

Determinants of cost-effective management agreements – an Austrian implementation analysis

Marianne Penker

Institute of Agricultural Economics, University of Natural Resources and Applied Life Sciences
Peter Jordan-Str. 82, 1190 Vienna, Austria
penker@boku.ac.at

Abstract

In economic literature, nature is generally referred to as input for industrial or agricultural production or as a source of ecological services supporting productivity. However, this paper addresses nature as the deliberate outcome of human intervention in landscapes governed by management agreements. In this case, the ‘production of nature’ entails payments to landholders (mostly farmers) and expenses for administrative services, which raises questions about the cost-effective allocation of public funds.

An implementation analysis of Austrian management agreements sheds light on the central coordination of demand and supply of landscape enhancing services provided by individual landholders. Mechanisms for revealing regional preferences for landscape development are rarely applied. The actual impact of management agreements on the landscape depends on inputs such as:

- How ecologically valuable or promising the sites involved are,
- The efforts of skilled and committed landholders,
- Context-sensitive management techniques,
- Suitable equipment and material,
- Trust and networks,
- The degree to which institutions encourage efficacy and equity.

Examples illustrate how Austrian conservation agencies try to combine high-quality inputs for a cost-effective provision of on-farm landscape assets.

Keywords: management agreements, agri-environmental policy, countryside, landscape development, policy implementation

JEL-Codes: Q28, R52

1 Introduction

Because of altered recreational requirements, higher environmental awareness and increased mobility, societal preferences for rural areas have changed. Besides the production of commodity goods, farmers are expected to fulfil services of countryside stewardship (referred to in this paper as eco-services). Due to high transaction costs direct ‘Coasian’ contracts between farmers and non-farmers are very rare. Government agencies conclude management agreements with individual landholders on behalf of

the heterogeneous group of non-farmers. The centrally co-ordinated provision of landscape goods involves compensation payments to landholders (mostly farmers) and expenses for the administrative services of the public sector, which amount to about 10% of the compensation payments (Falconer, 2000). These costs raise crucial questions about the cost-effective implementation of management agreements.

The implementation of management agreements confronts public authorities with the following challenges:

- Maximum achievement of ecological and recreational objectives with limited public resources;
- Direct bargaining with landholders;
- Divergent interests of landholders, conservationists and tourists;
- Co-ordination of numerous organisations and individuals;
- Targeted PR and marketing in order to win partners in agriculture, forestry, tourism, NGOs and communes.

The scientific literature on management agreements focuses primarily on policy design (e.g., Hodge, 2001; Dabbert et al., 1998; Latacz-Lohmann and Hamsvoort, 1998; Holm-Mueller et al., 2002; Lowe et al., 2002; Whitby, 2000) and on questions of uptake (e.g., Falconer, 2000; Morris and Potter, 1995; Geoff et al., 1999; Wilson, 1997). The success of management agreements has predominantly been assessed on the basis of financial input (payments to farmers) and uptake, i.e. the number of holdings and the area of land included in agreements (Hanley et al., 1999). Peculiarities of the implementation process such as face-to-face motivation and mechanisms for selecting ecologically valuable sites and contractors are scarcely regarded as determinants of the actual impact of management agreements on the landscape.

2 Material and Methods

Individual management agreements are embedded in either provincial or EU agri-environmental schemes. Political objectives underlying agri-environmental schemes are manifold; they range from the improvement of scarce resource allocation, to supporting rural employment and the redistribution of income between different groups in society (Kaechele and Dabbert, 2002). This paper focuses on those agri-environmental schemes that are intended to improve the endowment of landscape goods, and consequently demand for active eco-services such as the planting of hedgerows, willow pollarding, reverting arable land to grassland or the cultivation of species-rich flower strips. Unlike other EU agri-environmental schemes offered in Austria, the landscape-oriented schemes are co-administered by the provincial agencies for nature conservation. The process of their implementation is the subject of this paper.

Conceptually, the analysis of this process rests on theories of implementation research and new institutional economics. It synthesises the results of two studies on the implementation of management agreements in Austria (Penker, 2001; Wytrzens et al., 2002). The empirical results presented here draw on analyses of policy documents, but chiefly on mail questionnaires and semi-structured oral

interviews of government experts in the nine Federal Provinces and of national agencies, project officers and conservation experts, all involved in the design or implementation of stewardship schemes. Initial exploratory surveys were carried out during the period July to November 1999. They were repeated in the form of more detailed and structured follow-up interviews from June to August 2001. In accordance with methods of qualitative comparative content analysis (Mayring, 1995), the information collected in those two surveys was transcribed, summarised, annotated, structured and subject to comparative analysis with regard to peculiarities in the implementation process determining the cost-effectiveness of management agreements.

The first part of this paper gives a general overview of the characteristics of management agreements as implemented by the Austrian conservation agencies. The following section illustrates the implementation process of management agreements. It focuses on determinants for successful implementation and tries to systematise the causes of deviations in the actual outcome of management agreements from the intended landscape effects. Examples illustrate how Austrian government agencies try to co-ordinate the demand and supply side of stewardship programmes. The paper concludes with some general remarks on the shortcomings of centrally governed landscape provision by management agreements.

3 Characteristics of Austrian management agreements

In order to determine the characteristics of management agreements as implemented by the Austrian conservation agencies from an institutional economic point of view, the following questions are addressed (see Gawel, 1996):

- How do Austrian management agreements co-ordinate the conflicting interests of landholders and the beneficiaries of eco-services?
- Which rules determine the implementation of management agreements in Austria?
- Which societal groups and organisations are involved in policy design and implementation?

3.1 Co-ordinating mechanism

Institutional settings for the development of landscape assets in rural areas range from decentralised, self-organising market mechanisms to centralised planning (such as conservation covenants, labelling, zoning, mandatory restrictions, involvement of private sector organisations; for more details see Hodge, 2001). The respective advantages and disadvantages of different institutional settings arise from variations in the accuracy as well as in the costs of information, bargaining, planning and monitoring. Furthermore, making a choice between alternative institutional settings always affects questions of equity, of societal burden and benefit sharing between different societal groups. And last but not least, on account of the ecological and socio-economic diversity of European landscapes, context-sensitive solutions (Trudgill and Richards, 1997) are required; i.e. eco-services must be adapted to the specific local environmental and socio-economic conditions.

