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Tracing Power and Influence in Networks

Net-Map as a Tool for Research and Strategic Network Planning

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ABSTRACT

Believing that complex problems call for complex solutions and that stakeholders should have a say in policies that concern them, policymakers have strongly promoted the development of forums and organizations made up of many stakeholders to address complex governance issues such as water management. Both developing and developed countries have instituted multistakeholder water governance bodies on local, national, and international levels. However, while the belief is strong that these integrated bodies *should* improve governance, how and to what extent that actually happens is still unclear, not only because of the complexity of the matter but also due to a lack of appropriate research tools for the analysis of complex governance systems.

This paper presents an innovative empirical research tool—Net-Map—developed to better understand multistakeholder governance by gathering in-depth information about governance networks, goals of actors, and their power and influence. Researchers and implementers alike can use Net-Map to collect qualitative and quantitative information in a structured and comparable way. It can be used both as a research tool and as an instrument for organizational development and strategic network planning. A case study on the development of a multistakeholder water governance body in northern Ghana illustrates the application of this research method. The method can be used on many different levels, from the community, to national or even international levels.

Net-Map merges characteristics of two existing methods, namely social network analysis and the power mapping tool. Using a participatory approach, interviewees and interviewers together draw a network map of the actors involved in the policy arena and characterize the different kinds of links between the actors. They then add "influence towers," made of checkers pieces, to transfer the abstract concepts of power and influence into a three-dimensional form. Finally, the interviewee assesses the goal orientation of the different actors (for example, developmental versus environmental or pro versus con a certain intervention).

The tool provides an influence network map of the governance situation as well as qualitative and quantitative data about the perceived power and influence of the actors. While the data lend themselves to complex quantitative analysis, this paper mainly focuses on the use of the tool for the purpose of mapping and organizational development. The paper explores how the mapping process itself also stimulates a structured in-depth discussion of crucial issues and ways forward. In Ghana, the method has proven to be interculturally applicable and easy to apply and adapt. Interviewees were excited about their own learning processes throughout the interview. Implicit understanding and concepts were visualized and made explicit so that group members could understand where they agree and differ in their perception of the governance arena.

Keywords: Ghana, Water Governance, Social Network Analysis, Net-Map, research methodology, multi-stakeholder governance

ABBREVIATIONS AND ACRONYMS

WVBB	White Volta Basin Board
Trad_Auth	Traditional Authorities
DA_Admin	District Administration
WRC	Water Resources Commission
Mo_FA_Dist	Ministry of Food and Agriculture on the District Level
Res_Inst	Research Institutions
Mo_FA_Reg	Ministry of Food and Agriculture on the Regional Level
GES	Ghana Education Service
EPA	Environmental Protection Agency
Donor_Proj	Donor Projects
Dept_TCP	Department of Town and Country Planning
Priv_Sec	Private Sector
NGOs	Nongovernmental Organizations
GIDA	Ghana Irrigation Development Authority
Dept_Forest	Department of Forestry
Mo_Fish	Ministry of Fisheries
Dept_Wo	Department of Women's Affairs
Security	Security Agencies
GWC	Ghana Water Company Ltd.
CWSA	Community Water and Sanitation Agency
RCC	Regional Coordinating Council
Co_Minerals	Minerals Commission
Faith_BO	Faith-based Organizsations
Disaster MI	Disaster Management Institutions

1. INTRODUCTION

Strongly promoted by international actors such as donors, governments, and nongovernmental organizations (NGOs), multistakeholder organizations and forums play an increasing role in complex governance issues such as water resource management, education, and public health (Cosgrove and Rijsberman 2000).

Some multistakeholder organizations may be legally entitled to make binding decisions. In many cases, however, they play mainly a coordinating and advisory role. The underlying assumption is that coordination will improve the decisionmaking of individual agencies involved. Increased collaboration could inspire synergy effects and help to mitigate conflicts of interest (between agricultural, industrial, environmental, and household uses of water, for example).

However, knowledge about how and why multistakeholder bodies influence policymaking and implementation is still scarce (Widmer and Frey 2006). Widmer and Frey argue that this lack of knowledge stems from a scarcity of appropriate methodologies for analysis.

Since such multistakeholder bodies tend to be located outside existing hierarchies, we argue that their impact is strongly linked to three factors:

- their formal and informal networks,
- the influence/power of different actors within these networks, and
- the goals that these actors pursue.

In this discussion paper, we discuss the extent to which existing approaches to governance analysis in developing countries take into account these three factors (section 2). We introduce the case study of a Ghanaian subnational river-basin board (in section 3) and propose Net-Map as a method that integrates different approaches so as to allow for stringent in-depth analysis and comparison of networks and the goals and power of actors in complex governance fields (section 4). Referring to the case study, we explain how the method can be used both in individual and group interactions and how a process could be structured to serve both data collection and organizational development (section 5). Section 6 gives some guidance toward data analysis, while the concluding remarks in section 7 point toward further uses of Net-Map.

2. EXISTING TOOLS FOR THE ANALYSIS OF MULTISTAKEHOLDER GOVERNANCE

Most governance analysis tools analyze individual sectors separately and focus mainly on formal hierarchies and responsibilities. They fall short in explaining how the emerging complex governance systems work. To obtain a richer and more realistic understanding of multistakeholder governance, researchers and practitioners have developed different methods. They generally approach the analysis from one of two different angles:

- they either analyze the performance of a whole system (such as a water sector, country, or region) based on certain indicators, or
- they evaluate one specific intervention or organization and its effects and achievements.

The analysis of *governance systems as a whole* focuses on the political context in which the policymakers are embedded. One type of analysis is the Country Policy and Institutional Assessment (CPIA) used by the World Bank to inform their decisions about supporting developing countries (Gelb, Ngo, and Ye 2004). CPIA aims to analyze the economic management, structural policies, public-sector management institutions, and policies to promote social inclusion and equity. The main purpose of this type of analysis is to compare the efficiency of different aid-receiving countries, so the focus is on macro-level outcomes rather than on processes.

