More than just linking the nodes: civil society actors as intermediaries in the design and implementation of payments for ecosystem services – the case of a blue carbon project in Costa Rica

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Abstract

While in many cases the benefits of ecosystem services (ES) can be enjoyed on different scales, the provision of ES requires engagement and commitment at the local scale. Therefore, the local level becomes important when thinking about compensation schemes or payments for ecosystem services (PES) as an approach to managing ES. The difficult task of bringing together different actors and institutions at different scales for specific conservation projects at the local level often remains in the hands of intermediaries. In this paper, we investigate the role of a civil society organization (CSO) as an intermediary organization in a PES scheme, the Community Blue Carbon Project (CBCP) in Costa Rica. To assess the role of intermediaries in a PES scheme, we rely on social network analysis and examine the position and role of the intermediary organization. Based on Net-Map interviews, which is an interview-based mapping tool that helps people understand, visualize, discuss, and improve situations in which many different actors influence outcomes, we find that the intermediary organization in the CBCP is composed of several institutional and individual intermediaries who create both formal networks for connecting the international to the local level and informal networks for creating trusting relationships among the actors. Different spatial levels are reflected within the CSO´s organizational structure, and the CSO mitigates the distributional, procedural, recognition and contextual aspects of environmental justice.

Keywords: Social Network Analysis; Net-Map, Community-Based Conservation; Governance; Equity; Central America

1. Introduction

The governance of ecosystem services (ES), which are "the benefits people obtain from ecosystems" (MEA, 2005:5), is often characterized by cross-scale dynamics and represents a mostly multi-level type of governance because the benefits of ES usually can be realized at different scales, from the local to the international level (Schleyer *et al.*, 2015). Mangrove and wetland ecosystems, for example, deliver provisioning ES such as fish, mussels or wood that are mainly used by the local communities, but they also provide regulating ES such as carbon storage, barriers against hurricanes, soil fixation, purification of water, and cultural ES such as natural beauty for recreation and tourism as well as biodiversity (MEA 2005). Some of these ES are global public services, such as carbon storage. Natural beauty and biodiversity attract international as well as national and local tourists. In contrast to the beneficiaries, the main commitment for maintaining and managing the provision of these ES lies with the land users at the local level. In the case of mangrove reforestation, local actors are burdened with activities such as collecting seedlings, setting up nurseries, planting and monitoring the reforestation. "This implies that the governance of ecosystem services is characteristically multi-layered. Multi-level governance systems entail a complex architecture involving a multiplicity of actors and many interrelations between the ´local´ and the ´global´" (Muradian and Rival, 2012).

Multi-level governance can be defined as steering and coordination to handle interdependencies among different territorial levels and jurisdictions through the cooperation of governmental and non-governmental actors based on negotiation or competition and is embedded in an institutional rule system within each level (Benz, 2010). The multi-level governance concept thus contains both vertical and horizontal dimensions. Territorial levels stretch from the local, to the regional, to the national, and to the international and global contexts (Bache, 2004, Benz, 2010).

Payments for ecosystem services (PES), which is one approach to governing the provision of ES, can be considered multi-level governance systems, where the local level is of particular importance and relations are conflict laden (Petheram and Campbell, 2010, Cranford and Mourato, 2011, Adhikari and Agrawal, 2013). Often PES are based on extrinsic economic (and regulatory) incentives in combination with intrinsic motivation (Matzdorf *et al.*, 2013). In general, PES can be defined as an approach where "land users are paid […] for reducing allowable negative external effects on ecosystem services or for taking action to preserve or restore ecosystem services and biodiversity" (Matzdorf et al. 2014, 12). Seen as a governance model, PES schemes fall into one of the three types defined by (Vatn, 2010) — hierarchies, markets and community management. Hierarchies ('command and control') are based on the system of command and resource allocation and occur according to the existing power structures. By contrast, markets are based on the principle of voluntary exchange between individual agents. The allocation of resources then results from the agents' willingness to pay for goods and services. Community management is based on co-operation amongst actors. It has to take into consideration the multiple actors and their interests within the community and how they influence the decision making process (Agrawal and Gibson, 1999). The allocation of resources is carried out taking into account both individual and common goals. In reality, PES often are hybrids of these types of governance models. "In practice, PES is not confined to markets and strict commodification of nature, but reflects socially constructed arrangements in which governments as well as social organizations play a mediating role, not a priori serving global corporate interests." (Van Hecken *et al.*, 2015).

PES approaches are not without criticism. In general, they are criticized for ethical and methodological reasons (Hansjürgens et al., 2016: 176). PES are seen as morally questionable because they treat nature as an economic good by putting a price on nature and trying to make a profit from nature. PES have crowding out effects as they pay for actions people would have

accomplished without being paid (Vatn, 2010) and therefore are "counterproductive to conservation" (Dempsey and Robertson, 2012). Methodologically, the methods of the economic valuation of ES, which try to translate ES values into income equivalents, are criticized as weak and limited due to biases in the cost-based and revealed-preferences methods (Hansjürgens et al., 2016:176). Finally, PES are sensitive to the consideration of targeting and equity aspects (Schomers and Matzdorf, 2013). Carbon offset projects, for example, are found to be faulty for following a logic of market capitalism and underlying power relations (Lohmann, 2008, Norgaard, 2010, Ibarra *et al.*, 2011, Anderson and M'Gonigle, 2012, Anderson, 2012, Wittman *et al.*, 2015), for neglecting the complex dynamics between the ecological and the social systems (Kosoy and Corbera, 2010), and for rarely considering any aspects of equity and justice, as the distribution of costs and burdens are often perceived to be unjust (Martin *et al.*, 2014, Pascual *et al.*, 2014, Sikor and Newell, 2014).

