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The role of agri-environmental contracts in saving biodiversity in the post-socialist Czech Republic

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Abstract: Agri-Environmental Schemes are a voluntary policy measure of the Common Agricultural Policy of the European Union. Since 2004, these have been implemented in the post-socialist new Member States. Agri-Environmental Schemes could help to achieve a higher level of biodiversity on agricultural land. We focus here specifically on protected landscapes. In particular, we analyse whether such types of contracts between farmers and state organisations represent a useful tool in the protection of shared natural resources, such as biodiversity. We analyse the determinants that allow for such a policy to be implemented more successfully. In addition, the administrative structure of such a policy measure is very complex since responsibilities overlap among various administrative units, and transactions between farmers and governmental bodies need to be regulated. Cooperation among so many parties is challenging. The aim of this article is to clarify the impact of some contract characteristics on its effectiveness. We analyse why implementation has been easier in some Protected Landscape Areas (PLAs) than in others. The research focuses on selected factors which showed differences in performance. In particular, these factors are trust and reciprocity between farmers and state administrative bodies, information spreading and the availability of advisory services. Despite the demanding implementation process, we find an indication that trust tends to grow following a previous good experience. The case study was carried out in two large and two small PLAs in the Czech Republic.

Keywords: Agri-environmental measure, biodiversity, coordination problem, governance structure, policy implementation, trust

1. Introduction

During the socialist era, the government of Czechoslovakia (which included the territory of the current Czech Republic) used in general mainly regulatory and hierarchical policy approaches. However, weak environmental policies were the norm at this time, because of lack of enforcement and limited contract use. As a result, in the early nineties, the government of the Czech Republic had almost no experience in designing and delivering environmental policies in close cooperation with stakeholders (Prazan et al. 2005).

Biodiversity on agricultural land is relatively high in the Czech Republic. Large areas of grassland were historically quite rich in biodiversity, but are not currently in a satisfactory state (Miko and Hosek 2009). Many of these areas were endangered by the land abandonment that started in the 1990s. Due to a loss of traditional markets and abolishing state subsidies the beef and sheep markets in Central and Eastern European countries collapsed and resulted in a decline of farm animals' numbers (Prazan et al. 2005). From this time, supporting a more sustainable management of grasslands began to receive more attention politically. This then became a political priority in the lead-up phase to European Union (EU) accession (Ratinger et al. 2004; Prazan et al. 2005). Simple contracts were introduced in the mid-nineties to stop the process of land abandonment and later a pilot Agri-Environmental Schemes (AES) was designated in framework of SAPARD (Special Accession Programme for Agriculture and Rural Development). A significant proportion of the biodiversity-rich grasslands is in designated areas of protection. Key protected areas are the so-called Protected Landscape Areas (PLAs) and National Parks (NP). Each of these possesses its own individual administration including, usually, one person who deals with farmers on biodiversity protection issues. In both NPs and PLAs there are zones where fertilisers and pesticides use are regulated (the first and second zones of protection) as a part of regulatory provisions to prevent direct destruction of valuable habitats. The rest of zones are used more as a buffer to the core zones of protection. Usually in the first and second zones are natural or semi-natural habitats. The protection is stricter in NPs than in PLAs, where agricultural activities are not so limited. The proportion of the protected areas is 21.4% of the total national territory (Ministry of Agriculture 2012a). A share of 19% of all grasslands in the Czech Republic is in NPs and PLAs. There are several EU policies influencing directly or indirectly the conservation of valuable grasslands. Less Favoured Area (LFA) payments are particularly provided for grasslands and their aim is to prevent land abandonment. Also Direct Payments stabilise the economic situation of farmers on grasslands, but it is provided on all agricultural land regardless the conservation goals. Regarding biodiversity protection, the most important policy measure takes the form of the AESs. AESs complement

regulatory provisions in nature protection by motivating farmers to carry out farm practices which are going beyond requirements of regulatory framework. Together with LFA payments and Direct Payments, they represent a substantial part of the income of grassland farms. Some scholars state that the total amount of support on grasslands leads even to an overcompensation of farmers (Abrahámová et al. 2012). An AES consists of a voluntary contract between a governmental body and a farmer. Farmers receive payments for activities beneficial to biodiversity, which in turn require them to give up some profitable farm management practices. There is an on-going debate about the effectiveness and cost-effectiveness of this kind of contract to protect biodiversity on agricultural land. There are positive examples in other countries where long-term monitoring has proved that AESs have positive impacts on biodiversity. For instance, evaluation studies from Northern Ireland reported improvements in some areas and proved that “schemes have generally been successful in the maintenance and enhancement of biodiversity on target habitats” (Queen’s University of Belfast 2004, 23; see also Queen’s University of Belfast 2000). In contrast, the study of AESs in Austria by Wrška et al. (2008) found that the schemes did not protect biodiversity, since they did not appear to be sufficiently targeted to effectively halt biodiversity losses.

In the Czech case, participants have to comply with management prescriptions on a large proportion of their farm (i.e. their total grassland area). The idea is to encourage them to maintain environmentally-friendly farming practices and to prevent intensification in areas of high landscape value vulnerable to changing agricultural practices. The AESs studied in this paper had already been implemented and were running at the time of the research, which was carried out in the years 2009–2011. They formed part of the Czech Republic’s Rural Development Plan 2007–2013. The research focuses on the management of high nature value grasslands on agricultural land as a proxy for biodiversity.

There is, of course, a general problem in assessing the effectiveness of AESs and, in particular, the success of the schemes as regards conservation, for example because too many factors influence the final outcome of the policy and clear causal links between farming practices and actual changes in biodiversity are difficult to draw. Therefore, the overarching question is whether the type of contract offered under the EU Common Agricultural Policy (CAP) is a suitable institution for the fight against biodiversity loss and, if so, what the determinants are that can make these AES contracts better implemented and functioning in the long-run. In this case we mean sustainable contracts pursuing sufficient uptake of the AESs. We can state that current uptake shows that the sites managed under the schemes cover a large proportion of the targeted area. Despite being aware of the crowding-out effect, described among others for the environmental virtues by Vatn (2010), we follow Wilson and Hart (2001) who stated that, even if it is not certain that AESs really lead to the protection of biodiversity, they do lead to a shift in farmers’ attitude towards conservation. This might ensure the continuation of environmentally-friendly farming practices, even if the financial incentives for countryside management were to come to an end. Even without a direct link to

halting biodiversity loss, the shift in attitudes towards conservation, which we assume is encouraged by the AES negotiations, is an important first step.

