

# New Security Concept and Analytical-Transdisciplinary Approaches to Hydro Politics

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**Abstract**— Sustainable water management in transboundary river basins have gained more importance related with climate change induced uncertainty that have increased since last 30 years. It is obvious that beside of water shortage, uncertainty also can create more tension between neighbouring countries in near future. Because the current status of governance of transboundary basins shows that 60% of transboundary basins do not have any agreements. One can also see that 80% of existing agreements are bilateral. Beside of this situation many agreements don't provide for regular data-sharing/ notification. They also don't establish water allocation&benefit-sharing criteria/processes. They don't contain dispute prevention/settlement rules and don't apply to entire river basin / aquifer system, etc. It seems that a new generation of literature will have somehow different hydro-politics definition to cover the new security concept that is different than that of cold war era security. This will influence the hydro diplomacy concepts in international relationships in the 21st Century. In an attempt to help to clarify a new hydro politics concept, the article proposes an analytical-transdisciplinary approach to Hydro Politics Research. But this study does not attempt to have the final say or an exact definition on new hydro-politics concept. The philosophy behind this study is try to identify the hydro-politics in connection with new world order and new security concept of 21st Century. In this Century Climate change related Water, Energy, Food, Environment security and their interrelations will play more important role for national and regional security issues.

**Index Terms**— Analytical Approach, Improved Hydro-politics, New Hydro-politics, New Water Diplomacy, Paradigm Shift, Transdisciplinary Research

## 1 INTRODUCTION

There has been little advancement in the development of applicable and effective frameworks for realistic international water cooperation during last 60 years. But the world population lives in transboundary river basins has increased and reached approximately 45% of the total population during this period. Growing threats and the reality of global change calls for “**Innovative Hydro Diplomacy**” The new terms of hydro politics like improved hydro politics, innovative hydro politics, upgrade hydro politics, anthropocentric hydro politics [12] in the recent studies can be considered as a need of a paradigm shift to a new hydro-politics approach.

UN General Assembly call for ‘preliminary studies on the legal problems relating to the utilisation and use of international rivers in 1959. Text developed by International Law Commission, in collaboration with UN Member States between 1970 –1994. Even there hasn't been expected advancement in the development of transboundary river basins management, two main agreements came into force on transboundary waters are 1997 UN Watercourses Convention in 2014 and UNECE 1992 Water Convention in 1996 (EU), in 2013(Global).

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## 2 ANALYTICAL APPROACH

An analytical approach can be defined as the use of an appropriate process to break a problem down into the smaller pieces necessary to solve it. In this case each piece becomes a smaller and easier problem to solve [9]. The problem solving process can be taken as a puzzle solving effort. This needs firstly understanding the systems and key pieces of the puzzle.

In the definition of analytical approach, the key words are “*fit and appropriate.*” If your problem solving process is not appropriate and doesn't fit the problem, you can execute the process to the highest quality possible and still not solve the problem. This is the reason most people fail to solve difficult problems. They're using an inappropriate approach without realizing it. The process doesn't fit the problem [9]. If you are not using an appropriate analytical approach, you will never find enough pieces of the puzzle to solve a difficult problem.

In other words analysis means separating a problem into its constituent elements. If we can do that we reduce complex issues to their simplest terms. Mostly we usually focus on the solution giving inadequate attention to alternative solutions. This might direct us to discuss and think hard expending a lot of energy but going nowhere.

Analytical means the use of analysis to solve problems. Analysis is breaking a problem down into smaller problems so they can be solved individually. For instance; transboundary issues individual solutions of the total problem should be linked each other creating spill over effect to solve other easy but blocked problems.

A process is a repeatable series of steps to achieve a goal. That's why an analytical approach is the use of an appropriate process to break a problem down into the elements necessary to solve it. Each element becomes a smaller and easier problem to solve.

## 2.1 Appropriate Analytical Approach at Non Basin Scales

Transboundary water issues are also large and complex issues that requires appropriate process to break a problem down into the elements.