In recent years some of the bilateral donor agencies have supported the development of instruments to analyze the *processes* through which actors in aid-receiving countries push for or hinder policy changes: The British development agency the Department for International Development (DFID) focuses on identifying the "drivers of change" (DFID 2005). They propose a framework for analysis that incorporates a whole range of different methodologies. In their analysis, they incorporate both formal and informal networks and explicitly discuss the power of different actors. However, because the drivers-of-change analysis is a very broad conceptual framework for a whole range of methodological approaches, the comparability of different drivers-of- change studies is limited. Along the same lines, the "power analysis" approach used by the Swedish International Development Authority (SIDA) provides a broad and methodologically open umbrella for the analysis of both the informal and the formal political landscape (DFID and World Bank 2005). Power analysis can (but does not necessarily) include analysis of the social networks involved (for Tanzania, see Hyden 2005).

Nash, Hudson, and Luttrell (2006) point out that those approaches that focus on policy processes and actors (rather than outcomes) tend to define broad frameworks but often lack in stringent and comparable methodologies. On the other hand, approaches like the CPIA or the Governance Matters and Country Diagnostics of the World Bank Institute are methodologically strict and results can easily be compared between countries. However, the results only provide a rather broad overview of the situation in a country and are of limited value for understanding *how* and *why* a country or a policy field such as integrated water resource management or the health system has reached a certain state. These questions are crucial for those who want to understand how multistakeholder governance works and how to improve or generally affect the situation in a policy field.

This leads to a more pointed perspective focused on understanding how one specific multistakeholder organization can change a policy field. In donor-supported organizations, by far the most widely used tool for planning and evaluation of interventions is log frame analysis. Davies (2003) explores the shortcomings of log frame analysis for understanding complex governance situations in developing countries. He argues that this tool overly simplifies complexities, networks, and feedback loops; introduces counterintuitive abstract terminologies; and is mainly useful for governing small-scale contractual arrangements with clear-cut, well-defined outcomes and a limited number of actors involved. For the analysis of more complex political interventions, he recommends social network analysis (for the use of social network analysis in the evaluation of multilevel governance networks in a developed country, see Widmer and Frey 2006).

Social network analysis is a broad field of research that focuses on the structures of interactions[1] It fills the old adage "it's not what you know, but who you know" with new life and analyzes it from empirical as well as theoretical angles. The underlying idea is that the structure of networks determines both the success of the individual and the way an organization or society acts and develops (Borgatti and Foster 2003). A social network consists of actors, who are represented as nodes, and their interactions, which are represented as links (either directed or undirected). Social network analysis tries to understand social and political situations by focusing on their structure, both formal and informal. Less attention is given to the characteristics of individual actors. A phenomenon like power is explained by the position of an actor in the network. For example, Krebs (2004) argues that those actors are especially powerful who serve as a bridge between actors that are not otherwise linked (high betweenness) and those who can reach everyone in the network on a short path (high closeness). They have a high degree of control over the exchange between other actors (betweenness) and easy access to everyone (closeness).

However convincing these arguments seem, when looking at real world situations, one finds that the structure of the network and the characteristics of the actors shape their influence on the policy process. For example, a donor with just one link (flow of money to one local department) can have a lot of influence on the policy development and implementation, even though its closeness and betweenness are very low. Thus we agree with Davies (2003) that social network analysis can greatly benefit actors who want to understand and improve multistakeholder governance in developing countries. For the purpose of understanding multistakeholder governance, we need to analyze networks, power and influence, and the goals of actors. Thus we combine social network visualization with the power-mapping tool (Schiffer 2005), that collects data about the perceived power of different actors within a policy field.

[1] Find a comprehensive introduction in Hanneman 2003.

3. CASE STUDY: RIVER BASIN BOARD, GHANA

International river commissions have been developed for many rivers that touch more than one country (for example, the Mekong River Commission or the Volta Basin Authority). Individual countries also have organizations to oversee their water resources (such as the Water Resources Commission of the Republic of Ghana). Even on the subnational level, multistakeholder bodies are instituted to coordinate the governance of river basins or subbasins: for example, the White Volta Basin Board is a subcommittee of the Water Resources Commission (WRC) of the Republic of Ghana. The development of these multistakeholder entities is driven by the understanding that complex problems need complex solutions, and all concerned in a geographical area need to be involved in coherent planning and implementation of integrated water resources management. However, it is rather unclear how these multistakeholder organizations impact on governance. This leaves both evaluators and actors on the ground in search of appropriate methods to assess structures, processes, and achievements.

The research that provides the material for the case study presented here was undertaken in close collaboration with the newly established White Volta Basin Board in Ghana. The members of this multistakeholder organization felt the need to better understand the policy field and their role as a basin board.

The Basin Board is a subcommittee of the WRC of the Republic of Ghana. The WRC was established in 1996 under the Water Resources Act and started operations in 1998. The creation of this institution followed a world-wide trend toward multistakeholder governance organizations as a result of water resources management studies supported by a number of major donors (including the Canadian International Development Agency, the Danish International Development Agency, DFID, , the German Agency for Technical Cooperation, the United Nations Development Programme, and the World Bank). Prior to the creation of the WRC, the management of Ghana's water resources was fragmented among various institutions with no clear policy for coordination. Following a shift toward decentralization, the WRC made provision for the development of basin boards. Because catchment areas do not follow administrative boundaries, these boards are not tied to regional boundaries but integrate water governance on a river-basin level. The first pilot basin board was developed in the Densu River Basin. In this area, water pollution problems are the major challenge. As a second pilot project, the Commission chose the upper White Volta Basin. Here a major issue is the coordination of cross-boundary water management, especially with Burkina Faso. The board was inaugurated on June 5, 2006. The 17-member White Volta Basin Board is a multistakeholder body; like the WRC, it includes representatives of many governmental agencies involved in water resource management. Three other members of the basin board represent NGOs, the research sector, and the regional House of Chiefs (representing the traditional authorities). For this study, Net-Map was used both to gather data about multistakeholder governance and to help the Basin Board in their organizational development.

