



Sediko Shavadze, a smallholder farmer in Ajara, Georgia. Photo: Caroline Berger/Oxfam

UNDERSTANDING NETWORKS

The application of Social Network Analysis methodology in the South Caucasus context

Oxfam has had many experiences of building networks to leverage change for people living in poverty worldwide, and aims to learn from these about what makes such alliances more or less effective. This case study focuses on two networks developed in the South Caucasus region, which were recently analysed using Social Network Analysis (SNA) methodology. The main objective of the paper is to share the learning on using SNA as a tool. It presents the main challenges, learning and best practices, and provides recommendations both for the South Caucasus project and for the development of networks analysis more generally.

1 INTRODUCTION

'If this particular period in the world's history had to be characterized in any simple way, it might be as one that is more highly, more globally, and more unexpectedly connected than at any time before it. And if this age, the connected age, is to be understood, we must first understand how to describe it scientifically; that is, we need the science of networks.'

Duncan J. Watts (2003) Six Degrees: The Science of a Connected Age¹

The power of networks is well understood by NGOs in the development sector. NGOs often choose the strategy of building alliances, associations and coalitions of actors with similar aspirations and world views on specific development issues – gender, climate change, food security, agriculture, health, education or any other.

The name and the form of these united efforts can vary, from voluntary task forces to formally endorsed legal alliances; however, the basic underlying structure can be captured by one term – network. Even though networks are assigned a central role in achieving results for people living in poverty, NGOs working directly on the development of those networks rarely go beyond conducting the stakeholder-mapping exercise. This means that scientifically tested measures are hardly ever applied for a more comprehensive analysis of those networks; they are simply taken for granted to be the main actors in delivering positive changes.

Oxfam, like many other NGOs, has had many successful experiences of effective alliance-building with the aim of leveraging change for people living in poverty worldwide. This paper focuses on the case study of two networks developed in the South Caucasus region – the Georgian Alliance for Agriculture and Rural Development (GAARD) and the Agriculture Alliance of Armenia (AA). These networks have recently been analysed using Social Network Analysis (SNA) methodology, with the aim of building more resilient, sustainable, effective and efficient alliances to bring about the necessary changes in food security policies in the two countries.

SNA is an innovative methodology – a tool for describing, analysing and measuring the characteristics of the network. It provides information on the structure of the network as a whole, as well as on the roles of individual actors within the network. The primary reason for analysing networks is to better understand them, so that the learning can be translated into actions for optimizing the networks for achieving programme objectives.

This case study shares the learning accumulated within the project on using SNA as a tool. It presents the main challenges, learning and best practices, and recommendations both for the South Caucasus project as well as for other projects which focus generally on network development.

2 ABOUT OXFAM'S PROGRAMME

In September 2013, Oxfam started a four-year European Commission funded project, 'Improving Regional Food Security through National Strategies and Small Holder Production in the South Caucasus'. A central part of the project is to facilitate gender-sensitive food security and nutrition strategies in Armenia and Georgia. In order to guarantee that the national strategies meet the needs of beneficiaries, the project applied the 'bottom-to-top' approach and engaged multi-stakeholder alliances of civil society organizations (CSOs) in evidence-based advocacy with policy makers.

Engaging CSOs with different profiles not only ensured an effective bottom-to-top approach; the need for multi-stakeholder alliances was also defined by the issue itself – food security. The term 'food security' covers a broad range of areas including food supply, financial affordability, climate change, nutrition, etc. The project adopts the Food and Agriculture Organization (FAO) classification of food security in its conceptual framework, which addresses availability, accessibility, utilization and food stability.² Thus, in order to have comprehensive knowledge of the various aspects of food security, the project supported two alliances – the Georgian Alliance for Agriculture and Rural Development (GAARD), and the Agriculture Alliance of Armenia (AA). Each alliance consists of around 20 local and international CSOs working in the sectors of agriculture and livelihoods – development, gender, access to finance, research, etc. The two alliances have different levels of maturity and different organizational structures, which provides a solid ground for comparison within the framework of SNA.