Boundary, bridging or intermediary organizations can potentially play a role to balance power relations and do not always act according to capitalist values (Corbera *et al.*, 2009). They are meant to be organizations that "play an intermediary role between different arenas, levels or scales and facilitate the co-production of knowledge" (Cash *et al.* (2006)) and, therefore, meet the challenges of scale and cross scale interactions in multi-level governance models (Cash and Moser, 2000, Folke *et al.*, 2005, Cash *et al.*, 2006, Hahn *et al.*, 2006, Berkes, 2009).

Intermediaries are examined in different scientific contexts. Intermediaries in PES schemes operate at the interface between ES service providers and beneficiaries and play a number of different roles: they initiate and/or coordinate the whole process, advise and recruit providers, are responsible for monitoring and evaluating the implementation and certify and validate certain inputs (Matzdorf et al., 2014). PES intermediaries can be i) public players (such as agencies and ministries), ii) civil society players (such as environmental associations) or iii) private (market) players (such as carbon companies).

In many cases, PES intermediaries can be described as bridging organizations, as they have to approach the challenges of multi-level and hybrid governance models. These kinds of intermediaries refer to adaptive co-management and social learning; they are "emphasizing their positional function as conduits between social networks with the potential to link diverse nodes for expertise for collective action" (Sternlieb et al., 2013), but they also "include other facets of intermediary work such as knowledge services, smaller scale businesses and emphasis on the role of user-actions" (Sternlieb et al., 2013). PES intermediaries facilitate connections and interactions between actors from different backgrounds as well as work across conventionally resistant boundaries between actions, scales, and actors.

Existing studies concentrate on the different roles and functions of intermediaries as well as their influence on PES schemes (Pham et al., 2010, Bosselmann and Lund, 2013, Coggan et al., 2013, Huber-Stearns et al., 2013, Sternlieb et al., 2013, Meyer, 2015, Schomers et al., 2015) or on the role of civil society organizations (CSO) in PES schemes (Meyer, 1995, Lipschutz and (with Mayer, 1996, Gemmill and Bamidele-Izu, 2002, Eastwood, 2011, Maier and Meyer, 2011, Adhikari and Agrawal, 2013, Hrabanski et al., 2013), but a number of issues remain unsolved, such as research on the suitability of the different types of intermediaries in the context of multi-level PES schemes (Schomers et al. (2015).

This paper contributes to closing this gap. We examine the characteristics of intermediaries in a PES network and focus on how the intermediaries mitigate critical or negative PES aspects? We concentrate on aspects of environmental justice and equity and consider four dimensions: distribution, procedure, recognition and context (LIT). Distribution refers to the various costs and benefits that stakeholders receive through resource allocations, which herein are specifically from a PES scheme. Procedure relates to the processes of decision making and participation, while recognition refers to the acknowledgement of different cultural identities, values and knowledge. Finally, the dimension of context considers the pre-existing

political, economic and social conditions that influence people positively or negatively in their capacities to participate or gain from the PES scheme.

To answer these questions, we rely on social network analysis and examine the position of the intermediary in a specific conservation network, the Community Blue Carbon Project/Program (CBCP) in Costa Rica. We use a participatory, interview based mapping tool called Net-Map to address the questions above, which not only creates scientific knowledge but also enhances social learning, as participants may understand, visualize, discuss, and improve their (PES) situations. In so doing, we contribute to the still limited amount of literature addressing and implementing the Net-Map method (Schiffer and Waale, 2008, Aberman et al., 2010, Schiffer and Hauck, 2010, Hauck and Schiffer, 2012, Harlan et al., 2013, Sander et al., 2013, Hauck et al., 2015) as well as to the role of social networks in natural resource governance (Bodin and Crona, 2009).

We first introduce the case study before we present the methodological approach and the Net-Map tool, and we provide information about the data collection. Based on the data we analyse and visually interpret the social network before discussing the results and presenting some conclusions.

2. The Community Blue Carbon Project (CBCP) on the Osa Peninsula: The case study

The Golfo Dulce region is situated on the Osa Peninsula on the southern Pacific Coast of Costa Rica. As part of the Osa Conservation Area (ACOSA), the whole area is one of Costa Rica´s best preserved wilderness areas and is extremely rich in biodiversity thanks to the mangrove and other wetland ecosystems. Mangroves provide valuable ecosystem services such as carbon storage, biodiversity, prevention of soil erosion and recreation. Mangrove ecosystems store up to five times more carbon than tropical forests, both through the plants that compose them and

their sediments, and therefore, they are of great significance in the fight against climate change.

Although public property, these ecosystems lack management guidelines and funding to guarantee conservation. In addition, they are threatened by a variety of issues, such as the global environmental phenomenon of climate change, bad practices in the agricultural and industrial sectors and misled governmental policies. Additionally, the situation is affected by the fact that the Golfo Dulce region is one of the poorest in the country, where education standards are low and emigration rates high (González Vega and Herrera Montero, 2010). Mangroves are not highly valued among the population and are often perceived as dirty environments without any advantages for human livelihoods.

To foster the conservation of these important coastal ecosystems, the CSO Fundación Neotrópica – in the following referred to as the CSO – together with the local communities and national companies, such as a car retailer and a beauty product company, established the so-called Community Blue Carbon Project (CBCP). The project is a kind of payment for ecosystem service schemes based on the voluntary compensation for carbon production by part of the donor companies. The project is not a carbon offset project, as the public property status of the mangroves prevents enhancing conservation efforts through typical market based mechanisms. No carbon credits maintained from ES derived from mangroves are generated and sold. Instead, the programme is more of a social responsibility programme for community conservation of mangroves rather than a market-based PES scheme: Businesses buy a kind of restoration package for a certain amount of money. The package includes the implementation and operation of a nursery for seedlings of four different mangrove species, which will be distributed in different areas of the Golfo Dulce, the reforestation of the seedlings, monitoring and education activities with local schools. These activities are coordinated by the local fishermen's association "Asociación de Pescadores del Golfo Dulce" (ASOPEZ). The project is not about installing tree plantations; instead, the project focuses on the reforestation of destroyed

