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Powerful stakeholders as drivers of community forestry — Results of an international study

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ABSTRACT

Community forestry is a complex collective action by forest users that takes place within a broader network of multiple actors at local, national and international levels. This paper looks at all relevant actors and tests the hypothesis of whether they have a significant influence on the outcomes of community forestry. The empirical basis comprises 57 cases of community forestry in four developing and one developed country. The cases were selected to represent a variety of political conditions and best practices, defined as success in the achievement of high outcomes. The actors were theoretically defined, and we identified political, economic and societal actors. Additionally, their power and interests were theoretically defined and observed in the field studies. The group of powerful actors desires specific outcomes for the local users of the community forests. As far as the ecological outcomes, some 40% of the powerful actors prefer sustained forest stands, and 20% also find biodiversity to be important. With regard to the economic contribution to the local users, 25% of powerful actors support only a subsistence level for the local users, and 25% prefer higher economic contributions. Within the social outcomes, 40% of powerful actors accept devolution of some information and decision rights to the local users, but only 2% would grant them full empowerment. The interests of the powerful actors were compared with the outcomes achieved in practice. A comparison shows that within each outcome there is a congruence of 82–90% between the interests of powerful actors and the outcomes for local users. We interpret these findings as empirical evidence that powerful actors have a significant influence on the outcomes of community forestry for the local users.

1. Focussing on actors' power

> *"The world is driven by different factor and if you like it or not someone is always more important than others [sic]."*[1]

Decentralisation approaches started at the end of the 1970s, when policy makers and scientists realised that the centrally-managed government systems had failed to stop continuing deforestation (McDermott and Schreckenberg, 2009; Devkota, 2010). The term "community forestry" came into use in the 1970s, when the UN's Food and Agriculture Organisation initiated activities and programmes related to rural communities and their forest-related activities. Since then, community-based management concepts, in particular community forestry programmes, have been established in many countries around the globe (Agrawal, 2007).

Shackleton et al. (2002) characterise the paradigm shift in which there is a move away from state-centred control and toward an approach in which local people play a much more active role. This requires devolution of power to local users, even at the community level (Ostrom, 1999; Acharya, 2002; Lachapelle et al., 2004; Nygren, 2005). This can be achieved formally, in a situation in which "governments grant control" or informally, "in the absence of formal rights" (Poteete and Ostrom, 2004) where the absence of formal rights can also be seen as the absence of governmental control.

Devolution of power does not imply the disappearance of multiple actors with forest interests. Instead, it is a challenge to their interest in reaping benefits from the forest. A comparative analysis by Shackleton et al (2002) shows that multiple actors still wield a strong influence in community forestry. Traditional leaders, local government, NGOs, donors and the private sector intervene in the collective actions of community forestry. As a consequence, the local forest users often do not benefit significantly in terms of empowerment or of livelihood improvement (Maryudi, 2011; Devkota, 2010; Edmunds and Wollenberg, 2001:192). Shackleton et al. (2002) conclude: "The way in which local people realize [*sic*] the benefits of devolution differs widely, and negative trade-offs, mostly felt by the poor, are common". Agrawal and Gibson (1999, p. 629) suggested that it would be "more fruitful" to

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[1] Mr. Hailwa, Director of the Directorate of Forestry, Namibia, Interview on the 2nd of November 2009.

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focus on "internal and external institutions that shape the decision-making process" and that it is important to know what the multiple interests of the actors are, and how they make decisions regarding natural resource conservation. Shackleton et al. (2002, p. 1) suggest the same: "More powerful actors in communities tend to manipulate devolution outcomes to suit themselves".

Based on these findings, the article examines whether the influence of powerful actors on community forestry is dominant enough to drive the outcomes more often than not. If actors' power is the decisive factor, it is not necessary to know the details of their interventions. Instead of analysing complex influences it would be sufficient to identify the power of the actors and their interests. From these two factors alone it should be possible to predict the outcomes of community forestry. The direct power analysis will add to detailed findings by Shackleton et al. (2002) about influences of different actors, a general framework which links the outcome of community forestry directly to the power of actors. The advantage of such a rigid framework is its simplicity, which makes quantification and comparative research much easier (Schusser, 2012c). Additionally, the focus on power adds scientific value, because the power factor, often stated theoretically, will be empirically measured and tested (Krott et al, 2013).

In focussing on power, we formulate the hypothesis that "the interests and power of relevant actors determine the outcomes of community forestry." The test requires a theoretical concept underlying this hypothesis and empirical data to test it.

The theoretical concept has to clarify the independent variable "interests and power of relevant actors" and the dependent variable "outcomes of community forestry". The paper first introduces briefly our concept of actors with regard to community forestry, and of their interests and power. Then we present our concept of outcomes of community forestry. Finally we discuss the results from testing the hypothesis with data from five selected countries.

2. Theoretical concept of powerful actors within community forestry

2.1. Theory-based actor classification

Many investigations have looked at community forestry and identified different actors as important players. But none of this research has defined its actors explicitly and theoretically. Poteete and Ostrom (2004, p. 216) mention that "Inconsistent terminology […] may obscure consistent patterns or suggest a pattern where none exists." Apart from that, this inconsistency makes it impossible to compare actors identified within different studies. To overcome this problem, this article uses a theoretical actor definition as well as a theoretical actor classification model proposed by Schusser et al. (submitted for publication). As Schusser points out, the implicit theoretical common basis of much research dealing with actors is that actors are assumed to be entities that have the possibility of influencing processes in order to achieve their own goals (Jansen and Schubert, 1995; Kooiman, 1993; Maynitz, 1993; Rhodes, 1997; Agrawal and Gibson, 1999; Edmunds and Wollenberg, 2001; Shackleton et al., 2002; Maynitz, 2004; Schimank, 2005; Hermans and Thissen, 2009; Schneider, 2009). Furthermore, Böcher and Töller (2012), and Blum and Schubert (2011) go one step further and attribute the term "goal" to an actor's distinct interest. Based on this, Schusser defines an actor as any entity that has a distinct interest and the possibility of influencing a policy. With this definition, the "relevant" actors covered by our hypothesis are easy to determine: in the cases we study all actors who are relevant and who have a distinct interest in a specific instance of community forestry.