The EU Commission has set out certain guidelines (European Commission 2007) for the implementation of AESs. These include the duration of a contract (at least 5 years), how to calculate the payments and how to design, and carry out the monitoring and sanctioning system. The remainder of the contract design and management is, however, the responsibility of the individual Member States and is therefore influenced by the national institutional context. Thus, in the Czech Republic as in other Member States, the measure has become more tailored to local needs. Since 2007, which is the second programming period of this policy in the Czech Republic (besides the SAPARD program with pilot contracts), the management prescriptions have become more site specific and the targeting to valuable habitats has become more precise.

The measures have been heavily used and employed in Czech PLAs; in protected, as well as, in non-protected landscapes, where today most grassland is under AES management. These areas are of particular environmental value and beauty. Most of them are in mountainous or highland areas.

As explained by Sell and Son (1997), the management of public goods such as biodiversity is often characterised by the provision of funds to increase or maintain the public goods. Other scholars have advocated that the protected areas should be viewed as the “new commons” (Hess 2008). But common-pool resources, which are traditionally characterised by the subtractability of the resource unit (Ostrom 2005), have to be managed by rules that regulate the use of the resource in order to protect it from degradation. One example is given by Hess (2008, 4) who stated that: “New commons can also be natural resources for which there are new uses or new institutions, such as landscapes, protected areas, the control of agricultural pests, or ocean waters used as surfing lanes.” In this paper, biodiversity is regarded as a commons. It is shared and the constructed and introduced management structure should limit its excessive use.

In the Czech Republic in the early 1990s – between the socialist era and the market-based economy – institutional change in the management of natural resources was dramatic. It was necessary to introduce new laws in a very short period of time (e.g. the Law on Nature and Landscape Protection in 1992). As a means for stopping the land abandonment in the mid-1990s very simple contracts were created (e.g. schemes to support grass cutting). Market economy and loss of economic links to Eastern countries changed the demand structure for some agricultural commodities and the structure of production, respectively (e.g. decrease of numbers of dairy cows). State subsidies in agriculture ceased, property rights (e.g. on land) were enforced, and the number of family farms increased. In sum, this means institutions which usually evolve over decades (Slangen et al. 2008) were introduced in just a few years. Likewise, in order to avoid the depletion and degradation of biodiversity, a new institutional environment was created and new governance structures emerged (e.g. contracts to manage biodiversity-rich grasslands) (Prazan et al. 2005). However, some institutions, for

instance informal rules, norms, beliefs, and customs, usually do not change so quickly (Williamson 2000; Slangen et al. 2008). The discrepancy between formal and informal institutions tends to negatively influence the effectiveness of the contract for resource management (Theesfeld 2005, 2009). Additionally, in line with Heinmiller (2009), we assume past-path dependency creating the context for the new institutions and thus also determining the management of the common-pool resource. New institutions do also influence the performance of relevant policies and vice versa.

A further institutional change happened at the beginning of programming period 2007–2013. The AESs targeted at biodiversity in the PLAs and NPs became better tailored to local needs. For instance, for designated valuable grassland habitats, a more specific management plan for farming practices was elaborated. Therefore, the policy became more precise and detailed, but also more diverse and thus more difficult to implement. The Ministry of Agriculture (MoA), with help from other stakeholders, designed a menu of management prescriptions from which farmers could choose. The administration of the PLAs and NPs is within the remit of the Ministry of Environment (MoE), but the management authority of the AES is part of the MoA. As already shown in other studies, the cooperation between the ministries needs to be significantly improved (Prazan et al. 2005). PLAs have a centralised organisational body at the national level; the Agency for Nature and Landscape Protection (AOPK), where rules for the tailoring of AESs are designed, such as what kind of management practice should be applied to what kind of biotope. Then, for each valuable grassland plot, either the regional PLA administration suggests a specific suitable scheme from the menu (based on the AOPK guidelines) or they leave it to the farmers to decide whether a particular habitat requires a specific management in order to be preserved. A compliance check is carried out by Paying Agency and the rules are the same for all national territory. This study does not analyse the role of this organisation, but perceptions of farmers on the rules and approaches applied during compliance check were questioned.

For implementation reasons, the MoA has introduced a significant innovation of the AESs called ENVI-tier. This consists of a Geographical Information System (GIS)-based database with grassland plots based on a Land Parcel Identification System. Each grassland plot is associated with a particular farm practice management prescription, suggested by the local administration of the PLA or NP. The total number of AES options has increased significantly and the various conditions of the agreement allow for a better fit to the local conditions as shown in Table 1.

Each of these schemes has corresponding management prescriptions, such as a certain time of year to cut the grass, the level of nutrients to be used, and leaving strips of uncut grass. The calculation of payments is based on opportunity costs of avoiding of certain level of intensity of production and some additional costs when further activities are required (European Commission 2007). Transaction costs were not compensated in AES.

Table 1: Tailored AES and its outreach.

AES	Payments (EURO)	Uptake (1000 ha)
Meadows (basic extensive management)	75	308
Mesophilic and hygrophilic meadows (three variations of management)	100–135	59.4
Mountain and xerophilous meadows (three variations of management)	120–150	15.6
Permanently waterlogged and peatland meadows	417	1.6
Bird habitats on grassland – waders' nesting site	202	1.2
Bird habitats on grassland – corncrakes' nesting site	183	11.1
Pastures (basic extensive management)	112	271.8
Species rich pastures	169	100
Dry steppe grasslands and heaths	308	1

Source: Ministry of Agriculture (2007, 2012a).