mangrove areas along the coast line, and there are no land grabbing issues as the land is public. Fishermen are paid very small amounts of money, which cannot be compared to a salary, to acknowledge their activities and to prevent possible crowding out effects. The fishermen were aware of the fact that they were being affected by environmental problems, such as the decrease of fish populations and the sedimentation of streams, but did not relate it to mangrove protection before starting the PES scheme. The CBCP involves local communities as service providers and also instigates the participation and commitment of customers of donor companies who are beneficiaries and take on their responsibility in conservation issues. Therefore, PES schemes involve a variety of intermediaries: the companies, the CSO and the fishermen's association who represent the financiers and suppliers of ES, respectively. In this paper, we concentrate on the analysis of the CSO as an intermediary organization. While its headquarters is located in San José, since 1993, the CSO also has been running a field station located on the Osa Peninsula.

3. Methodology

3.1 The Net-Map tool as a participatory approach

To collect data on the CBCP network, we used the Net-Map tool (Schiffer and Waale, 2008). Net-Map combines in-depth interviews and participatory mapping because during the interview the interviewee is drawing the network and evaluates the actors´ influence by building influence towers (Schiffer and Hauck, 2010). The interview consists of four steps. In a first step, the researchers define the issue they want to know about: "Who was involved in XY… (in the last X month/years) (in country/region/town, etc.))?" In our case, we asked about the influence of the actors in the Blue Carbon project in Osa/Costa Rica. In the second step, the researchers define the link(s) they want to know about: "How did the actors interact to influence XY?" We chose contact and trust, which are relevant for this paper, among others such as money flow,

knowledge flow, contracts and reporting. In the third and fourth steps the motivations of the actors and the strength of their influence are elicited. These four steps serve as a guideline for visualizing a network map together with the interview partners. This visualization process is accompanied by narratives, which the interview partners provide to explain the drawings.

3.2 Data Collection

Data collection occurred in February and March of 2014. Through the formal and informal qualitative interviews, the most important stakeholders of the PES scheme were identified. In total, eleven Net-Map interviews were conducted with 20 interviewees. Interviewees were selected based on their specific relationships to the CBCP or their specific roles in its implementation. Two of the eleven interviews were held with representatives of the donor companies (six persons, three women and three men), four were held with members or former members of the CSO (six persons, two women and four men), and five were held with community members from the target region (eight persons, three women and five men) who were participants and non-participants in the PES scheme. In this way, we mapped the network with all the important actor groups, which ensures the reliability of the information and provides data validation. We also tried to balance the gender and age of the interviewees. In the selection of interviewees, we considered the information that the CSO is present at both its national headquarters (HQ) and a local field (FSt) station as well as the importance of the director. Because the fishermen's association is a larger group, we interviewed more than one fisherman and also interviewed fishermen from a control group of fishermen who are not organized in the fishermen's association. The interviews were conducted with single persons or in groups of up to four interviewees and were held mostly in the homes or in the offices of the interviewees. Depending on the interviewees´ language skills, the interviews were conducted in either Spanish or English.

3.3 Data processing and analysis

The information contained on the Net-Map sheets was digitized in order to be analysed in the form of network graphs and their related SNA measures.

Although we presented the nine main actors at the beginning of the interviews, a total of 149 different actors were identified on the eleven Net-Map sheets after concluding the interview process. This number was reduced, and the actors who were named only once were clustered with actors having similar characteristics. The information contained in the eleven individual CBCP networks was converted into eleven adjacency matrices to create the network graphs. In these binary matrices, information on the existence of a tie is coded with 1, and information on the non-existence of a tie is coded with 0 (Wasserman and Faust, 1994).

To obtain the common network of the CBCP, the eleven single networks were stacked together. This was accomplished by summing up the adjacency matrices for each of the seven relations, resulting in seven common adjacency matrices, one for each relation. For the analysis of this paper, the results from all eleven Net-Maps were compared to the results of five Net-Maps from local community members. The information about the heights of the importance and benefit towers and the actor motivations were listed in eleven separate attribute tables.

For the analysis of the actors´ positions in the networks, the SNA measures were calculated using the software for social network analysis, UCINET 6 (Borgatti *et al.*, 2002). We calculated the actors´ degree centrality for the contact network and the indegree centrality for the trust network to determine the CSO´s importance. Degree centrality means the number of direct ties an actor has to other actors in a network (Wasserman and Faust 1994). A high degree centrality in the contact network points to a high number of direct relationships maintained by an actor, increasing his opportunities to access novel information and to exert influence on other network members. To show the intensity of contacts, the node strength of every actor was calculated, which is the sum of the weights of a node's ties, meaning that an

actor with a single high value tie will receive a similar score as an actor holding many low value ties. In-degree centrality means the number of direct incoming ties or the relations in which something is "received" by an actor (Wasserman and Faust 1994). A high in-degree centrality in the trust network points to the high trustworthiness of an actor, increasing his opportunities to exert influence on other network members. To assess the amount of trust received by actors, the node strength was calculated separately for incoming and outgoing ties in the directed network. These measures were chosen instead of betweenness centrality due to the CBCP's length of operation; at the moment of the interviews, the actors were already successfully connected by activities encouraged by the CSO.

For the visual interpretation, network graphs were generated using NetDraw (Borgatti, 2002). We used the actors´ node size to better visualize their importance. To visualize the multi-level governance, we coloured the actors with regard to their spatial level. Local actors are coloured in green, national actors in blue and international actors in pink.

