

CHARACTERISING AGRI-ENVIRONMENTAL POLICIES: TOWARDS MEASURING THEIR PROGRESS

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Characterising Agri-Environmental Policies: Towards Measuring Their Progress

Santiago Guerrero

This report proposes a taxonomy of policy design features for agri-environmental payment schemes, with a focus on those features that are conducive to policy cost-effectiveness. An application of the taxonomy to all agri-environmental payment schemes in six countries (Argentina, Australia, Estonia, Finland, Korea, and Portugal) reveals that more than 70% of 85 agri-environmental payment schemes have some of these key design features, including establishment of baselines; rates based on estimated or actual implementation costs; inspections and penalties; contract flexibility; and technical assistance. That said, at least 80% of the schemes could be improved, including by: use of cost-effectiveness criteria for selecting recipients; moving from supporting the adoption of specific practices to focusing on achievement of environmental outcomes; more regular policy evaluations; and comprehensive collection of information on policy characteristics. An in-depth application of the taxonomy to Korea illustrates the potential of this taxonomy for country policy monitoring and evaluation purposes.

Keywords: Agri-environmental payments; monitoring and evaluation; cost-effectiveness; policy indicators

JEL Codes: Q18, Q15, Q58

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Key messages

- The application of the agri-environmental classification tool in all agri-environmental schemes of Argentina, Australia, Estonia, Finland, Korea, and Portugal shows that most of the reviewed schemes should: (1) incorporate cost-effectiveness criteria in the enrolment screening mechanisms; (2) when possible, transit from supporting the adoption of practices to focusing on the achievement of environmental results or outcomes; (3) conduct policy evaluations more regularly; and (4) improve the collection of information on policy transaction costs, budgets, enrolled area, and recipients.
- An in-depth evaluation of Korea's agri-environmental schemes reveals that the country's agri-environmental payment schemes could be enhanced by aligning objectives to the environmental challenges of the agricultural sector, making use of enrolment screens with environmental effectiveness or cost-effectiveness criteria, making contracts more flexible as well as evaluating their effectiveness and costs.
- When designing agri-environmental payment schemes, policy makers should consider consulting stakeholders, conduct pilot studies, incorporate technical expertise in the programme design, establish rules and legislation on the choice of the eligibility criteria, and ensure that contracts are flexible.
- This taxonomy can be adapted to other payment schemes and can be further improved as more information from other agri-environmental programmes becomes available.

Executive summary

One of the main challenges facing the agricultural sector is to provide enough food for a growing population, while reducing its impacts on the environment. To improve the environmental performance of agricultural activities, governments can use voluntary agri-environmental schemes that offer payments to participants in return for the provision of agricultural public goods. As governments face mounting pressure to achieve societal goals under tighter budgets, it is important that agri-environmental payment schemes deliver on their objectives as efficiently as possible.

This report offers policy makers a taxonomy to characterise, organise and compare agri-environmental schemes, focusing on those design features that are conducive to their cost-effectiveness. The taxonomy proposes 16 categories to characterise agri-environmental schemes and a list of eight essential features that can be used as a checklist to identify areas for improvement: targeting mechanisms, use of baselines, tailored payments, contract flexibility, technical assistance, inspections, penalties and policy evaluation tools. The report also describes the methodology and supporting material to collect information and presents an application of the taxonomy in six pilot countries: Argentina, Australia, Estonia, Finland, Korea and Portugal. Lastly, an in-depth evaluation of Korea's agri-environmental schemes illustrates how the taxonomy can be applied for monitoring and evaluation purposes.

The application of the methodology in the pilot countries identifies relevant factors for the successful design, implementation and evaluation of agri-environmental schemes. First, consultations with stakeholders at an early stage of the policy process and public consultations to receive feedback on the proposed measures both help improve acceptability and uptake rates. Second, pilot studies can be useful tools for evaluating and improving programmes. In addition, technical experts can play an important role in providing a scientific basis for setting policy parameters such as eligibility criteria for payments, payment rates and conditions. In general, rules and legislation on the choice of the eligibility criteria can increase the transparency of the policy process. Finally, allowing a degree of flexibility to modify the eligibility criteria, payment conditions and payment rates also helps to improve the policy outcomes.

The pilot country analysis also identifies the presence of essential features for agri-environmental schemes. In particular, the reviewed schemes establish baselines or benchmarks as part of the eligibility criteria; use estimated or actual implementation costs as a basis for setting the payment rates; use inspections and penalties to encourage compliance with contracts; allow for modifications to contracts in cases of personal hardship or for adaptive management purposes; and provide technical assistance to recipients.

