

# Social Network Analysis: Brief Step-by-Step Guide<sup>1</sup>

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**Purpose.** The Social Network Analysis can be carried out to analyse governance structures. It mainly focuses on the local network structure (relations, influences, missing actors, etc.) and on the way actors (and networks) participate in the formulation and implementation of public policies and/or private initiatives.

## What is a Social Network Analysis (SNA)

The Social Network Analysis (SNA) has been defined as the mapping and measuring of relationships and flows between people, groups, organisations, computers or other information/knowledge processing entities. The SNA is also a means of visualising the power of connections between people, which allows the identification of how interaction and knowledge sharing is structured and how it can be optimised. The SNA views social relationships in terms of network theory consisting of nodes and ties (also called edges, links, or connections). Nodes are the actors within the networks, and ties are the relationships between the actors.

**Project background.** In the context of the 15 UNISECO case studies, the SNA was applied to answer the following general research question: ***Who are the actors and what are the social structures and governance processes that do (or could) influence the transition towards agro-ecological farming systems?*** This general research question was targeted at case study level by focusing on one specific challenge/dilemma for each case, with the objectives of:

- Providing a detailed analysis of the network currently involved in the key agro-ecological challenge/dilemma;
- Discussing on how such network should (or could) evolve - in terms of involved actors and relations amongst them - to better address the key agro-ecological challenge/dilemma in the future.

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<sup>1</sup> If you have any questions about this tool, please contact the author(s) by e-mail: Francesco Vanni (CREA) - [francesco.vanni@crea.gov.it](mailto:francesco.vanni@crea.gov.it)



## Step-by-step guide to applying the methodology.

### 1. Preliminary work

**Identification of the key challenge/dilemma.** The first and crucial step of the analysis will be the identification and clear definition of a significant and representative challenge/dilemma in your context.

**Option choice.** The second step of the preliminary phase will be the choice of the most suitable methodological approach for carrying out the SNA: option 1 - individual interviews with at least 3 key actors; option 2 - individual interviews with at least 3 key actors, followed by a workshop; option 3 - individual interviews with at least 8 actors.

**NET-MAP.** In the context of all three options, the NET-MAP will be the toolbox used for the joint development of network maps with local stakeholders and for interactive analysis, with the objective of ensuring co-production of knowledge, joint learning and favouring transdisciplinary approaches (Hauck et al., 2015; Schiffer and Hauck, 2010)<sup>2</sup>. NET-MAP is a low-tech, low-cost, interview-based mapping tool that can be used by researchers, facilitators, and implementers to: (i) visualise implicit knowledge and understand the interplay of complex formal and informal networks, power relations, and actors' goals; (ii) uncover sources of conflict as well as potential for cooperation; (iii) facilitate knowledge exchange and learning processes; (iv) develop visions and strategies to achieve common goals.

#### **Stakeholder involvement:**

- Identify the key actors - key actors are those involved in activities and/or decision-making processes that are relevant (or potentially relevant) to address the key challenge/dilemma;
- Select and contact interviewees: a good starting point will be to identify a stakeholder "champion"/leader and then getting 3-4 additional recommended actors who hold in-depth knowledge of the area, the key challenge and of the stakeholders affecting the key challenge/dilemma;
- Inform interviewees of the key objectives of the SNA as well as the key challenge/dilemma, and explain that the SNA could help local actors to gain a better understanding of how the network works, but also to make more informed decisions about their day-to-day practices/processes.

### 2. Interviews

Semi-structured interviews will be the core method to carry out the SNA and it will enable an analysis of the actors' goals, influences and flows, in order to develop a richer understanding of the governance structure (challenges, barriers, drivers, centrality of actors, institutional and policy issues, etc).

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<sup>2</sup> Hauck, J., Stein, C., Schiffer, E., & Vandewalle, M. (2015). Seeing the forest and the trees: facilitating participatory network planning in environmental governance. *Global Environmental Change*, 35, 400-410.

Schiffer, E., & Hauck, J. (2010). NET-MAP: collecting social network data and facilitating network learning through participatory influence network mapping. *Field Methods*, 22(3), 231-249.



**Questionnaire.** The table below contains the 10 questions for the semi-structured interviews with stakeholders (to be used for all the three options above mentioned).