The allocation of biotic resources on the basis of current market and policy signals is inefficient and leads to losses in social wellbeing. Market and policy failures highlight the need for mechanisms to co-ordinate the activities of the landholders, who are able to enhance landscapes, and those benefiting from their eco-services. Voluntary management agreements between landholders and government agencies represent a promising and EU-wide applied instrument for on-farm landscape enhancement.

The prevailing management agreements are embedded in provincial or EU agri-environmental schemes, which determine the payments per ha/m/unit, preconditions for successful application, details on eco-services and other management restrictions. Thus, demand and supply of landscape goods is co-ordinated centrally on the provincial, national or EU level.

Landholders can secure fixed payment for traditional management practices (traditional orchards, farm gardens, mountain meadows), the creation of new landscape features (hedges, regenerated wetlands, planting of traditional orchard landraces) or special eco-services for species protection. One part of the payment compensates for foregone revenues, the other part for the eco-services performed. The agreements are generally for a period of five, ten or twenty years (Table 1 and Table 2) and the assumption is that at the end of the period they can be renewed or renegotiated.

Table 1: EU-agri-environmental schemes in 2001 (BMLF 2002)

EU agri-environmental schemes *	Characteristics	Since	Area (in ha)	Holdings	Payments to farmers (in Euro)
Small Structures	Maintenance and restoration of small landscape features (max 254,35 per ha, bonus for small fields (0,1 to < 0,5 ha 109, 0,5 to < 1,0 ha 36.33))	1995	4,729	1,298	415,000
Ecologically Valuable Areas	Maintenance and enhancement of agricultural habitats of extraordinary ecological importance (max. 872,07 per ha)	1995	38,347	17,615	15,220,000
New Landscape Features	Creation of habitats and wildlife corridors (max. 835.74 per ha)	1995	5,693	3,088	3,163,000
Conservation Plan	Co-operation in developing a conservation plan (72.67 per site, max. 10 sites)	2000	1,897	485	166,000
Total of the 4 schemes co-administered by conservation agencies **					19,964,000
All 32 EU agri-environmental schemes **					588,473,000

* Period of 5, 10 or 20 years; ** Sum of areas and holdings are not available due to overlap in cases where the same farmer or area participates in more than one scheme

At first sight, the management agreements as outlined above do not resemble a ‘Coasian bargain’ since landholders and beneficiaries do not negotiate with one another directly. Government agencies articulate the demand for landscape assets on behalf of local residents, city dwellers looking for recreation in rural areas and tourists visiting Austrian landscapes. However, with financial incentives provided by the taxpayer, government agencies act as intermediary broker and create quasi-markets for landscape goods and eco-services.

Table 2: Provincial stewardship schemes in 2000 (Information provided by project officers)

Stewardship schemes of the Federal Provinces		Period of agreements	Since	Area (in ha)	Holdings	Payments to farmers (in Euro)
Burgenland	Landschaftspflegefonds	1	1992	2,960	1,606	800,000
Carinthia	N. A. B. L.	1 to 20	1994	150	100	36,000
Lower Austria	Niederösterreichischer Landschaftsfonds	5, 20	1993	200	100	58,000
Upper Austria	Pflegeausgleich für ökologisch wertvolle Flächen	5	1985	910	705	277,000
Salzburg	Landesprogramm	5, 10	1992	n/a	1,700	1,396,000
Styria	BEP – Biotop Erhaltungs- und Förderungsprogramm	4, 6	1987	1,456	1,122	458,000
	BIOSA – Vertragsnaturschutz im Wald	n/a	n/a	352	4	41,000
Tyrol	Feuchtgebietsförderung	5	1992	620	1,000	254,000
	Lärchenwiesenförderung	5	1993	283	1,000	174,000
	Naturschutzfonds	n/a	n/a	n/a	n/a	236,000
Vorarlberg	Landesprogramme des Naturschutzfonds	1	1998	200	30	73,000
Vienna	Wiener Vertragsnaturschutz	1 to 5	1999	4	7	4,000
Total						4,807,000

3.2 Regulations, rules and rights

Whereas Austrian landholders face mandatory legal restriction without any compensation as regards abiotic resources such as water, soil and air, they have a general right to affect the quality of biotic or cultural landscape features (see Figure 1). Thus, in the present institutional setting, society has no prior property rights (either legal or presumptive) to positive agricultural externalities such as scenic landscapes or semi-natural habitats (Bromley and Hodge, 1990). According to the ‘provider gets’ principle for public goods provision (Hanley et al., 1998), the beneficiaries of biotic and cultural landscape assets have to reward the landholder for extra expense or foregone profit.

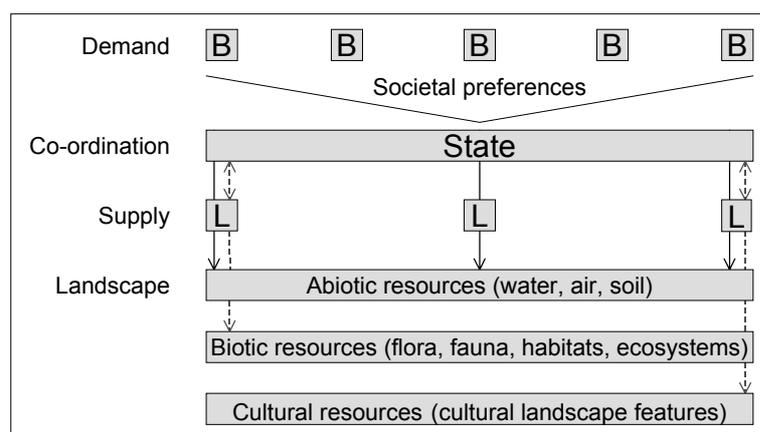


Figure 1: Co-ordination mechanism

L ... landholders, B ... beneficiaries of eco-services; -> governance by mandatory regulations; --> governance by individual management agreements

As they were unable to govern on-farm biodiversity with general legal restrictions, in the 1980s some conservation agencies began to draw up contracts with farmers. Payments came either from the general conservation budget or from particular landscape funds instituted in the same period and financed by a landscape tax (on mining of gravel, waste dumps and other interventions in the landscape). The allocation of compensation was based on regional stewardship schemes and on the broad involvement of landholders, the local population and conservationists.