There is no competition among the farmers who apply for an AES. Entry to a scheme is based solely on eligibility criteria, for example possessing biodiversity rich grassland of a minimum size, and agreement to a particular scheme. Therefore, nearly all farmers who apply for a contract enter into it. The procedure of implementing an AES in protected areas is usually as follows: Farmers choose a scheme from a list, including the production restrictions for their plot. They have to negotiate with the administration of the PLA or NP in order to agree on: a specific scheme and its options regarding timing of cut, level of fertilisers use for each plot separately. In some cases, PLA administrations do not agree with a particular scheme and demand a different one for a particular plot. In order to receive compensation, farmers rely on approval from the administration. Administrations of the PLA or NP can reject a farmer's proposal or can ask for different farming practices to be selected from the menu under the same scheme. Agreed management is then indicated in the ENVI-tier. In extreme cases, the PLA or NP administration can reject any AES on a particular plot and offer instead one from the national environmental schemes. The budget for these national schemes is limited, therefore in most of the PLAs this happened only in a few cases. However, the requirements for these are usually much more difficult for farmers to fulfil, because of their accuracy, changing prescriptions and demanding management. Therefore, PLA and NP administrations wield a significant level of power over the decision-making of farmers. The success of an EU AES supporting grassland management has to be considered with caution due to one of its particular characteristics; namely, the fact that it is a "whole-farm scheme". This approach impinges upon farming activities on large parts of the farm since farmers have to include their total grassland on farm in the scheme. This counteracts the voluntary character of the AES approach, because if farmer refuse to participate on national scheme offered instead of AES on particular plot, there is a danger he/she cannot comply with "whole farm" requirement and cannot join the AES on any grassland on the farm. Farmers reported that non-participation was not an option. If they are

situated in a region which is less favoured for agriculture production, they depend heavily on the financial support from the scheme due to the economic situation prevailing. As the less powerful partner in the contract, some farmers felt trapped by the negotiation process and more or less forced to accept the conditions dictated by the administrative staff. Farmers rely greatly on getting approval, because if no agreement is reached quite significant amounts of support are at stake. There are more PLAs, where the negotiations were finally rather successful as opposed to those areas where the difficulties were significant (personal communication with headquarters of the PLAs on national level).

The uptake of the AES on grasslands at national level, i.e. in protected areas and outside the protected areas, is quite high. It increased between 2004 and 2011 from 74.4% to 82.4% of total grasslands under contract (Ministry of Agriculture 2005, 2012b) (82.4% of all grasslands). Therefore the payments can be regarded as attractive (Ministry of Agriculture 2012b; Czech Statistical Office 2013). In total 227,213 ha were designated as high natural farming grasslands of which 83% were covered by contract with targeted management (Ministry of Agriculture 2012b). In 2011, nearly 19,000 farmers applied for this AES. The uptake of high nature value grasslands increased also over the period 2004–2011 partly because of more precise designation of valuable grasslands.

Simultaneously with AES the Czech National Environmental Schemes has been provided. This is typically an annual contract on the management of the most valuable sites in protected areas, provided by agencies in remit of Ministry of Environment. They resemble rather a framework contract and are very flexible, because they can be adjusted according to actual development of the site during the year. Therefore, the contracts can be demanding to farmers because they imply very detailed regimes, such as several cutting regimes on one single meadow during a year. Because of budgetary limits the national schemes are usually limited in land coverage. There is a coordination of policies in order to avoid double payments on one plot from the various measures.

The paper proceeds as follows: the next section explains the role of contracts in the management of common-pool resources, contract's characteristics, and their potential influence on policy effectiveness. This is followed by a section that explains the research methods. The proceeding section introduces the case study areas and is followed by a section presenting the results of the research. The results are discussed, followed by a concluding section.

2. Sustaining biodiversity with neo-classical contracts

The main unit of analysis in this paper is the neo-classical contract under the AES between the state administration and a private farmer for the management of biodiversity as a commons. The contract is voluntary by its nature, therefore neither farmer nor the state have to join the contract. Likewise, the state is not obliged to agree when farmers apply. In these contracts, farmers are required to change their farming practices in order to preserve or improve biodiversity on

their land. These changes are usually associated with income losses or additional costs. The state agrees to pay for such services in the contracts (covering income foregone and costs incurred) and tries to renew the contract repeatedly after a 5–7 years period. Farmers would prefer to have shorter contract which are renewed. The reason is the uncertainty concerning renewal of agreement with landlord over the rented land due to the prevailing high rental share in agricultural land. The renewal of the contract is important for two reasons. Firstly, because most of the effects of a change in farming practices on biodiversity are long-term, and secondly in order to ensure the policy stability.

Neo-classical contracts meet the needs of such transactions. Farmers are paid for carrying out agreed farm practices but not for actual change in biodiversity. Neo-classical contracts are long-term, coordinated more by a set of rules than by price, and are usually used in cases where performance is not easy to measure, but where the relationship between the parties to the contract is important (i.e. parties matter). In contrast, classical contracts are short-term, are coordinated more by price, and their performance is easy to measure (Slangen et al. 2008). Neo-classical contracts in farming are not considered to be complete, because not all possible situations which could occur between the contract parties could be covered by a contract. They involve high transaction costs, due to the high complexity of services provided and specified in the contract (e.g. sites designation, costs of monitoring and compliance check for a high number of sub-schemes). In addition the state administration has to invest in research in order to understand the links between farm practices and biodiversity, to study the impact of various policy designs on farm practices, to target the farm practices (e.g. designation of sites), and to help farmers to trust the activities they are paid for (e.g. concerning its contribution to biodiversity protection). On the farmers' side they have to invest in planning farming practices in order to meet the contract management prescriptions and to carry out paper work. All these add to the transaction costs. Problems with enforcement arise because of uncertainty (e.g. nature) and the complexity of the asset in question, leading usually to high complexity of management prescriptions on valuable sites. Given these conditions, contracts are designed to mitigate transaction costs (Allen and Lueck 2005). The contracts studied are typical principal-agent theory examples, where the principal (the state administrative body) cannot directly observe the activities of the agent (farmer) and the surrounding factors. Thus, moral hazard occurs (Rees 1985). Theory assumes that both principal and agent can observe the outcomes of the contract, but this is very limited in the case of contracts dealing in the very end with biodiversity provision. Therefore the subject of contract is a change of farm practices, but the real outcome (i.e. biodiversity change) still matters, and could be influenced by quality and management of the contract. One of the key dilemmas under the principal-agent theory is how to share the risk (Slangen et al. 2008). The AES payments do not in principle include payments for risk, as payments are defined on the basis of loss of income and costs incurred by the agent. In general, transaction costs covered by state

would help to decrease transaction costs on farmers' site, during the negotiations and enforcement of the contract.