This definition allows for different possibilities for what an actor can be, e.g., an individual person, like a sawmill owner, or a composite actor, like a government institution. It associates the term "actor" strictly to a specific type of policy, e.g., policy on community forestry, only if it is possible for the actor to influence it. Interests in community forestry and sources of power may shift over time. Therefore, relevant actors are not static throughout time. It can happen that, during some periods in the development of a community forestry project, specific actors become irrelevant due to a change in their interests.

It should be underscored that linking interests directly to the influence on community forestry excludes all actors from our list who have an interest but lack the ability to influence community forestry. This selection is justified by a limited aim, i.e., describing the drivers of community forestry. Projects interested in evaluating broad effects or justifications for community forestry will need to enlarge the group of relevant actors.

Applying this definition, Schusser et al. (submitted for publication) arrives at the actor classification in Table 1. The three categories, political, economic and social, are derived from the role an actor plays within the political, economic or social subsystem (Luhmann 1986, p. 216). Basic roles within the political system are politicians, public administration, boards, donors and associations. Political theory describes their tasks and their legitimation. In addition, the traditional leaders are identified. They are not part of the formal political system but, at an informal level, they still play their traditional roles in many countries and will be classified as politicians.

Within the economic system, the study discriminates between the forest user group representative and other user group representatives, entrepreneurs and consultants. They all conduct primarily economic activities related to the forest. The entrepreneurs are identified by any economic activity. Therefore this type of actor comprises multiple producers and consumers of forest goods and services. The forest user group representative is the actor who manages the community forest. He acts formally on behalf of the forest users.

Finally, the social actors are the research institutions and the media. They define their key tasks as being independent from the political system. All actors exist on different geographical levels (regional, national and international levels).

For this study, the forests users' ability to carry out collective action, in particular community-based forest management is seen as an outcome of community forestry. Therefore, the forest user is not forgotten as an actor; on the contrary, the forest user is analysed more in detail in the outcome evaluation, with regard to empowerment and livelihood improvements.

2.2. Actor-centred power

The actor-centred power approach is defined by Krott et al. (2013) as a social relationship between actors in which one actor can alter the behaviour of another actor without recognising the latter's will. Actor-centred power is linked to actors directly. They play the role of potentate or subordinate, depending on their power sources and the specific issue at hand. The most powerful actors can be identified by accumulating their roles as potentates. This can be done within the framework of a power network, discriminating a group of powerful actors from a group of weak ones (Devkota, 2010; Maryudi, 2011). The model does not assume that the powerful actors are always most powerful because in specific relations they might be forced to the subordinate side. Actor-centred power specifies the following three elements of the general term "power":

- Coercion: altering the behaviour of another actor by force
- Incentives: altering the behaviour of another actor by providing advantages (or disadvantages)
- Dominant information (when building up power): alteration of another actor's behaviour due to his accepting information without verifying it.

Power is assumed only if behaviour is altered by force, (dis-)incentives or unverified information. These particularities allow the separation of power from other social relations that alter the

Table 1
Theoretical actor classification, definition and examples.

Actor	Definition	Example
Political		
Politician	Actor who is elected by the people to fulfil a public mandate and who can legitimise binding decisions.	Government and ministers, representatives of political parties, parliament, etc.
Public administration	Public actor that makes decisions concerning specific problems on the basis of general legal standards, resolving those problems by implementing special measures. (Krott, 2005)	Nature conservation authority, land use authorities, agriculture authorities, police, military, etc.
Forest administration	Public administration focusing on forest tasks.	Department of forestry, forest office, directorate of forestry
Traditional leader	Actor who is legitimised to fulfil a public mandate and who can legitimise binding decisions for a community.	Village leaders, traditional healers, traditional authority, religious leaders, etc.
Board	Actor formed by politicians, traditional leaders or administrations with public mandate	Land-use boards, public-control boards, etc.
International donor organisations	International actor that offers funds for solving problems	KfW (German Development Bank), Sida (Swedish International Development Cooperation agency), etc.
Association	Actor that articulates the interests of the group he represents and attempts to implement them by lobbying politicians and public administration (Krott, 2005)	Forest user group association, carpenters association, foresters association, all etc.
Support associations	Actor that can be characterised as an association but also offers funds for solving problems	All kinds of NGOs which offer funds, health organisations, educational agencies etc.
Economic		
Forest user group representative	Actor that articulates the interests of the local forest users and attempts to implement them.	Forest management committee
Other user group representatives	Actor that articulates the interests of other community forestry user groups and attempts to implement them.	Village development committee, conservancy management committee, management boards, etc.
Forest entrepreneur	Actor using the forest for production or consumption of products and services	Sawmill operators, logging companies, professional hunters, illegal loggers, companies or individuals buying products or services etc.
Consultant	Actor providing information, funds and management for another actor, based on an contract	Consultants
Societal		
Research institutions	Actor providing science-based knowledge.	Universities, research centres, etc.
Media	Actor distributing and generating information	International and national media, like newspapers, journals, radio and TV stations, etc.
Religious organisations	Actor providing spiritual or religious backup	All kinds of churches, mosques, religious or spiritual associations, etc.

behaviour of actors. Communication based on verified information is of the greatest importance. If two actors exchange information they both verify, they build a social relationship that is the opposite of a power-based relationship. This kind of communication constitutes political bargaining in which both can make informed decisions as long as all information is shared. In cases in which the outcome of bargaining is driven by dominant information or scarce sources we could identify the additional power processes. Open bargaining about sources means offering to other actors what they most urgently demand for themselves, at least in part. In addition, (dis-)incentives are regarded as power because the will of the subordinate in respect of his prior resources is neglected by the potentate applying (dis-)incentives. For example, the subordinate gets money for planting trees as long as he overrides his prior will to plant corn. The amount of the power source known as money decides the outcome, and not the will of the subordinate.