Additionally, the network narratives, which are the qualitative parts of the interviews, were recorded with the consent of the interviewees and transcribed into Spanish or English, depending on the interview language. The interviews generally lasted approximately one to two and a half hours and were conducted in or near the residents' houses, in the respective offices of the administrative staff, or in public spaces nearby. The transcripts were examined to determine additional information regarding the intermediaries´ roles and functions (Herz, 2015)

4. Results

Our findings identify the intermediaries in the formal contract network and in the informal contact and trust networks and show their positions and functions. We complete these visual descriptions with statements provided in the transcripts of the network narratives to explain how the intermediaries can mitigate critical PES aspects.

Table 1 gives an overview over the characteristics of the most important actors in the PES.

Table 1: Characteristics of the most important actors in the PES.

Geographical level	Actor name	Role	Attributes/Main motivation
Local	ASOPEZ	Intermediary	Ecologic
Local	Fishermen	ES provider	Economic
Local	Community	ES provider and beneficiary	Knowledge
Local	Teacher	Educator	Ecologic
Local	Local Students	ES provider and beneficiary	Ecologic
Local	Neo_FieldStation	Intermediary	Ecologic
Regional	ACOSA	Government entity	Ecologic
National	Neo_Headquarter	Intermediary	Ecologic
National	Neo_Director	Intermediary	Ecologic
National	VW_Ford	Donor	Ecologic
National	Davines	Donor	Ecologic
International	EbHo	Intermediary	Ecologic; social; knowledge

Source: Own elaboration.

4.1 The identified intermediaries within the intermediary organization and their importance to the network

Comparing the overall network based on all eleven Net-Maps with the local perception of the network based on five Net-Maps with community members, the importance of the different actors becomes clear, and the intermediaries can be identified.

Table 2 shows the highest degree centralities in the contact network, meaning that these actors maintain the highest number of relationships within the CBCP network. While in the overall Net-Maps the CSO´s headquarters is the most important actor for contacts, followed by the CSO´s field station, the fishermen's organization and the CSO´s director; in the community Net-Maps, the fishermen's organization has the highest degree centrality, followed by the

CSO´s field station, the CSO´s director and the fishermen. The CSO´s headquarters are less important for contacts at the local level.

Table 2: Actors with the highest degree centrality in the contact network – a comparison of all the Net-Maps vs. the community Net-Maps

Actor abbreviation	All Net-Maps	Actor abbreviation	Community Net-Maps
Neo_Headquarter	158	ASOPEZ	66
Neo_FieldStation	150	Neo_FieldStation	58
ASOPEZ	144	Neo_Director	58
Neo_Director	138	Fishermen	46
Fishermen	100	Neo_Headquarter	44
Davines	80	Community	38
Teacher	78	VW_Ford	28
Community	72	Loc_Students	22
VW_Ford	54	Teacher	20
ACOSA	38	Davines	20

Source: Own elaboration.

In the informal trust networks, the actors´ importance are slightly different. We calculated the highest in-degree centralities in the trust network to analyse the actors with the highest trustworthiness. While in the overall Net-Maps the CSO´s headquarters, field station, and director gained the most trust, followed by the fishermen's organization, in the community Net-Map the most trustworthy actors are the CSO´s field station, followed by the fishermen's

organization, the community and the fishermen. This shows that the CSO´s headquarters plays a key intermediary role in the overall network, while the CSO´s field station and the local actors play a key intermediary role in the local network. Comparing these results with the height of the influence towers from all the Net-Maps, the importance of the local actors is evident. With the influence towers, we measure the importance that actors have for the CBCP, which is perceived from the point of view of the other network actors, and the actor´s self-perception of his own importance is included. The influence towers therefore are helpful to evaluate the significance of the actors´ roles and their engagement in the CBCP. High perceived importance points to a positive image and high levels of influence by actors. The CSO's field station and the fishermen's organization are considered the most important actors for the CBCP's implementation, and their importance is seen as nearly identical. The general recognition of the fishermen's organization and the CSO as equal project partners seems to be reflected by this. While the two most important actors, NEO_FSt and ASOPEZ, are found at the community level, the CSO´s headquarters and donor companies, the actors next in importance, are based in San José. The high importance assessed for the donor companies points to the strong significance that the provision of funds has for the interviewees, which was frequently mentioned during the interviews. In sum, the identified intermediaries for the PES scheme are the CSO – divided into the three parts of the national headquarter, local field station and the executive director– and the fishermen's organization. After having identified the important intermediary actors in the CBCP network, we examine their positions in the formal contract network and the informal contact and trust networks

4.2 The intermediaries´ positions in the formal contract network

The contract network describes the formal relations among the participating actors through the

existence of written contracts concerning the CBCP. Supported by a formal contract with the companies, the CSO makes a contract with the local fishermen's organization, which is free to organize itself in order to fulfil the tasks agreed upon in the contract. The CSO provides help and support where needed and monitors the fishermen's activities, which is mainly facilitated by the CSO's people present in the field station. To obtain the agreed upon remuneration, the fishermen's organization has to submit periodic written reports about the work accomplished in the nursery and forests. After fulfilment, the money is transferred to the fishermen's organization's bank account, and the organization distributes it among its members according to the working hours they completed. The donor companies, for their part, try to relocate the costs to their clients. The automobile retailer, for example, tries to sell climate certificates – although not carbon credits – for every sold car to make it carbon neutral, the chocolate company increases the price for its chocolate, and the beauty company is selling support cards at their retail hairdressers.

In this network (figure 1), the intermediary position of the CSO and that of its headquarters is obvious as it connects the donors and the community. Without this actor, the contact between the two actor groups and therefore between the local and the national levels would hardly be possible. Flows of funding, written reports and written contracts are the formal links that the interviewees mentioned most often in the overall contract network. A formal contract is established between the CSO´s headquarters and the fishermen's organization on the one side and between the headquarters and the donor companies on the other side. Depending on their individual knowledge, the interviewees mentioned formal contracts between the CSO and volunteers, between the international mangrove expert working at the CSO's field station and his home organization, and between the donor companies and their clients. While the headquarters are central for contracts and money flows, the field station is central for the written reports, as the local CSO staff located here helps the fishermen's organization in writing down

the listed activities and the results in a formal report. This is not to influence the results but to support the writing, formulating and formalizing of the documents, as the fishermen are not used to this kind of work in their everyday life, and in many cases, they are functional illiterates.