	Questions
<b>Actors</b>	Q1 - Please identify and discuss the number and role of actors who are influencing and/or who are influenced by the key challenge/dilemma.
	Q2 – Please describe the main goals and objectives of each identified actor in relation to the key challenge/dilemma.
	Q3 – Please can you briefly describe the decision-making process related to the key challenge/dilemma? ( <i>e.g. how the policy and market incentives related to the key challenge/dilemma are managed and by whom</i> )
<b>Power</b>	Q4 - Please judge the influence (power, leadership, lobbying) of each actor in relation to the key challenge/dilemma: 0 - no influence; 1 - little; 2 - fair; 3 - good; 4 - high; 5 - very high.
<b>Links</b>	Q5 – Please identify and describe the main links amongst actors regarding the exchanges of goods, services, works. <i>Specify the type of goods, services, works exchanged amongst actors.</i>
	Q6 – Please identify and describe the main links amongst actors regarding the exchanges of information and knowledge. <i>Specify the type of information and knowledge exchanged amongst actors.</i>
<b>Relations</b>	Q7 - Please discuss the relations amongst the actors involved in the network, with particular attention to the shared goals as well as to the climate of collaboration and trust.
	Q8 – Which are the main conflicts and controversial matters amongst the actors? And between which actors do these conflicts and controversial matters arise?
<b>Overview</b>	Q9 - Please can you comment on the system as a whole? Which is your interpretation of this network? Is there room for improvement regarding the communication, power relation and exchanges of goods/services/information to better tackle the challenge/dilemma?
	Q10 - Please identify and discuss the missing actors: those who could be affected/included (also in the decision-making process) but for some reason are currently out of the network.

### The interview step-by-step:

→ **Assemble all actors on map.** An empty sheet of paper is placed in front of the interviewee and you can start with the first group of questions regarding the actors (mainly groups, associations, authorities or organisations) who affect/are affected by the key challenge/dilemma under analysis (Q1, Q2 and Q3). If a list of network members is prepared beforehand, the participants can choose from this list and discuss the list (confirm and add/eliminate actors from the list). Actors are then written on cards (post-its or small pieces of paper) and distributed on the empty map. To allow for a more defined visual structure, differently coloured actor cards can be used for different actor groups (e.g. governmental, NGO, civil society, and private sector).