The specified power elements are linked to observable factors (see Krott et al., 2013). These include the wielding of power as well as threats and sources. The sources of power offer the best opportunity for collecting empirical data. They are specific and observable, like a weapon, economic resources or written data.

2.3. Outcomes of community forestry

"Evaluations of community forestry outcomes are important to observe whether the community forestry programme produces what it has promised. For the evaluation – as an alternative to the comprehensive criteria and indicators on sustainable community forestry – we propose an approach based on the core policy objectives of the program [*sic*]." (Maryudi et al, 2012: 1)

Schusser et al. (2013, p. 2) state that "…the core policy objectives of the international community forestry concept can be summarized as follows:

1. Empowered direct forest user (social outcome)
2. Improved livelihood of the direct forest user (economical outcome)
3. Improved forest conditions (ecological outcome)."

The theoretical development of the outcomes is well described in the article by Maryudi et al. (2012). In the work by Schusser et al. (2013) the authors build upon the concept introduced in Maryudi et al. (2012) and specify the outcomes in more detail. Most important for the framework of a comparative analysis is to define elements and indicators for the outcomes that can be well observed in the field. Therefore, within the social outcomes we focus on access to information and land, which is directly relevant for the management and use of the forest. Social goals concerning community identity, vulnerability or social networks are not covered here due to their separation from direct forest management. The ecological outcome is highly complex too. We selected forest stands and biodiversity as two core pillars that could be observed by specific indicators. The following table, presented in Schusser et al. (2013), summarises the theory-based definition used to analyse CF outcomes. The outcome analysis relies on expert judgments, our own observations and document analysis (Table 2).

2.4. Interests of actors

We use a general description of the characteristics of interests by Krott (2005, p.8): "Interests are based on action orientation, adhered to by individuals or groups, and they designate the benefits the individual or group can receive from a certain object, such as a forest". In our case, the object is the community forest. We look at the benefits an

Table 2
Outcomes/core objectives of CF with definition and the key facts.
Source: Schusser et al. (2013, p 7).

Outcome	Definition (core objective)	Key facts
Social outcome	Empowerment of direct forest users	–Access to forest-related information –Access to decision making –Access to forest land and resources
Low	No empowerment	No access to information, decision making and/or forest land and resources
Middle	Some empowerment	Some obstacles for access to information, decision making and forest land and resources
High	Full empowerment	Maximum access to information, decision making and forest land and resources
Economic outcome	Contribution to the livelihood of direct forest users[a]	–Forest products –Monetary benefits –Community development
Low	No contribution to livelihood	No access to forest products, no monetary benefits and no community development
Middle	Contribution up to subsistence[b] level	Access to community development which was financed through community forestry and financial benefits and/or products providing subsistence
High	Contribution above subsistence	Access to community development which was financed through community forestry and/or financial benefits and/or products supplied above subsistence level
Ecological outcome	Contribution to forest condition	–Forest growth –Biodiversity
Low	No contribution to forest stands and biodiversity	Observation of decrease in stands and forest area, No management activities
Middle	Contribution to sustained forest stands	Observation in increase of stands or forest area, Forest management plans, Control of implementation
High	Contribution to sustained stands and biodiversity	In addition to sustained forest stands monitoring and increase of biodiversity

[a] Illegal or legal.
[b] Subsistence: earnings too low to allow the possibility of savings.

actor can receive from a specific community forest. In theory, the model assumes that the expected benefits directly influence the action of individual actors. The interests are linked to goals of community forestry, obligations or values, but they are additionally shaped by informal aims. Interests cannot be observed directly, but the link to the actor's behaviour offers a chance to learn about the interests by observing the behaviour of actors in the past. Quite often an actor claims to have ecological concerns or to be convinced of the importance of sustainability, but by looking at his behaviour in the past it becomes evident that his actions can be explained wholly by the desire to achieve quick economic benefit or to augment his sources. How the actor behaves and what he does are indicators that show his interests. That is, if an actor has no interest in a positive biological outcome, he will be indifferent toward instruments measuring biodiversity or specific actions that benefit biodiversity. Therefore, interviews with powerful actors were conducted and field observations were made to assess these behaviours.

To test the research hypothesis, the interests needed to be related to the outcomes of community forestry. Therefore, the PIDO (Powerful Interest Desired Outcome) indicator (Schusser et al., 2012a, 2012b) was used. It shows the powerful actors' interests in specific outcomes for the final end users. The following scenarios are possible and are presented below:

- PIDO (+1): the powerful actor has an interest in a high outcome
- PIDO (1): the powerful actor has an interest in a middle outcome
- PIDO (−1): the powerful actor has an interest in a low outcome
- PIDO (0): the powerful actor has no interest in a specific outcome

A PIDO with the values +1, 1, or −1 indicates that an actor prefers a specific outcome for the end user. Depending on the interests of the end user or the goals for community forestry, a specific PIDO might be evaluated as being positive or negative. Keeping the official programme of community forestry in mind, we would assume a result to be formally positive if all outcomes are middle to high.

The PIDO is the final element needed to test dependencies between the interest of powerful actors and the real outcomes of community forestry.