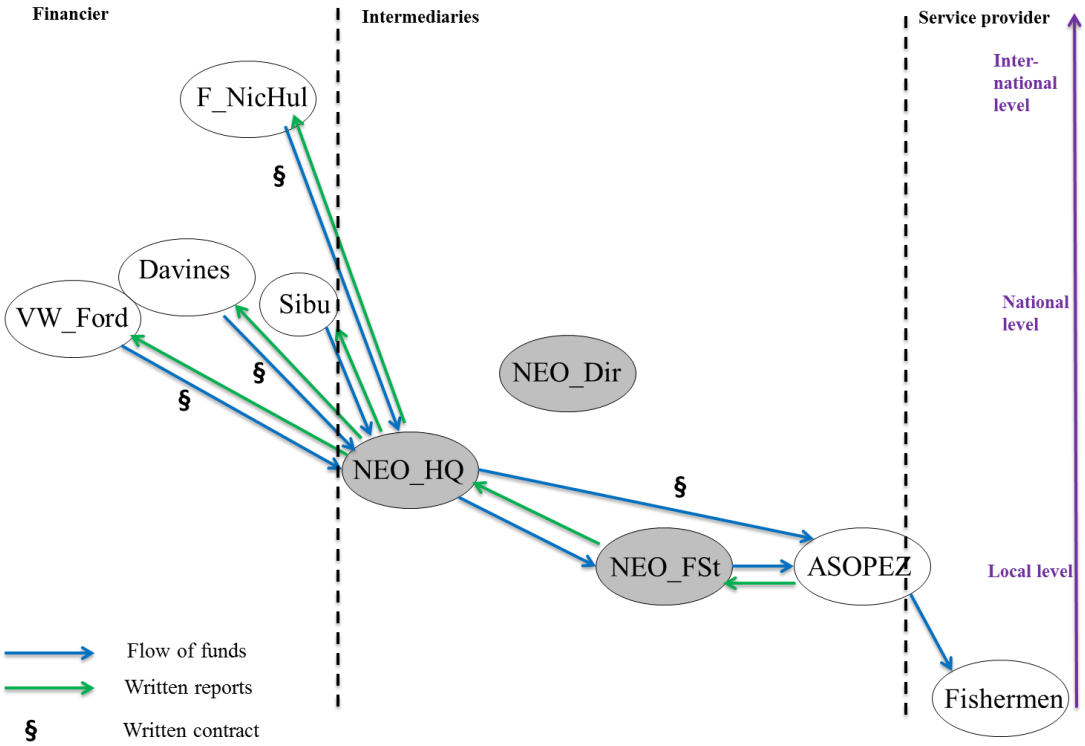

Figure 1: Formal network of the CBCP

Relations mentioned a minimum of three times during Net-Map interviews are shown in the figure. Actors belonging to the NEO are shaded in grey.

4.3 The intermediaries´ position in the informal contact network

The contact network reveals the presence of personal connections between the CBCP network actors, that is, which actors know each other personally, independent of any formally recorded connection. The personal connections demonstrate that the CSO spans multiple levels in the network, reaching from the local and the national to the international spheres.

The network (figure 2) based on all eleven interviews shows that the actors with the highest degree of centrality, that is, the highest importance, are the CSO´s headquarters and

field station. The fishermen's organization also has a high degree of centrality as well as the CSO´s director. Thanks to these important strong actors, the local and the national level are connected, and international actors are involved.

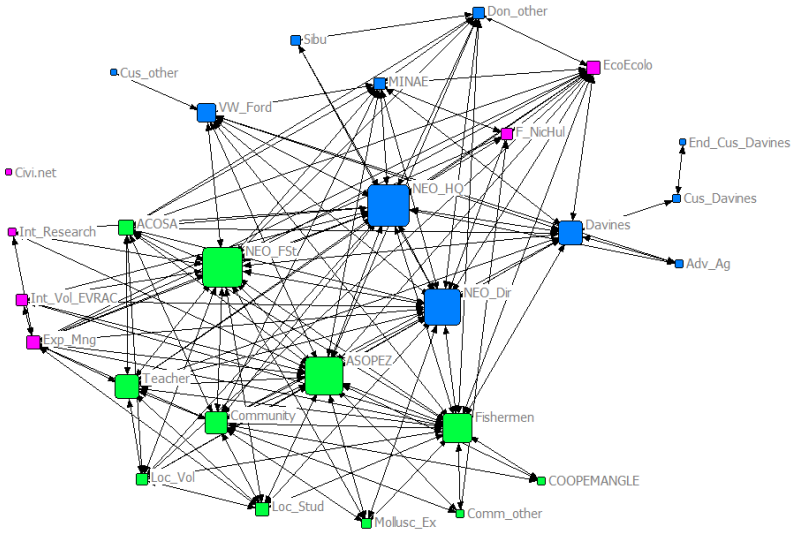

Figure 2: Contact network based on all eleven Net-Maps with CSO members, community members and donors.

Source: Own elaboration with Netdraw.

All ties depicted. Node size according to the actors' node strength in the contact network (degree centrality). Node colour according to the actors´ geographical scale: green=local, blue= national, and pink= international.