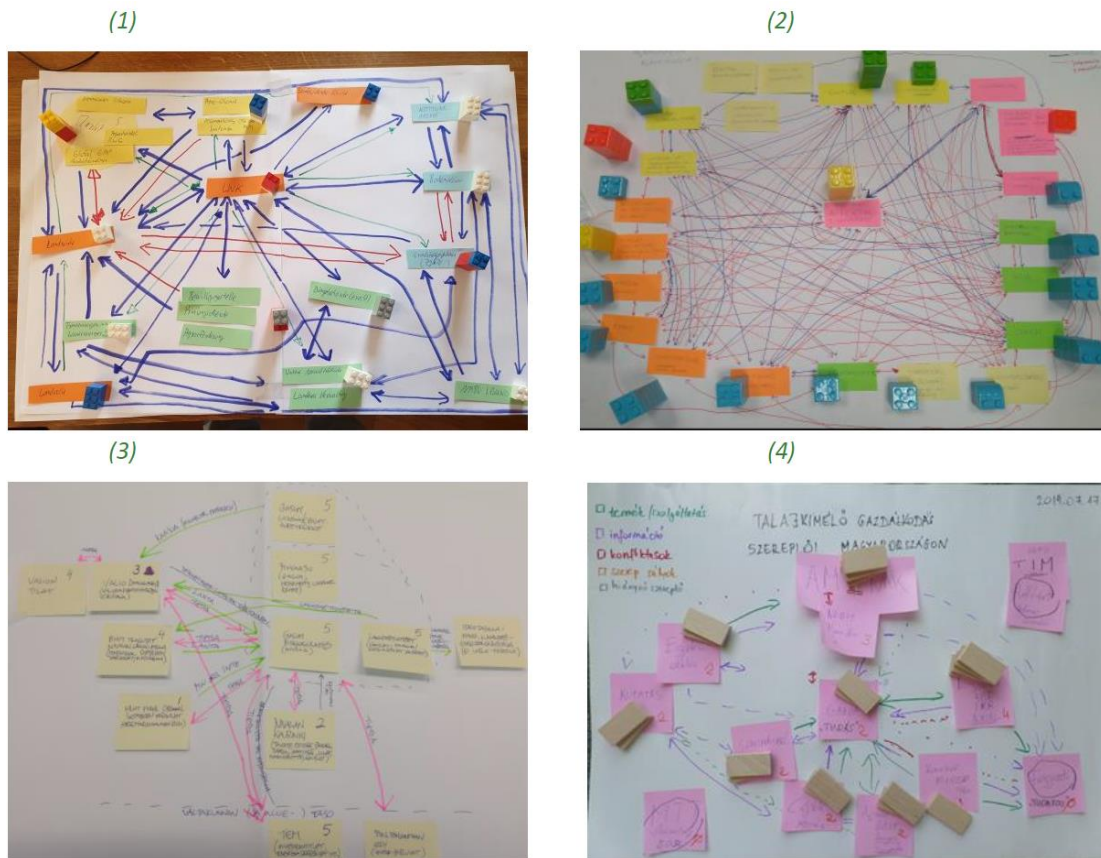


This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement N° 773901. It does not necessary reflect the view of the European Union and in no way anticipates the Commission’s future policy in this area.

Necessary equipment: sheets of A3 paper for drawing the network maps (one per interview); small, if possible multi-coloured, actor cards to note down the actor names, preferably adhesive paper (post-its); two differently coloured pens to draw different types of links between actors.

- **Define influence/power of actors.** Each actor will be scored on each actor card (Q4).
- **Define different links and draw network.** In the next step, you will collect data about how the selected actors are linked using the next group of questions (Q5, Q6). This is done by drawing differently coloured arrows between the actor cards. The colours represent two different kinds of links: exchanges of goods, services, works, and respectively exchanges of information and knowledge. The arrows indicate that “something” (goods, information, relations, etc.) flows from one actor to the other. If there is a mutual exchange, the arrow has two heads.
- **Discuss relations.** Relations amongst actors should be discussed qualitatively (Q7, Q8).
- **Final overview.** Interviewees are asked to provide a qualitative assessment of the system as a whole and if there is room of improvement regarding the communication, power relation, and exchanges of goods/services/information to better tackle the challenge; this final part also helps in identifying the missing actors and discussing how the involvement of such actors could change the governance structure and impact on the challenge (Q9, Q10).
- **Interview NET-MAP (social network map).** At the end of each interview, together with the recorded notes and comments, you should have developed an interview NET-MAP, namely a visual overview of the network in place according to each interviewed actor (on the A3 paper). This map should include: all the identified actors with the influence score; all the missing actors; the links (arrows with one or two directions) between the identified actors representing (by using two different colours) flows of goods/services, and flows of information/knowledge.





Picture of NET-MAPs in UNISECO case studies (1 - Germany, 2 - Spain, 3 - Finland, 4 - Hungary)

### 3. Data analysis

**SNA summary.** For option 1 and option 2, you will draw an SNA summary (template provided in Annex 1) that should include pseudonymised details of the specific answers of different interviewees as well as your own relevant comments on the different views of the interviewed stakeholders. You will also aggregate (including for option 3) the quantifiable data in 3 Excel tables (as in the examples below): 1 table with the list of actors and their influence scores (Q4) and list of missing actors (Q10), and 2 tables with the adjacent matrixes, one on the exchanges of goods/services/work amongst actors (Q5) and one on the exchanges of knowledge/information amongst actors (Q6). For Q4, the final score of each actor could be calculated as an average of the different scores.

**!** Be sure to use the same definition (coding) of actors and consistent information in all the documents/tables in order to have clear, traceable data.

In option 1, the compilation of the SNA summary will be the basis for developing the final NET-MAP. In option 2, the SNA summary should be compiled after organising a workshop to draw collectively the final NET-MAP (see details below regarding the final NET-MAP).