3. Methodology

This research is part of a comparative research study that investigates community forestry in several countries around the world. The countries were selected based on their level of development and their political system, with the aim of achieving high variability. Additional criteria for selection were that community forestry had to be an important item on the national forest-political agenda and that we had to have easy access to the field. From the developing countries in Asia we selected Nepal, which has a strong community forestry programme, and Indonesia, which has emphasised it to a great degree recently. From Africa we chose the developing countries of Namibia and Cameroon, which have different political traditions. Namibia was governed until 1990 by the apartheid system and only thereafter started to develop a democracy. Cameroon's democratic development, in contrast, can be traced back to 1960. Finally, we selected Germany for comparison, as a developed country with a European political system. A developed country greatly increases the variability within the sample. If we found similar results in developed and developing countries this would be strong empirical evidence for our hypothesis, indicating that we were right in seeing power as a universal driving factor.

Approximately 12 case studies were selected in each country. The selection was made from all forests that matched our definition of community forestry, namely "Forestry practices which [*sic*] directly involve local forest users in common decision making processes [*sic*] and implementation of forestry activities" (Maryudi, 2011, p. 37). For the field study in different countries it is important for our definition to be based on participation in forestry and not on a specific name like "community forestry" or "co-management", and that the definition is not linked to the legal framework. The collective action might be formally stated or it may be an informal practice (Poteete and Ostrom, 2004, p.218). Within the group of community forests we followed the criteria of best practice. That meant that we were interested in community forests that were seen as the best community forest examples in each country with regard to the outcomes they produced. The best outcome was assumed to be "high" in the social, economic and ecological dimensions. Based on this, the study applied the selection criteria: establishment stage of the community forest (initial or advanced) (Devkota, 2010; Maryudi, 2011). The selection of the cases within the countries

was based on interviews with experts (Failing and Gregory, 2003). The researchers were familiar with the regions and could speak the respective languages. In total, 57 community forestry case studies were analysed between the end of 2007 and the beginning of 2012. This article's empirical findings are based on the results from the completed field studies (Nepal: Devkota, 2010, Indonesia: Maryudi, 2011, Namibia and Germany: Schusser et al., 2012a, 2012b; Schusser et al., 2013; Schusser, 2013, Yufanyi Movuh and Schusser, 2012).

In order to save resources and be able to compare results from different community forest case studies conducted internationally, we used a sequence design methodology involving preliminary quantitative methods and follow-up qualitative methods (Schusser et al., 2012a, 2012b; Schusser, 2013). The sequence of quantitative and qualitative surveys can save about half of the resources needed for the field work as compared to a single qualitative method (Schusser et al., 2012a, 2012b, p 4). At the same time, a high quality of the research can be maintained by having flexibility in the formulation of hypotheses and in the search for empirical evidence.

The sequence design starts with a preliminary quantitative network survey. It aims to identify most of the participating actors, their power and the most powerful actors. Not only individual persons are considered to be actors, but also organisations, if these can intervene in community forestry by themselves. The leaders of the specific organisations were interviewed. Applying a "snowball" system, relevant actors were identified and interviewed, for a total of 427 interviews in 57 case studies.

The preliminary quantitative network survey was followed by qualitative data analysis. It examines individually the power sources of the actors representing the most powerful actors. The observations look for empirical evidence of specific power sources or processes within the framework of the three elements of actor-centred power. Qualitative in-depth interviews shed light into such power features, accompanied by observations and secondary data, like a forest management plan, laws, meeting minutes, guidelines or letters of formal acts from the field. The interviewer identified an empirical phenomenon in order to find a relation to the power element that would support the existence of that specific power element. For example, the possession of a rifle by a forest guard indicates that he can exert considerable coercion over a forest user with no gun. The follow up interviews were combined with field observations and each lasted from one to three days. They were conducted only with the actors who were identified by the first quantitative survey as belonging to the group of powerful actors. In total, 258 actors were identified as belonging to that group.

A triangulation of the results from the preliminary sequence and the results of the qualitative investigation is the final step in the sequence design. If an actor was powerful some evidence could be found during the qualitative follow-up sequence. Therefore, verification of the results of the preliminary quantitative sequence could be made via the qualitative second sequence. If the quantitative data analyses indicated power elements for an actor, the qualitative follow-up sequence would identify power features. For example, if the quantitative survey determined that a certain actor had coercive power, the qualitative investigation had to find irrefutable evidence of this. Priority of the results was given to the qualitative survey due to the rich empirical evidence in qualitative interviews, documents and observations. The qualitative survey did not quantify the power of an actor, but identified the power sources.

4. Results and discussion

For all researched 57 community forests, a total of 427 relevant actors were identified. The following graph presents the relative frequency with which any given actor was identified, in relation to all actors in all cases:

Fig. 1 shows that public administration and forest user group representatives are the most frequent relevant actors. The common practice is confirmed (Yufanyi Movuh, 2013, Schusser, 2012a, 2012b, 2012c; Maryudi, 2011; Devkota, 2010) since both actors have to take part in community forestry programmes. Due to official requirements, each of the user group representatives is initiated as an actor through the community forestry programmes. In accordance with our definition for the