After EU accession in 1995, Austria responded rapidly to the EU agri-environmental regulation (Council Regulations 2078/92 [succeeded by] 1257/99). In 1997, 85% of the Austrian utilised agricultural area in objective 1 zones (EU 15 average 10%) and 67% (EU 15 average 28%) in non-objective 1 zones was managed in accordance with at least one agri-environmental scheme (European Community, 1998). And also for the period 2000 to 2006, Austria was able to secure a comparatively high share, 16,5% of the total EU 15 agri-environmental budget (BMLF, 2001). Since 1995 the provincial stewardship programmes have been progressively substituted by four standardised EU agri-environmental schemes focusing on landscape enhancement (Table 1). Due to their standardisation, EU agri-environmental schemes allow only for small deviations between the Provinces. Unlike the other 28 EU agri-environmental schemes, they are characterised by a clear landscape focus and are co-administered by the conservation agencies in the nine Federal Provinces.

Provincial stewardship schemes (Table 2) play a financially small but still important subsidiary role in addition to the EU agri-environmental schemes. In general, they focus on agreements with non-agricultural landholders, with farmers of holdings that do not meet the EU requirement of a minimum size of 2 ha, or on very specialist eco-services in protected areas. Hence, they allow for additional flexibility and decentralised context-sensitive solutions.

The individual management agreements are determined by the close and detailed rules of stewardship schemes, which again have to fit into the general frame of international treaties, EU directives and provincial regulations for nature conservation (see Gellermann and Middeke, 1991). Due to the high degree of prescription and standardisation, the prevailing management agreements lack certain characteristics of 'real' contracts under private law. The 'public law character' of such agreements also becomes manifest in the language of the project officers, who tend to speak of subsidies, applicants, approvals and obligations rather than of agreements, contracting partners or eco-services.

Besides lower transaction costs, the standardisation of the prevailing agreements has another advantage. Because the rules are detailed, transparent and predictable, government agencies are prevented from acting arbitrarily or misusing their position of power. Since no landholder is confronted with the alternative either to sign an agreement or to face mandatory restrictions of land use (by law or by integration of the land into a protected area), indirect pressure is not applied either.

3.3 Organisations involved and levels of decision-making

In Austria, nature conservation comes under the legislative and administrative competence of the Federal Provinces. With the EU agri-environmental schemes, other organisations also became involved in nature conservation (EU Commission, Federal Ministry of Agriculture, the Agrarmarkt Austria, pro-

vincial and regional chambers of agriculture and provincial agencies of agriculture). Plural multi-level co-ordination and decision-making results in higher transaction costs. NGOs are also increasingly involved in the implementation of management agreements. They provide highly qualified and motivated manpower for site inspections and monitoring labour. Thus in terms of the organisations involved nature conservation has become more complex during the last decade.

Strategic planning of the four countryside stewardship schemes co-financed by the EU is done in collaboration between representatives of national and provincial authorities, and in association with an advisory board including representatives of two umbrella organisations of NGOs engaged in biodiversity conservation. Central strategic planning and standardised operational management by the Agrarmarkt Austria, a national authority attached to the Federal Ministry of Agriculture, has brought a gradual levelling of regional procedural particularities of management agreements.

Besides their participation on the advisory board, the influence of the provincial conservation agencies is confined to the issuing of project confirmations, which are required for a successful application for a management agreement. If there are more applications for management agreements than the budget allows, conservation agencies will have to choose from among the various sites and contractors.

4 Determinants of a successful implementation process

Whereas agricultural production focuses on the output of commodity goods, the emphasis of eco-services lies in the creation and enhancement of landscape goods. In this regard, Nuppenau (2001) refers to a ‘bio-economic transformation’ of human-controlled inputs into biological output. Since management agreements generate results relevant to both the socio-economic and the ecological sphere, it seems useful to distinguish between output and outcome (Knoepfel et al., 2000). The *output* (change in human behaviour) is only a means to an end. The actual impacts on the landscape are referred to as *outcomes*. Table 3 gives some examples of outputs and outcomes of management agreements.

Table 3: Results of management agreements broken down into output and outcome

	Results	Examples
Output	Administrative services by government agency	Site inspection, conclusion of contracts, compliance check, evaluation, PR, consulting, data management
	Outsourced administrative services	Site inspection, compliance check, evaluation carried out by NGOs or private business
	Eco-services provided by the landholders	Interventions for the enhancement of landscapes, the development of habitats and species protection
Outcome	Habitat-related ecological results	m, m ² , number of newly established, cultivated or developed habitats, wildlife corridors, buffer zones
	Non habitat-related ecological results	Changes in microclimate, changes in population size of endangered species, effects on biodiversity
	Socio-economic results	Increase in awareness, access to hot spots of recreational value, preservation of agricultural land use (avoiding large forested areas)
	Unintended results	Negative side-effects on endangered species, shading of adjacent cultures, excess mown grass that is of no use

The success or failure of management agreements depend on:

- the ratio of input of financial and labour resources and the output of services (efficiency) and
- the ratio of intended and actual outcomes in the landscape (effectiveness, see Figure 2).

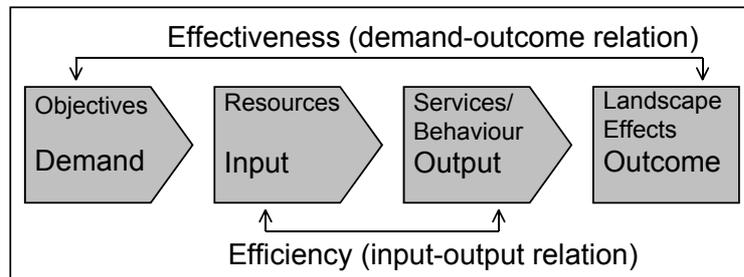


Figure 2: Efficiency and effectiveness of management agreements

Stewardship schemes are implemented in stages, and every stage can be crucial for failure or success (Figure 3). The first condition of success is that a large number of all potential contractors are interested in co-operating and in providing financially rewarded conservation services (degree of takeup). An increasing number of interested contractors is a precondition for competition between landholders and between the sites proposed for management agreements.