Rees (1985) also argued that, under conditions where the agent is risk averse, the principal pays a fixed rate, not taking into account any additional related factors and, as a result, in theory the principal bears all the risk. But, in reality, the agent still has to take some risks and the principal also tends to behave strategically (Slangen et al. 2008). The principal (e.g. the MoA) could reduce the agent's risk by defining certain conditions in the contract (e.g. force majeure in relation to weather). The MoA can also make farmers less risk-averse and increase government credibility (Slangen et al. 2008) by delegating part of the contract management to an intermediate who is known to be trustworthy and well respected by the farmers. The intermediate could even be an independent, private body providing advice on participation in an AES. Greater emphasis on delegating parts of the contract management can be found in several Rural Development Plans and corresponding AES, for example in England (Higher level stewardship: Farm environment plan manual, 2011, personal communication with English advisor). Another example of influencing the risk behaviour of farmers is when several open-minded farmers are hired by state officials to promote the contract on their farms via field days open to other farmers. Experience shows that farmers often trust their colleagues more than administrative bodies (personal communication with a person from the state administration in Northern Ireland).

Sell and Son (1997) explained that, when a resource declines and the interactions of actors are repeated, cooperation in the management of the resource increases. However, this implies that all actors are aware of the resource decline and that the interactions are arranged – or at least facilitated. Thus, knowledge on the resource status is a crucial factor, too.

The empirical study was motivated by the need for a deeper understanding of the characteristics of the contract and their influence on the effectiveness of the management of natural resource – biodiversity in the Czech Republic. The quality of the contract and its features were assumed to have an influence on the performance of relevant policies in the provision of biodiversity in selected protected areas. Based on theoretical assumptions (Rees 1985; Ostrom 1990; Allen and Lueck 2005; Slangen et al. 2008) the perceptions of different actors about the following characteristics of a contract were studied empirically:

- motivation and compensation (e.g. payment level, compliance control, sanctioning, knowledge of the outcome of the contract);
- information provision, risk sharing, relationship and commitments (e.g. trustworthiness and trust, reputation, common values, building of self-interest);
- way of organising the contract; and
- conflict resolution mechanisms.

In the remainder of this section, the characteristics of the contract are explained in more detail. Special attention is paid to trust. Following Offe (1999), personal

trust can be defined as the result of past experience of a particular person. At the regional level, this means experience with a particular person in the state administration. It should be noted that trust turns out to be one of the important factors explaining why contracts fail or succeed. Polman and Slangen (2008) suggested that trust in government is needed for farmers to take part in AES. In this paper, a successful contract is considered to be one which delivers the desired outcome (i.e. sufficient uptake of valuable habitats with appropriate management) and the willingness to renew the contract of both parties.

In a long-term neo-classical contract, internal motivations (e.g. believing in the purpose of the contract) play a bigger role than external motivations (e.g. price, penalties). Too much external motivation kills internal motivation and the initiatives of those providing the public service (Slangen et al. 2008). Likewise payments may crowd out the protection attitude of land users (Vatn 2010). Therefore, both parties should believe in the subject of the contract (e.g. biodiversity provision) and should share corresponding values.

In addition, the way the contract signing is organised matters. For instance, when farmers are given little time to think through their participation and feel forced into quick decisions, it is likely that some enter into a contract that might affect their farming business negatively. This discourages them from continuing the contract relationship in the next period. Furthermore, when the distribution of power in the contract is asymmetrical and that power is abused (e.g. by state administrators), there will be a decrease in trust and the willingness to renew the contract.

As a precondition for a well-managed contract, both parties should know enough about the conditions and purpose of the contract. This study assumes a lack of information – especially on the farmers' side. In fact, government bodies often neither offer advice to, nor cooperate closely with, farmers. This affects the Czech corporate farms less, since they usually have university educated managers and specialists dealing with the Common Agricultural Policy (CAP), and believe they understand the contract well (Prazan and Dumbrovsky 2011).

A high complexity of neo-classical contracts for provision of biodiversity and prevailing different interests of state administration and farmers generate a need for conflict resolution mechanisms. It is even more required because the farmers need for their AES application the approval of PLA/NP administration, which may involve conflicting matters. Conflict resolution mechanisms are crucial for both parties to ease the transaction in cases where conflicts about the implementation and performance of the contract are difficult to resolve (Slangen et al. 2008).

One way of measuring the effectiveness of an AES is by the share of abandoned land remaining. Abandoned land is one of the biggest threats to biodiversity in these high natural value areas, since valuable grassland habitats without long-term management change to forests, which represents a loss of habitat (IEEP 2011). In the short-run, however, set aside measures of proportions of used land can be a very efficient measure in halting biodiversity losses (Wrbka et al. 2008).

In sum, the formal rules for the contracts are the same all over the Czech Republic. Therefore it is reasonable to assume that there must be determinants for contract performance (e.g. informal institutions) which are region specific. Thus, one key question for this research is: What particular factors of neo-classical contracts can influence the performance of contracts intended to save biodiversity?

3. Methods

The determinants of successful contracts on the management of high nature value grasslands on agricultural land under AESs were investigated taking a case study approach (Yin 2003). Four PLAs were selected, complemented by a survey at the national level. Initial interviews at the national level allowed to decide on PLAs where the policy implementation was regarded as reasonably successful and smooth and PLAs where the implementation was reported to be very difficult. In each group one small and one large PLA was selected. In all four PLAs, interviews were carried out with farmers (balanced groups of small and corporate farms) (see Table 2). The target group was selected in order to collect data from those who manage valuable land from a biodiversity point of view and who are likely to have had experience with the contract schemes.

In addition, eight interviews were carried out: four with staff of the PLA administrations, one at the national level MoA, two at the regional offices of the MoA, and one with a private farm advisor. Both amount to a total of 54 conducted interviews. In addition to key features of the neo-classical contract, the questionnaire covered the implementation process and the system of contract management, as well as an assessment of the relationship between the government bodies and farmers, for example farmers expressed their trust towards administrative bodies on a five-point Likert scale and also provided examples explaining their trust level. The interviews were carried out either in the PLA's offices, or at the corporate farms, or at the homes of family farmers. All interviews took place in an open and trustworthy atmosphere and there were no obstacles to getting information. Only a few farmers found the topic so sensitive that it took them a while before they were able to speak freely.

Triangulation was based on different data sources. For all key questions, the saturation point was reached and no new substantial information was gathered towards the end of the field research. Most of the answers tended to be consistent

Table 2: Distribution of interviews with farmers.