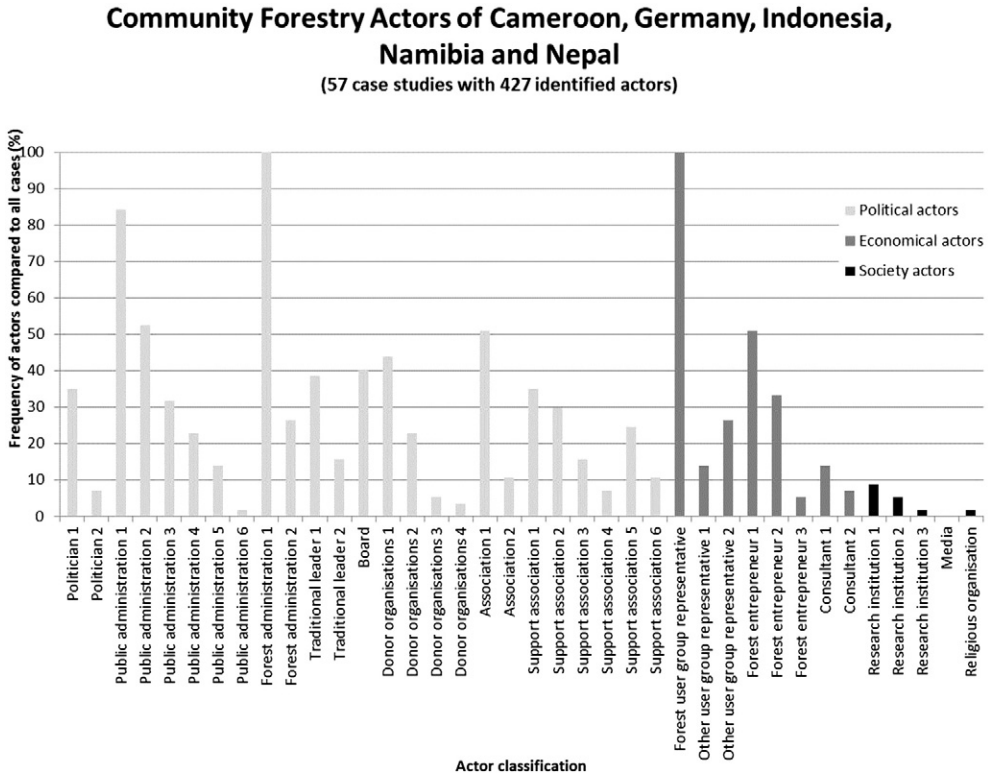

Fig. 1. Frequency of relevant actor appearance relative to all cases.

term "relevant actor", they become relevant actors through their recruitment as representatives of all local forest users and through their normative claim to be involved in forest management decisions. In addition to them, public administrations, associations, forest entrepreneurs and international donor organisations are also relevant actors in half of all cases (50%). Further analysis of the relevant actors shows that the public administration actors are well represented in community forestry. In total, six different public administration actors could be identified. The same applies to the "support association" actor, which is also represented by six different actors. Fig. 1 also shows an unequal distribution of relevant political actors vs. relevant society actors, which shows that political actors have much more opportunities to influence the community forestry programme and hence might have a stronger influence on the programme. This is in line with the findings from Maryudi (2011), Devkota (2010), Shackleton et al. (2002), Wollenberg et al. (2008), Ribot (2004), Ribot (2009), Larson (2005); Blaikie (2006), Dahal and Capistrano (2006), Edmunds and Wollenberg (2001), and Agrawal and Gibson (1999).

The results presented in Fig. 1 highlight that the relevant actor called "forest user group representatives" was an actor in every case (100%). Most of the research influenced by Ostrom (1990) sees the user group as the actor that carries out collective action. This does not contradict the finding that the user groups had representatives that were successfully identified by our study. However, the result differs in the way that this study sees the representatives of the user group, e.g., the forest management committee as a relevant actor by itself.

Many other studies, e.g., Jones and Mosimane (2000), Shackleton et al. (2002), Schiffer (2004), and Andersson and Agrawal (2011), report on inequalities in the user group and/or mention local elites that have captured some of the decision-making power over community forestry issues. We did not investigate whether these local elites were represented specifically in the actor entity called "forest user group representative", but what was found is that one could identify traditional leaders as separate relevant actors, apart from the "forest user group representative" actor. These leaders of local elites could be identified clearly (39% traditional leader 1.16% traditional leader 2).

Furthermore, the results support similar findings by Jones and Mosimane (2000) and Schiffer (2004), who identified actors comparable to those in this study. For example, both identified the central government, which was classified as public administration (up to six different actors), the traditional authority, NGOs referring in this study to support associations, donors, and the user group representatives. Different studies have mentioned NGOs as involved actors (i.e., Shackleton et al., 2002; Jones and Mosimane, 2000; Schiffer, 2004). Vakil (1997) examines NGOs and points out that it is nearly impossible to define what an NGO is. To avoid ambiguity, Schusser et al. (submitted for publication) linked the term theoretically to the well-defined actor association. But to still recognise the important role of the "NGO" actor, the term was therefore defined as a support association. In this way one could identify the actor. As many as six support associations could be identified, which confirms the results found in the literature mentioned above.

In order to test whether the outcomes in community forestry are determined by the interests of powerful relevant actors we focused only on the relevant actors that were identified as part of the group of powerful actors. Fig. 2 presents the results of the power analysis of the relevant actors belonging to the group of powerful relevant actors, independently from the specific power source.

The figure above shows that the actors "forest administration 1" and "forest user group representative", which appear in all 57 cases, are part of the group of powerful relevant actors to an extent equivalent to 88%, whereas other relevant actors, like public administrations, associations, forest entrepreneurs and international donor organisations, who appear in at least half of all cases as relevant actors, belong to the group of powerful relevant actors less than 50% of the time.

Fig. 3 presents elements on which the power of the relevant actors is based.

The forest administration and the forest user group representatives base their power on a mixture of all three power elements (coercion, incentives and dominant information). Interestingly, the forest user group representatives achieve their power status through the dominant information power element in the majority of cases (43 from 57). The community members accept most of their advice without verifying it. Nevertheless, in about half of the cases these actors also rely on the other two power elements. Following these cases the community forest representatives can also use coercion and incentives and are not as weak as often thought.

The results in Figs. 2 and 3 show that, in applying our theoretical terms we were able to identify the powerful actors in community forestry in the different developed and developing countries. The results support similar findings made by Jones and Mosimane (2000) and Schiffer (2004), who conducted research on community-based natural resource management, and identified actors comparable to those in this study. For example, both studies identified the central government, which we classify as public administration, the traditional authority, NGOs, donors, and the user group representatives.

The interests of the powerful actors in the outcomes of community forestry (PIDO) were researched further, based on the qualitative survey described above. Fig. 4 summarises the PIDO results of all cases for the powerful actors.