After two years of project implementation, the alliances had achieved important results in both countries – the national agricultural strategies in Georgia and Armenia had been successfully influenced to be more targeted towards meeting the needs of beneficiaries –smallholder farmers. Currently, AA is moving towards the role of monitoring and oversight of the implementation of the new national agricultural strategy, while GAARD is working with the government to lobby for the development and adoption of a food security bill.

As both alliances were heavily supported by financial resources from Oxfam, sustainability of these voluntary networks was raised as one of the crucial issues that needed to be assessed within the project mid-term evaluation. As the project is focused on policy advocacy, the monitoring and evaluation methodology largely relies on qualitative assessments from a wide range of sources. Thus, to guarantee the validity and reliability of measurements for the assessment of the project's core results, the SNA methodology was applied in order to study the two alliances in greater detail.

3 ABOUT SOCIAL NETWORK ANALYSIS

Social Network Analysis (SNA) is a set of mathematical, graph theory and statistical tools to analyse the structure of the network as a whole, as well as the role of relationships each member has within it. The term 'network' represents the system of interconnected relationships. It has been applied in a number of areas, ranging from biology to organizational development in the private sector. Within this learning paper, the focus will be on the network of organizations.

SNA places its main focus on the relationships of organizations within the network. By analysing in parallel the overview of the network (structure) and the role of each organization within it (relationships) we can answer the following key questions:

How dense is the network? In other words, how many connections are there within it? If each organization is connected to every other organization, the network is regarded as having 100 percent density; while if none of the organizations have any connection with any other, the network density is zero percent, i.e. no network exists.

Which organizations are central in the network? The information on which organization has the most and which has the least number of connections tells us about the role of these organizations within the network. Some groups of organizations might be more connected within the network than others; thus they might be forming their own small sub-group/community. Other organizations can be the 'linkers' between two communities, playing the role of bridge within the network.

What is the average distance within the network? This refers to the number of average connections that one organization would have to take in order to connect to another organization.

Combining the above information enables us to better understand the context, meaning we can adjust our efforts to make a more sustainable impact. The network density enables us to track progress when we start building the network; the centrality of the organization tells us about the possible structure that our network-building plan will have; while the average distance gives insights into the potential time and human resources needed to form the optimal network.

While the SNA is a relatively new tool for the measurement of networks within the NGO world, it is also relatively easy to administer; however, the analytical phase requires knowledge of statistical and network analysis software. Oxfam has previously successfully implemented SNA for the project 'Empowering Civil Society Networks in an Unequal Multi-Polar World' (ECSN-BRICSAM). Data were collected from Russia, China, India, Mexico and South Africa with the aim of standardizing and unifying

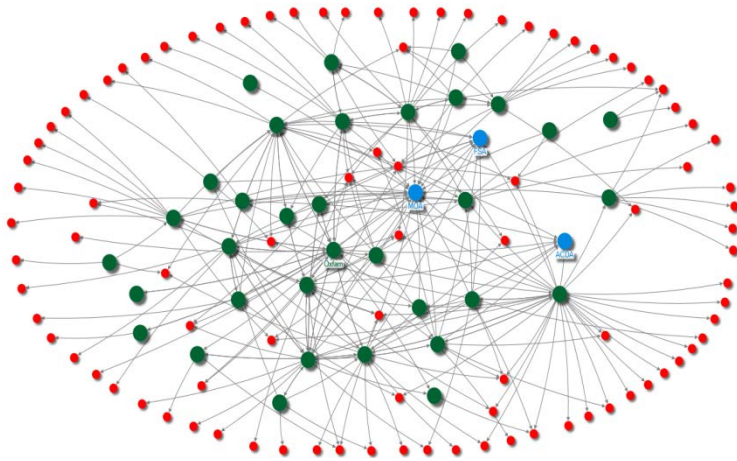
a conceptual approach, and facilitating a tentative cross-country comparison across the nationally framed civil society networks.³ The South Caucasus SNA implementation team is grateful to the ECSN-BRICSAM team for collaboration during the methodology development phase.