PLA	Family farms	Corporate farms	Share of grasslands in each PLA covered by the sample
I	6	8	40.3%
II	10	8	20.3%
III	1	6	66.9%
IV	2	5	34.8%

Source: Prazan (2011).

across the various interviews. Some questions encouraged storytelling and the data collected were coded and interpreted afterwards. It was possible to find explanations (e.g. size and legal form of farms) for partial differences between answers. The qualitative nature of the survey was complemented by descriptive statistical evidence.

The contract was designed to respond to the requirements of managing the natural resource. The service is highly specific (e.g. different biodiversity on each type of meadow), uncertainty is also high (e.g. weather conditions), and the effect of the contract can only be measured if it is repeated over several years at least. Thus, it is very difficult to measure objectively and quantitatively the performance of the contracts under consideration in this study. The success of the contract was assessed by the PLA administration in a qualitative way, for example by statements about the level of farmers' participation in the AES. This follows the implicit assumption that the AES will lead to an increase in biodiversity or at least its conservation and a shift in conservation attitude.

There are, however, typical coordination mechanisms that are known to be responsible for the success of a contract and that can be measured. These cover price (i.e. financial motivation), "handbook", and also "handshake" (Slangen et al. 2008). Handbook represents, for instance, performance indicators, control, system of penalties, while handshake represents, for instance, sharing norms, trust, reputation, and mutual adjustment. Other important factors of contracts are: assurance of supply of the service; credible commitments; and motivation (Ostrom 1990). These factors were mirrored in the questionnaire with the aim of assessing their role in the contract and potential influence on the success of the contract.

4. Case study areas

Two large and two relatively small PLAs were selected (see Table 3). One large (PLA I) and one small PLA (PLA III) were regarded as successfully implementing the AES. The other two were supposed to have difficulties in implementing the AESs. Both large PLAs are situated in the highlands of the Czech Republic with less productive agricultural land. Farming in these two areas is represented by large number of mixed farms and beef cattle farms. The share of family farms and corporate large farms is quite balanced. The two small PLAs are situated in the lowlands. These grasslands are surrounded by fertile arable land, which means the relatively small areas of wet grassland in these small PLAs are regarded as not important for agricultural production, especially by the large farmers. The number of farms in these two PLAs is rather low and these are mostly corporate and quite large (over a thousand hectares) mixed or mainly arable farms. It is important to mention that PLA II represents an area of exceptionally high natural value with higher acreage of valuable grasslands with higher payments (see Table 1), then in the other three areas. Farmers in PLAs on highlands face partly different challenges in management of valuable

Table 3: Size and location of PLAs.

PLA	Total area (ha)	Geographical location	Level of difficulties in the implementation of AES perceived by farmers
I	70,940	Highlands	Acceptable
II	74,687	Highlands	Very difficult
III	9600	Lowlands	Acceptable
IV	8150	Lowlands	Very difficult

Source: own data and websites of the PLAs.

sites (e.g. fields on slopes), than those on lowlands (e.g. higher potential for intensification of meadows use).

5. Results

5.1. Design and implementation process of AESs

The MoA designed the AES together with the AOPK and created administrative structure for their implementation. PLA administrations in all studied PLAs played an active role in implementation of AES. Because there should be agreement among farmers and PLA administration on the particular management of a site, different parties could initiate the process of negotiations. In PLAs II and IV, the local PLA administration took the initiative to implement AESs, while in PLAs I and III the regional MoA played a stronger role. But the responsibility for the success of the AES stayed with Ministry of Agriculture and relied partly on the level of participation in protected areas. In all four PLAs, AESs are implemented and the uptake by farmers is regarded by PLA administrations as quite successful. PLA administration reported that just a few farmers did not join the AES. This result is in line with the uptake level at national scale which is rather high (see Introduction). Yet, all actors reported that the implementation was quite demanding.

The empirical material exemplified that not all key steps of AES negotiation and agreement processes were covered by common rules across the four PLAs. In particular, although there are common rules for the contract (e.g. payment level, prescriptions), the implementation was not carried out in the same way for all PLAs. For example, in some areas there was an equal treatment of farmers, while in others not. Although there have been delays in the online access to the Land Parcel Identification System, which is used as a database and decision-making platform, PLA staff confirmed that training in the database use was quite sufficient and that the database was considered to be a helpful tool.

Interviewed farmers in several PLAs complained that there was not enough time for the required negotiations between farmers and PLA staff. Some farmers complained that basic information about the application process did not reach them on time. For example, farmers underestimated the importance of the call for

negotiations by the PLA administration and some just did not open the received letters. Also, in PLA II only one private advisor was active in the case study area and he could only help a small group of farmers in the application and negotiation procedure.

PLA administrators can influence farmers' decisions on which AES to choose for their plots by either: 1) approving the AES applied for by the farmer; 2) proposing changes to the AES chosen; or 3) excluding particular plots from AESs and instead offering national environmental schemes, which are generally more demanding but (from the viewpoint of the PLA administration) better adjusted to the local needs. This exclusion of plots from AESs happened to a large extent in PLA II where the administrators did not allow farmers to apply for AESs on a total area of 850 ha – a comparatively large area in relation to the area excluded from AES and aimed for implementation of the national schemes in other protected areas. Although the share of this land is not high in this large PLA, it became an issue for farmers affected. Having this share of grassland that required extra negotiations led to a higher potential source of disagreement between farmers and the PLA administration than found in the other three case study areas. It should be noted that the area that is excluded from the regular AESs should be supported from national sources, which in turn are limited. The budget for the national schemes is uncertain and has to be agreed each year, in contrast to the more reliable budget of the European AESs, which allows for 5–7 years' contracts.

Given poor farming conditions on arable and grazing land in the two large highland areas and the marginal use of grassland in the two more productive agricultural lowland areas, the demand for the grazing land schemes is relatively high, and farmers were under pressure to accept the management duties required by the PLA administrations. In exchange, farmers received an area payment in the 2007–2013 period that ranged from €75 (i.e. extensive grassland management) to €200 (species rich pastures). For management of wet meadows with otherwise no income the payment was €417 per ha. Figure 1 sets out more details on the process of AES design and implementation¹.

PLA administrations were interested in participation of farmers in both extensive schemes with aim to prevent land abandonment and future intensification, and also in more tailored and demanding scheme targeted to valuable habitats.