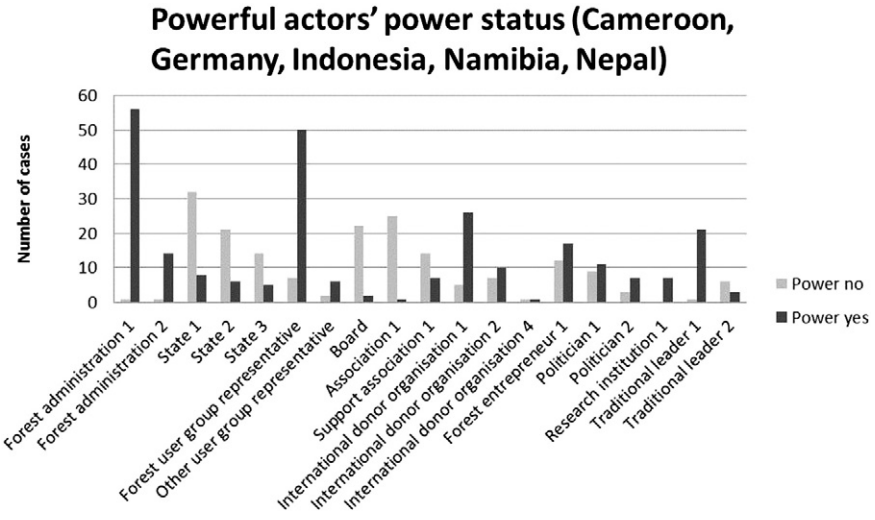

Fig. 2. Power of the relevant actors for all cases.

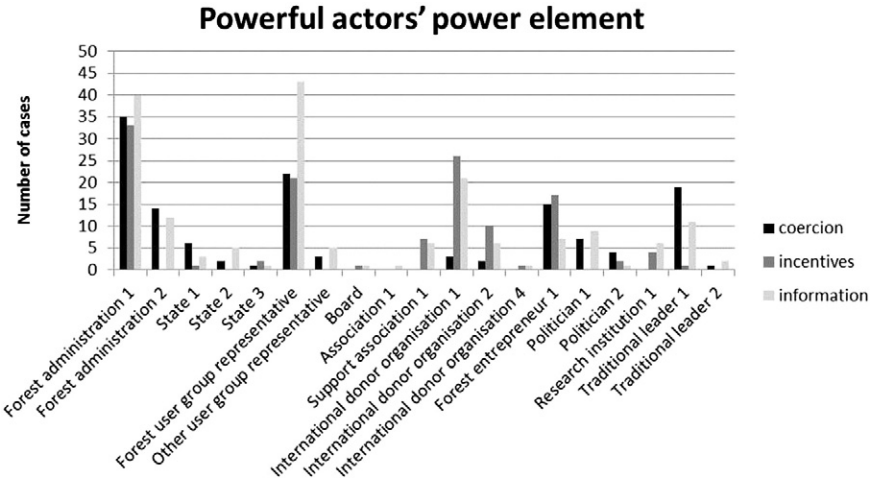

Fig. 3. Power elements of the powerful relevant actors of all cases.

Fig. 4 highlights that only 2% of powerful actors desire a high social outcome for the direct forest user. The majority, 41%, would like to see a middle outcome, a large proportion, 25%, would even want a low social outcome, and 32% are open to any outcome. The results are different for the economical outcome for the forest user. Here, 50% of all powerful actors are fine with any outcome, only 3% would like to have a high outcome for the forest user, and middle and low outcomes would be the preference of 25% each. It would seem that only few powerful relevant actors want full empowerment and a high contribution of community forestry management to the livelihood of the community forest users. This is in contradiction to the claim of the concept of community forestry, which aims precisely at empowerment and economic contributions for the forest users. The results indicate that the interests of the powerful relevant actors are not in line with the basic concept of community forestry.

Looking at the interests related to ecological outcomes, the results change. Here, 21% of all powerful relevant actors desire a high ecological outcome from community forestry. This group of relevant actors is followed by the biggest group (41%), which desires at least a middle outcome in respect of sustainable forest management. Only one relevant actor desired a low outcome, tolerating exploitation. The relevant actors that are open to any outcome are 38%. Therefore, it can be said that the majority of powerful relevant actors desire sustainably managed forests and that additionally 21% also care for general biodiversity issues. The results suggest that most of the powerful relevant actors care mainly for the natural environment, and to a lesser extent, for the people who depend on it.

Since no similar research to this study was found, the results of this study cannot be discussed within a given scientific context. However, one might make general assumptions and comparisons. For example, NGOs (support associations) are seen as the drivers for nature conservation (Jones and Mosimane, 2000). Therefore, one could assume that they have an interest in a high ecological outcome. Similarly, Shackleton et al. (2002: 4) point out that donors were funding "development and facilitation of devolution". This could be interpreted as a high interest in the empowerment of end users. In our terminology, it means that a donor has an interest in a high social outcome, which is in line with our findings.

The outcomes achieved in the community forests were analysed based on the core functions of community forestry (social, economic and ecological outcomes). The results are presented separately for community forest in the initial stage (11 cases) and in the advanced stage (46 cases) and are presented in Fig. 5.

First, the results in Fig. 5 clearly show a difference between the management stages for the outcomes of the community forest. We interpret this result to mean that practicing community forestry influences the outcomes of forest management. The difference can be seen in the graphics and should be interpreted as an indication that actors have a certain interest to take part.