At the same time, the analysis helps identify four areas for improvement in the agri-environmental schemes of participating pilot countries. Agri-environmental schemes in analysed countries should (1) incorporate cost-effectiveness criteria in the enrolment screening mechanisms, (2) when possible, transit from supporting the adoption of practices to focusing on the achievement of environmental results or outcomes; (3) conduct policy evaluations more regularly; and (4) improve the collection of information on policy transaction costs, budgets, enrolled area and recipients.

1. Context and objectives

OECD countries have introduced a wide range of policies to limit the negative environmental impacts of agricultural activities, such as regulations on input and output use, agri-environmental payments, taxes, tradable permits and community based measures (Vojtech, 2010^[1]).

Among those, agri-environmental payment schemes or programmes¹ are voluntary participation programmes that offer payments that aim to provide agricultural public goods beyond the level defined by existing regulations and cross-compliance requirements (OECD, 2012^[2]). In general, their objective is to reduce the negative environmental impacts of agricultural activities and to incentivise the provision of public goods such as biodiversity, improvement of water quality, carbon sequestration, among others. Most schemes pay for the implementation of specific environmental practices; relatively few of them pay for the achievement of environmental results.

Agri-environmental payment schemes date from the 1930s, when the United States established the Soil Conservation Act that provided funds to farmers to adopt soil conservation practices (Cain and Lovejoy, 2004^[3]). The Great Depression of 1929 and the degradation of soils that accompanied the massive erosion episodes of the Dust Bowl triggered the enactment of the Soil Conservation Act (Coppess, 2017^[4]). The first agri-environmental schemes in EU countries date from the 1970s, when they were introduced in Austria (Darnhofer and Schneeberger, 2007^[5]), and the 1980s, when were adopted in the United Kingdom and Germany (Baylis et al., 2006^[6]). Agri-environmental schemes were further introduced as a co-ordinated EU policy in 1992, following the Maccary reform (Baylis et al., 2008^[7]) that partly replaced price support policies by direct payments (OECD, 2011^[8]).

Other OECD countries, such as Australia, Japan, Korea, Mexico, Norway and Switzerland have also implemented agri-environmental schemes (OECD, 2019^[9]). While total amounts dedicated to agri-environmental payments grew in OECD countries from 1990 to 2019, their share of total producer support estimate (PSE) remains limited in 2019 (7% of PSE) (Figure 1).²

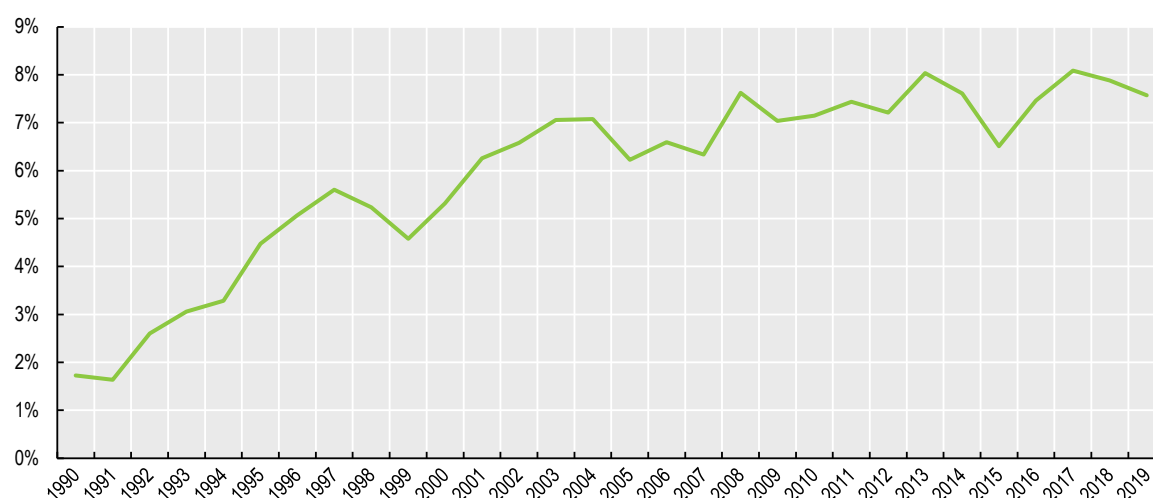
In general, evaluations of agri-environmental payments schemes have shown that they typically have limited environmental effectiveness and fail to ensure value-for-money (budgetary cost-effectiveness), due to poor design features and, in some cases, due to high transaction costs associated with the identification of recipients (Engel, 2016^[10]; Batáry et al., 2015^[11]; Coderoni and Esposti, 2018^[12]; Dal Ferro et al., 2018^[13]; Hardelin and Lankoski, 2018^[14]; Lankoski, 2016^[15]; Shortle et al., 2012^[16]).