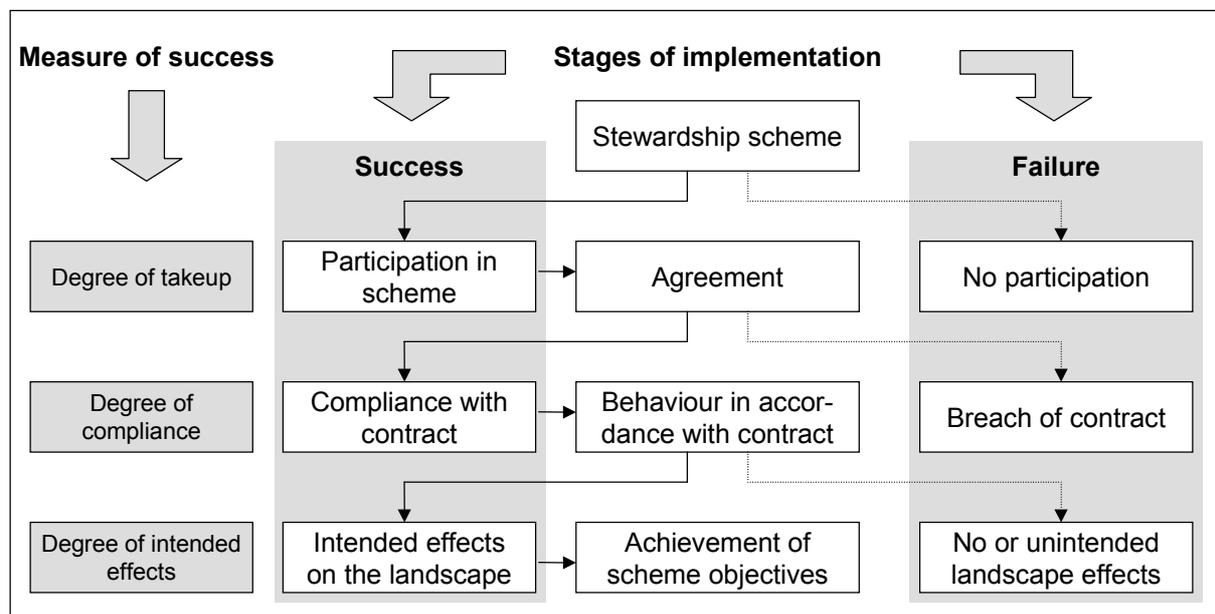


Figure 3: Implementation of stewardship schemes

However, the conclusion of a contract does not necessarily guarantee the intended outcome. The stewardship scheme will prove to be effective only if the contracting landholder conforms with the agreement and the rules of the stewardship scheme and fulfils all the obligations he or she has committed to (degree of compliance). But even then, the intended effects on the landscape might fail to materialise if the experts responsible for planning the scheme have misjudged the causalities between conservation services and their actual impacts on the landscape. This and various other causes for the deviation of the actual outcome from the intended one are systematised in Table 4.

Table 4: Causes for deviation of the actual outcome from the intended impacts on the landscape

Controllable causes of deviation		Uncontrollable causes of deviation	Alleged deviations
Planning failure	Implementation failure		
Deficient assessment of demand (failure in problem analysis)	Selection of inadequate sites (low ecological value, low potential for development)	Negative externalities of other forms of land use (e.g. trans-regional emissions, intensive recreational use)	Faulty deduction of target values from objectives
Unrealistic formulation of objectives (failure of objective setting)	Faulty or insufficient supply of services by deliberate or negligent breach of contract	Degradation of important supplying habitats (gene pool for endangered species)	Unsuitable indicators
Deficient knowledge of causalities (failure of intervention planning)	Unfavourable timing	Weather (excessive rainfall, unusual temperatures)	Faulty determination of actual values
Deficient estimation of incentive effects (failure of cost planning)	Deficient equipment and operating resources (defective seeds, poorly adapted seedlings)	Catastrophes (e.g. epizootic, fire, floods, mudflows, avalanches)	Faulty determination of deviation

In order to bring the factors determining efficient and effective management agreements into an overall economic framework, demand and supply need to be considered. The next paragraph outlines Austrian strategies for identifying the societal demand for on-farm landscape goods and eco-services.

4.1 The demand for landscape goods and eco-services

The demand for on-farm landscape goods and eco-services depends primarily on the preferences of the local and regional population. But it might also have a national or even global dimension, since use values (recreation, sports) and non-use values (option, existence and bequest value) of biotic and cultural landscape features could be of supra-regional or even international relevance. Thus, landscapes of high ecological and recreational value such as the Alps attract tourists, adventurers and scientists from all over the world. Because of the increasing mobility of tourists, city dwellers and sportsmen, they benefit increasingly from eco-services provided by landholders of other regions than their home areas. Since demand for eco-services is not limited to the regional level, it can be argued that stewardship programmes should co-ordinate demand and supply on the provincial or – as in the case of EU agri-environmental schemes – even on the national and EU level.

Assuming homogeneous quality and substitutability between different landscape types, a cost-oriented trade off between two landscape types can be illustrated by an indifference curve (see Figure 4). The indifference curve shows all the possible combinations of two landscape types that will give the same utility. L_1 , for example, demonstrates the maintenance of wetlands, L_2 the maintenance of species rich meadows on limestone. 'A' points out the present combination of wetland and limestone meadows areas covered by contract. The utility of the present situation is represented by the indifference curve I_A . The production possibility frontier (P) shows all possible combinations of wetlands and limestone meadows which could be included in management agreements using the given financial and personnel resources (for information, payments to farmers, monitoring, etc.).