¹ Figure 1 shows that the MoA agreed with the MoE on the overall concept. The MoA created LPIS based platform for record of schemes linked to each particular parcel. The AOPK develops guidelines for distribution of particular AES to certain types of habitats and sends the guidelines to the PLA administrations. The AOPK also agrees on rules for the process of implementation and cooperation, and solves particular difficulties in implementation with the MoA. Some regional MoAs also helped to solve difficulties in implementation and participated in the process of farmers' application for the schemes. Farmers select the scheme for their field and try to agree with PLA administration on the decision. When agreement is reached, the PLAs administration populates LPIS based website with a particular AES for each plot. Some farmers had to ask for help at the MoA when the agreement with PLA administration was not reached. The Paying Agencies are not included in the figure as the purpose is to show the process until the application form is filled in.

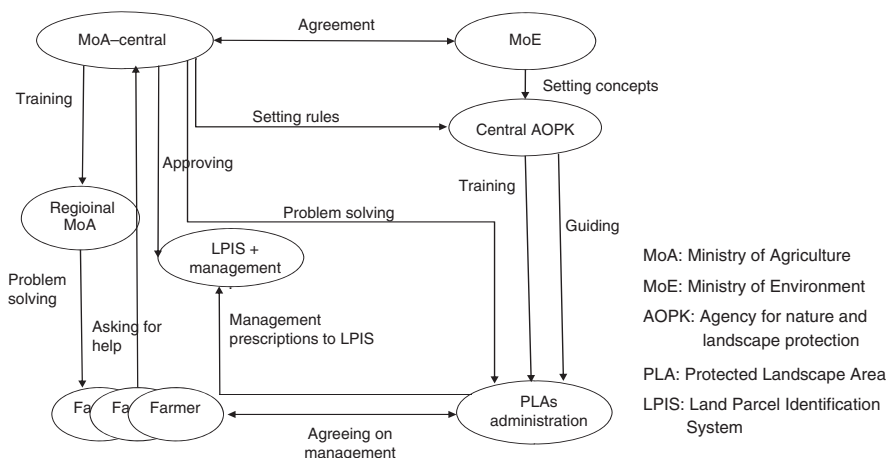


Figure 1: Role of actors in implementing more tailored AESs.

Source: Own figure.

PLA administrations tried under time pressure to allocate right scheme to relevant habitats. But in some areas there was not enough up-to-date knowledge of some sites on PLA administration to do so precisely, which was another source of disagreement between farmers and PLA administrations.

5.2. Farmers' perceptions about the determinants of a contract

Both parties to a contract should know the basic conditions of the contract beforehand. The main sources of information on contracts are meetings with farmers, brochures, and web-sites. Several interviewees felt under-informed. Farmers reported that their knowledge about contract details and implications was low and that they did not feel well enough informed. In two PLAs, only half the farmers reported that the MoA had been involved in instructing them; in the other two PLAs the ministry's direct engagement was even lower.

Significant gaps were found in farmers' knowledge about the purpose or goals of the AES and their contracts. One farmer even suspected that the aim of the contract was to fulfil a different purpose; namely, to directly support farmers' economic survival in unfavourable conditions. This farmer explained that he is not morally obliged to fulfil all management prescriptions, when the environment is not actually the purpose of the contract. Comments from regional and central MoA staff supported this knowledge gap. One MoA regional administrator even mentioned that "to tell farmers what the purpose of the contract is, is the business of the nature protectionist, not our matter, our duty is perfect administration". The central MoA recognised this fact as a serious determinant for the difficulties in implementing the policy. In consequence, it is not only a gap in knowledge of farmers, but also lack of believe in the real purpose of the policy. The result is a

higher likelihood of strategic behaviour. Some farmers even assumed they have a right to get the payment, believing the support is aimed at their economic survival.

Risk sharing between both parties to a contract is an additional requirement for successful contract negotiations. Here, risk sharing is regarded as unbalanced since farmers would bear most of the risk. Only two MoA and one PLA administrator believed risk sharing to be more balanced, but the rest of the respondents (farmers as well as PLA administrators and central MoA officials) explained why they perceive the risk as being more on the farmers' side. The main explanation was the frequent changes in conditions of the contracts made by the MoA – with changes even being made during the contract period. The changes did not influence the meaning of the management prescriptions as such, but usually the management of the contract (e.g. conditions for the compliance check, indicators used for definition of management prescriptions, or the criteria to define an animal unit).

Monitoring of contract compliance is another determinant for a successful contract fulfilment. The monitoring of compliance to AESs and specific management and production prescriptions was regarded by farmers as a rather strict instrument which did not respect the natural and environmental conditions they were exposed to. Compliance with the management prescriptions was monitored, for example whether farmers cut their grass for the last time after a specified date. In cases of non-compliance, farmers had to repay a certain part of the payments already received. The amount repaid depended on the severity of non-compliance.

At the time of the survey, interviewees had not had much direct experience with sanctions. Some concerns prevailed about the inflexibility of the sanctioning rules regarding unexpected conditions. For instance, extreme weather conditions, which prevented farmers to comply with the management prescriptions, were not accepted as explanation of non-compliance and farmers were sanctioned. Later un-compliance due to such reasons was accepted, after approval by meteorological office. Few respondents regarded this inflexibility in the sanctioning system as an expression of lack of respect of the MoA towards farmers' work.

Nevertheless, in general there were some positive comments concerning improvements in the control and sanctioning system regarding its fairness. There is no doubt about the effectiveness of the control and sanctioning system. Agreement with the contract content, here the payment level in exchange for fulfilling a certain management practice, represents another determinant for a successful policy implementation.

Payment levels were valued differently by the various groups. The most frequent answers of farmers were: the payment is sufficient (35%), payments will never be sufficient (35%), and payments have been sufficient but now after an increase in production costs they are not (11%). The latter was particularly mentioned in the small lowland PLAs. One regional MoA representative believed that some payments could be even lower. All in all, the payment level was not seen as inappropriate or as a reason for non-participation in an AES in the future.

Only one specific scheme was mentioned as not sufficiently supported and it is payment for cutting permanently water lodged grasslands.

Another important determinant is advisory help in negotiating and setting up a contract. Farmers were asked whether there was somebody in the region who could help them with the contract. Around 50% of the farmers mentioned the regional MoA as the only or main partner in the region. Differences in the performance of the regional MoAs were expressed. Some were highly valued and some were not visited by farmers because they did not believe there was any advice available. However, the capacity of the regional MoA to help farmers was very limited and consisted mainly of assistance with filling in the application forms. In a few cases, regional MoAs also helped in negotiating with the PLA administrations. The remaining 50% of farmers answered that there was nobody available to help them set up their contract. In the small PLA III with mainly large farms, some farmers stated that they did not need any help. No interviewee mentioned the farmers associations have any role in this respect.

