

# Net-Map: Analyzing social networks and power relations.

## Participatory research methods for sustainability – toolkit #10

*Net-Map combines participatory action research and social network analysis with a sociological analysis of power relations. The tool helps to identify, visualize and discuss which actors are involved in a given network, how they are linked, what their goals and interests are, and how influential or powerful they are with regard to a specific outcome. The tool is well suited for facilitating interviews with, and discussions among, network actors to address governance challenges and develop personalized solutions. The resulting maps and transcripts can form the basis for qualitative content analysis and quantitative social network analysis.*

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**Net-Map: Analyzing social networks and power relations.** Participatory research methods for sustainability – toolkit #10  
GAIA 33/2 (2024): 250–253 | **Keywords:** governance, influence mapping, institutional analysis, mixed methods, social networks

**N**et-Map is a participatory social network mapping tool. Participatory mapping tools enable research participants to share and analyze their knowledge with the researcher in a collective sense-making process that can be empowering rather than extractive. Net-Map is designed to help people understand, visualize, discuss, and analyze situations where various actors influence an outcome. It visualizes research participants' perceptions of the actors involved in a network, their connections, degree of influence on a specific outcome, and goals (Hauck and Schiffer 2012, Schiffer 2007, Schiffer and Waale 2008). Compared to other mapping tools, the tool uniquely allows researchers and participants to visualize power and influence in a three-dimensional space. This interactive visualization method is rooted in participatory and action research, stakeholder analysis, social network analysis (SNA), and the sociological study of power. Net-Map is well suited for participatory or transdisciplinary research designs that actively involve respondents in the process, such as defining research questions or designing and implementing

network interventions. Net-Map relies on eliciting perceptions of the whole network from selected actors, which is valuable when observational data are scarce or hard to obtain, and when researchers lack access to the entire network. Beyond its original purpose of analyzing multi-stakeholder governance, Net-Map has been used across various disciplines, such as agricultural economics, public health and natural resource governance, with different theoretical and conceptual frameworks.

### Procedure

Net-Map can be used at the onset of a study to learn about the actors, their relationships, and challenges and opportunities, to customize the research approach. It can also be used as a stand-alone method in qualitative or mixed-methods designs to investigate research questions on social networks. Net-Map can be flexibly adapted to many research approaches.

### Preparing a Net-Map session

Before starting the Net-Map session, an overarching question is defined, typically in the form of “Who influences a defined change or result?” A pre-test is important, including the defini-

In this series, we aim to alert GAIA readers to useful toolkits for participatory research methods for sustainability. If you would like to contribute a toolkit description, please contact [gaia@oekom.de](mailto:gaia@oekom.de).