Smaller-scale transboundary frameworks, tailored to specific issues, may constitute a fit-for-purpose approach that helps achieve practical progress in the context of broader basin-level approaches. In fact instead of entire basin-scale focus, basin-scale with a focus on scales inside the basin is an innovative and goal oriented method to reach solutions [8]. Transboundary water management is widely advocated to be implemented at the basin level, and a growing body of basin-level institutions have been formed in transboundary waters. However, transboundary water cooperation has also occurred at a range of non-basin scales. Ultimately, there may be a need to complement basin-scale focus with focus on scales inside the basin. Solutions to certain water issues may be effectively delimited at geographies other than the full basin [8].

An appropriate analytical approach to break a problem down into smaller problems can be taken as a focus on scales inside the basin. This can make the water problems solution easier which is not directly related with the entire basin. For instance solutions to certain water issues (e.g., dam operation, flood prevention, pollution control, conservation works) may be effectively delimited at geographies other than the full basin. Accordingly, there may be a need for innovative water policy to create transboundary water rules and regulations that are tailored to suit such geographies.

In fact it is not easy to sustainable implementation of the partial agreements because of the hydro hegemony politics between riparians. But even so focus on a selective part of a basin may constitute more achievable or 'second best' forms of water management that may foster practical progress. The classical cooperation at a full basin scale, in recent decades has been softer, more politicized and arguably more precarious cooperation. Most of the river basin organisations have faced several difficulties and struggled to secure riparian funding.

It seems that practically oriented water cooperation occurs at more local scales. Accordingly build on momentum at the local level should receive the attention it deserves.

An analytical approach would go all the way down to the root causes. We should create a concept of root cause resolution with analytical approach. When analysing the problem if don't analyze the matters we don't reach the root of the problems. In this case we only analyze the "proper practices" neces-

sary to solve the symptoms of the problem, like renewable energy, reuse and recycle, cooperation. This so called analysis only deals with the superficial layer of the problem [17].

If we can not create a step forward except for exchanging data cooperation in transboundary basins it means that we are still dealing with the superficial layer of the problem, so this step can be called as a superficial symptomatic solution step.

## 2.2 The Understanding of Power and Power Relations

Recent political developments may reflect significant changes in the balance of bargaining power among the riparian states. There is evidence that over the last decade the upstream riparians have made increasing use of bargaining tools to influence negotiations [4]. Experiences gained till now showed that the understanding of power and power relations has given greater nuance to why and how conflict and cooperation occur in international trans-boundary river basins.

## 3 HYDROPOLITICS! MULTIDISCIPLINARY OR (AND) TRANSDISCIPLINARY

Hydropolitics, a term developed in the 1990's, deals mainly with the politics of international water resources. It tends to be multidisciplinary and includes a political, technical, economic, social and legal approach to analysing international water issues.

In general it has been defined as a multi-disciplinary research and it is not only reflects the growing interest and concern over international water issues, but also the complexity of these same issues [3]. But as the years go by it has been in the scope of transdisciplinary research.

Therefore definition of the hydropolitics term as a multidisciplinary or transdisciplinary approach requires more detailed study on the base of the identifications given by Tress and Fry [2]. Tress and Fry [2] define the concepts and the process of knowledge production in integrative research. They identified Disciplinarity, Multi-disciplinarity, Participatory, Interdisciplinarity and Transdisciplinarity.

Tress and Fry stated that "disciplinary, multidisciplinary and participatory studies (involving one, several academic disciplines and also non-academic participants, respectively), approaches the research one theme, but in a parallel manner. Interdisciplinary and transdisciplinary studies on the other hand are defined as being integrative studies, projects that involve several unrelated academic disciplines and, in the latter case, non-academic participants, researching a common goal by crossing subject boundaries to create new knowledge [2].

We need a transdisciplinary research, if there is a socially relevant problem field, where those involved have a major stake in the issue, if there is societal interest in improving the situation and the issue is under dispute [15].