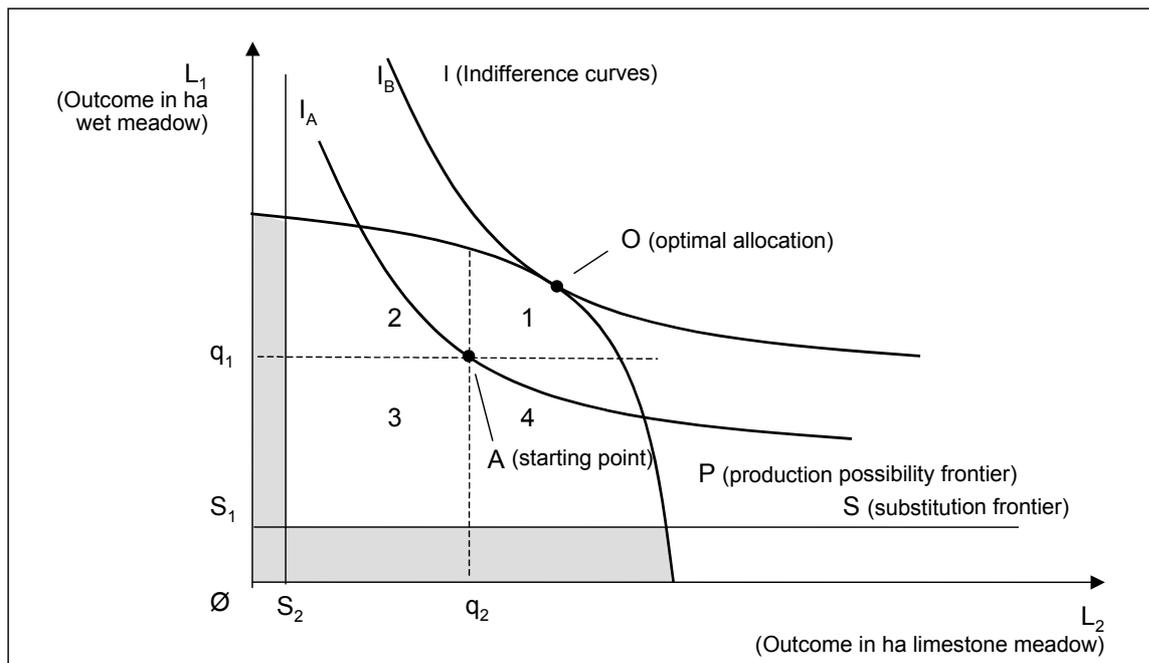


Figure 4: Trade-off between two different landscape types (L_i)

Figure 4 illustrates the results of efficient and inefficient resource allocation, such as:

- Increase in wetlands and a decrease in limestone meadows (quadrant 2),
- Increase in both, wetlands and limestone meadows (quadrant 1),
- Increase in limestone meadows and decrease in wetlands (quadrant 4) and
- Decrease in both, wetlands and limestone meadows, due to total misallocation (quadrant 3).

An optimal allocation would result in the point ,O', which indicates the highest utility (I_B) that can be reached with the given resources (P). S_1 and S_2 represent substitution frontiers set according to societal preferences. Therefore, decision-makers should avoid resource allocations which do not provide a minimum quantity of wetlands or limestone meadows (grey area in Figure 4).

In practice, however, there is little information on the actual societal demand for different landscape types and how it changes with time and growing income (Whitby, 2000). Figure 5 is based on the presumption that the demand for landscape goods and eco-services changes is context-sensitive, i.e. it may depend on the regional landscape endowment (stock of natural resources), household income and the socio-cultural context. In general, societal preferences and demand for landscape features and eco-services can be determined by economic, social or political assessment.

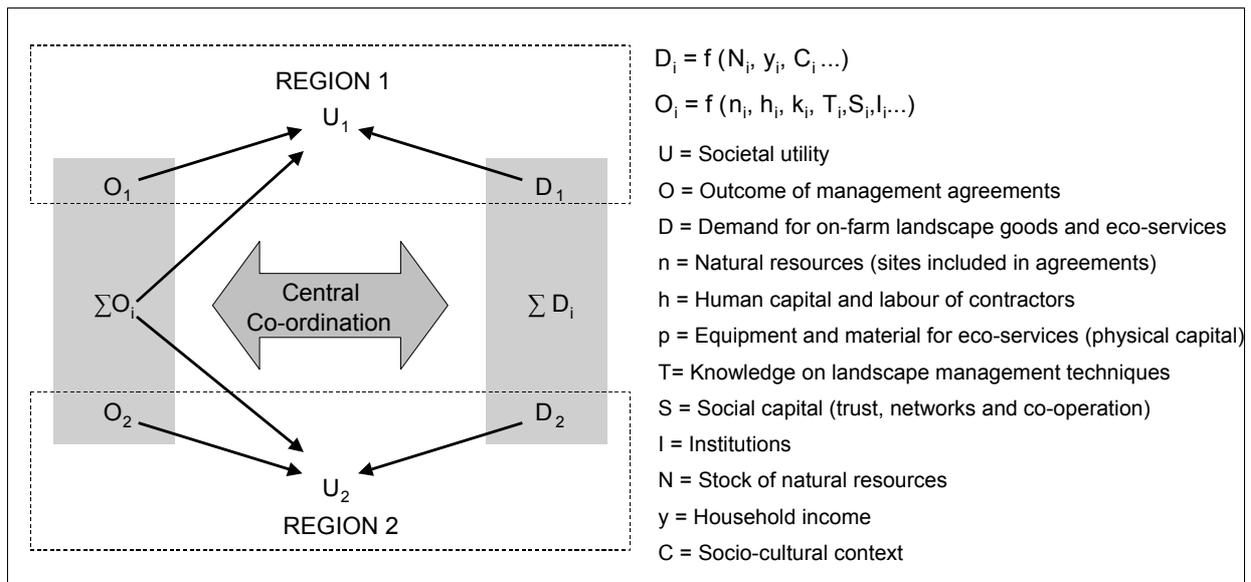


Figure 5: Utility of stewardship agreements: demand for and supply of eco-services

4.1.1 Economic assessment of preferences and demand

Recognition of the societal value of bio-diversity and landscape features is crucial in order to generate support for preservation efforts (Baumol and Oates, 1988; Van Kooten, 1993). However, it is often difficult, if not impossible, to accurately identify the benefits provided by scenic, diverse and resilient landscapes. Many potential benefits may be unknown at present or impossible to quantify within the planning horizon applied. Consumers may have too little knowledge about on-farm landscape assets and eco-services to make an informed decision on preferences and values. And they might be reluctant to make (hypothetical) tradeoffs between commodity goods and landscape assets (Clark et al., 2000). Moreover, important methodological questions about valuation are still under discussion, such as the question of the integration of positive interest rates, or how to account for the irreversibility associated with the extinction of species (Pearce and Turner, 1990; Kula, 1992; Pearce, 1993).

Despite scientific efforts to place a valuation on the landscape-enhancing services of Austrian farmers (Hackl and Pruckner, 1997), and a bundle of well-established valuation methods (such as hedonic price techniques, travel cost method, contingent valuation or choice modelling), Austrian stewardship schemes are not based on economic assessments of preferences and the demand for landscape goods and eco-services.

4.1.2 Social assessment of preferences and demand

Besides economic assessment the demand question can also be addressed by social assessments in a strategic conservation planning process involving participants from both public and private sectors. This participatory planning method emphasises the role of local institutions – both formal and informal – in providing people with the means to control their landscape. Participation gives local people a vested interest in landscapes, and – a point heavily emphasised by the interviewees – greater commitment to achieving common goals of conservation. Representatives of public authorities moderate the discussion and give advice on how to implement and finance the agreed measures (EU agri-

environmental schemes, provincial programmes, private commitment, NGOs). Participatory social assessments have major advantages:

- Local preferences are revealed and landholders can identify opportunities for developing landscape assets on their land.
- Personal contact encourages co-operation between farmers, which is crucial for the development of wildlife corridors and other integrated conservation approaches.
- Mutual learning about the interdependencies between landscape development and agricultural production is encouraged.
- Participation empowers people to mobilise their own capacities, be social actors rather than passive subjects, manage resources, make decisions, and control their regional landscape development as a major determinant of their quality of life.