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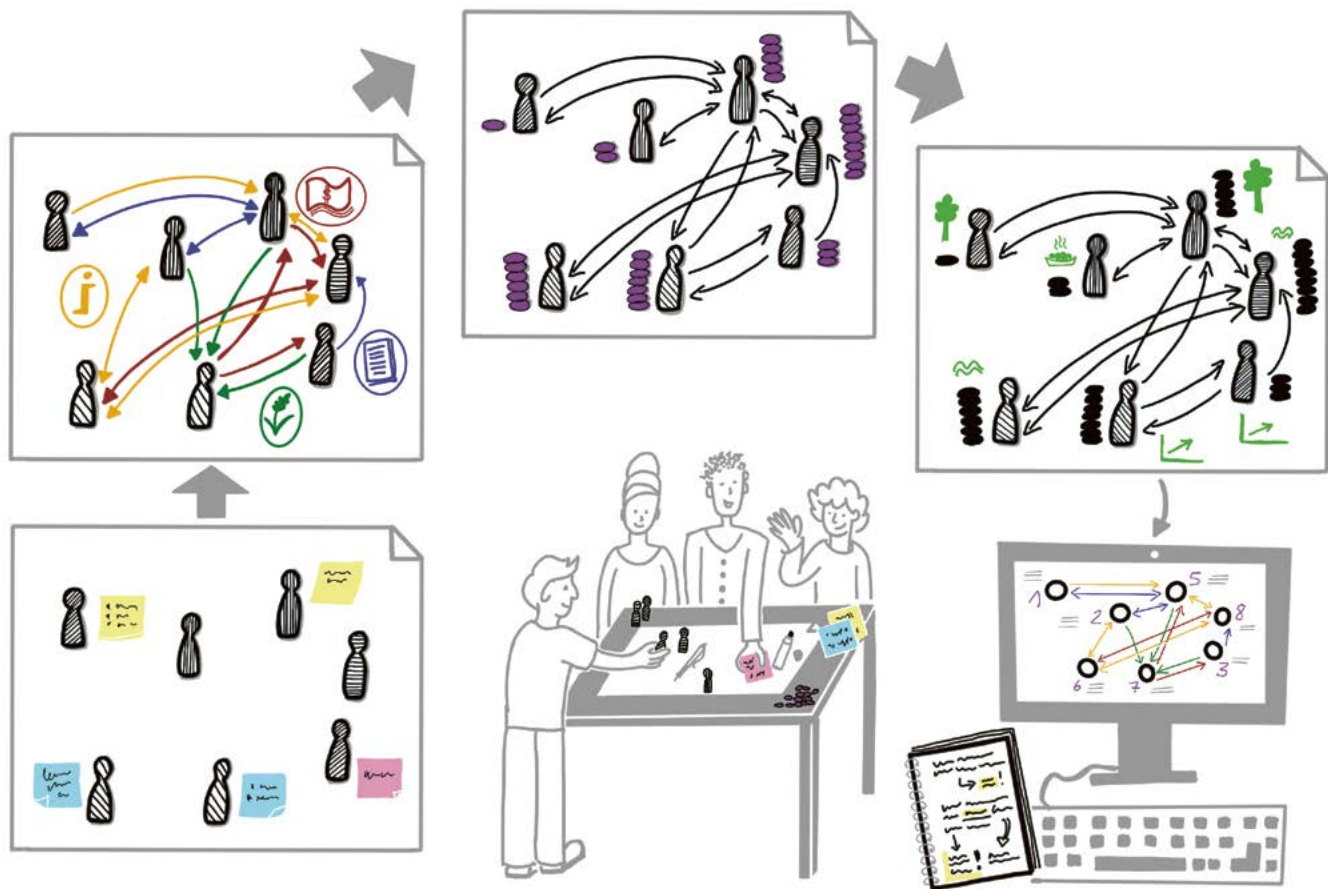
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<https://doi.org/10.14512/gaia.33.2.20>

Received February 26, 2024; revised version accepted April 18, 2024 (double-blind peer review).



**FIGURE 1:** Visualization of the four steps of co-development of the Net-Map (from left to right): 1. actors, 2. links, 3. power or influence, and 4. goals.

tion of power or influence and types of links, to prepare for local complexities and ensure a common understanding of terminology (Schiffer 2007).

A combination of sampling techniques can help identify relevant stakeholders at different governance levels. Researchers should be aware of marginalized stakeholders who may be overlooked. Asking specifically about (powerful) hidden and neglected actors that may clash with participants' perceptions and goals can help uncover governance challenges, success factors, and barriers (Hauck and Schiffer 2012). Highly influential or marginal actors could be interviewed separately to ensure that all participants feel comfortable during the sessions.

Net-Map is often applied in group discussions, but can also be used in individual interviews. Bringing all network actors together enables the participants to jointly decide on influence scores, interpret them, and reach a consensus after each step. If this is not possible, separate maps are drawn with individual actors.

Eliciting levels of power or influence is a key aspect of Net-Map. Clearly defining and communicating the concept of power and influence and its role within the social network at the beginning of the session, or collaboratively defining it with research participants, is essential to prevent misunderstandings

and ensure quality research. Various definitions of power or influence can be adopted and tailored to the specific context and participants.

### Running a Net-Map session

While Net-Map has been applied in various ways, the original method consists of four steps (Schiffer 2007, see also figure 1). The visualization is typically done on a large sheet of paper.

**1** As a first step, the facilitator asks the participant(s) to **identify all the actors** relevant to the research question. Their names are written on sticky notes ("actor cards") that are attached to the paper. Coloured cards can be used to differentiate actor types (e.g., public sector officials or community members). Figurines with unique characteristics can be placed next to the actor cards, which can help participants with low literacy levels associate and remember the actors.

**2** The second step is to ask the participant(s) to **identify the links**. The facilitator visualizes these links by drawing arrows between the actors on paper. Arrows of different colours can be used to identify different types of links, such as the exchange of information, the provision of funds, and the exercise of authori-

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ty. This step creates the network structure between actors. The links can be predetermined based on a theoretical framework or defined with participants during the Net-Map session.