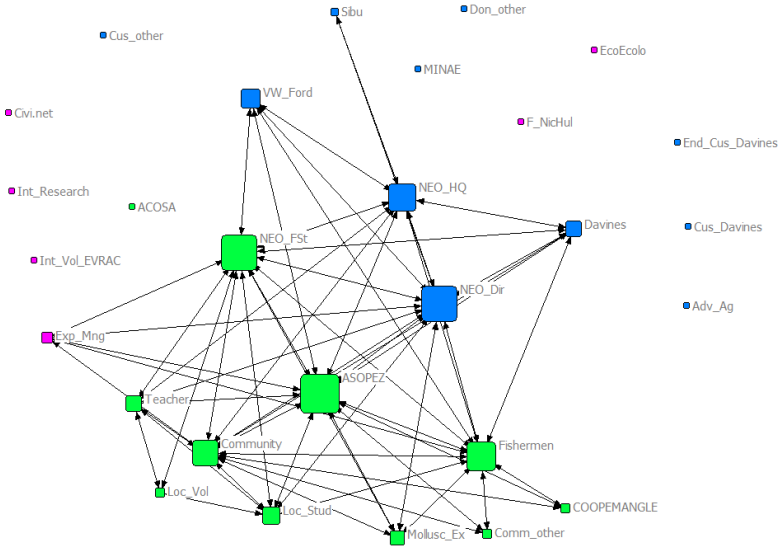

Figure 3: Contact network based on five Net-Maps with community members.

Source: Own elaboration with Netdraw.

All ties depicted. Node size according to the actors' node strength in the contact network (degree centrality). Node colour according to the actors´ geographical scale: green=local, blue= national, and pink= international.

The importance of the network´s expansion becomes clear when comparing the overall contact network (figure 2) to the contact network that was reported by the interviewed community members only (figure 3). The only international actor mentioned in the latter network is the mangrove expert who is closely connected to the community, as he works in the CSO´s field station. The community contact network in general is much smaller and less extended. Although the fishermen's organization and the fishermen have direct contacts and personally know people from the CSO´s headquarters, their contact is stronger with the CSO´s field station and the CSO´s director. Through these three intermediaries within the intermediary organization, the fishermen's organization's and the fishermen's contacts to the donor companies are the strongest. This was expected, as so far only people from the beauty company have visited the

mangrove nursery they paid for and got in direct contact with the members of the fishermen's organization.

4.4 The intermediaries´ positions in the informal trust network

Another informal network is the one comprised of relationships based on trust. This network helps us to understand the quality of relations between CBCP network actors, that is, which actors have especially strong relationships, and reveals the level of trust received by the intermediary.

Comparing the overall network and the community network, the importance of the local field station becomes evident. In the overall network, the most trusted actors are the CSO's headquarters and field station, followed by the CSO's director. In contrast, in the community network, which again is far less extended, the field station is the most trusted, followed by other local actors.

4.*5 The CSO: a heterogeneous rather than a homogeneous intermediary*

Based on the qualitative part of the Net-Map interviews, we can more closely examine the intermediary position of the CSO in the network and focus on how it fills this role in the PES scheme.

Due to its structural division into the headquarters located in San José and a field station on the Osa Peninsula, the CSO is equally present both on the national and on the community level. On both levels, the CSO is well-known and enjoys a good reputation, and on both levels, the organization is perceived to be strongly committed to the implementation of its conservation initiatives. In addition, its structural division offers the CSO the possibility of focusing on the very different specific concerns of the respective actor groups and to address them in a way that is best adapted to their mentality and needs. At the same time, in spite of its geographical division, the CSO clearly sees itself as one single entity, and the staff of both facilities is found

to be engaged in constant communication and exchanges, including frequent travels between the two bases. The different institutional parts have different tasks respectively in contact and trust creation.

The CSO is responsible for bringing together financiers and service providers in the PES scheme. Money and formal report flows are regulated mainly by the headquarters, which also sets up formal contracts with both parties. "Because many local groups lose the trust and confidence of many NGOs, exactly because *they do not comply with the contracts. Basically, the contract is the confidence-building element because it allows for strict control*" (Field team).

The overall importance of the intermediary organization, therefore, lies not only in bringing together the contract partners but also in bringing together different spatial levels. The contact and the trust levels clearly show the CSO´s importance to extending the networks to all levels. The national level is managing the formal contracts as well as the international contacts, while the field station is indispensable for both the establishment of contacts on the local level as well as the construction of trust. The fishermen confirm this: "*I would say we trust more in the one [the CSO] from here, from Osa [CSO field station], let´s say, because it is the one which is closer, for everything, for information, etc."* (Fisherman) And the field station is aware of its job: "*If there is something to be changed then there are three things to be changed. First, continue to build up confidence. Second, continue to build up confidence. In addition, third, continue to build up confidence. These are the three things to be changed. In the case that something has to be changed.*" (Team field station) One way to establish trust is to make the field station "local", to make it a part of the community: "*The Centre [=Field station] was restricted in access before. We said, ´no, that's not going to be the case, this needs to be a part of the community´. Therefore, people need to be able to come in and out and feel comfortable with doing that, and, you know, things like that. We started only hiring locals...*" (CSO Director)

The donors share this impression: Because of the social and educational work, "*the station is like a community centre."* (Donors)

For the fishermen, the field station is closer to them as it controls their activities. "*The [field station] staff are the ones that control everything, let´s say, the monitoring of everything – everything that is planted. They do the follow up*." (Fisherman). "*It [the field station] is the one that gives the orders*" (Fisherman).