The following brief description of the method and how it is applied in the field is aimed at encouraging social scientists, policymakers, and implementers to use it in their own work, adapting it to their needs. While this description focuses on a multistakeholder water governance organization, the method can be used in different fields from individual strategic network planning to conflict mediation.

4. MAPPING INFLUENCE NETWORKS STEP-BY-STEP

Equipment Needed

The strength of Net-Map lies in visualizing and making explicit a number of phenomena that structure political arenas. The equipment needed for the interviews is low cost and low tech, which makes the method easily applicable irrespective of the technical infrastructure available. Interviewers will need

- *Large sheets of paper* for drawing the influence network maps (one per interview, at least A2 size);
- Small *actor cards* to write down the names of the actors (these should preferably be on adhesive paper such as Post-it notes or the cards should be fixed to the map with masking tape);
- *Checkers pieces* (or similar flat round disks) that can be piled on top of each other to build influence towers and to carry the actor figures (the number required depends on complexity and influence differences between actors, around 80 for complex setups);
- *Board game figures* to symbolize actors (the number required depends on the complexity of the governance field and on the interviewees' perceptions (in this study the most complex setup included 47 actors);
- *Felt pens* of different colors (3–5) to draw the links between actors

Preparation and Pretesting

Before using the Net-Map tool in the field, it is important to clearly define the area of analysis and develop a concrete idea of the question that the interviewers hope to have answered in the course of the interview. This might sound obvious, but it is important because a lack of clarity of purpose will confuse interview partners (interviewers and interviewees), leading to frustrating interview sessions and results that cannot be compared. The area and question should not be too vague: for example, if the researchers ask "How strongly can this actor influence the issue at question?," the issue has to be defined clearly enough to gather useful answers. In the case of the White Volta Basin Board, the main question revolved around achievement of the goals of this new organization. All members of the board were asked "Who can influence whether and how the Basin Board achieves its goals?" This followed a preparatory round of interviews where board members were asked to define goals for the Board. The result of these preparatory interviews was a list of environmental, developmental, and governance goals (such as increased collaboration) that were presented to the interview partners.

Because in this study we intended to use the method to also develop a *common* understanding of the influence network of the Basin Board among all board members, and to facilitate a process of strategic influence network planning for the future, we decided to interview all members of the organization. Different research goals might lead to a different selection of interviewees.

For example, to understand how a policy is implemented, it might make sense to interview actors from all organizations involved in the process, plus a number of external observers. To analyze how scientific knowledge enters policy processes, researchers as well as policymakers could be interviewed and their differing views could explain why and how some findings influence policy, while others don't.

We begin with a general description of the use of the method in individual interviews. In the White Volta Basin Board study, we went from individual interviews to group interactions, the process for which will be briefly explained in section 5.

Another important step of the pretesting phase is the choice of appropriate terminology. One of the concepts that we wanted to analyze was "power," defined according to Weber (1922,53): "Power is the probability that one actor within a social relationship will be in a position to carry out his own will even despite resistance, regardless of the basis on which this probability rests" (Weber 1922, 53). However, pretests showed that in some cultural settings, the term "power" may have a negative

connotation or it may only be used to describe formal hierarchical relationships. To avoid misunderstandings, the term "influence" was used in the interviews in Ghana. In other cultural settings, different wording might be appropriate. For example, in rural India the phrase "whose word has weight" is easily understood and covers the concepts defined above (Regina Birner, personal communication, 2006).

With a general idea about the political environment, goals, and structures and the research question set out, the researchers now have to define which kinds of links the research will focus on. In the case of the White Volta Basin Board, the relevant links were defined as:

- flows of funds,
- formal lines of command,
- support, advice, direction given,
- flow of information, and
- future links (to be established or strengthened).

Pretesting is also used to find the most appropriate wording for the definition of links (for example, "line of command," "line of reporting," or "line of formal hierarchy"?). This is especially important in intercultural settings.

In different setups, it might be interesting to analyze who is linked through conflicts (physical or otherwise) or who belongs to the same extended family. A rather general link like "flow of information" can be specified or split up into different links such as flow of research findings or flow of information about funding opportunities. However, for practical reasons, we recommend that the number of different links be limited to four or five, so as to keep the resulting diagrams manageable and meaningful.

Explain Basic Ideas to Interview Partners

Most interviewees will not be familiar with the specific approaches used by Net-Map. However, the underlying concepts of social network analysis and power mapping easily relate to the everyday experiences of many people. So, as an introduction to the interview, a common ground of understanding is established by explaining that this tool helps to explore those relationships that shape and affect their work but are not necessarily reflected in formal hierarchies. This idea is explored further by giving practical examples that relate to the experience of the interviewee.

Assemble All Stakeholders on Map

A big, empty sheet of paper is placed before the interviewee and he or she is asked to think of all individuals, groups, or organizations that impact on the governance body, field, or activity under analysis (for example, "Who are the actors that can influence whether the Basin Board will achieve its environmental, developmental, and governance goals?"). The interviewer stresses that actors can be local as well as regional, national, and international, and that they do not necessarily have to be formally linked to the process. Every individual, group, or organization that can have an impact should be named. The interviewer writes the names on the actor cards (the Post-its or small pieces of paper fixed with masking tape) and distributes them on the sheet of paper. The interviewee and the organization that is being analyzed are added even if the interviewee does not mention them, as the goal is to analyze their roles in the process. While the distance between the different actors on the map is not used in the analysis, it makes sense to place the actors so that those with many expected links are put close to each other, so that the final influence network map is not too disorganized or messy.

In the Basin Board interviews, this start took different shapes with different interview partners: some interviewees mentioned a long list of actors immediately and filled the map quickly. Others started slowly and added more actors throughout the interview. Adding actors and links whenever they come to mind is encouraged to allow people with different approaches to complex questions to express themselves

at their own pace. However, while encouraging the interviewee to add more actors, the interviewer has to be careful not to probe and push the interviewee to add actors that he or she has not thought of. With interviewees who start out slowly, it helps to have the interviewer read out loud the actors already mentioned to give the interviewee time and space to think about further actors.

