]
  - Data screening; homogeneity testing; **direction/amount/significance** of trends (Man-Kendall tau test; p-values)



Station	TXx [°C]
S1	-0.632 (p=0.230)
S2	<b>0.175</b> (p =0.020)
S3	<b>-0.23</b> (p =0.008)

(**p-values** are in Parenthesis; **bold** values indicate **significant** trends at 5% level of significance)

# Research Types (Qualitative)

Qualitative

## ■ Is climate change taking place?

- Develop suitable set of questionnaire
- Decide sample size (e.g. % of pop., or stat. approach)
- Conduct questionnaire survey, focal group discussion (FGD), key informant interview (KII), etc.

- has it become hotter/colder than past years?
- has it become less colder during winter?
- has it become more rainy compared to past?
- has there been any change in timing of rainfall?

n=sample size;  
N=population size; LS  
is level of confidence  
(e.g. 95%)



$$n = \frac{N}{1 + N \left(1 - \frac{LS}{100}\right)^2}$$

# Research Types (Qualitative)

Qualitative

## ■ Is climate change taking place?

- Analyze data (e.g. descriptive statistics;  $\chi^2$  test for statistical significance, etc)

VDC	No. of households	Temperature		Precipitation			Timing	
		I	NC	I	D	NC	On time	Erratic
Kunjo	30	26	4	24	2	4	3	27
Kobang	30	25	5	22	3	5	4	26
Jomsom	35	30	5	2	28	5	4	31
Muktinath	30	25	5	4	21	5	3	27
Lomanthang	30	24	6	4	22	4	5	25
Total	155	130	25	56	76	23	19	136
(%)	(100)	(84)	(16)	(36)	(49)	(15)	(12)	(88)

I: Increase;  
D: Decrease;  
NC: No change

Perceived climate change

p

Temperature  
Precipitation intensity  
Precipitation timing  
Snowfall

$\chi^2$  test: statistically significant at 95% level of significant

0.006  
0.037  
0.011  
0.019

# Research Process/Methodology

01

- **Problem formulation**

- Problem statement, objectives & scope

02

- **Literature review**

- Concepts, methods, earlier studies, etc

03

- **Research design**

- Process, hypothesis, sample size, techniques

04

- **Data collection/analysis/interpretation**

- Generalization, conclusion, recommendations

05

- **Submission & dissemination**

- Report writing, presenting (oral), publishing

# Considerations for Writing – Parts of a Proposal

- Title
- Initial Pages
- Introduction
  - Background/context
  - Problem statement
  - Research Question/ Objectives/Scope
  - Significance/implications

- Chapters overview
  - Literature Review
  - Methodology
  - Study Area
  - Expected Outputs
  - Time & Budget Plan
  - References

# Considerations for Writing – Story-making

- Describe proposed plan
  - **WHAT** you intend to study (scope & research questions).
  - **HOW** you intend to study (methodology).
  - **WHY** this topic needs to be studied (significance).
  - **WHEN** you will complete this work (timeline).
  - **WHERE** you will conduct this work (study area)

Provide a Bigger Picture



# Considerations for Writing – Citation & Referencing

## ■ Citation:

- A reference to a (un)published source. Purposes are -
  - uphold intellectual honesty (avoid plagiarism);
  - attribute prior work & ideas to the correct source;
  - help the reader to measure strength & validity of materials used by the Author
- **Citation:** climate change may alter the hydrologic systems (Bolch et al., 2012)

## ■ References:

- List of sources **cited in the Report/Thesis**

## ■ Bibliography:

- List of sources consulted; **whether cited or not**

Referencing: Bolch T., Kulkarni A., Kääb A., Huggel C., Paul F., Cogley J.G., .Bajracharya, S. (2012). The state and fate of Himalayan glaciers. *Science*, 336 (6079): 310–314.

# Considerations for Writing – Citation & Referencing

- Oxford style
- Harvard style
- MLA (Modern Language Association) Style
- APA (American Psychological Association) style
- Chicago style
- ...
- ...



# Considerations for Writing – Plagiarism

- It is a wrongful use of another author's **language, thoughts, ideas or expressions** as one's own
- **Plagiarism** is considered as academic dishonesty and a breach of journalistic ethics
- Plagiarism is not a crime per se but in academia and industry it is a serious ethical offense and cases of plagiarism can constitute copyright infringement
- Many institutions use plagiarism detection software to discourage plagiarism
  - [iThenticate](#)
  - [Turnitin](#)

Thank you!

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**VERY BEST WISHES!**

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