4 APPLICATION OF SNA IN OXFAM'S PROGRAMME

The main objective of implementing the SNA methodology within the South Caucasus food security project was to assess the sustainability of alliances as part of the project Monitoring, Evaluation and Learning (MEAL) system during the mid-term evaluation. The first step included defining the network boundaries, i.e. the types of organizations that would be surveyed within the study. Based on the project objectives, the SNA study focused on non-state organizations. The list of alliance members (of GAARD and AA) was taken as the primary step, and two more stages of network boundary formation were implemented using the 'snowball principle'.⁴ The study focused on issues related to food security (agriculture development strategy, agricultural production, food safety and healthy eating/nutrition) and on the following types of connections within the network: information-sharing, resource-sharing, joint advocacy, and memorandum and contract-based connections. This allowed for the assessment of both formal and informal relationships formed within the network.

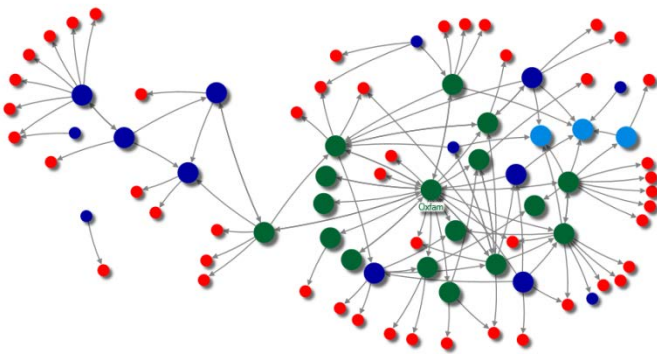
The main tool used by the study was an online, structured questionnaire; and after the information had been converted into a data matrix, the network-drawing software 'Netminer' was used. The total number of organizations asked to respond to the survey was 65 in Armenia and 80 in Georgia; the overall response rate was 43 percent.

The initial findings of the SNA show an interesting pattern of **formal** versus **informal** network structures both in Armenia and Georgia. The figures below show the network structures for information-sharing and for formally based connections.



**GEORGIA:
Informal network for
sharing information**

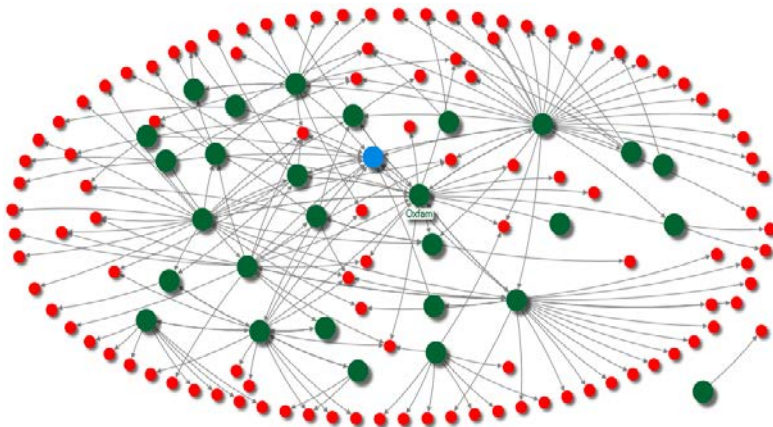
DENSITY: 0.017
Organizations: 130 **Links:** 290
DEGREE CENTRALIZATION INDEX:
 17.0% (IN), 22.5% (OUT)