However, the conservation officials interviewed also pointed out major difficulties and disadvantages with social assessment and participation. It is literally impossible to involve all the different groups of society in the discourse, due to lack of interest, time and social empowerment. Moreover, there is a need for institutions, mechanisms and procedures to support fair procedures for negotiating conflicting interests and settling disputes. However, the biggest disadvantages of social assessment are the high costs (especially in terms of labour and time). Hence, only one of the nine Provinces undertakes such assessments on a regular basis at the local community level. Others have experimented with scenario planning and participatory strategic planning of local landscape development.

4.1.3 Political assessment of preferences and demand

Generally, the collective demand for landscape assets and the overall goals of Austrian stewardship schemes are determined in the political arena. Representatives of Federal and Provincial governments, farmers' unions and nature conservation organisations negotiate the schemes. Thus demand is defined in a political-administrative debate, and is manifested implicitly in the level of financial incentives offered for the various conservation services.

Whether this politically determined demand meets the actual preferences of the people living in or visiting the rural areas is not systematically verified by economic or social assessments. Moreover, extra private willingness-to-pay for on-farm landscape assets is not captured in stewardship schemes. But there are other possibilities for individuals to support on-farm biodiversity conservation:

- A growing number of consumers are willing to pay extra for foodstuffs promising positive biodiversity effects (labels indicating landscape-enhancing forms of agriculture such as 'Pro Landschaft' organic food or agricultural products from national parks).
- It is assumed that a considerable share of the 45 million euros (OEIS, 2001) which Austrians donated for ecology, environment and animal welfare in 2000 went to NGOs committed to biodiversity conservation and landscape enhancement.
- Tourists support ecologically sound forms of agriculture by staying on farms offering eco-tourism, and Austrian rural tourism in general depends on diverse and scenic landscapes.

The political–administrative process of decision-making on stewardship schemes is dominated by national representatives of agriculture. The preferences and priorities of residents, conservationists and tourism organisations are barely integrated into the design of stewardship schemes. The missing consumer orientation is also indicated by the payments for eco-services, which depend solely on the foregone profit and the extra expenses of landholders, whereas varying societal values of different landscape goods are not considered. Thus, centrally governed landscape enhancement by management agreements is supply driven rather than demand oriented.

4.2 The supply of landscape goods and eco-services

Management agreements are based on the assumption that humans not only deplete the stock of natural resources, which is the most pressing topic of environmental politics, but are also able to enhance nature by controlled intervention into ecological systems. In an analogy with the production process of commodity goods, the outcome of management agreements is primarily a function of land and human effort. These two input factors also define the calculation basis for the prices of eco-services, which are fixed for the programming period:

- The foregone profit of other land uses (opportunity costs of management agreements)
- Expenses for eco-services (labour costs).

But the implementation analysis in the nine Federal Provinces also identified other ‘softer’ determinants for high-quality outcomes of management agreements. The two decades of experience of management agreements in Austria has demonstrated that payments for land and labour alone do not necessarily guarantee the intended change in the landscape. The success of management agreements is also based on the skills and commitment of contractors, on adequate equipment and material, scientific and endogenous site-related knowledge, on suitable management techniques and on institutions supporting an efficient and fair co-ordination of demand and supply (see Table 5).

Project officers are confronted with different budget constraints on the EU, national and provincial level. EU and national co-financed agri-environmental payments are determined for a period of several years. Thus, more flexible provincial funds are used to tap the full potential of national and EU funds and to achieve as many conservation objectives as possible. The high takeup and high effectiveness of management agreements are supported with appropriate measures of information and motivation, by appropriate selection of sites and human resources, by monitoring and by participatory processes on the local level.

Table 5: Inputs and management implications

Input	Description	Management implications *
Natural resources	Adequate sites (ecological value, endangerment, potential for development, habitat corridors)	Habitat maps, 'market places', site inspections, formal decision support for comparative, intersubjective ecological assessment
Labour and human capital	Human efforts to enhance landscapes, skilled and committed contractors	Definition of priority target groups (education, age, membership in environmental NGOs, organic farmers)
Physical capital	Adequate equipment and material	Collective ownership, co-operatives lending equipment, NGOs providing site-specific seeds and plants
Knowledge	Scientific and endogenous knowledge of context-sensitive management techniques	Trial and error, demonstration projects of NGOs, integration of endogenous knowledge and creation of region-specific knowledge by outcome-related payments
Social capital	Trust, networks, co-operation	Events and institutions (Conservation plan) providing face-to-face contact between farmers, project officers and beneficiaries
Institutions	Fair procedures for reconciling conflicting interests, incentives for innovation and efficiency through competition	Transparency and accountability of state behaviour, balanced multi-level governance, competitive outcome-related payments, participatory procedures guaranteeing fair negotiations, etc.

* *Italic ...* applied by Austrian conservation agencies

4.2.1 Natural resources

A given stewardship scheme usually covers different pieces of land of the same landscape type, but of varying ecological quality. And the quality refers not only to the present ecological value and its threat of deterioration but also to its future potential for development, which depends for example on climate or adjacent areas providing a gene pool. The cost-effectiveness of stewardship schemes can be improved significantly by selecting those sites promising the highest outcome when integrated in management agreements. In practice the selection of appropriate sites is based on site inspections and individual, subjective expert assessments. Since the budgets for compensation payments have been generous so far, all sites meeting the minimum requirements have generally been accepted. On the other hand, it is exceptionally rare for project officials to contact individual landholders of ecologically valuable sites and to actively motivate them to conclude a management agreement. Thus the characteristics of the land included in management agreements depend on the landholders' applications and are barely controlled by the conservation agency.

However, with increasing trust on the part of the landholders and thus decreasing transaction costs for participation, takeup has expanded. For some years now, in Lower Austria and Styria the number of application has exceeded the budget for compensation payments, so that project officials have had to choose between various applications. Project officers try to base the selection of sites on their present ecological value and their potential for development.

In a case study on species-rich wildlife strips, experts in Austrian nature conservation listed the following criteria for assessing the ecological value of a site: size of area, richness of plant species, degree of coverage, structure, soil quality, neighbouring structures, occurrence of very rare plant species. These criteria were weighed with the AHP method (Saaty, 1980) and applied to comparative site assessments by professional site inspectors in a demonstration project (Wytrzens et al., 2002).