Furthermore, the graphs reveal that the ecological outcomes improved from 64% in the initial stage of community forestry (positive outcome: middle and high) to 93% in the advanced stage of community forestry. Apart from the fact that at the beginning the majority of community forests had already been found to show positive outcomes,

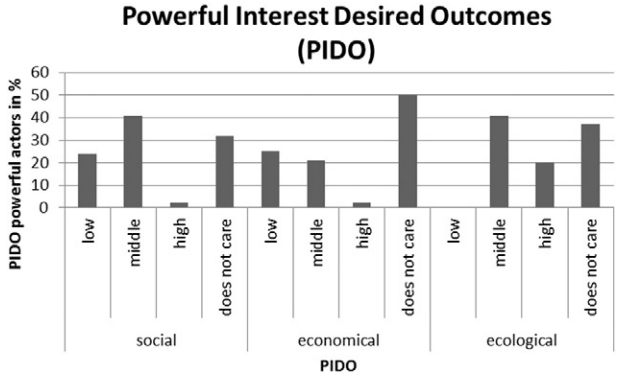

Fig. 4. "Powerful Interest Desired Outcomes" (PIDO) of the powerful actors.

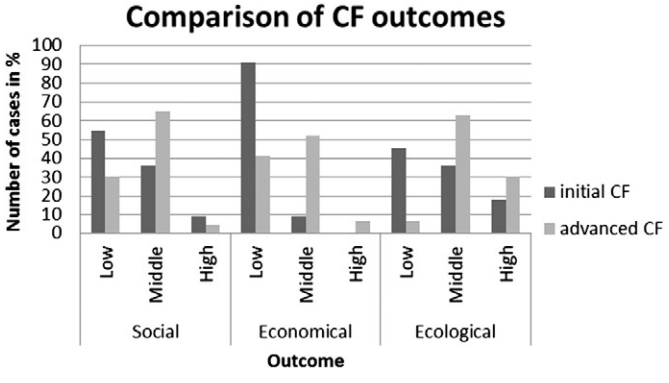

Fig. 5. Outcomes of 57 community forests divided into initial stage (11 cases) and advanced stage (46 cases).

these outcomes could still be significantly enhanced with community forestry. The results in ecological outcomes were also observed in a variety of similar studies elsewhere (Brendler and Carey, 1998; Chakraborty, 2001; Dietz et al., 2003; Thoms, 2006; Charnley and Poe, 2007; Adhikari et al., 2007; Singh, 2008; Wollenberg et al., 2008; Devkota, 2010; Vodouhê et al., 2010; Maryudi, 2011; Pandit and Bevilacqua, 2011).

The social outcomes were determined to be low for the majority (55%) of initial stage community forests. The forest user had very limited access to information, decision-making, and forest land and resources. The situation changed slightly in the advanced stage community forests. There, only 31% remained in the low category. The middle category increased the most. Nevertheless, only 4% were found to belong to the high group in the advanced stage and 9% in the initial stage community forests. Community forestry seldom improved the power status. Many researchers around the world report similar findings (Brendler and Carey, 1998; Chakraborty, 2001; Dietz et al., 2003; Thoms, 2006; Charnley and Poe, 2007; Adhikari et al., 2007; Singh, 2008; Wollenberg et al., 2008; Devkota, 2010; Vodouhê et al., 2010; Maryudi, 2011; Pandit and Bevilacqua, 2011). These researchers indicate that it is not the forest user who decides on community forestry matters. In addition, other researchers point out that decentralisation policies in practice are seldom followed by genuine power devolution to the local natural resource user (Ribot, 2004, 2009; Larson, 2005; Blaikie, 2006; Dahal and Capistrano, 2006).

The economic outcomes for the majority (91%) of cases in the initial stage were in the low category. The forest users get very limited access to forest products, financial benefits and/or access to community development that had been financed by community forestry. The situation changed significantly in the advanced stage, where 52% of the community forests achieved a middle outcome, indicating an improvement for the direct forest user. Several studies have shown similar results (Shackleton et al., 2002, Flint et al., 2008; Charnley and Poe, 2007; McDermott and Schreckenberg, 2009; Maharjan et al., 2009a, 2009b; Danks, 2009; Lawrence et al., 2009; McDermott, 2009a, 2009b; Vyamana, 2009, Pandit and Bevilacqua, 2011; Andersson and Agrawal, 2011; Maryudi et al., 2012; Maryudi and Krott, 2012). However, the outcomes for the direct user might not always be positive. This is specially the case if benefits are distributed unfairly, which may increase inequality between the forest users (McDermott and Schreckenberg, 2009; Maharjan et al., 2009a, 2009b; Danks, 2009; Lawrence et al., 2009; McDermott, 2009a, 2009b; Vyamana, 2009; Pandit and Bevilacqua, 2011). This equality aspect is not researched within our study.

A comparison of the achieved outcomes with the desired interests of powerful relevant actors (PIDO) will be the way to test our key hypothesis. In doing this, the question could be raised of how to classify the powerful relevant actors that were open to any outcome, high, middle or low. We assumed that powerful actors use their power to achieve certain outcomes that are in their interests. If they are not interested in a specific outcome high, middle or low, they do not intervene.

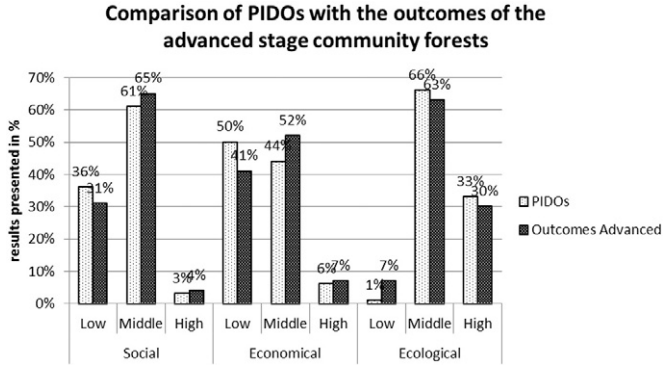

Fig. 6. Comparison of PIDOs with the outcomes of the advanced stage community forests.

Therefore we omit them from the test of the hypothesis about the influence on the outcomes. The results of the selected PIDOs are presented together with the results for the advanced stage community forests in Fig. 6. Only the advanced stage community forests were chosen because the actors need time to exert their influence.