Define Different Links and Draw Network

In the next step, the interviewer collects data about how these actors are linked, illustrating links by drawing arrows of different colors between the actor cards. The colors represent different kinds of links.

A network legend is written in a corner of the map, which spells out which color represents what kind of link. In the study of water governance in the White Volta Basin, black arrows represented the formal lines of command; red, the flow of funds; green, informal support, advice, or guidance; blue, the flow of information; and yellow, links to be established or strengthened in the future.

The interviewer explains that the next step is to connect the actors with arrows colored according to their links. The arrows indicate that something (such as information or funds) is flowing from one actor to the other. If there is a mutual exchange, the arrow has two heads. It is advisable to start with those kinds of links that are rather rare and only add the very common ones (such as flow of information) toward the end, so the picture does not become cluttered early on. If actors are linked by more than one flow, arrowheads of different colors can be added to existing arrows.

Especially in complex setups, the interviewer can guide the interviewee through the process by making sure that he or she goes step—by-step, instead of jumping from one color to the next and back. If actors identify few or no links, the interviewer can ask whether that is an oversight or a purposeful statement. However, it is important that the interviewee doesn't feel pushed to add links. The links to be established in the future are not visualized at this point of the interview but only at the end as an outlook toward strategic influence network planning. Therefore, the interviewer should state clearly that "We are talking about the existing links now, not about those that should or will exist in the future."

Define "Influence/Power" and Put Actors on Influence Towers

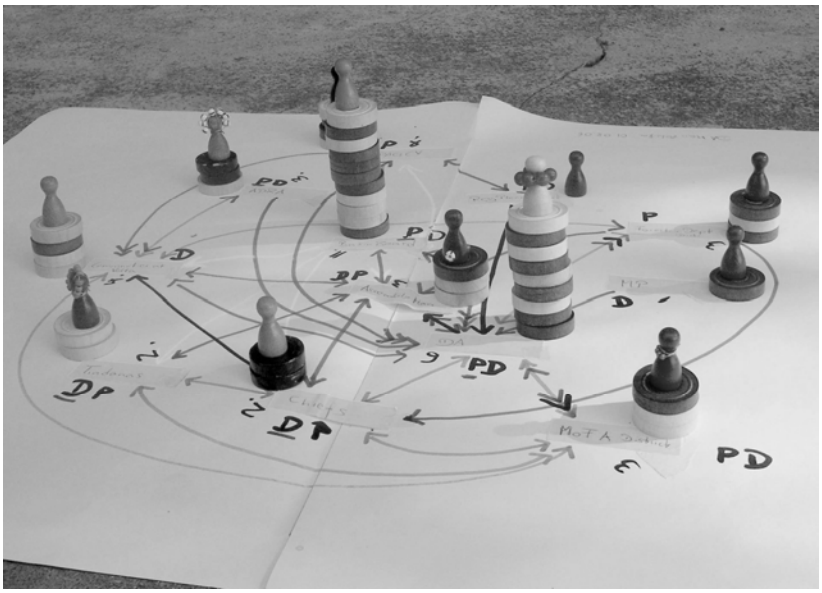
For comparable results, it is crucial that influence/power is defined clearly and that interviewer and interviewee reach a shared understanding. The definition used in the case study is based on Weber's definition of power—the ability to reach one's goals in a social setting; however, the definition used has to be pretested carefully to avoid misunderstandings. In communicating the definition to interviewees, the interviewers must stress that the sources of influence/power can be diverse, ranging from legitimate decision-making capacity through giving advice or providing incentives to bending or breaking the rules. It is important that interviewees understand that they are not being asked about formal hierarchies but about the ability of the actor to influence a specific issue. The question is how much influence does this actor have in this specific field/activity/organization—not in a more general sense. For example, the president of a country will be seen as more powerful in a general sense than a district chief executive (DCE). However, when it comes to influencing the implementation of a specific intervention in his district, a DCE tends to have much more impact than the president.

Once this understanding of influence is established, the interviewees are asked to assess who has how much influence on the given governance field. In the case study, the question was "How strongly can these actors influence the achievements of the Basin Board's goals?" The actors are represented by board game figures that are put on top of "influence towers" of checker pieces. Rules for this exercise must be explained:

- The more influence an actor has the higher the tower
- The towers can be as high as interviewees want
- Two actors can have towers of the same size

- If an actor has no influence at all, the figure is put on the ground level without an influence tower.

After the interviewee sets up the influence towers, the interviewer verbalizes what he or she sees, starting with the highest tower, and encourages the interviewee to make adjustments if he or she has second thoughts. This is especially necessary where influence networks are complex. Once the interviewee is content with the whole setup, the interviewer writes down the height of the influence towers next to the actors' names on the network map.



Actors on influence towers

Qualitative Discussion

Now the interviewer uses the drawn map with the influence towers as a three-dimensional sketch to structure a qualitative discussion of the governance situation. Starting with the most influential (the tallest towers), he or she asks about sources and effects of influence. The questions asked here will vary according to the field analyzed. The quality of discussion is likely to improve over time, as the interviewer becomes more familiar with the instrument and also with the crucial issues of the local area (conflicts). After a number of interviews, the interviewer often can see at first glance the unusual and interesting characteristics of each new setup.

The interviewers' questions and comments often go along the following lines:

- I see you have put this one on the highest tower. Why? Where does his/her influence come from? How would an outsider like me see that?
- You say that these two have the same level of influence. What happens if they disagree? Is their influence based on the same grounds? Does it have the same range?
- I have heard there is a conflict about *xy* between these three actors. Could you explain to me what that is about?
- You have linked this actor to many others, but you say he doesn't have much influence. Why is that so?

Interviewers should make sure that they discuss all actors in the setup.