¹ Throughout the document, the term “programme” is used interchangeably with the term “scheme”.

² The majority of the support in OECD countries comes in the form of distortionary measures, mainly from market price support measures (OECD, 2019^[23])

Figure 1. Agri-environmental payments in OECD countries

Share of agri-environmental payments in total Producer Support Estimate



Note: The Producer Support Estimate (PSE) refers to the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm gate level. In some countries, some transfers are conditional on farmers adopting pro-environmental practices or producing environmental goods and, therefore, are subject to environmental constraints. Agri-environmental payments are defined in the Producer Support Estimate as those payments that are subject to voluntary environmental constraints.

Source: OECD (2020), OECD Producer and Consumer Support Estimates database, <http://www.oecd.org/agriculture/topics/agricultural-policy-monitoring-and-evaluation/>.

This report proposes a classification system (taxonomy) of agri-environmental schemes comprising 16 categories to monitor agri-environmental schemes.³ These categories are defined on the basis of the process for setting, implementing and evaluating agri-environmental schemes.

Policy makers can use the taxonomy to organise and compare the characteristics of specific agri-environmental schemes. They can also use it to improve the cost-effectiveness of agri-environmental schemes by ensuring the presence of key essential features such as benchmarking, effective targeting, tailoring, contract flexibility, inspections, penalties, training and policy evaluation. The qualitative information used to characterise agri-environmental schemes is organised in a database of indicator variables that take a value of one if a given payment scheme has an attribute in question.

The application of the taxonomy in six pilot countries, Argentina, Australia, Estonia, Finland, Korea and Portugal, demonstrates that it is feasible to classify and compare qualitative information from agri-environmental schemes' characteristics. A particular application of the taxonomy to Korea's agri-environmental schemes illustrates its potential use for monitoring policy characteristics and for assessing whether the design of agri-environmental schemes is appropriate in view of ensuring the schemes' cost effectiveness.

Two important limitations of the taxonomy are acknowledged. First, the taxonomy focuses on agri-environmental payments and excludes other policy instruments such as market-based approaches, regulations and loans, which could be used to improve the environmental performance of agricultural activities. Second, the taxonomy cannot replace impact evaluation⁴ exercises. Instead, it can provide auxiliary information for impact assessments.

³ Monitoring refers to the continuous tracking of inputs and outputs related to specific activities or processes (Joint Research Centre-European Commission, 2017^[29])

⁴ Evaluation refers to the assessment of specific activities or processes (Joint Research Centre-European Commission, 2017^[29]).

This report is organised as follows. Section 2 discusses the conceptual process for setting agri-environmental payment schemes. Section 3 presents the taxonomy. Section 4 shows eight taxonomy features that are determinant for cost-effectiveness. Section 5 applies the taxonomy to six pilot countries with a special focus on Korea. Section 6 concludes.

2. Agri-environmental policy process

As a basis of the development of the taxonomy, it is important to understand the policy process for setting agri-environmental schemes.⁵ Figure 2 illustrates the different phases (OECD, 2012^[2]; OECD, 2007^[17]).⁶ Most agri-environmental schemes are well-defined policy instruments that belong to broad and overarching agri-environmental policies. The process illustrated below refers to the establishment of agri-environmental schemes. It starts with setting up the scheme, which entails defining the objectives, conducting research and collecting information to define benchmarks (reference levels that are to be used to evaluate the policy), targets and desired outcomes. Targets refer to quantifiable (intermediate or final) objectives (e.g. percentage reduction in soil erosion rates, enrolled area, enrolled farmers). *Ex ante* evaluations of potential impacts of the schemes can help to inform and decide policy features such as eligibility and enrolment criteria, payment mechanisms, monitoring and compliance mechanisms. Programme design refers to defining eligibility criteria, the enrolment criteria to identify potential recipients from the pool of applicants, the payment type and supported activity (e.g. uniform payment per hectare, bid, performance-based) and the contract type (modalities, length, etc.). Once the policy has been designed, building consensus for enacting it is needed to ensure its long-term success.