However, formal support for comparative value assessments of different sites is not evident in practice. Spatial allocation criteria (connectivity of habitat networks) are scarcely considered. Regional conservation plans, if they exist at all, do not integrate voluntary management agreements; they focus rather on zoning and accompanying mandatory regulations. In addition, there is little societal discourse on desirable outcomes and priorities of management agreements, so targets are not set regarding either the intended number or area of the various landscape types to be contracted or the quality features of the outcomes.

In Lower Austria, a Province with relatively high numbers of applications, officials have tried to organise the selection process by holding a kind of ‘market place’ once a year, after the deadline for submitting applications has expired. A team of experts selects the most promising applications from the total received, by reflecting on spatial allocation and ecological site value, on the basis of relevant information provided in the application. Thus by a comparative assessment they are able to gain insight into the quantity and comparative quality of the sites offered and their relative value. This seems to be a pragmatic and promising process as long the application forms provide information on relevant selection criteria. However, the bigger the pool of proposed areas for management agreements the more probable it is that areas of high ecological value, of critical endangerment and of big development potential will be included.

4.2.2 Labour and human resources

The second input in landscape improvement, human effort, is also anything but homogeneous. A piece of land under a stewardship scheme might improve in ecological value when professionally cared for, but it could also deteriorate, even if the landholder complies with the management agreement and the rules of the stewardship scheme. Thus, the quality of human intervention has a decisive influence on the outcome of a management agreement. Training and extension-service support is intended to enable farmers to undertake the measures with confidence (European Commission, 1998). According to Dietl (1993), the effectiveness of incentive programmes is also determined by ‘fundamental institutions’. In the case of management agreements, the latter encompass a positive attitude on the part of the farm families towards landscape and nature conservation, knowledge about management impacts on the landscape, motivation and regional identity.

Agreements with young, dedicated farmers who do not intend to give up farming in the foreseeable future promise long-term co-operation. And long-term co-operation is preferable to a high turnover of contractors, because eco-services need time to show results and age is a decisive determinant of the ecological value of habitats. Besides the expectation of positive landscape effects, long-term agreements or the prolongation of existing agreements also promise a reduction in transaction costs, which are considerable when new contracts are drawn up.

A structural analysis of farmers in Lower Austria indicates that contractors differ from the average farmer. They are younger, better educated, they prefer to produce organically, they are more often members of environmental NGOs (Wytrzens et al., 2002). A greater pool of applications and targeted contracting with committed, skilled and well-trained landholders promises a higher quality of eco-services and hence increased effectiveness of management agreements.

4.2.3 Equipment and material

Besides land and human resources, inadequate equipment and materials can limit the success of management agreements. Due to a lack of specialised machinery (e.g., for removing and shredding vegetation on rocky and uneven pastures), some contractors have failed to provide the intended outcome. Interviewees regretted that, under the prevailing scheme, investment in new machines could not be financially supported. Consulting and financial support could encourage landholders to buy special machinery and equipment collectively or to rent it from co-operatives and machinery pools.

In addition, several management activities depend on seeds, seedlings and plants well adapted to the regional ecosystems. In some Provinces, conservation authorities co-operate with specialised NGOs in order to provide context-sensitive and well-adapted seeds and plants to the landholders.

4.2.4 Knowledge

There is little information on the interrelationship between human intervention and landscape development. Thus, political decisions on nature recreation or rehabilitation are made in the face of a high degree of uncertainty, which will be revealed only by learning from experience (Di Fabio, 1994). Centrally planned stewardship schemes with standardised management agreements run the risk of causing policy failure by giving inappropriate incentives, which result in unintended outcomes, or even in irreversible loss of development options. The risk of policy failure grows with the standardisation of management interventions in the landscape and with the loss of diversity in different forms of landscape management.

Prevailing management agreements are strictly management-oriented; i.e. the rules of the stewardship schemes detail not the outcome but the requirements on when to do what and what not to do at all. Thus, the present institutional frame of management agreements does not encourage farmers to act entrepreneurially, to introduce original ideas, to innovate more effective or less expansive eco-services or to be willing to take risks for the provision of landscape goods (Hodge 2001, 101).

The generation of regional landscape knowledge and innovative management techniques could be encouraged by performance-related payments, rewarding for the actual outcome compared with intended change or baseline conditions. This competitive setting would favour skilled farmers with innovative ideas and site-related knowledge, which matches the conception of farmers as entrepreneurs rather than highly subsidised welfare recipients. High transaction costs for contracting, monitoring and enforcement as well as the hazard of state arbitrariness are important arguments against outcome-oriented and decentralised strategies of landscape management. However, as asset specificity increases, more complex governance structures are required to eliminate or attenuate costly bargaining over specialised assets (Williamson, 1985). Thus, there is still scope for new institutions, encouraging competition, innovation and the generation and integration of site-related knowledge of the farmers.

For an effective implementation process, it is also worthwhile integrating NGOs, which possess specialised and regional knowledge. They point out ‘hot spots’ and situations calling for action, explore new management techniques and observe the actual landscape impacts of management agreements.

4.2.5 Social capital

If landholders can trust government agencies not to behave opportunistically or arbitrarily, they will be more willing to share confidential information, such as that on opportunity costs and actual efforts for eco-services. But they could also pass on relevant information for problem solving, such as information about difficulties in integrating eco-services in the conventional production process of commodity goods or ideas for improved management strategies. However, landholders will share this information only if they can be sure that it is used only for co-operative problem solving and not to squeeze their profit margins (Larson, 1992).

According to the project officers, trust is also a major driving force for uptake. There are local communities with 100% uptake, encouraged often by a single person, such as the mayor, representatives of farming lobbies or dedicated farmers. Other communities have shrunk away from co-operating with the conservationists. Accounts of the positive experiences of other farmers (Morris et al., 2000), face-to-face contact with project officers and other conservationists at regional events, and favourable reports in farmers' periodicals have successively built up trust and social capital. Project officials stated that trust built up by information, motivation and consulting is a decisive factor for high-quality outcomes of management agreements.

