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River Science Research: Multidisciplinary To Trans Disciplinary

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Abstract

We are in the decay where water is important as well as complex concern of our day to day life. River is the main source of surface water. It's merely essential to figure out the issues that will affect the river changes for successful river management. Due to enormously uncertain spatial; temporal multidimensional characteristic of river change it's very difficult to give exact theoretical concept to address this issue. There is inherent contradiction that what the basis for river management is; since property of river change cannot be explained and expressed by single factor. Therefore, river changes scenario should have to realize as dynamic process. Integrated assessment of physical and socioeconomic scales in rivers changes improve our understanding and provide greater potential for long-term persistence of river management and it will require a conceptual framework. A successful development of conceptual framework should provide a basis for multi-disciplinary researcher with very diverse goals for river changes to come together in support of better river management. To see regularity in the behavior of river change, it is necessary to prepare a conceptual framework. In this paper an attempt has been made to prepare the conceptual framework of river changes to get more to Trans disciplinary research.

Keywords*: river changes, river management, conceptual framework, water, Trans disciplinary*

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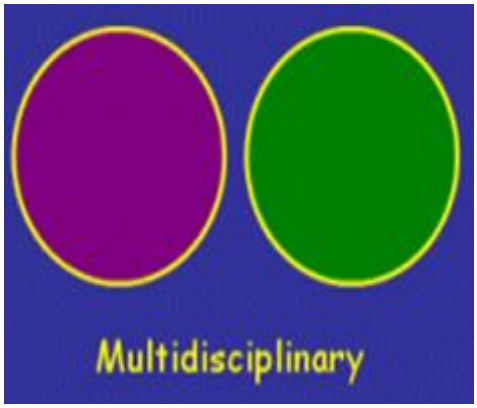
INTRODUCTION

Effective river management involves concern of multifaceted interacting processes with frequently opposing goals. In particular; to deal with social, environmental, technical, Legal, Policy and economical; outcomes should be considered to get better sustainability of river systems [1, 2, 3]. River Management required better communication among researchers for technical & environmental aspects, managers for social aspects and funding bodies for economic aspects [4]. In river science research multidisciplinary and interdisciplinary approaches are frequently in use [5,6,7,8,9,10,11,4,12] . In this paper different aspect of river change research which involves more than one area has been shown and emphasis on transdisciplinary research instead of multidisciplinary or interdisciplinary approaches in the river change study. Idea of transdisciplinary research borrowed from human health science [13,14] analogous to river change i.e. health. Multidisciplinary Research has individual goals of different professions, Interdisciplinary Research has Shared goals but Transdisciplinary Research has Shared goals as well as shared skills [14]. Social systems can provide a risk or benefit to the wellbeing of a river system, through excess or lack or through incompatible characteristics and it is important part of transdisciplinary research. Social systems learning encompasses a more structured approach facilitating participatory decision making by improving mutual learning of all involved actors[15]. Transdisciplinarity integrates the natural, social and technical sciences in a humanities context and transcends their traditional boundaries [16] .

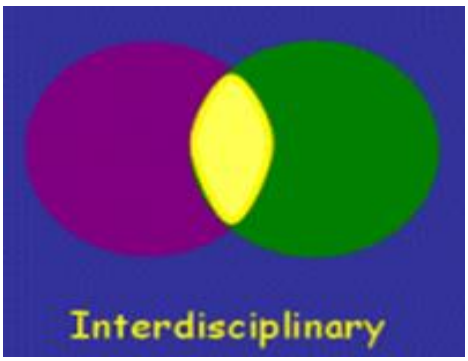
TYPES OF SCIENTIFIC RESEARCH (Involving more than one subject together)

a. Multidisciplinary Research: Draws on knowledge from different disciplines but

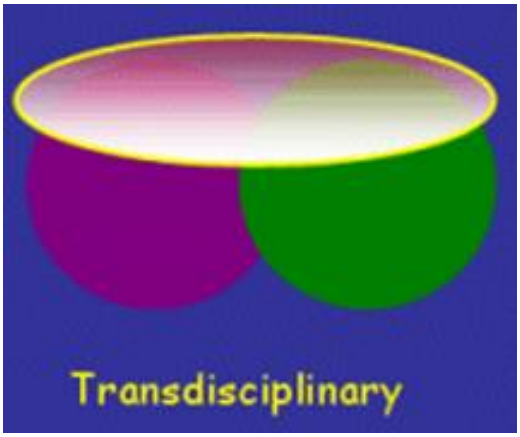
stays within the boundaries of those fields [16]. In multidisciplinary research, a variety of disciplines collaborate in one research program without integration of concepts, epistemologies, or methodologies. The degree of integration between disciplines is restricted to the linking of research results [17].