The policy implementation phase has three main pillars: distribution of benefits among beneficiaries, monitoring and control instruments and technical assistance. First, during the distribution phase, eligibility criteria and enrolment screens define scheme recipients and the actions they will implement. Contracting with selected applicants comes next and finally, the payment is processed. The second pillar of scheme implementation refers to the monitoring and control phase, which requires monitoring compliance with scheme requirements and conditions and scheme enforcement actions: checks, inspections and penalties. The third pillar of the implementation phase is technical assistance, which involves training sessions, information dissemination and the use of tools such as software to simulate scheme interventions, monitoring devices and digital technologies (satellite images, sensors, apps, etc.) for monitoring outcomes.

Another important phase of the process is its evaluation. Evaluation often happens during the design phase, using simulations of potential impacts (*ex ante* evaluation) or, once the programme has been implemented, with analysing observed outcomes compared with pre-intervention situations (*ex post* evaluation). Common methods used to evaluate schemes are cost-benefit, cost-effectiveness, environmental effectiveness or multi-criteria analysis. Cost-effectiveness is a holistic concept that takes into account environmental effectiveness, different kinds of costs (e.g. implementation costs, policy-related transactions costs), and can incorporate dynamic considerations (e.g. policy impacts on innovation). OECD (2010^[18]) characterises the cost-effectiveness of agri-environmental schemes as follows: "... the cost-efficient policy instrument is the one that minimises compliance costs while achieving the environmental target." In cost-benefit analysis, the social welfare impacts of a programme or regulation are measured in monetary units. Environmental effectiveness focuses on environmental impact assessments. Multi-criteria analysis is similar to cost-effectiveness but involves multiple effectiveness indicators. While cost-effectiveness and multi-criteria analysis can only help to rank policy measures, cost-benefit analysis can also indicate whether it is socially profitable to implement a given measure (OECD, 2012^[2]).

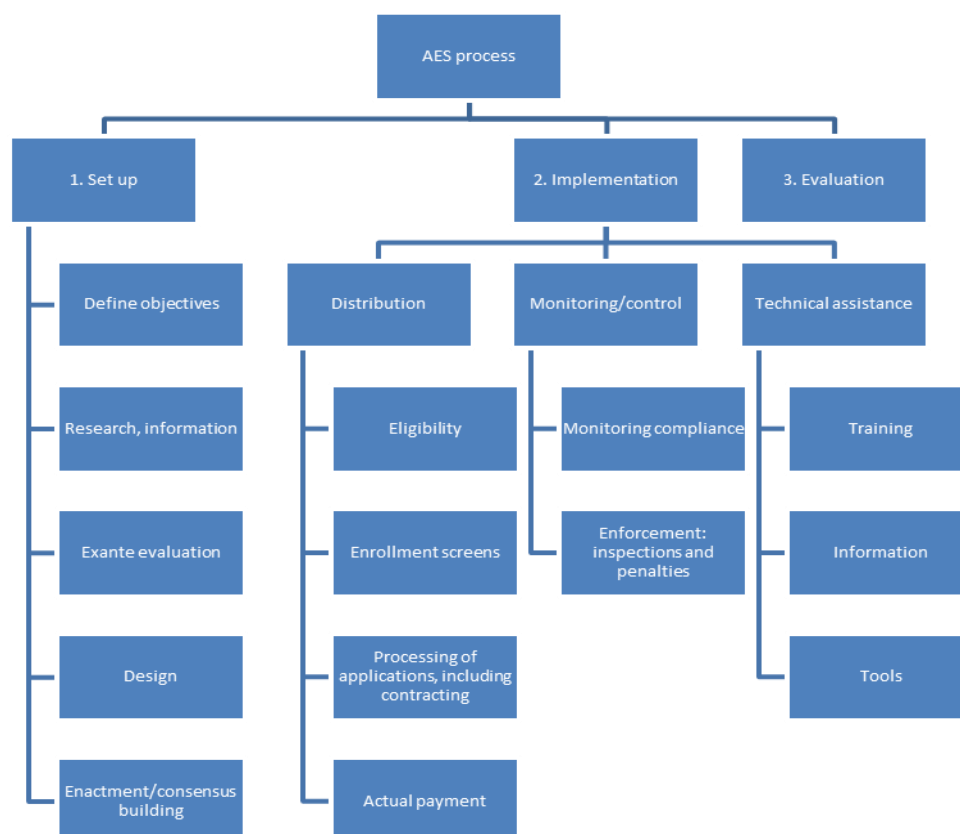
Activities in the agri-environmental schemes' implementation process generate transaction costs for governments and payment recipients. These costs are defined as policy-related transaction costs (PRTC) (OECD, 2007^[17]). Governments face PRTCs during the setup, implementation and evaluation stages. Most

⁵ The term policies is used throughout the document as referring to a set of instruments to achieve a given goal, while the terms schemes and programmes refer to specific instruments within those policies. The focus of the taxonomy is on agri-environmental schemes.