Add Orientation of Actors

In many governance situations, actors will pursue different orientations or goals. This information is important for a thorough understanding of the situation. It is especially helpful in strategic influence network planning for the future, where participants need to be aware of potential conflicts of interest and to determine which alliances they could strengthen in the future. Therefore, in the analysis of the White Volta Basin Board, the interviewees were asked which actors had a strong developmental orientation, which focused more on environmental protection issues, and which focused on both. On the map, these orientations were noted next to the names of the actors (P for protection, D for development, PD for both goals, PD for both goals but a stronger protection focus, PD for both goals but a stronger development focus).

In the analysis of a conflict, one might consider adding plus and minus signs for actors who support or contradict the interviewees' goals. Or, especially for conflicts that prevail for a long time, it might be interesting to note who is interested in the continuation of the conflict and who is interested in reconciliation. This information will help to develop peace-building strategies. The combination of influence towers and goal orientation can serve as a real eye-opener, allowing participants to be more strategic in their networking activities. However, some interviewees might not be comfortable with sharing such explicit judgments; in many situations it might be appropriate to find neutral terms for characterizing the different goals of actors.

Add Links to be Established or Strengthened in the Future

Once the present situation is mapped out, interviewers turn to questions about the future:

- For achieving these goals, which links would you want to establish or strengthen in the future?
- Are there any actors that you would like to add to the network in the future?
- What kind of alliances could you form with actors to achieve these goals?

In the Ghana case study, we added future links in just one color and used this step basically to encourage further thinking about the future and to gather more qualitative data. Depending on the time and resources available and on the focus of the research, it might also be interesting to draw a second influence network map around the question: "What should the situation be like in five years time?" A map like this could be a good tool for integrating Net-Map into an evaluation program. The organization (or external reviewers) would go back to this map after the given time has passed to see how the real network development compares with the strategic network plans.

5. STRUCTURING A NET-MAP PROCESS

Having outlined the basic steps undertaken in a Net-Map session, we now look at the overall design of a study or intervention.

Depending on the goal of the study, the tool can be used not only with individual interview partners but also with groups of people. In the White Volta case study, we wanted to obtain both individual and group perspectives to help the Basin Board develop a common understanding of the prevailing network and work toward a vision for the future. We chose to follow an iterative sequence of interviews, feedback, and group activities:

1. Individual interviews with all 17 board members
2. Feedback and discussion with the entire Basin Board
3. Drawing Net-Maps with small working groups of Basin Board members (plus one external group of actors seen as powerful in the individual networks)
4. Feedback and discussion with the entire Basin Board
5. Development of a common influence network map and strategic influence network planning with the whole Basin Board
6. Second round of Net-Map to be conducted after a period of operation to keep track of developments and compare strategy and achievements (compare with Davies 2003)

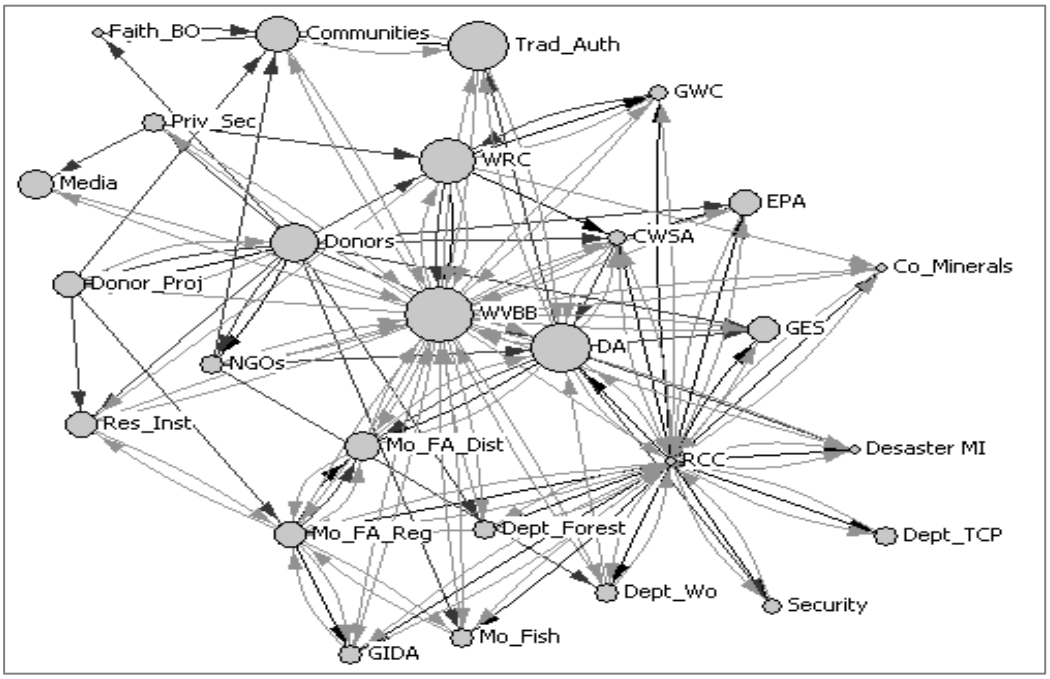
As this paper is being written, we have reached step 5 of this sequence in the case study.

6. DATA ANALYSIS, FEEDBACK, AND THE PROCESS OF STRATEGIC INFLUENCE NETWORK PLANNING

The depth and sophistication of analysis depends strongly on the purpose and scope of the research. Throughout our interactions with the Basin Board, we observed that the process of developing individual and group network maps (even before further analysis) allowed the board members to learn a great deal about their own position in the policy field; it also provided them with a tool for discussing their views with other board members. For example, the basin officer (who mapped out 47 different actors) felt that, by visualizing all the actors involved, he was better able to cope with the complexity of the network. A technical officer at the regional level commented that putting actors on influence towers and thus prioritizing and structuring the picture helped increase understanding of the network.[OK?] A number of interviewees expressed a desire to learn how to use this method for their own work.[2]

The learning process in the group mapping exercise took several steps. First, because board members had to agree on the list of actors involved, they discussed at length the mandate of different actors. In the discussion, it became apparent that individual board members had extensive knowledge about their own "corner" of the network, but they had many misconceptions about actors with whom they did not regularly interact. When drawing the links between the actors (focusing on the three links "command," "funding," and "advice"), the more experienced board members could share their network knowledge with their colleagues and were encouraged to give concrete examples about past collaboration. This led to discussions about strategies for future collaboration (see the common network map in Figure 1).