**3** The third step is to *identify the power (or influence)* of each actor on the predefined outcome, like the successful implementation of a project. Stacks of chess pieces or other stackable items are used to visualize the actors' influence on the outcome.

**4** The final step is to *identify the actor's objectives or goals*. This helps to identify proponents or opponents of a goal and the direction in which the actors might try to influence the goal. Symbols for goals can be drawn next to the actor cards (e.g., a tree for environmental goals), and it can be indicated on the map whether the actor supports, opposes, or remains neutral.

Steps three and four can be interchanged depending on the flow of the discussion. The three-dimensional map is the basis for further discussions about the network and its characteristics. The discussion can be used to explore reasons for influence levels, to discuss governance challenges and potential solutions or to engage passive actors. When eliciting governance challenges and sensitive issues, facilitators can refer to them as potential rather than actual challenges.

Beyond the Net-Map session, triangulation of data and methods is suggested. Expert knowledge can be combined with information from secondary sources and extended researcher engagement. Depending on the research questions, a mixed-methods approach is recommended, for example, to explore factors beyond social networks or effects of networks on livelihood outcomes.

#### Data analysis

Interviews and discussion are usually recorded if participants give informed consent. The data collected can be analyzed qualitatively and quantitatively. Some of the analysis can be done with the participants during the Net-Map session, such as explaining linkages and influence levels, or discussing solutions to governance challenges. The transcripts of the discussions, along with the map, serve as primary data for the researcher, and can be analyzed using a qualitative interpretative approach, such as content analysis. Different maps can be analyzed individually, to highlight diverging perspectives on the same network or to explore contradictions between maps. Maps can also be combined or aggregated, for instance, to present a value chain network.

A quantitative analysis of the structural characteristics of the network can be conducted, typically supported by software applications such as *UCINET*. The software calculates SNA indicators (e.g., betweenness centrality = broker or connecting position) to determine the structural power of actors. As these indicators may not reflect an actor's influence as perceived by participants, triangulation is recommended. It is strongly recommended to share the results with the participants. Box 1 shows how the Net-Map was used to analyze cooperation.

## Skills and resources needed

It is recommended to have an experienced facilitator trained in the Net-Map tool. The facilitator should be familiar with the socio-cultural context, the actors in the given setting, and understand social norms and hierarchies. Familiarity with SNA provides a conceptual understanding of networks and helps to "read" networks (Hauck and Schiffer 2012). Studying social networks raises specific ethical issues, such as anonymity. Therefore, clear rules on how to handle such matters should be established in the beginning.

## Strengths and weaknesses

### Key strengths/benefits

With Net-Map, researchers can quickly gain detailed insights into complex networks. It can be adapted to various participant contexts, used flexibly, and can easily integrate questions that emerge during the research process. Net-Map sessions have an entertaining aspect, similar to the concept of "gamification" in digital tools, which can prevent respondent fatigue and improve data quality. Participants are actively involved in drawing maps, discussing, and interpreting results, placing them on a similar level to the researcher, who acts more as a facilitator. The process creates a space for critical reflection, trust-building, and inclusion of illiterate participants, providing deeper insights into the subject, especially on sensitive issues. As the data collection is transparent and participants can equally learn, the research process can raise awareness of everyone's position in the network, which can be empowering. The tool is well suited to elicit sensitive issues. When mixed-methods designs are used, Net-Map can bridge the often criticized gap between quantitative structure-oriented SNA and qualitative, narrative, and participatory research designs (Hauck and Schiffer 2012).

### Key weaknesses/challenges

Purely quantitative research designs are less suitable for applying Net-Map because it is difficult and time consuming to standardize across different contexts, group dynamics, and definitions of terms such as power or types of links (Hauck and Schiffer 2012). Bringing all actors to the table can be challenging due to social, or cultural distances and power dynamics. While visualization can enhance inclusion and participation, it may require abstract thinking skills. Moreover, in hierarchical contexts, participants may be reluctant to provide information on power relations and to assess the influence of actors (Schröter et al. 2018).

**Acknowledgements:** The authors would like to thank *Eva Schiffer* for her invaluable contribution and helpful discussions. We are grateful to two reviewers for useful comments and to *Joana Albrecht* for the design of figure 1.