⁶ While in practice, few policy processes follow these phases in a linear way, in many 2, one or more of the phases presented are often implemented. They are presented in a stylised way to facilitate their interpretation.

of the PRTCs that recipients face are in the implementation phase, due to the filling of forms, submission of receipts, proof of implementation of activities and training. PRTCs are fundamental in determining the success of payment schemes. If too high, PRTCs can lead to low uptake rates and ineffective policies.

Figure 2. Agri–environmental schemes implementation phases



Source: Adapted from OECD (2012^[2]; 2007^[17]).

3. Taxonomy of agri-environmental schemes

The taxonomy was developed following an iterative process that started with a preliminary version based on a review of OECD reports and relevant literature on characteristics that are conducive to the cost-effectiveness of agri-environmental payment schemes. The taxonomy was further improved on the basis of information on agri-environmental schemes in pilot countries and the advice of country experts.

The taxonomy defines 16 categories that can be used to systematise key design features of agri-environmental schemes.

1. **Setting objectives.** This category refers to the objectives and goals of the scheme. These can be as broad as “protection of biodiversity” or as specific as “reduction of nutrient runoff”. In many cases, individual schemes may have other objectives such as economic, societal or cultural ones.

- Environmental objectives
 - Protection of biodiversity
 - Broad biodiversity goal
 - Ecosystems/landscape protection
 - Protection of pollinators
 - Protection of wild native species or species at risk
 - Protection of local livestock breeds
 - Protection of local crops varieties
 - Protection of other species
 - Natural resources protection
 - Preservation of the soil quality/fertility
 - Water infrastructure improvement (irrigation, storage systems, channels, etc.)
 - Water quantity protection
 - Other
 - Climate protection and air quality improvement
 - Reduction of GHG emissions
 - Carbon sequestration
 - Reduction of ammonia emissions
 - Other
 - Water quality improvement
 - Nutrient management, reduction of nutrient leaching/runoff
 - Sediment runoff reduction
 - Other
 - Adaptation and resilience to natural hazards and climate change
 - Natural hazards
 - Climate change
 - Other
 - Protection of genetic resources
 - Crops
 - Livestock
 - Forest
 - Other
 - Other
- Other specific objectives
 - Economic, societal and cultural objectives
 - Promotion of economic development
 - Production of safe and nutritious food
 - Landscape preservation
 - Protection of cultural heritage
 - Maintenance of stonewalls
 - Empowerment of farmers
 - Empowering of women farmers
 - Public access to land for recreation
 - Other
 - Support farming activities and specific activities
 - Traditional practices/systems⁷
 - Organic and/or sustainable farming
 - Infrastructure improvement
 - Capacity building
 - Income support

⁷ Refers to the implementation of ancient farm practices or the management of indigenous livestock or crops.

- Pest management
 - Productivity and input efficiency
 - Other
- Animal welfare
- Other
- 2. **Quantifiable targets.** This category refers to the quantifiable targets of the scheme. They can be specified in absolute terms (e.g. minimum income level, number or abundance of species per hectare, number of hectares of wetlands to be maintained or restored) or in relative terms (e.g. reduction of emissions compared to a base period).
- Participation
 - Enrolled area
 - Recipients
- Outcomes
 - Environmental
 - Economic
- Other
- 3. **Administrative level of scheme implementation.** The administrative level of the institution responsible for the day-to-day implementation or management of the agri-environmental scheme.
 - National
 - Local
 - International
 - Other
- 4. **Eligibility criteria.** These are the set of conditions and rules that determines who can apply, and the administrative criteria, obligations and restrictions for enrolment. In certain cases, there are restrictions in terms of farm characteristics, such as minimum farm size, livestock or crop densities, cultivated crops and land use. Some schemes stipulate that farmers need to demonstrate efforts beyond a baseline or reference level to be eligible. In other cases, recently converted cropland is not eligible or required environmental practices in those areas are at a higher standard. In some specific cases, policies stipulate that farmers need to achieve a minimum level of a given practice.
 - Recipients
 - Farmers
 - Tenants
 - Landowners
 - Partnerships and farmers associations
 - Public entities
 - Public - private partnership
 - Communities/indigenous groups
 - Any private legal person/group
 - Other
 - Administrative requirements
 - Registration in other programmes
 - Have a certification
 - Submit a management plan
 - Bid submission
 - Other