This structure gives the CSO an advantage over other intermediary actors, as it has a deeper understanding of the local peoples´ interests, culture and perceptions and enables a closer and better communication with them (see Pham et.al 2013:68). "*We do have social capital, and part of that social capital had been built just from the fact that we have the Centre [= field station], you see? That's one of the reasons why I tell you that, the Centre has played a key role. Having the Centre there*." (CSO Director)

Although the institution as a whole is connecting the levels, one cannot neglect the importance of the director who, to a slightly higher extent than his employees, is moving between all the levels and connecting them. Most of the interviewees mentioned him as an important element of the network. The director is important as he is links across all levels and gets high trust rates. "*He is the face that they know best. He is the face of the headquarters*." (Field station team) *Additionally, the donors trust in his intermediation abilities: "We feel that there is trust between them [the foundation and the fishermen]. The director is very special, he is rolling up his sleeves*" (Donor). The director can also be understood as a "champion" figure: "A person with great personal commitment and a very good reputation with the stakeholders who takes the initiative" (Matzdorf et.al 2015:169). For many interviewees the director is the face of the CSO and receives trust as he has proven his endurance and commitment to continue working with the local people and looking for –above all financial – solutions where necessary. "*I still insist that I really, really have a lot of trust in this man. For me he is a very good friend*

and teacher." (Fisherman) "*He could be linked closer to the headquarters, but he is always here with us*" (Fisherman). "*He is always in touch, that is, we are connected on Facebook, we exchange pictures, and everything…*" (Fisherman) "*He jokes, he worries about our situation, he knows the children.*" The director has a great ability to develop and maintain the networks and team spirit within the CSO. "*We consider that we are a team and he is part of the team, even being the director*" (CSO members). Although it is not his home region, the director has been working there for years and speaks the "language" of the local people. Talking about his motivations, the interviewees gave him the symbol of a "heart", saying that he loves what he does. "*Like the heart of work let´s say*." (Fisherman) "*He is everybody´s darling*." (Fisherman) Additionally, when asking about the benefit to each actor from the CBCP, the CSO´s executive director is perceived to be obtaining the lowest amount of benefits, pointing to his generous and selfless – and, thus, very positive – image this actor seems to have for the interviewees.

Though it was not mentioned in our pre-interviews, during the Net-Map interviews, it turned out that the field station has a similar individual figure, the international mangrove expert who was added as an individual actor by the interviewees without it being suggested. The expert is the face of the CBCP at the local level. Formally, he is integrated into the national CSO, but as he is living in the field station and sharing his expertise, he became accepted as a local, although he is not Costa Rican. "*He is more a part of the field station, he is always nearby, he is always with us*." (Fisherman) "*I think he is also doing it from his heart. He loves doing his job and he has come here to learn and get to know our system*" (Fisherman). At the same time, the fishermen are learning from the expert's experience: "*At the beginning we did not have a lot of knowledge, but thanks to the foundation and to him, he shared a lot of knowledge with us"* (Fisherman). Additionally, the school children were taught by him occasionally. The expert is perceived as a partner by the fishermen's organization, not as a controller from the CSO, although he actually is monitoring the fishermen's activities. *"He is guiding them*" (field team).

The expert's role is not to be seen in the sense of an international CSO influencing the PES scheme but more as enriching the PES scheme through knowledge co-production and bringing new ideas from outside into the dense network.

5. Discussion

The results made clear how the CSO could mitigate critical PES aspects: by connecting different levels and sectors to balance power aspects among the actors and through its permanent engagement due to the interest in the development and empowerment of the local community. That means that the CSO´s success is linked to aspects of equity and justice. The CSO mainly enables the participation of the local sphere and mediates the contextual conditions, as without their existence and activities linkages between the local, national and internationals levels would be difficult or cost intensive; the actors would not get together or be able to communicate. The CSO connects these actors, enables communication and assumes these transaction costs. The CSO improves the contextual conditions to make access to the PES scheme possible for the local communities and therefore contributes to equity (McDermott *et al.*, 2013). It acknowledges the culture, values and knowledge of the local communities and advocates for the transparency of the project and the written contracts, which indicates the equity dimension of recognition (Sikor, 2013, Martin *et al.*, 2016). In this way, the PES scheme is adapted to the local conditions — which is one aspect that should be considered in PES design (Adhikari and Boag, 2013, Calvet-Mir *et al.*, 2015).

5.1 The CSO as a multilevel boundary spanner in the PES scheme

The results show that the intermediary organization is composed of several institutional and individual intermediaries who create both formal networks for connecting the international to

the local level and informal networks for creating trustful relationships amongst the actors. This separation into different intermediaries also reflects multi-level governance within the organization. This is a clear role of the CSO as an intermediary in the PES scheme, and our findings are in line with the existing literature on intermediaries in PES schemes (Pham *et al.*, 2010, Adhikari and Agrawal, 2013, Bosselmann and Lund, 2013, Coggan *et al.*, 2013, Hrabanski *et al.*, 2013, Huber-Stearns *et al.*, 2013, Sternlieb *et al.*, 2013, Meyer, 2015, Schomers *et al.*, 2015): CSOs are needed to span different spatial levels from the local to the international. They present a means for local people to get into contact and to communicate with donors at a higher spatial level, whereas for the donors CSOs present the opportunity to really get engaged on a personal, local level. Bringing together these actors on different levels reduces costs on both sides, creates new contacts, opens opportunity windows and builds trust amongst the involved actors (Pham *et al.*, 2010). The community alone would not have national or international contacts without the intermediation. However, through participation in workshops and field visits, most stakeholders of the CBCP know each other personally. “This skill of translation and (re)presentation is key to the role of intermediaries in transcending boundaries” (Sternlieb *et al.*, 2013).

5.2 The CSO as a guarantor of the balance of power

The CSO balances top-down and bottom-up approaches, initiating successful solutions such as the PES scheme for the top level and the bottom level as well as considering the needs and recognition of both parts. Power relations are balanced as through the CSO´s intermediation a contract is negotiated between ES providers and donors. Although the donors are identified as the most important actor, as they provide the money, the fishermen are still taking part voluntarily, as they need to protect the mangrove areas for their livelihood. In interviews, the CSO actors explained that to explicitly avoid the economic dependency of fishermen on the

PES scheme and the donors, the CSO has developed the strategy that income from PES money should only be an additional but never the main source of income for the fisherman. Even such a strategy helps to reduce the predominance of the donors within the PES power balance, which is a serious problem for PES schemes specifically in developing countries and needs to be adapted to local solutions. Powerful intermediaries can advocate for the service provider. That is why the CSO´s agenda does not only include environmental issues but also social aspects.