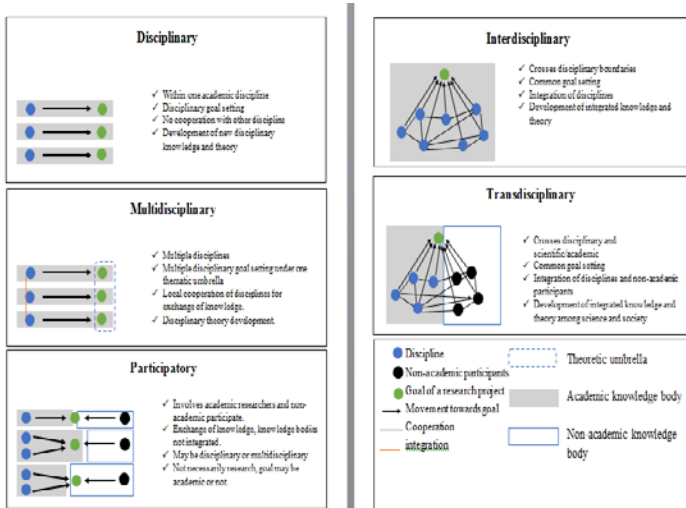


Fig 1. Disciplinary Research Types.[13]

Pohl and Hadorn also stated that “Transdisciplinary research develops descriptive, normative and practice-oriented knowledge in order to help solve, mitigate or prevent life-world problems”The transdisciplinary research process consists of three phases: problem identification and structuring; problem analysis; bringing results to fruition [15].



Fig 2. In transdisciplinary research, scientific disciplines (represented by individual researchers) and sectors of the life-world (represented by individual actors) are getting interrelated and transformed through a problem field. A transdisciplinary research project is the system built by the collaborative research process. [15].

Figure 2 describes the structure of a transdisciplinary research project as a system. The elements of the system are: the problem field, researchers from particular disciplines and actors of governmental and other public institutions, the private sector, the civil society or another sector of society [15]. Considering abovementioned information it can be said that Hydropolitics Research is closer to transdisciplinary research

than multidisciplinary.

### 3.1 THE HYDRO-POLITICAL SECURITY

In general most states define their security relations in regional rather than global terms and that when they confront global issues there is a tendency to see these as determined by the regional context. In effect the region dominates the perception of security”[6]. This approach can be taken as a major departure from the traditional military-state approach to security studies and is an important tool that allows us to put water at the centre of a security (and therefore foreign policy) analysis between riparian states.

### 3.2 WHAT IS HYDRO-DIPLOMACY

According to Three elements are at the heart of hydro-diplomacy, which align closely with the principal objectives of the UN Charter, include the following:

1. The preventive nature of diplomacy in maintaining peace and security;
2. The need for dialogue in which traditional bilateral diplomacy is complemented by multilateral and multilevel diplomacy;
3. The notion of collective responsibility of the international community.

Water governance in a transboundary water resources context requires the meaningful engagement of a vast array of stakeholders through operational and functional mechanisms (formal and informal) but there is no one formula that works in all situations.

### 3.3 BARGAINING POWER

Power plays a significant role in influencing transboundary water relations and allocative outcomes, and must therefore be incorporated into any analysis. In this approach, hydropolitics are also considered to be characterized by hegemonic configurations, wherein the most powerful riparian states have an advantage over their riparian neighbours to influence the allocation of the resources. Notably, the power available to the ‘basin hegemon’ assumes different forms – material, bargaining and ideational.

Bargaining power refers to the capability of actors to control the rules of the game and set agendas, in the sense of their ability to define the political parameters of an agenda [1]. Importantly, however, bargaining power is not the exclusive possession of the hegemon. It is bargaining power that makes the weaker actors in a given basin not as weak as they may be perceived [5]. By leveraging bargaining power, the non-hegemons can in theory improve their negotiating position vis-à-vis the hegemon(s), counterbalance their weaknesses in other fields of

power, and eventually contribute to change the hydropolitical configuration. As such, bargaining power is a key element of any counter-hegemonic strategy [4].

The civil war in Syria and Iraq showed that if there is a war and instability just near the border of a country this war can badly influence to the neighbouring countries creating somehow instability like we have experienced in Turkey.

Therefore Syria and Iraq unrest and civil war has been an important example to defend not only national peace but also regional peace and security in some critical region. This means that bargaining powerful countries in a basin must consider this last Syrian example not to exert power hegemony that can create instability in the region. This approach should especially be taken into account on transboundary water management issues. In other words we need shifting paradigm and conceptual change to regional stability and peace.