- Geographic location
 - Environmentally sensitive areas⁸
 - Other specific geographic area
- Characteristics of the farm operation
 - Minimum land size
 - Livestock density/plant density
 - Specific practices related to land use or crop type
 - Other
- Baselines, benchmarks, reference levels⁹
- Land cover restrictions¹⁰
- Minimum level of supported activity¹¹
- Other

5. Supported activity. The activities, practices or environmental performance levels that recipients need to implement or achieve in order to receive agri-environmental payments.¹²

- Environmental protection
 - Environmental practices
 - Crop management
 - Livestock management
 - Soil testing
 - Uncultivated areas¹³
 - Other
 - Environmental performance or results¹⁴
 - Nutrients
 - Water quantity
 - Biodiversity
 - Other
 - Land retirement
 - Environmental connectivity¹⁵
 - Other

⁸ Environmentally sensitive areas are those for nature conservation, vulnerable to the accumulation or transportation of pollutants or experiencing environmental degradation.

⁹ Set of regulations or minimum levels of practices or activities that recipients need to comply with to be eligible for participating into a scheme.

¹⁰ Contract clauses that either restrict practices in newly converted cropland or that do not permit transfers to be made to recipients located in newly converted cropland.

¹¹ Recipients must attain a minimum level of practices, beyond the baseline, that the scheme intends to support in order to be eligible for the programme.

¹² This category establishes the conditionality of the payment, which refers to the extent to which farmers participating in an agri-environmental policy mechanism receive the incentive (e.g. payment) if and only if they actually deliver the agreed action, practice, performance, or result as specified in their contract.

¹³ Practices implemented in areas not used for cultivation of crops such as field-margins, hedgerows and fallow-land. It also includes stone walls and buildings.

¹⁴ Environmental performance refers to an environmental pressure indicator at the farm level which can either be measured or estimated (e.g. reduced nutrient runoff from a field or parcel). Environmental results refer to measurable outcomes such as number of breeding bird nests on a field parcel or water savings (OECD, forthcoming^[22]).

¹⁵ Areas comprising multiple management units and or landscapes physically connected with the purpose of improving environmental conditions at the landscape level.

- Economic, investment and infrastructure projects
 - Economic project (boosting local activity)
 - Infrastructure activities
 - Innovation activities and investments
 - Implementation of business management practices
 - Other
 - Training, capacity building activities
 - Other
- 6. Enrolment screens.** The rules that are used to rank and identify the pool of beneficiaries from the group of eligible applicants. A common rule is based on cost-effectiveness ratio, where those projects that have the highest estimated environmental performance gains per unit cost are selected. In other cases, identification is based on the record of the applicant or on geographic location.
- Environmental performance¹⁶
 - Participation costs thresholds¹⁷
 - Cost-effectiveness/value for money¹⁸
 - Geographic considerations (geographic location or characteristics of the management unit)
 - Extent of supported activity in total farmland
 - Record of applicant (performance, previous funding or participation in former/other programs)
 - Risk, certainty or duration of outcomes
 - Socio-economic assessment
 - Other
- 7. Payment type**
- Monetary payment per unit (i.e. ha, animal, practice)
 - Total or partial reimbursement of investment costs
 - Grant
 - Tax incentive
 - Loan
 - Bonus payment¹⁹
 - Other
- 8. Payment format.** This category refers to the way the payment is made.
- Per hectare
 - Per animal unit
 - Per practice
 - Lump sum payment

¹⁶ Estimated or measured environmental performance of a management unit or farm. An example of estimated environmental performance is reduced nutrient runoff from a field or parcel, accounting for geophysical conditions (soil type, slope, weather conditions, etc.). Example of measured environmental performance metrics are nitrogen concentrations measured at end-of-pipe for a tile-drained field or methane emissions from livestock units measured using livestock-unit sensor devices.

¹⁷ Ceilings to the costs incurred by the recipient to comply with the requirements of the scheme.

¹⁸ Compares environmental effectiveness in physical units (e.g. reductions in nitrogen loads) to its costs in monetary value for complying with scheme requirements.

¹⁹ Incentive paid in addition to base incentive if a certain goal is reached. An example of this payment is an agglomeration bonus that is granted if a desired spatial configuration of practice adoption in a given region is achieved (e.g. buffer strips adopted in all field parcels adjacent of a given water course).