In addition, conflict resolution arenas are crucial for long-term successful contract management. These could be independent bodies respected by both parties of the contract with capacity and power to find solutions when parties disagree. A conflict resolution mechanism was not designed in 2007, the first year of the policy implementation. However, a growing number of conflicts resulted in such an arrangement being set up in the second year. Under this conflict resolution mechanism, one of the options was to ask directly at the central MoA for help when the mechanism controlled by a regional state body (e.g. a regional MoA) failed. Surprisingly, only one respondent in the case study knew about this mechanism (one person from a PLA administration). Still, some farmers (not many), even though they did not know about this conflict resolution mechanism, intuitively called the MoA for help, especially in cases of disagreements with PLA administrations. The help from the central MoA was reported as being quite effective for those few farmers, particularly in arranging the necessary next steps.

As earlier stated, trust between the contracting parties is a very important determinant for the successful implementation of contracts. In our case study we found that it was one of the most important determinants. We differentiate in the following between building trust and actual trust.

We empirically subdivided farmers and administrators' groups to assess the effort of state administrators (both MoA and PLA) in building trust. There is a clear distinction between the two groups of PLAs. More farmers in PLAs I and III than in PLAs II and IV could see that the state administration tried to build trust relationships with them (30% in I and 57% in III vs. 19% in II and 14% in IV). The comments of PLA staff support these findings. Yet, even the administration in PLA III, regarded by 57% of the farmers as investing in trustworthy relationships, reported that: "We try to build the trust; we believe we are a reliable partner for the farmers, but this is not currently a priority for us, despite the fact that we recognise it as a long-term goal".

When farmers were asked about their actual trust in governmental bodies (in our case, the MoA and PLA administrative bodies as their partners in the contract) the difference between the two groups of PLA was even more notable. In PLAs I and III, the trust of farmers in their contract party was quite high; 90% of farmers in PLA I and 75% in PLA III trusted their contract party. A typical statement regarding this was: “We can make agreements with them, they are reliable and our partners”. In PLA I farmers mentioned previous good experiences with the PLA administration, which helped them deal even with the difficult implementation period of ENVI-tier without great problems.

The share of farmers trusting in their administrative contract partner was only 27% in PLA II and 29% in PLA IV. Indeed, extremely bad experiences with the PLA administration and corresponding mistrust were reported by more than 25% of farmers in PLAs II and IV. As an example: one non-assertive farmer was pushed to change from AES to national scheme on several plots. He had to carry out changes in farm practices, which caused significant economic losses and organisational difficulties, which were not sufficiently compensated under national scheme. The farmer felt he had no choice despite actual possibility to give up all AES support as an option. In PLA II in particular, the PLA administration did not act in a coherent way and therefore farmers experienced different treatment from different administrators. A clearly distinct rating among the PLAs is obvious from the summary in Table 4.

Looking at this more closely, the level of trust had variations within each PLA. Trust relationships usually depend on experiences with specific/concrete people. For example, a farmer who is a friend of a PLA employee reported: “We are OK with the PLA administration, we are young farmers – more environmentally concerned – but it is strange how authoritative they are towards our old neighbouring farmer”. In cases where the approach of PLA administrators was too authoritarian, farmers reported that during contract negotiations they were forced into agreements which were unfavourable to them. Thus, some farmers reported having suffered economically.

As stated earlier, farmers can choose only between applying for an AES for their total grassland area, or not applying at all. The most vulnerable farm type to this approach seems to be the family farm which has a high proportion of valuable grasslands, as these might undergo a severe cut in income. Equally it is difficult to take the decision not to apply for grassland support if one possesses a large area of grassland in an unfavourable agricultural area. A manager of a large farm stated: “We are able to defend ourselves adequately and we do it, but I cannot imagine how the small farms cope with the approach of the PLA administration”. Family farmers said, for instance: “You know, they are the government, so we just signed” and “They know that we are weak.” When analysing the differences in statements and taking into account the characteristics of farms, it turned out that some farms were satisfied with the contract they had signed because there was no pressure on them. These tended to be the particularly large farms with a small share of valuable grassland and a capable manager. The evidence collected shows

Table 4: Farmers' view on their relationship with the PLA administration.

How would you as farmers demonstrate and describe your relationship to the PLA administration (total of 46 interviewees)?	PLA I	PLA II	PLA III	PLA IV
We can agree, the relationship is solid	75%	23%	71.4%	14.3%
We can agree, but with difficulties	17%	12%	0%	0%
The relationship is not solid: the PLA work is not consistent, they are arrogant towards some farmers, they treat farmers as enemies, they do not have skills in communication, they do not see that protection would not work without the farmers	0%	59%	14.3%	85.7%
Do not know	8%	6%	14.3%	0%

Source: Own data.

that the difference in the natural value in one PLA most probably contributed to approach of PLA administration to farmers does not fully explain the difference in the trust level between parties in two groups of PLAs. The difference stems from the different approach of PLA administration. One representative of PLA II for example explained that they do not understand farming sufficiently and do discuss the impact of conservation on field level, which means the farm level impact is overlooked. And therefore they are sorry for pushing farmers to unfavourable economic conditions. While representative in PLA I discussed the needs of farmers on farm level where needed and tried to find compromises, which was in interviews appreciated by farmers.

The farmers' views on the relationship with their contract party are further outlined in Table 4.

Trust relationships always have two sides. Opportunistic behaviour reported by some farmers had a negative impact on their trustworthiness from the perspective of the administrative body, and might have made the contract negotiations more difficult. Administrators, likewise, acknowledged the tendencies for strategic behaviour by some farmers.

A majority of the farmers (70%) in PLAs I and III stated that the policy implementation was successful. However, in PLAs II and IV, less than half the farmers believed the same (44% and 29%, respectively). While farmers in PLAs I and III mentioned difficulties and how smooth it was to overcome them, farmers in PLAs II and IV expressed a wish for a substantial change in the approaches of the PLA administration concerning the contracting.

To summarise, our empirical material showed the determinants for a successful policy implementation, based on private-administrative contracting relationships.