### 3.4 SHIFTING PARADIGM AND CONCEPTIONAL CHANGE

Conceptualizing conflict and cooperation in a linear fashion is not a solution-oriented approach. It is very hard to achieve transboundary water cooperation with normative assumptions starting from existing conflicted water issues.

Therefore it needs a new conceptual approach. It may be productive to focus on the analyses of rapid changing which brought new areas to collaborate between basin states rather than taking discrete events related to transboundary water interactions. We can say that "*Traditional Water Conflict or Cooperation*" concept ends with integrated approach with an emphasis on increased diversity and flexibility is needed. It is because of that numerous challenges are involved in water management. These various challenges call for multifaceted, more flexible hydro policy processes.

We need to shift the transboundary water management approach from Water Cooperation to Collaboration to achieve one step ahead to water related goals and security issues as soon as possible.

Concerns over transboundary water "cooperation" has to shift away from absolute water quantity to applicable benefit sharing collaboration on water supply. If collaboration is essential in sustainable transboundary water management, a mutually beneficial way can help built this collaboration in appropriate transboundary river basins [19]. Most of the developments including climate change and nexus water, energy, food and ecosystem showed that a vital need is growing to get innovative approaches to transboundary water governance. We should develop very innovative approach to transboundary water governance in various basins of the World.

First of all we should downscale the concepts and principles of international treaties and regulations on water to a very local level. We should take into account that multilevel governance considering the balance between them. If building trust between the riparian countries is a must. Then we should

find a new and innovative approach and more interdependent relationship apart from classical "cooperation" approach to built dependable and sustainable trust [20]. Mutually beneficial interdependency is the only way to build it.

### 3.5 WHY HYDROPLITICS NEEDS A PARADIGM SHIFT FROM MULTIDISCIPLINARY RESEARCH

Sustainability challenges under climate change require new ways of knowledge production and decision-making for transboundary water management and related issues.

Transboundary rivers water is under the threat of climate change effects. Uncertainty is the most difficult parameter to define to adapt climate change. Therefore instead of multidisciplinary research, transdisciplinary research which the involvement of actors from outside academia into the research process is essential. This need is not only for collecting the best available knowledge but also create ownership for problems and solution options. Lang at all [10] suggested that "*Transdisciplinary, community-based, interactive, or participatory research approaches are often suggested as appropriate means to meet both the requirements posed by real-world problems as well as the goals of sustainability science as a transformational scientific field.*"

Transdisciplinary approach realize the importance of local cultural, social, and economic factors in determining effective base, integrating knowledge from different disciplines related to these factors as well as experiential knowledge from actors in the cases under investigation.

We conclude that a new paradigm is essential and future research needed to further enhance the practice of transdisciplinary research for transboundary hydroplitics [14].

### 3.6 WHY TRANSBOUNDARY RIVERS NEEDS A TRANSDISCIPLINARY RESEARCH

Multidisciplinary research needs multiply disciplinary goal setting under one thematic umbrella. It also requires local cooperation of disciplines for exchange of knowledge. It is also needed disciplinary theory development.

But transdisciplinary research crosses disciplinary and scientific. It requires common goal setting instead of multiple disciplinary goal setting under one thematic umbrella.

Transdisciplinary research requires integration of disciplines and non-academic participants instead of local cooperation of disciplines for exchange of knowledge. Multidisciplinary develops Disciplinary theory as Transdisciplinary develops integrated knowledge and theory among science and society. Lang at all [10] defined one of the key principle of transdisciplinary research as "(re-) integration of the generated knowledge into scientific and societal practice".

On one hand, while real-world implementation of the solution options to the sustainability problem is critically im-

portant, on the other hand to integrate the generated knowledge into the existing body of scientific knowledge is equally important.

In fact, mutual learning among the different transboundary basin commissions needs to be established and learning processes beyond the boundaries of individual projects must take place.