For the implementation of the PES scheme in general, the intermediary organization ensures effective communication among the actors. The CSO takes on the responsibility arrangement arranging contracts and for the transparency of information in the reports as well as for the informal networking as a service for the programme, such as obtaining permissions from state institutions for the activities in the public mangroves. The CSO also promotes stronger relationships among the fishermen's organization and the donors: This is shown, e.g., by the fact that the CSO convinced one company to visit the field and the nursery it paid for.

As the CSO fosters the inclusion and generation of local knowledge and the incorporation of the local level, the PES scheme gets higher acceptance both at the local but also at the (inter)national levels. In this way, both the influence and the potential of the PES scheme are improved, as "without appropriate incentives or local engagement in rule making, there is abundant evidence that state policies might be ineffective." (Muradian and Rival, 2012).

High acceptance of the PES scheme is accompanied by high recognition and legitimation of the intermediary. Through balancing power relations between the different levels and recognizing local knowledge, all parts of the CSO have a high standing with both the donors and service providers. This is important, as "management decisions regarding public and common pool goods require that higher-level institutions and organizations be recognized and legitimate" (Eckersley, 2004).

The CSO´s key to success is the replication of different spatial levels within the organization. The national headquarters and the local field station are responsible for their respective areas and for the contacts with the respective spatial areas. This is complemented by individuals, mainly the director and the international expert, who with the support of these two offices cross these borders within the organization. They have a high in-depth understanding of the local people´s interests, culture and perceptions and also of (inter)national ideas and perceptions, and they support communication between both groups (Pham *et al.*, 2010). In addition, they are also responsible for trust: "*The trust that is built up in this social capital are persons. That is why we are persons, the employees of the CSO*." (field team). However, the CSO does not depend on the individual alone: "*The director could be another director, but the CSO by itself is very important*" (Donor).

We could also identify a positive role of the international mangrove expert within the CSO. He complements local knowledge by bringing in new knowledge from outside to the project. However, his role is even more important than that: He does not represent local interests and additionally monitors the implementation activities; he makes sure that local elites are not favoured. This brings more fairness to the whole process.

Nevertheless, acquiring financial resources is a hard business for the CSO and makes it dependent on donors. This challenge allows for the establishment of only small, not too far-reaching PES schemes and threatens the continuity of the projects.

5.3 The CSO as a permanently engaged intermediary

Because of its structure, the intermediary organization has some advantages in comparison to big international non-governmental organizations. International NGOs tend to hire local organizations or outsource consultants to implement PES projects instead of working with lasting locally anchored structures. As international NGOs exercise control and power over

these actors, the PES design and implementation is affected in a negative way, excluding local ideas and knowledge (Pham *et al.*, 2010). After the implementation, international NGOs tend to withdraw their activities and have no real interest in following up on projects, as they do not identify closely with the region. Their interest lies in competing for projects with other international or national NGOs. This methodology is not sustainable mainly because it takes a long time to build up trust and common understanding (Stiles, 2002, Brunnstrom, 2003, Holmén and Jirström, 2009, Banks, 2012). In contrast, the local CSO has a different responsibility: They are interested in following up on projects and want to stay in the region and therefore do not follow the purely economic motivation and logic that PES intermediaries used to have. CSOs are also interested in the development and empowerment of the local people. That is why the payments for the fishermen´s activities are not sufficient to sustain them.

A next step would be to have a closer look on the grade of neutrality of the CSO whose motivation to engage in PES was described as for environmental protection, economic reasons in terms of securing their work place, and doing this work "from the heart". "Intermediaries are expected to be neutral, but if they have relationships or derive benefits from the buyers or sellers, their advice is no longer neutral and may not ensure benefits for the buyers and sellers." (Pham *et al.*, 2010). Our study did not yet question this neutrality.

However, it would be worthwhile to have a closer look at how far the other equity dimensions – distribution and procedure – are accomplished through the CSO´s intermediary role.

5.4 Methodological limitations

The limitations of the Net-Map tool are that the interviewees are asked about their perceptions of the relations of the other actors. That is why the data have been validated by conducting Net-Map interviews with representatives of each identified actor group and by discussing the network map and different interpretations in a follow up workshop with all the interviewed

people. Another limitation is that the data are qualitatively gathered; therefore, it is not representative, and the findings cannot be generalized to other PES programmes or regions. Nevertheless, the results show the importance of including local actors with interests in the balance of power and a permanent engagement in the design of future PES schemes. Additionally, the model of the CSO being present on different spatial levels due to the presence of a headquarters and a field station looks promising and should be taken into account in PES designs.

6. Conclusions

In this article, we showed the importance of an intermediary organization for a PES-like social responsibility programme for the community conservation of mangroves. We conclude that the mixture of regional, national and international resources, competences and knowledge that are bundled in the intermediary organization is the recipe for a successful intermediary in a PES scheme. Based on the participatory Net-Map tool and the following social network analysis, we demonstrated that the importance of the intermediary organization on the one hand lies in the creation of formal networks for connecting the international to the local level. On the other hand, the intermediary organization is able to create informal networks of contact and trust between the actors. This is possible because of the CSO´s bipolar organizational structure, which is divided into a national headquarters and a local field station, as well as because of the trust building personalities within the CSO. The director and to a lesser extent the international mangrove expert in the field station are both important for fairness and transparency as they prevent either international, national or local interests from being implemented one-sidedly. Interests, moreover, are quite well-balanced in this multilevel governance model. The reflections of the intermediaries´ positions in the network and their motivations for their roles in the PES scheme showed how they supported communication, transparency, long-term

engagement, legitimacy and trust. In terms of environmental justice, the value-added provided by the CSO is that it mitigates aspects of equity in the PES scheme. Future research should have a closer look at these aspects of intermediaries in PES schemes.

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