After some years of decline in face-to-face contact between conservation experts and farmers due to standardised application forms, Austria succeeded in integrating a new agri-environmental scheme for reinforcing communication: the conservation plan (see Table 1). Farmers get extra payments for co-operating in the establishment of conservation plans, on the farm or regional level. Socio-economic and technical requirements of the holding should be considered as well as the ecological and recreational values of the farmland. The intensive communication in the planning phase should help to impart knowledge on conservation objectives and on-farm landscape assets. Having regional conservation plans and involving several relevant farmers ensures that there is co-ordination among individual management agreements, which is crucial for the establishment of habitat corridors, buffer zones around particularly valuable areas or for the conservation of larger habitats. The conservation agency provides co-operating farmers with a folder illustrating the ecological on-farm assets and the eco-services provided by the farm family. This handout supports farmers in improving their eco-image for agro-tourism and direct marketing.

While the conservation plan is a new procedure for reintegrating farmers and their interests in the process of contracting, there are also attempts to bring farmers and beneficiaries of on-farm eco-services together. Events like school trips or farm open days should reveal the positive effects of agriculture on nature conservation and recreation. Cookery books edited by the conservation agency promote the private processing and consumption of agricultural foodstuffs, of landraces and wild berries growing in ecologically valuable areas.

4.2.6 Institutions

Institutions shape human interactions (North, 1990) and thus have a decisive influence on the development of man-dominated landscapes. Without government intervention, direct Coasian bargains be-

tween farmers providing eco-services and those benefiting from them would be very rare, due to the high negotiation costs of numerous agents, and the difficulty of excluding those not paying from the use of public goods (free riders). Although market failure provides the trigger for state intervention, this does not necessarily imply that there is a need for central state government to be involved. NGOs, local communities or private brokers could co-ordinate the demand for and supply of eco-services by farmers. For example, in a Carinthian community (Gemeinde Weissensee) hotels share the benefits of a scenic landscape directly with farmers by decentralised co-ordination on the local level. An agreed fee levied on the number of overnight stays is transferred directly to the local farmers.

However, clear rules and procedures reduce the uncertainty of interpersonal relations ('transactions', see North, 1990) and build a foundation of trust between small and large contractors (individual landholder and powerful government agency). Thus, the clear differentiation between situations where voluntary incentive measures are applied and those where mandatory state interventions are envisaged (zoning, prohibitions, obligatory authorisation) could decrease insecurity and build up trust.

Another question in dispute concerns the property rights of landscape assets created under voluntary management agreements. Since such agreements are financed by public funds, the public may claim property rights over the newly created landscape good. On the other hand, farmers will be reluctant to participate if they face long-term restrictions on land use, which reduces the value and market price of their land. In Austria, the question about the property rights of landscape assets generated through management agreements has not (yet) been answered consistently. Whereas certain landscape features created within some provincial programmes may not be removed without formal approval of the conservation authority, the EU agri-environmental schemes do allow the displacement of elements created under management agreements already expired.

Since we know very little about the causalities between certain management measures and their actual impact on the landscape, it seems reasonable to consider the effects of decentralisation and regional differentiation of management agreements. Diversity in approaches to on-farm conservation and thus landscape diversity (Jongman, 2001) could be encouraged not only by a competitive outcome-related setting with decentralised operational decisions, but also by a decentralisation of planning. Thus, the challenge for policy is how, within a general regulative framework, to incorporate as much regional and local flexibility, discretion and participation as possible. Of particular interest is the integration of regional and local knowledge on landscapes, on context-sensitive management techniques, on regional opportunity costs and adequate prices for eco-services. A balanced multi-level approach by agri-environmental schemes might enable decentralised decisions to be made while nevertheless guaranteeing the integration of supranational interests. In this regard, project officials also stated that there was a demand for participation procedures guaranteeing an efficient, fair and transparent co-ordination of demand and supply (see 4.1.2).

4.2.7 Tradeoffs between different inputs

In view of budget constraints, project officers have to make a tradeoff between direct payments for land and labour, investments in human capacity building, the testing of new management techniques or the funding of trust- and network-building measures. Whereas most agencies are confined to their

own limited personnel, in some Provinces administrative tasks such as site inspections, monitoring or consulting can be generously outsourced to private business or NGOs. Thus, the personnel resources range from 3 or fewer (Carinthia, Vorarlberg, Salzburg) to almost 50 people in Styria and Lower Austria. Those two latter provinces have been able to invest in additional services such as individual motivation of holders of particularly valuable land, trust building measures, PR and education. They have thus managed to reduce the farmers' transaction costs of participation and reveal additional gains of participation (e.g., the eco-image of farms as marketing arguments for agro-tourism and direct marketing of foodstuffs), which has increased the uptake considerably. Hence, despite higher restrictions and requirements, in Lower Austria and Styria the applications now exceed the budget available.

Whereas uptake and thus success of stewardship schemes in other provinces is still limited by lack of trust, these two Provinces have overcome limiting factors of quantitative success and can redirect their efforts towards high-quality outcomes. In order to increase cost-effectiveness, they attempt to pick out those applications:

- offering crucial sites (ecological value, potential for development, endangerment, location for integrated conservation strategies like the development of wildlife corridors, large habitats, buffer zones);
- promising skilled and committed human efforts for eco-services (priority target groups like well-educated, ecologically interested landholders, long-term contractors, organic farmers).

Moreover, personnel and financial resources formerly used to promote uptake can be deployed for on-farm conservation plans, for developing farmers' skills and ecological knowledge, for participatory processes of strategic landscape planning and for experimenting with new, more context-sensitive management techniques.

5 Conclusions

This survey-based paper sheds light on the implementation process of Austrian management agreements and systematises the causes of deviations in their actual outcome from the intended landscape impact. Valuable sites, committed and skilled contractors, high levels of trust and good networks, suitable equipment and material, context-sensitive management techniques as well as institutions supporting efficiency and equity are important inputs for a centrally governed landscape enhancement.

Although the qualitative approach cannot inform about the comparative relevance of these inputs or about the efficiency of their selection and allocation, it indicates that direct payments to landholders alone are unlikely to provide the intended landscape impacts. There is still little information available about the quality and quantity of landscape goods and eco-services actually demanded, and mechanisms of value articulation and aggregation are rarely applied. On the supply side there are institutional shortfalls regarding mechanisms for selecting valuable sites and promising contractors. The absence of suitable equipment and context-sensitive materials (such as seedlings, material for fences or trails) also decreases effectiveness.

Furthermore, the systematic determination of property rights for newly developed landscape assets, and a clear differentiation between assets to be protected by mandatory regulations and those which are the object of voluntary agreements, could improve the predictability of government activities. And last but not least, there is a need for institutions to encourage diverse, decentralised management strategies, competition and innovation while at the same time reducing the risk of policy failure.

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