### 3.7 WHAT TO DO ACHIEVE MEANINGFUL COLLABORATION

In order to achieve meaningful collaboration win win is the best model in many case. It should be used a gradational levels of cooperation on water issues. It would be wise to focus on the establishment of a joint committee. This committee can serve as a platform for data exchange and research on the issues of flooding. After a confidence building time the committee agenda can be extended to work on aquatic weed management and rules for navigation. When the committee reach a mutually agreement to take further step for adoption, this could be second phase of the gradually varied establishment of the collaboration. In this stage to reach an agreement on a joint taxation and maintenance program for navigation could be possible. Next step would be an action stage that focus on on the construction, operation and maintenance of joint infrastructure work.

During this mutually understanding period, an acceptable and applicable cost sharing model should be negotiated for any infrastructure or river maintenance programs. It is important to find ways for riparian countries to satisfy each other's interests for mutual benefit instead of zero sum result. For example, upstream areas of Malawi could incorporate downstream areas of Mozambique more concretely into flood planning and management activities. In return, Mozambique could offer concessions to Malawian vessels that wish to navigate from Nsanje to the Indian Ocean (and vice versa) [8].

As for specific, constructive ways forward in the Shire catchment, it can be started with small steps and low intensity. After a certain period of time, confidence building can identify the best opportunity for upscaling. Respective riparian advantages and interests can be a catalyser to reach mutually beneficial collaboration point. After this stage it can be utilized adaptive approaches to find most appropriate way of application.

The mechanism will be used through all stages diverge from conventional approaches often used. Main goal is to reach an active collaboration on water related issues with spill over effects on different sectors [18]. Global norms can supply theoretical very large frames but contextual realities may lie at scales other than the basin wide or regional wide approaches.

## 4 CONCLUSION

Gained experiences have shown that there is a lot to do in transboundary surface and groundwater basin management. Radical change in way of thinking is a must in transboundary

basin management. Therefore what to do first is simply accepting that "It needs more than cooperation" anymore. There is also a need to move from the global analysis (which is very useful to quantify the problem) to localized and contextualized solutions that involve local partners. One solution definitely does not fit all.

During the past years there has been positive progress in awareness, knowledge and tools development but there is still a need to advance on policy coherence and sectorial planning. Climate change progressively became a security issue for the countries, leading to a necessary change of water policies as well as their behavior to transboundary water management. It should therefore be a priority to promote deeper cooperation, comprehensive collaboration on transboundary water management in assessing climate change and its impacts on these strategical water resources.

In fact, classical cooperation approach between co-riparian states wouldn't be enough to manage the Transboundary Rivers and transboundary aquifers under the effects of climate change as well as new international relationships and new geopolitics. Besides the Transboundary Rivers, the proper governance of transboundary aquifers requires particularly high levels of international collaboration. Sustainable transboundary water management need greater political and diplomatic engagement that can't be achieved only classical cooperative approach on water issues. It requires shared vision, shared goal and unity of effort which means a real collaborative approach on the basis of new Hydro-diplomacy approach instead of tight classical cooperative one. International water issues need more than Cooperation.

Instead of entire basin-scale focus, basin-scale with a focus on scales inside the basin is an innovative and goal oriented method to reach solutions.

Solutions to certain water issues such as dam operation, flood prevention, pollution control may be easier other than the full basin management. Management frameworks at scales within basins may no doubt need to be navigated carefully. Nonetheless, focus on a selective part of a basin may constitute more achievable or 'second best' forms of water management that may foster practical progress. As it is stated in IWMI Water Policy Brief No: 39, we shouldn't overlook focus on practical issues to achieve practical progress.

In conclusion, it would seem that a full basin scale cooperation, in recent decades has been more politicized and arguably more precarious cooperation. This has been reflected in the number of River Basin Organisations struggling to secure riparian funding.

It seems that meaningful, practically oriented water cooperation occurs at more local scales and building on momentum at the local level deserves more attention in order to improve relations on transboundary water management. Developing science and technology has been brought new opportunities to solve the problems. For instance; newly developed climate

change models and many statistical models with reliable data will help to identify the future threats more precisely. Accordingly obtaining and implementation of the best solutions will be easier than before. But all these require improved water politics.

Transboundary Rivers requires transdisciplinary research that crosses disciplinary and scientific. It requires **common goal setting** instead of multiple disciplinary goal setting under one thematic umbrella.

New security concept requires an analytical-transdisciplinary approaches to 21 st Century Hydro Politics that is under the effect of serious climate change.

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