b. Interdisciplinary Research: Involves the interaction among two or more different disciplines and occurs at the inter face between disciplines. This may range from the sharing of ideas to full integration of concepts, methodology, procedures, theory, terminology, data, organization of research and training [16]. Interdisciplinary research is a collaboration of several disciplines, but in this case concepts, methodologies, or epistemologies are explicitly exchanged and integrated, resulting in a mutual enrichment [13].



c. Transdisciplinary Research :Transdisciplinary is a specific form of interdisciplinary in which boundaries between and beyond disciplines are transcended and knowledge and perspectives from different scientific disciplines as well as non-scientific sources are integrated [13]. It is the problem-oriented research involving the participation of stakeholders in society [14]. Transdisciplinarity integrates the natural, social and technical sciences in a humanities context and transcends their traditional boundaries.



DISCUSSIONS ON CONCEPTUAL FRAMEWORK OF RIVER CHANGE

River system affected by infrastructures on it are well studied field[18,19,20,21,22,23] and will lead for river change also. Catchment hydrology actively contributes in river systems [24, 25] and it is the important part of conceptual frame work of river change. Catchment hydrology modifies river systems as well environmental and ecological services [26, 27] and well connected with social systems [28, 29, and 30]. Social systems; which are the part of transdisciplinary research [14] as well as river science behavior study [28,29,30] , is included in this conceptual frame work to optimize change of river systems. Conceptual frame work of river change is given below in Figure 1.

Left part of frame work tries to optimize the river change and right part take care of action needed when some changes occurred or going to occur within their region. This whole frame work is showing transferability of work from regional to local scales i.e. larger to smaller scales. Transferability of each work to another should be subjective rather than objective to run this model better. River system model may be enhanced with active participation of technical and non-technical peoples attached with the system.

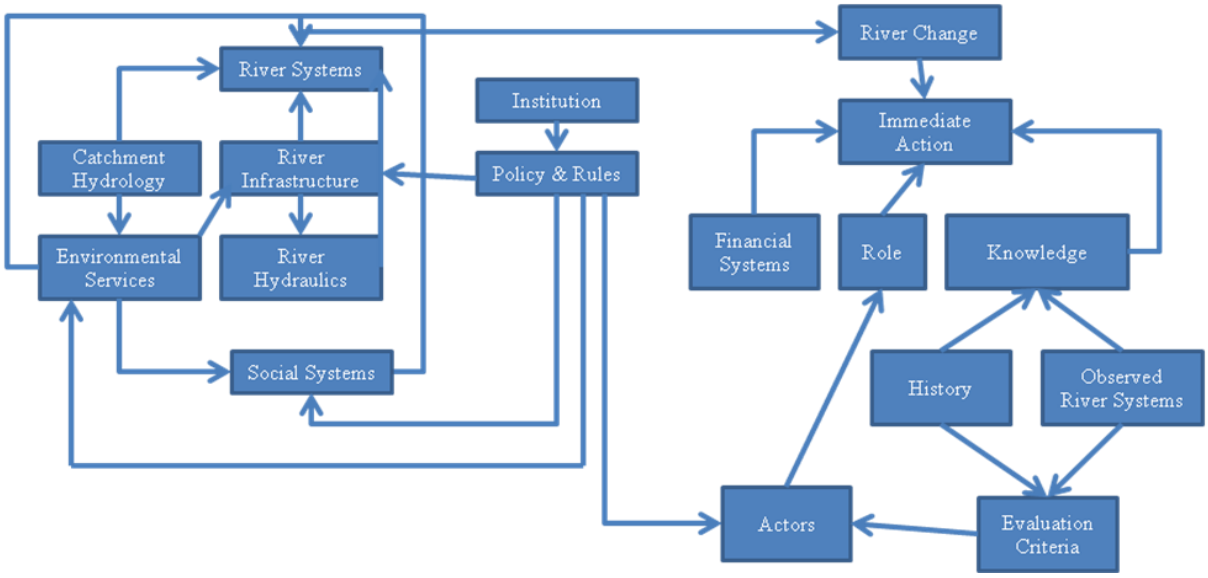


Fig. 1: *Conceptual frame work of river change.*

CONCLUSIONS

1. River science research can be adopted as transdisciplinary research rather than multidisciplinary or interdisciplinary research.
2. Cognitive transferability can be preferred over technical transferability of work in river system framework.
3. Evaluation criteria given to actors of all fields based on history and current observation of river systems and they have to work as group rather than individual.

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