**GEORGIA:
Formal network based on
contracts and MoUs**

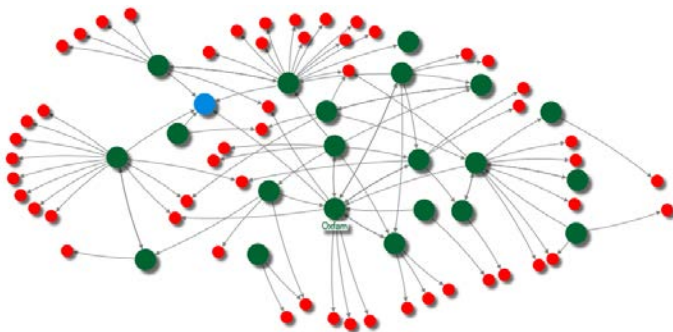
DENSITY: 0.019
Organizations: 82 **Links:** 126
DEGREE CENTRALIZATION INDEX:
 6.83% (IN), 21.83% (OUT)

The results from Armenia presented below also show how networks can take a different structure in different socio-political contexts.



**Armenia:
Informal network for
sharing information**

DENSITY: 0.011
Organizations: 137 **Links:** 209
DEGREE CENTRALIZATION INDEX:
 8.5% (IN), 23.3% (OUT)



**Armenia:
Formal network based on
contracts and MoUs**

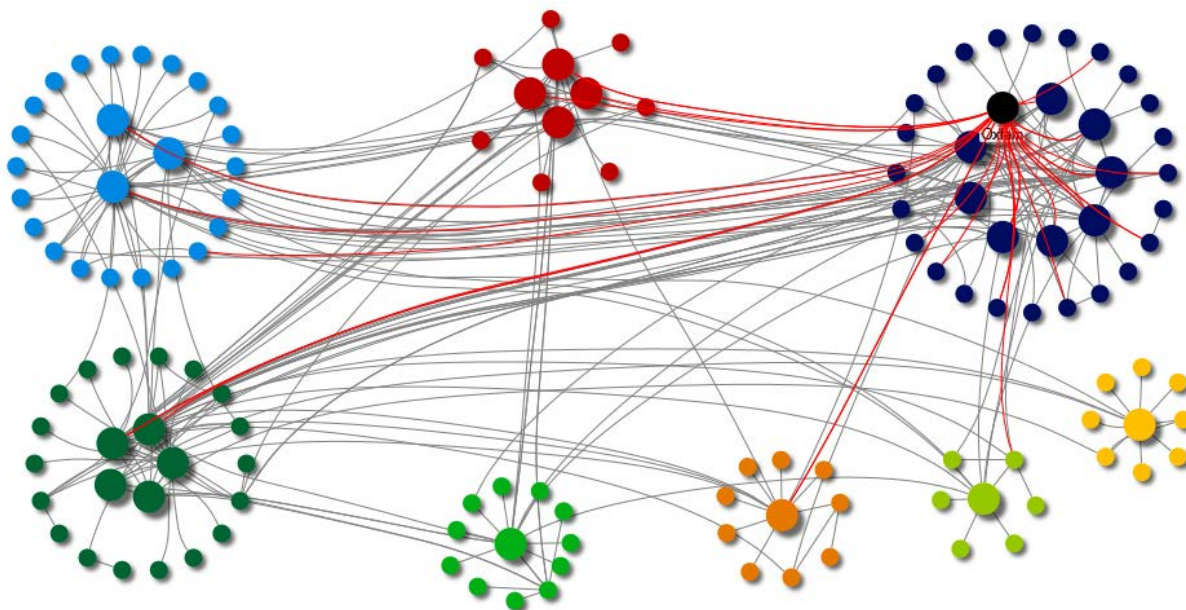
DENSITY: 0.019
NODES: 75 **Links:** 103
DEGREE CENTRALIZATION INDEX:
 7.70% (IN), 17.29% (OUT)

- Respondents
- State
- Other

Source: South Caucasus Food Security Project SNA Report, 2016

The two figures from both countries show that the number of organizations engaged in informal information-sharing is much higher, and the linkages between them much greater, than in the case of formal relationships. Oxfam's 'in-degree centrality' measure (i.e. the number of organizations which declare to be connected with Oxfam) is also higher in the case of information-sharing than in the case of formal relationships.