6. Discussion

When analysing institutional change, many scholars, among others Uslaner and Badescu (2002), have pointed to the particular role of trust in post-socialist countries. The empirical results of this study underline this in two ways. Firstly, the observation that investing in trust-building measures by state administrators

is a crucial determinant for a better implementation of an AES. Secondly, trust in regional-level administrative bodies can partly compensate for a lack of trust in central administrative bodies (in case they are trustworthy). The comparison of the two groups of PLAs provides evidence for this finding, but further research is required to strengthen this argument.

Farming on grasslands is not profitable in most areas of the study region. Therefore, most of the farmers feel under economic pressure to participate in the voluntary AESs in the respective protected areas. As a result, the uptake of the schemes is quite high and there has been almost no increase in abandoned land recently. Nonetheless, the involvement of regional PLA administrations in the tailoring of AESs to particular sites can discourage profitable farmers from participating in the schemes if the prescriptions for farming practice management decisions are too controlling and if too much power is exercised by the PLA administrative bodies.

The Czech Republic's policy evaluation at the national level did not provide for an understanding of the regional differences in the implementation of the rural development policies. One could argue that the final uptake of the schemes was sufficient and that the goal was reached. However, we have shown that in two out of the four PLAs the number of farmers who mistrust governmental organisations as partners in a contract is high. This endangers the renewal of the contracts in a significant part of PLA territory. Farmers would be even less likely to renew if the economic situation of farms were to stabilise in the future, or if the distrust among the parties increased. But the rate of renewal is still high (as the rate of current uptake suggests) in addition to the fact that the economic situation did not change in the regions. Concerning compliance to management prescription, the empirical material supports theory that explains why parties that do not trust the subject of the contract, are more likely to perform non-compliance to agreed rules (Slangen et al. 2008). On the other hand when farmers believe in the subject of contract one can assume that they are not only more likely to fulfil the obligations but some farmers can even perform better than the contract requires.

Theory concerning the consequences of not adapted institutional development and a mismatch between various elements of institutions (Williamson 2000; Slangen et al. 2008; Theesfeld 2009) was mirrored in the discrepancy between the quality of "handbook" (e.g. rules of contract) and "handshake" (e.g. relationship, trust, trustworthiness, reputation, sharing values) when implementing contracts as new forms of institutions.

Theesfeld (2009) explained that the discrepancy between formal and informal rules and high information asymmetry is widespread in transition economies. This, in turn, supports the persistence of the abuse of power. As a result, there might be a decrease in trust. The risk of this vicious cycle is always there when new institutions are formally introduced and if trust or distrust among the actors involved is decisive for the success of the implementation of that new institution, as shown here for the AESs.

The empirical material shows that the “investment” in trustworthiness from state administrations in two PLAs gave to both parties to the contract a higher capacity and commitment to overcome difficulties in the policy implementation.

In line with the findings presented, it appears that certain determinants of successful contract implementation have not been enhanced by the Czech government. Common values (Slangen et al. 2008) are not purposefully built, neither by the MoA nor by some PLAs. Governmental bodies seem to underestimate the “handshake”-type of characteristics of a contract and only try to improve the contract management by elaborating the formal rules, such as the monitoring and sanctioning systems.

The unbalanced risk sharing and unequal level of knowledge on both sides likewise does not support trust relationships.

Time inconsistency, already identified by Slangen et al. (2008) as a form of strategic behaviour by governments, adds to the hampering factors. Frequent changes of contract rules from the administrative side was mentioned by farmers as the most common reason for non-equal risk sharing and therefore hampering the evolution of trust.

In addition, the government does not invest sufficiently in communication strategies, e.g. by hiring advisors to improve its reputation. The result is the low level of farmers’ understanding of the actual environmental purpose of the contracting under the framework of the Rural Development Programmes. In contrast to Wilson (1997), who found that information provision seemed not to be important for farmers’ participation in environmental schemes, our results show that information among farmers and their belief in the information influence their perception of the quality of their contract. Thus, advisory help is needed not only to facilitate negotiations with the PLA administration, but also to help farmers believe in the long-term goal of the contract – the need for biodiversity.

7. Conclusion

We investigated the use of AESs realised through contracts between state administrative bodies and private farmers as one possible institution to stem biodiversity loss. Biodiversity is a commons, meaning it needs regulation in order that everybody can continue to enjoy its function. We were curious to know if the studied kind of institution has special requirements when it is applied to natural resource management and whether it has some particularities if applied in a transition country context.

The assumption had to be made that the success of a contract, understood as the implementation and realisation of the contract, is equal to the actual goal of preserving biodiversity. The latter, however, is not measured in terms of output evaluation in this study. In a large area, the increase and sustaining of biodiversity can be fulfilled neither by private agents only nor by state administrative bodies alone. Our research has shown that public-private contracts could be an effective hybrid institution helping in the management of such a shared natural resource.

We identified determinants that make such a contract realisation more likely. We have also highlighted the particularities of such an institutional solution in post-socialist countries. In particular, low trust and experience with low reciprocity could lead to a decrease in the willingness to participate in such management schemes. The case study proved that poorly developed informal determinants of contract realisation could lead to difficulties in implementing the targeted AESs. These findings are in line with previous research in economies in transition on the important role of low social capital and especially distrust.

Under trustworthy conditions, however, the difficulties in implementation are regarded as a new experience contributing to the accumulation of trust between the parties of the contract in the long run. Key determinants are also level of payment and farmers believe in the purpose of the policy. High or sufficient payments in combination with misinterpretation of the purpose of the contract could lead to misunderstanding of the determinants of the contract as such. Farmers could complain about the conditions of the contract, which are in fact relevant and should be required by state administration (e.g. some management prescriptions or control). When considering the results in the broader institutional context, the agri-environmental contract belongs to the group of support measures for the management of grasslands (direct payments, LFA payments, organic farming support). Farmers tend to not distinguish the types of support leading to an overestimation of management requirement for the AES.

It would be useful to study the dynamics of socially embedded institutions in the new post-socialist Member States in more depth in order to improve the effectiveness of contracts as a means of managing shared natural resources.

As we are dealing with natural resource management and not with business relations, the contracts need to take account of several particularities. Risk aversion and strategic behaviour need to be seen in relation to the natural conditions that prevail. Monitoring and controlling mechanisms need to be designed in a way that corresponds with the natural conditions. If the contract should function well, some informal norms should get more attention during the process of design and management of contract (e.g. building of trust, reputation, reciprocity, sharing values).

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