Figure 1. Common influence network map of the White Volta Basin Board (WVBB), June 2007



Notes: The size of the circles (nodes) denotes the height of the influence towers. Larger circles indicate more influence.

[2] Since then a Net-Map training workshop for policymakers has been conducted for participants of the study and other government and NGO staff in Bolgatanga, Ghana.

When separating out the different layers of this multiplex network, a number of interesting observations can be made. To understand crucial tensions in the governance network, we compare the position of actors in the network (centrality) with the size of their node (perceived influence). While social network theory suggests that a high centrality of actors would lead to a high influence (Krebs 2004), this does not seem true for all actors and all kinds of links in the water governance network analyzed here. For example, in Figure 2, the Regional Coordinating Council (RCC) is seen as an actor that can give formal commands to most other actors in the network. However, in the discussion, the Basin Board members agreed that the RCC has little influence on the achievement of the goals of the Basin Board for two reasons. One was the RCC's lack of interest in water-specific issues; the other was its lack of funds to distribute (Figure 3). The RCC has no relevant financial means for facilitating the activities of partners in the network and is thus not perceived as a persuasive actor.

Figure 2. Formal lines of command in the common influence network map of the White Volta Basin Board, June 2007

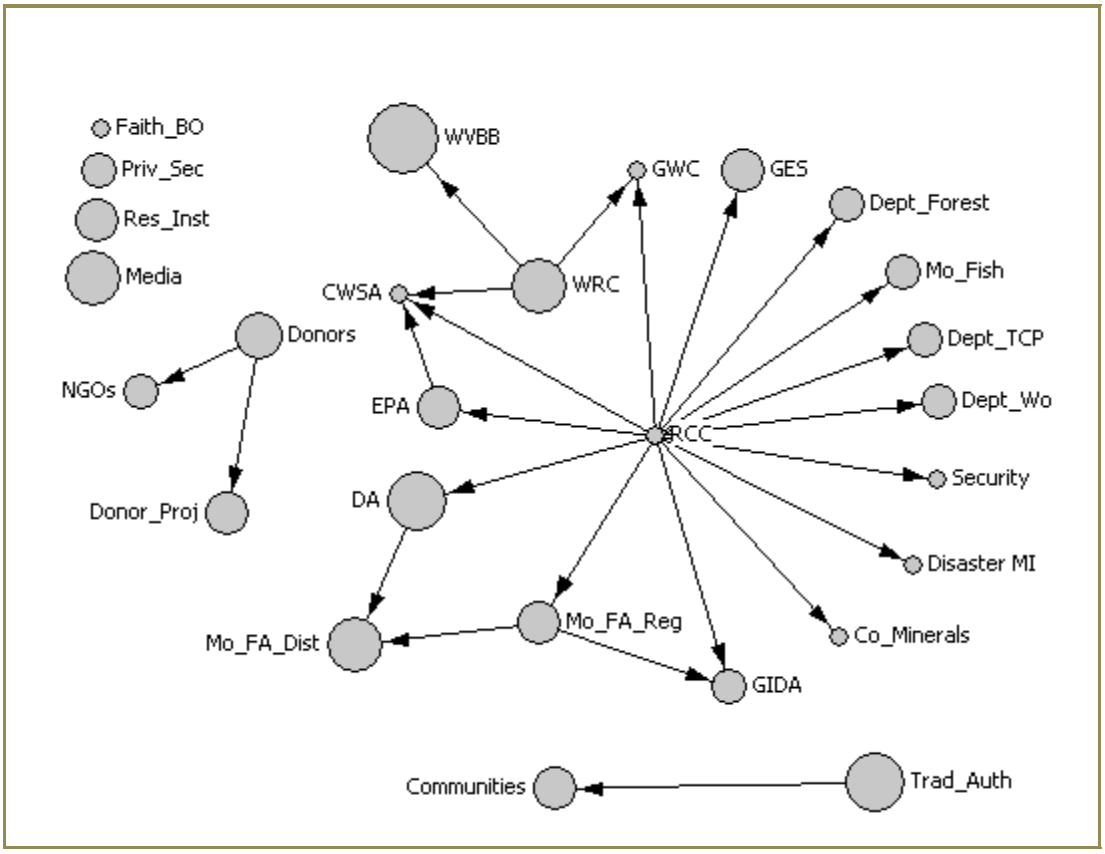


Figure 3. Flow of funds in the common influence network map of the White Volta Basin Board, June 2007.