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**Example of table with the list of actors (with influence score and missing actors)**

	A	B
1	Identified actors	Score
2	Actor 1	3
3	Actor 2	2
4	Actor 3	1
5	Actor 4	0
6	Actor 5	5
7	Actor 6	0
8	Actor 7	4
9	Actor 8	4
10		
11	Missing actors	
12	Actor 9	-
13	Actor 10	-
14	Actor 11	-

**Example of adjacent matrix**

	A	B	C	D	E	F	G	H	I	J
1			Target	Target	Target	Target	Target	Target	Target	Target
2			Actor 1	Actor 2	Actor 3	Actor 4	Actor 5	Actor 6	Actor 7	Actor 8
3	Source	Actor 1	-	1	0	1	0	1	1	1
4	Source	Actor 2	1	-	0	0	0	0	1	0
5	Source	Actor 3	1	0	-	1	1	1	0	0
6	Source	Actor 4	0	0	0	-	0	1	0	1
7	Source	Actor 5	0	0	0	1	-	1	0	0
8	Source	Actor 6	0	1	0	0	1	-	1	1
9	Source	Actor 7	1	1	0	1	0	1	-	1
10	Source	Actor 8	0	0	0	1	0	0	1	-

**Interview summaries.** For option 3, you will compile a summary for each interview (template provided in Annex 2), where you can add additional relevant notes/comments regarding your interpretation of answers. The compilation of the interview summaries will be the basis for developing the final NET-MAP.

**Final NET-MAP.** The final NET-MAP will be obtained after the compilation of the SNA summary (in option 1) and of the interviews summaries (in option 3), which involves an accurate analysis and comparison of the information collected through the interviews, including the different interview NET-MAPs. In option 2, the final NET-MAP will be co-constructed with key stakeholders during a workshop. We suggest organising a workshop with well-informed and enthusiastic participants, possibly with the same actors selected for the interviews plus additional 3-4 key actors relevant for the analysed challenge/dilemma. The first step will consist of a short presentation of the single NET-MAPs produced during the interviews – these will be the starting point for a joint discussion with actors. The issues to be discussed are the same as during the interviews, but the objective is to find an agreement amongst actors on all the questions.

**Additional information:**

Vanni, F., Gava, O., Povellato, A., Guisepelli, E., Fleury, P., Vincent, A., Prazan, J., Schwarz, G., Bartel-Kratochvil, R., ..., Aalders, I. (2019). Governance Networks Supporting AEFS. Understanding and Improving the Sustainability of Agro-ecological Farming Systems in the EU (UNISECO), Deliverable D5.2. Report submitted to the European Commission, pp.65.

Vanni, F., Povellato, A., Fleury, P., Vincent, A., Prazan, J., Landert, J., Iragui, U., Social Network Analysis Guidelines (2019)

**NET-MAPs:**

[https://netmap.files.wordpress.com/2008/04/netmap\\_brochure.pdf](https://netmap.files.wordpress.com/2008/04/netmap_brochure.pdf)

<https://netmap.wordpress.com/>

<https://netmap.files.wordpress.com/2008/06/NET-MAP-manual-long1.pdf>

[https://en.wikipedia.org/wiki/NET-MAP\\_toolbox](https://en.wikipedia.org/wiki/NET-MAP_toolbox)



**ANNEX 1 - SNA summary (option 1 and option 2)**

	Questions	Summary of interviewees' opinions and views	Comments
<b>Actors</b>	Q1	...	...
	Q2	...	...
	Q3	...	...
<b>Power</b>	Q4	Table with list of actors with influence score + actors' opinions and views: ...	
<b>Links</b>	Q5	Table - adjacency matrix + actors' opinions and views: ...	
	Q6	Table - adjacency matrix + actors' opinions and views: ...	
<b>Relations</b>	Q7	...	...
	Q8	...	...
<b>Overview</b>	Q9	...	...
	Q10	Table with missing actors + actors' opinions and views: ...	



**ANNEX 2 - Interview summary (option 3)**

Interviewers name: ...

Interviewees name and organisation: ...

Date and place: ...

	Questions	Answers	Comments
<b>Actors</b>	Q1	...	...
	Q2	...	...
	Q3	...	...
<b>Power</b>	Q4	Table with the list of actors with influence score + opinions and views of the interviewed actor: ...	
<b>Links</b>	Q5	Table - adjacency matrix + opinions and views of the interviewed actor: ...	
	Q6	Table - adjacency matrix + opinions and views of the interviewed actor: ...	
<b>Relations</b>	Q7	...	...
	Q8	...	...
<b>Overview</b>	Q9	...	...
	Q10	Table with the list of missing actors + opinions and views of the interviewed actor: ...	