- Per level of environmental improvement (e.g. per value of achieved environmental benefit)
 - Other
- 9. Payment rate characteristics.** This category covers both, the mechanism used to determine the payment rate and its differentiation criteria (if any).
- Basis for rate calculation
 - Estimated or actual participation costs²⁰
 - Estimated or actual forgone revenue
 - Estimated or actual environmental performance
 - Bid-based
 - Other
 - Differentiation criteria for payment rate
 - Payment rate is uniform and not differentiated
 - Individually-differentiated
 - Extent of practices applied on farmland
 - Number of practices
 - Region
 - Livestock density, units or type
 - Farmland size
 - Land use
 - Other
- 10. Payment limits.** These stipulate whether there are any limits in terms of the payment and the total transfers to a single management unit or farm.
- Payment level cap per individual
 - Other
- 11. Total support.** This specifies the programme expenditures in monetary terms (amount) and also the source (e.g. general budget, earmarked taxes, supranational).
- Amount
 - Source
 - General budget
 - Earmarked taxes
 - Fund
 - Other
- 12. Contract length and flexibility.** This sets out the characteristics of the contract, particularly the length and whether it includes clauses that allow for flexibility due to unforeseen circumstances.
- Length
 - Specific length
 - Permanent contract
 - Variable according to project
 - Adjustable due to unforeseen circumstances
 - From personal hardship (e.g. drought, financial problems)
 - For adaptive management (making changes to better meet the objectives of the contract)
 - Other

²⁰ Costs incurred by the recipient to comply with the requirements of the scheme.

13. Enforcement. This sets out the set of actions that the regulatory agencies use to enforce the policy.

- Inspections
 - On-the-spot controls
 - Administrative data
 - Beneficiary's bills, records and/or reports
 - Data from digital technologies (precision agriculture, remote sensing technologies, mobile devices, etc.)
 - Other
- Penalties
 - Prohibition to re-apply to the programme
 - Expiration of benefits
 - Monetary sanctions
 - Reimbursement of past benefits
 - Payment reduction
 - Other

14. Technical assistance. Programmes often mandate or offer technical assistance to make sure beneficiaries understand the conditions for accessing payments and to help them to implement policies and monitor progress.

- Training
- Extension services
- Digital technologies
- Other

15. Policy evaluation. This category specifies whether evaluations need to be conducted to assess the benefits, effectiveness and costs of the schemes. There are different types of evaluations:

- Cost-benefit²¹
- Cost-effectiveness
- Environmental effectiveness²²
- Multi-criteria analysis
- Other

16. Policy-related transaction costs. This category refers to the costs of implementing and monitoring programmes. Both government and recipients bear policy-related transaction costs.

- Government costs
 - Programme set-up transaction costs
 - Programme implementation transaction costs
- Recipients' participation transaction costs

4. Eight essential features of agri-environmental schemes

Policies that are targeted, tailored, that provide flexibility to the recipient and the regulatory agency, and that are enforced and continuously evaluated tend to be more effective and less costly than others (Cattaneo et al., 2005^[19]; OECD, 2007^[20]; OECD, 2010^[18]; OECD, 2012^[2]; Lankoski, 2016^[15]). Effectiveness is also enhanced when policies pay for actions that go beyond baselines and when technical assistance is provided (OECD, 2012^[2]; Claassen et al., 2001^[21]). Provisions to avoid unintended

²¹ The social welfare impacts of a programme or regulation are measured in monetary units.

²² Assessment of the environmental impacts of a given policy intervention.

consequences of payments are also helpful to improve effectiveness (Claassen et al., 2001^[21]). However, improving targeting and enforcement often implies higher implementation costs that can only be jointly evaluated with cost-benefit analysis (e.g. auctions combined with performance screens can target policy action and add flexibility for farmers, but they can also have high transaction costs) (OECD, 2010^[18]).

On the basis of OECD expert judgement, findings from the literature and the companion report *Practical Design Principles for High Performing Agri-environmental Schemes: from Actions to Outcomes* (OECD, forthcoming^[22]), it is possible to identify a set of eight characteristics of agri-environmental schemes that are essential for effective performance:

1. Effective targeting mechanisms: enrolment screens that include cost-effectiveness or environmental performance criteria or directly support environmental performance or results (result-based schemes).
2. Baselines: reference levels in eligibility criteria.
3. Tailored payments: participation costs or bid-based mechanisms used as basis for setting payment rates.
4. Flexibility through contract adjustment clauses: clauses that allow for contract modifications due to unforeseen circumstances.
5. Technical assistance: provision of technical assistance to recipients.
6. Inspections: inspections for monitoring compliance as enforcement mechanism.
7. Penalties: penalties imposed on non-compliant recipients as enforcement mechanism.
8. Policy evaluation: conduct of policy evaluations.