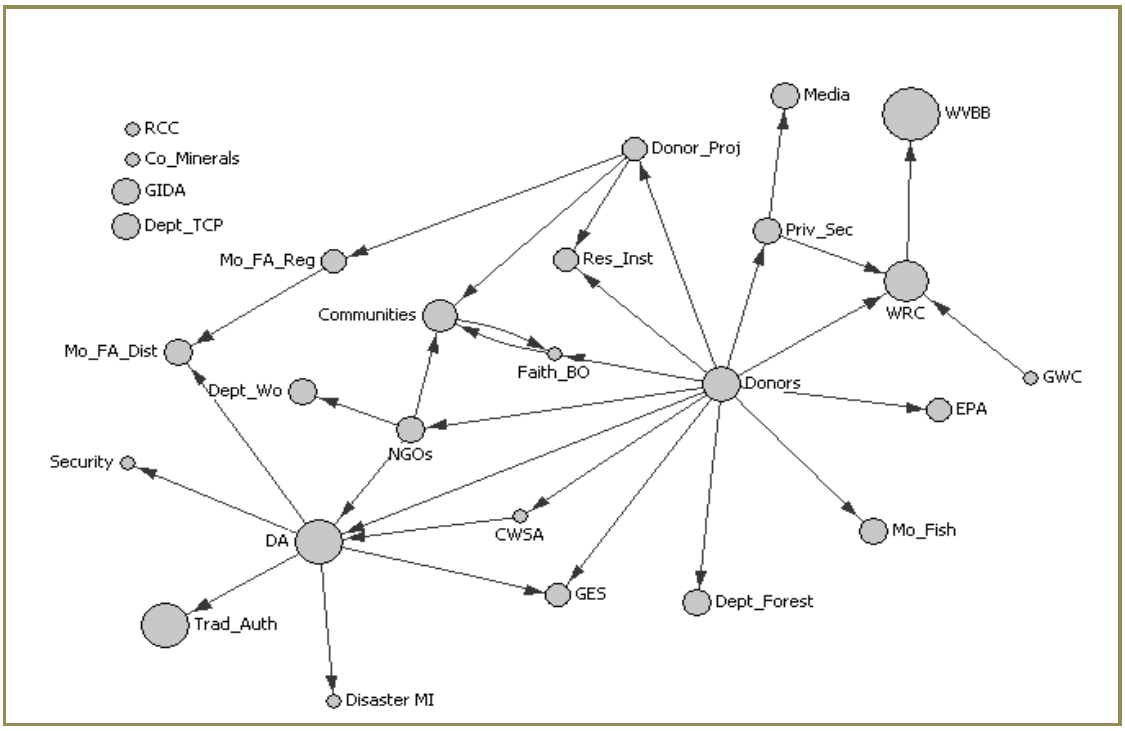


Figure 4. Advice given, common influence network map of the White Volta Basin Board (WVBB), June 2007

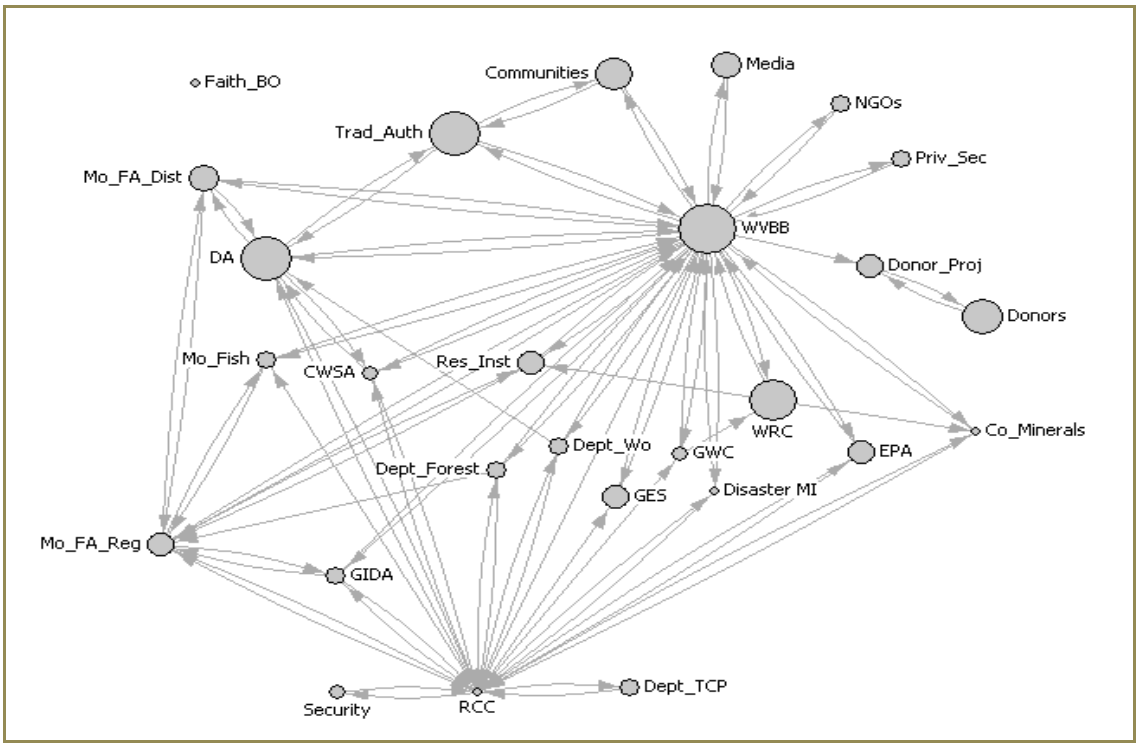


Table 1. Actor codes in Figure 1-4

WVBB	White Volta Basin Board
Trad_Auth	Traditional Authorities
DA_Admin	District Administration
WRC	Water Resources Commission
Mo_FA_Dist	Ministry of Food and Agriculture on the District Level
Res_Inst	Research Institutions
Mo_FA_Reg	Ministry of Food and Agriculture on the Regional Level
GES	Ghana Education Service
EPA	Environmental Protection Agency
Donor_Proj	Donor Projects
Dept_TCP	Department of Town and Country Planning
Priv_Sec	Private Sector
NGOs	Nongovernmental Organizations
GIDA	Ghana Irrigation Development Authority
Dept_Forest	Department of Forestry
Mo_Fish	Ministry of Fisheries
Dept_Wo	Department of Women's Affairs
Security	Security Agencies
GWC	Ghana Water Company Ltd.
CWSA	Community Water and Sanitation Agency
RCC	Regional Coordinating Council
Co_Minerals	Minerals Commission
Faith_BO	Faith-based Organizations
Disaster MI	Disaster Management Institutions

Figures 2 to 4 show that with regard to the degree centrality (number of links) in the networks the White Volta Basin Board is a marginal actor in both the command and the funding networks. The Basin Board realized that its strongest tool for influencing water governance in the basin area is informal: in giving advice.