Based on the four types of analysis (Eigenvector Centrality, Node Betweenness Centrality, In-Degree Centrality, Out-Degree Centrality), central actors were identified in Georgia and Armenia, with Oxfam taking one of the leading roles. This is especially important information for the development of the project exit strategy, as it gives a clear picture of the strength and capacities of other central members of the network, to which responsibility for areas of project direction could be handed over. For example, the figure presented below depicts the links (in red) which Oxfam has with various groups of stakeholders. As one of the central members of the network, Oxfam is presented in the largest cluster (sub-group) of organizations; however, it is most connected to other central members, while the links to some of the groups is either absent (i.e. the group highlighted in yellow) or is very weak, with only one connection.



Source: South Caucasus Food Security Project SNA Report, 2016

Even though the analysis is ongoing, the initial tentative structure and the types of relationships shown between different members of the networks has already given us a number of important insights:

First, the results show the importance of contextual factors in defining the basic structure of the network, e.g. socio-political context has a great effect on the structure of a CSO network. Thus there is a need to qualitatively assess what might be the underlying reasons, to ensure these are documented as risks and assumptions along with potential mitigation measures, while working on network development.

The results show Oxfam to be one of the central actors; however, the internal judgement on the benefits and drawbacks of this should take

place in line with other SNA measures, such as density and average distance between connections. The following key questions should be critically assessed:

- What does it tell us about the sustainability of the network?
- Have we taken sufficient measures to strengthen the capacity of other organizations?
- Are there other organizations which have the same level of centrality?
- What do the characteristics of their relationships tell us about lasting impact?

Oxfam's 'out-degree centrality' measure, which shows how much we are communicating or information-sharing with others, is 21–22 percent. Answering the questions above gives information as to whether this is enough for achieving our project objectives. The need for further engagement with various types of stakeholders is apparent, and the structure of the network already tells a story about the actions that Oxfam can take to strengthen the network.

5 WHAT HAS OXFAM LEARNED?

The SNA is especially useful when the project is starting to develop a new network, as it provides an opportunity to influence the formation of a more optimal network. However, a follow-up study into the AA and the GARRD will be carried out as part of the final evaluation's assessment of progress after the recommendations of the SNA were adopted.

As the information gained through the SNA primarily focuses on various organizations and their characteristics, their informed consent should be sought, along with further measures to guarantee the confidentiality of participating organizations.

Even though the current response rate of the survey is relatively high compared to other similar studies, in statistical terms it creates a limitation. Thus, the programme staff directly involved in the project should actively promote engagement in the SNA process through their formal or informal contacts in alliance member organizations.

6 INITIAL CONCLUSIONS AND NEXT STEPS

In conclusion, the initial findings – based on less than three percent of the available data – show us potential limitations and suggest sustainable and efficient strategies for Oxfam’s work in the South Caucasus. More detailed conclusions and strategies will be made available when the analysis has been completed. It was important that Oxfam spin-off organizations – BRIDGE in Georgia and OxyGen in Armenia – were also included in the SNA study. For these organizations, the given data serve as baseline conditions for starting the operational relationships with various stakeholders at CSO and governmental levels.

NOTES

- ¹ Duncan J. Watts (2003). *Six Degrees: the science of a connected age*. W.W. Norton & Company, Inc., New York
- ² United Nations Food and Agriculture Organization (FAO). *Introduction to basic concepts of food security*. <http://www.fao.org/docrep/013/a1936e/a1936e00.pdf>
- ³ Project report: <http://csnbricsam.org/wp-content/uploads/2013/08/ECSN-BRICSAM-consolidated-National-Consultations-report.pdf>
- ⁴ Snowball principle is a non-probability sampling technique where existing study subjects recruit future subjects from among their acquaintances. The researcher collects data on the few members of the target population, then asks those individuals to provide information needed to locate other members of that population whom they know. See: <http://sociology.about.com/od/Types-of-Samples/a/Snowball-Sample.htm>

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