**Funding:** This work received no external funding.

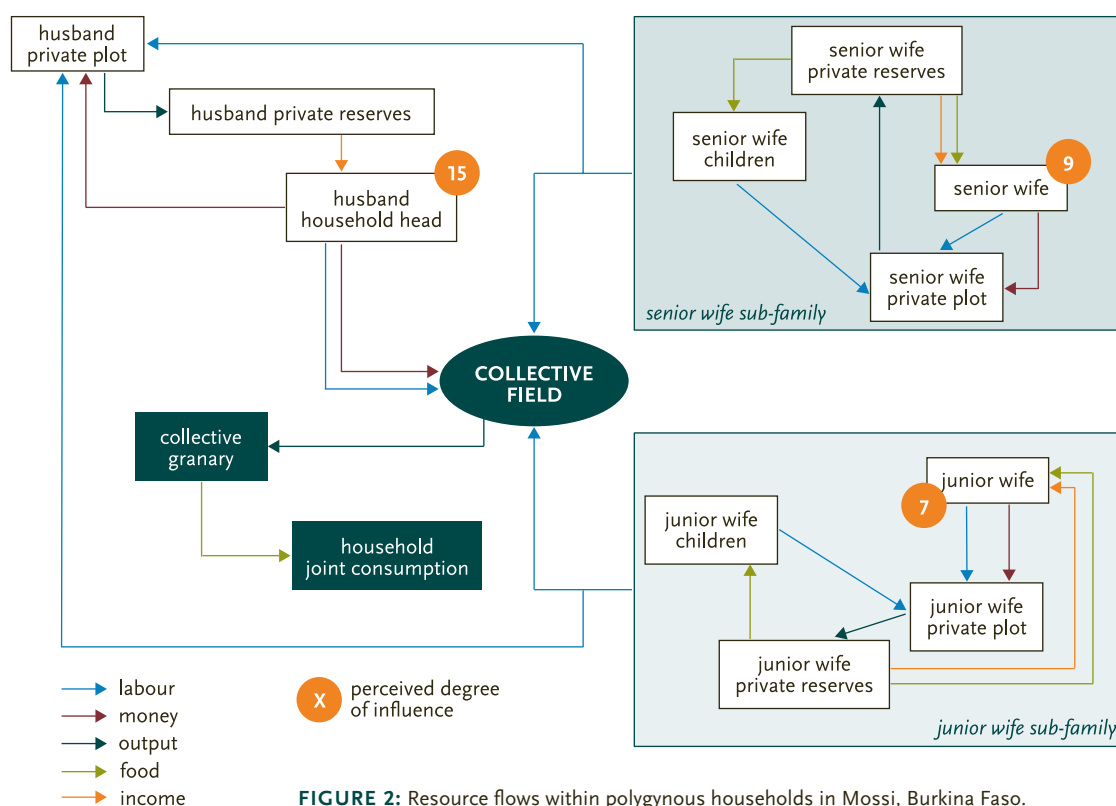
**Competing interests:** The authors declare no competing interests.

**Authors' contribution:** All authors contributed equally to designing the article. *CB, LS, AB, RB:* writing – original draft; *VY:* case study; *CB, LS:* writing – revision of final manuscript.

### BOX 1: Power relations and cooperation in polygynous households in Burkina Faso

The complexity of polygynous households poses cooperation problems, as household members may face collective dilemmas in providing food, care, and shelter. Using the Institutional Analysis and Development (IAD) framework and Net-Map, the nature of relationships between husbands and co-wives in polygynous households, and the rules and norms which shape cooperation within the household were examined. In addition to the actor cards, the flexibility of Net-Map was used to visualize respondents' physical assets, such as plots and reserves. Net-Map was instrumental in mapping the flow of resources between household members of different rank and gender (figure 2). The active participation of respon-

dents, and the visualization of the links facilitated understanding and spurred discussion among household members. Participants reflected on the flows of money, labour, capital and food and the direction of the links, and explained the underlying norms that governed these arrangements. Using Net-Map had the advantage of putting respondents at the centre of the research, giving them the “power” to draw and lead the mapping exercise. In a context of unbalanced power relations between men and women, the tool was useful in mitigating potential conflicts and giving greater voice to women and youth. The use of the tool also improved comparisons between different contexts.



**FIGURE 2:** Resource flows within polygynous households in Mossi, Burkina Faso. Source: Yameogo et al. (2023), p. 7.

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