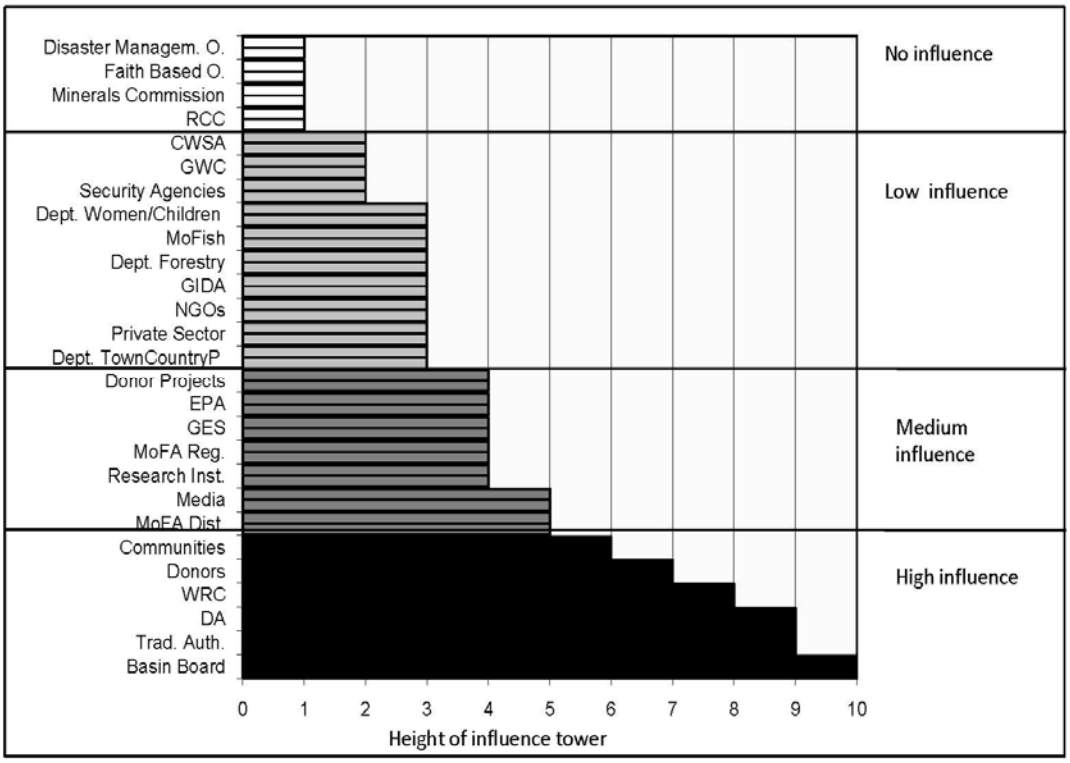
Apart from analyzing the position of individual actors in the network (centralities), it is also important to look at the structure or the network as a whole: all three networks show a rather high degree of centralization, meaning that one or two actors serve as hubs with a lot of spokes that are not interconnected. This structure generally gives the central actor a high capacity to control what happens in the network, but it also makes the network very susceptible to shocks, because the network will collapse if the hub is not functioning (Krebs 2004).

The most engaged discussions explored the question "Who is most influential (with regard to the achievement of the Basin Board's goal)?" Board members defined different factors that contribute to actors' influence:

- Provision of the formal framework (Water Resources Commission)
- Provision of funding (donors)
- Budgetary power and the mandate to implement activities on the ground (District Assembly)
- Traditional power to govern and enforce on the local level (traditional authorities)
- Freedom to accept or refuse proposed changes of behavior (local communities)

They agreed that all of these roles must be performed for the Basin Board's activities to be successful. Therefore, they defined a core group of "high influence actors" with whom they should interact. Added to these core influence actors was a larger, more flexible group of medium- and low-influence actors that the Basin Board can contact for specific projects or to realize specific goals. As a result of the discussion, board members gained an appreciation of the fact that some actors—such as the traditional authorities—might not be water resource management actors as such, but they are crucial for the implementation of policies because of their social standing in the community and their general ability to influence people and enforce appropriate behavior.

Figure 5. Height of influence towers of actors in the common influence network of the White Volta Basin Board, June 2007



However, even though the head of the regional House of Chiefs is the chairman of the Basin Board, the board members also had to appreciate that the procedure for influencing other traditional leaders is different from the hierarchies of a governmental agency. The traditional authorities in this area of Ghana are not organized in a hierarchical way; thus the chairman of the regional House of Chiefs does not have authority over the chiefs in the region. By being the chairman of the board and the head of the regional House of Chiefs at the same time, this individual is key to promoting the goals of the Board within the traditional authorities. However, he can only advise his fellow chiefs and will not be able to exert command. The common influence network map, drawn in June 2007, can be seen as a snapshot of a point in time, reflecting the situation in the early phase of operations and organizational development of the White Volta Basin Board. During the discussion, board members developed strategies to strengthen the role of some of the actors (such as faith-based organizations and disaster management organizations). When the results were presented at a policy forum in Bolgatanga, Ghana, some policymakers who are not represented on the board but are part of the network stated that they wished to be more strongly involved, so that in future, they would receive a higher influence rating (the Ghana Health Service, for example).

7. CONCLUSION

Net-Map is a method that allows for the analysis of actors' characteristics and how they are linked to one another in a comparative, structured way that provides researchers with both qualitative and quantitative data. It can help close the methodological gap discussed in section 2 and increase understanding of how multistakeholder organizations impact on complex governance fields.

In the case study, Net-Map proved to be a strong tool not only for gathering data but also for helping stakeholders to increase their understanding of the political arena in which they were working. The data gathered in the White Volta Basin Board study shows that in determining who is influential in this process, informal networks are perceived to be highly relevant in multistakeholder governance and formal lines of command are relatively unimportant.

Further analysis is needed to understand how and why individual and group perceptions of networks differ and how these perceptions can change over time. This paper mainly focuses on the use of the method for mapping out networks and its application in organizational development. The next step is to go further into complex analysis of influence network data and the lessons to be learned for policy development.

In Ghana, the method proved to be applicable interculturally as well as easy to apply and adapt. Interviewers with different levels of research background successfully conducted interviews. Interviewees were excited about their own learning processes throughout the interviews. Implicit understanding and concepts were visualized and made explicit so that group members could understand where they agreed and where they differed in their perceptions of the governance arena. Therefore, we conclude that Net-Map should be used as a well-structured component of broader frameworks of governance analysis and facilitation.

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