Fig. 6 indicates the relation between the outcomes expected by the powerful relevant actors and the outcomes of community forestry in practice. The interests of the powerful actors for the social outcome show a congruence of 90%, for the ecological outcomes 88%, and for the economical outcomes 82%. The correlation between the powerful relevant actors' interest and the achieved economical outcomes could be challenged, since the graph shows that the share of high and middle economic outcomes is higher than the share desired by powerful relevant actors. Apart 50% of powerful actors desire a low economic outcome, whereas the final outcome is lower (41%). The results indicate that there are also power games in between the group of powerful actors and it seems to be, in this case that one group was stronger than the other.

Apart we conducted a chi-square test (χ^2). The aim was to test the hypothesis if the interests of powerful actors (PIDO) and the achieved corresponding outcome are stochastically independent. The following chi-square (χ^2) was calculated:

- $\chi^2_{\text{PIDO social and social outcome}} = 35.7$
- $\chi^2_{\text{PIDO economical and economic outcome}} = 34.8$
- $\chi^2_{\text{PIDO ecological and ecological outcome}} = 20.2.$

With a significance level ($\alpha = 0.05$) the statistic test value χ^2 $(0.95;4) = 9488$. As the $\chi^2_{\text{PIDO social and social outcome}}$, $\chi^2_{\text{economical and economic outcome}}$ and $\chi^2_{\text{PIDO ecologic and ecological outcome}}$ are higher than the statistical test value (χ^2 ˃ 9488) the hypothesis is rejected significantly. Therefore it is believed that the interests of powerful actors (PIDO) are associated with the achieved outcomes.

In all cases the graphic analysis as well as the chi-square test (χ^2) clearly demonstrate that the powerful relevant actors determined the outcomes of community forestry.

5. Conclusions: quantifying power in explaining the outcomes of community forestry

The aim of this paper is to contribute empirically-based findings about the influence of powerful actors to recent studies in community forestry. Shackleton et al. (2002) identified multiple actors and their influence on the end user of community forests. Within the frame of devolution of power to forest users, Shackleton et al. discuss specific actions through which different actors can gain influence in community forestry. The findings are well supported by data from different case studies qualitatively.

The challenge of our study was to quantify the crucial factor of power and to apply this in a comparative field analysis to explain the outcomes of community forestry. We chose the research strategy of defining the factors of “power and interests of relevant actors” and “outcomes of community forestry” with a strong basis in theory in order to find generalised terms which can accurately describe the highly complex and multidimensional phenomenon of power. If we could find such terms this would offer three advantages. First, based on the theory one could claim that they are causally. Second, one could claim that they are sufficiently general so as to cover a variety of power processes. Thirdly, they would provide a framework that would make individual cases quantitatively comparable.

The causal link between actors wielding power and outcomes is based on the theoretical concept of power. Our actor-centred power model defines power as the general ability of a specific actor to alter the behaviour of another actor. On one side is a powerful actor with his interests and on the other side are the forest user and managers

who try to produce specific outputs. Based on the theory we assume that the powerful actors influence all other actors toward activities that produce outcomes well in line with the interests of the powerful actors. Our empirical data shows a great overlap of the interests of powerful actors with outcomes of community forestry. Given our theoretical basis we take this as empirical evidence that supports our hypothesis about the power of actors driving the outcomes of community forestry.

In practice there are many different processes that link actors to other actors and outcomes. The paper by Shackleton et al. (2002) offers empirical and rich insights into the high diversity and complexity of the specific processes through which power is exercised within the community forestry context. The added value of our model is that it is able to focus on three general mechanisms of power. The general terms of actor-centred power reduce the complexity of the analysis and allow the observation of empirical evidence, using mainly actors' power sources that are observable in the field as an indicator of power. The empirical evidence strongly suggests that the actor-centred power model can be applied with success to multiple power processes.

A direct application of the actor-centred power model to the multiple power processes identified by other studies (Koschnik, 1993; Shackleton et al., 2002; Theesfeld, 2004; Arts and van Tatenhove, 2004; Torniainen et al., 2006; Pérez-Ciera and Lovett, 2006; van Gossum et al., 2011) was not possible due to a lack of common empirical field data that could be shared. An application based on secondary data is very difficult because the other field studies do not produce data on the three different elements of actor-centred power used here. Therefore we preferred to conduct our own field studies to acquire primary data on power.

Finally, the actor-centred power model was quantified, providing a good basis for comparative research. We were hoping to introduce as much variety as possible by integrating cases from Germany into the study, a developed country with more than 200 years of experience in community forestry. Quite surprisingly, the general power relation between relevant actors and the end users and outcomes in community forestry in Germany is not much different in principle despite big differences in the political system and the tradition of forestry (Schusser et al., 2012a, 2012b, 2013). In addition, powerful relevant actors in Germany drive the outcome of community forestry. The framework of our analysis made the cases theoretically and empirically comparable. The demonstrated importance of power of multiple actors for community forestry leads to the question of how these findings are linked to the huge body of research on the collective action of local resource users presented in the outstanding research by Poteete and Ostrom (2004 and 2008) and by Wollenberg et al. (2007). They see the local resource users as the unit that carries out collective action. According to this notion, the local resource user is the key for the success of community forestry. The programme of community forestry emphasises this as a crucial point. Research on collective action is not questioned by our results. However, the evidence for the significant influence of relevant actors on the outcomes of community forestry emphasises the importance to draw the attention as on the external power network which strongly drives the collective action in the direction of the interests of powerful relevant actors (Zhu et al, 2013). The results suggest that internal organisational and management processes can be linked to the power of other relevant actors, and can offer deeper insights into the practice of community forestry.

The results for the five countries are strikingly significant, despite the great variability of their political systems. Nevertheless, deeper analysis of the data might reveal factors and processes specific to different countries. The qualitative and quantitative data of the 57 cases offer some potential for added analytical depth in a future paper.

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