These eight features, in conjunction with other characteristics, are explored in more detail in the next section, which discusses the application of the tool to a set of pilot countries.

5. An application of the taxonomy: Assessing the design of agri-environmental payment schemes in six countries

This section applies the taxonomy to six pilot countries and discusses the characteristics of the policy process related to the design, implementation and evaluation of agri-environmental schemes. The taxonomy was applied to Argentina, Australia, Estonia, Finland, Korea and Portugal. These countries offered a particularly rich set of contexts, policy priorities and characteristics to test the usefulness of the tool. To map countries' agri-environmental schemes into the taxonomy, a survey was designed, pre-filled, and sent to country experts for completion. The survey has two parts and is in Annex A. Part I includes six open-ended questions related to the process of designing and implementing agri-environmental programmes. Part II includes 31 questions specifically related to each agri-environmental programme.

Policy process related to agri-environmental programmes in pilot countries

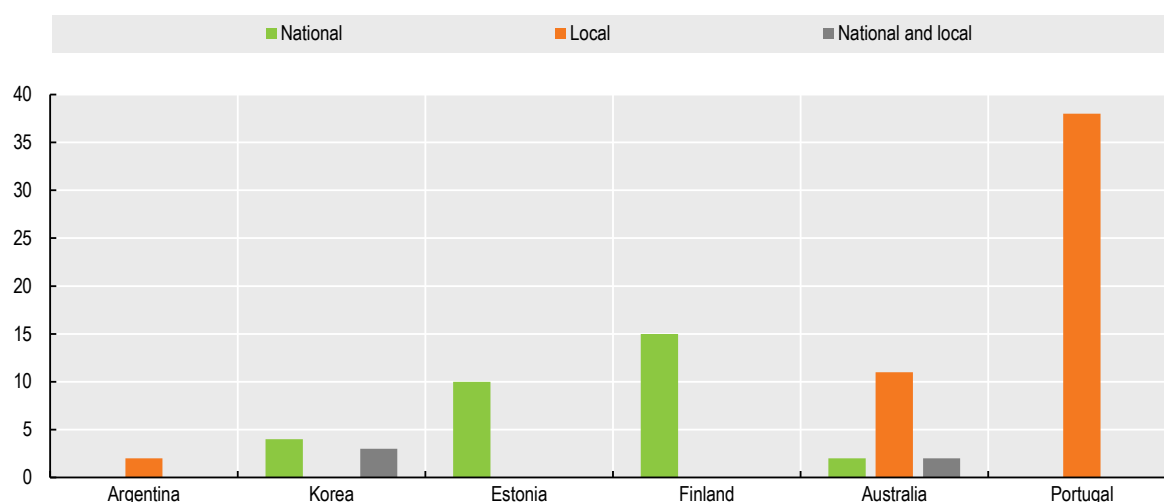
On the basis of the questionnaire responses, this report identifies several elements that are relevant for the successful design, implementation and evaluation of agri-environmental schemes. First, both early consultation with stakeholders and holding public consultations to receive feedback on the proposed measures tend to improve acceptability and uptake rates. Second, pilot programmes can be useful tools for evaluating and improving programmes. Third, technical experts can play an important role in providing a scientific basis for setting policy parameters such as eligibility criteria for payments, payment rates and conditions. In general, rules and legislation related to the choice of the eligibility criteria can increase the transparency of the policy process. Finally, allowing a degree of flexibility to modify the eligibility criteria, payment conditions and rates also helps to improve policy outcomes.

Agri-environmental schemes have been introduced as part of different policy packages and are managed at different levels of government in the pilot countries. In the pilot countries within the European Union

(Estonia, Finland and Portugal), agri-environmental schemes were developed as part of the Rural Development Programmes (RDP) of the Common Agricultural Policy (CAP). In Argentina, Australia and Korea, some of the agri-environmental schemes were developed as part of broader policy packages, while others were developed separately. The degree of devolution regarding the management of agri-environmental schemes also varies by country. In Argentina, Australia and Portugal, subnational governments are in charge of designing and managing most agri-environmental schemes (Figure 3).

Figure 3. Management of agri-environmental schemes at the local and national administrative levels

Number of schemes



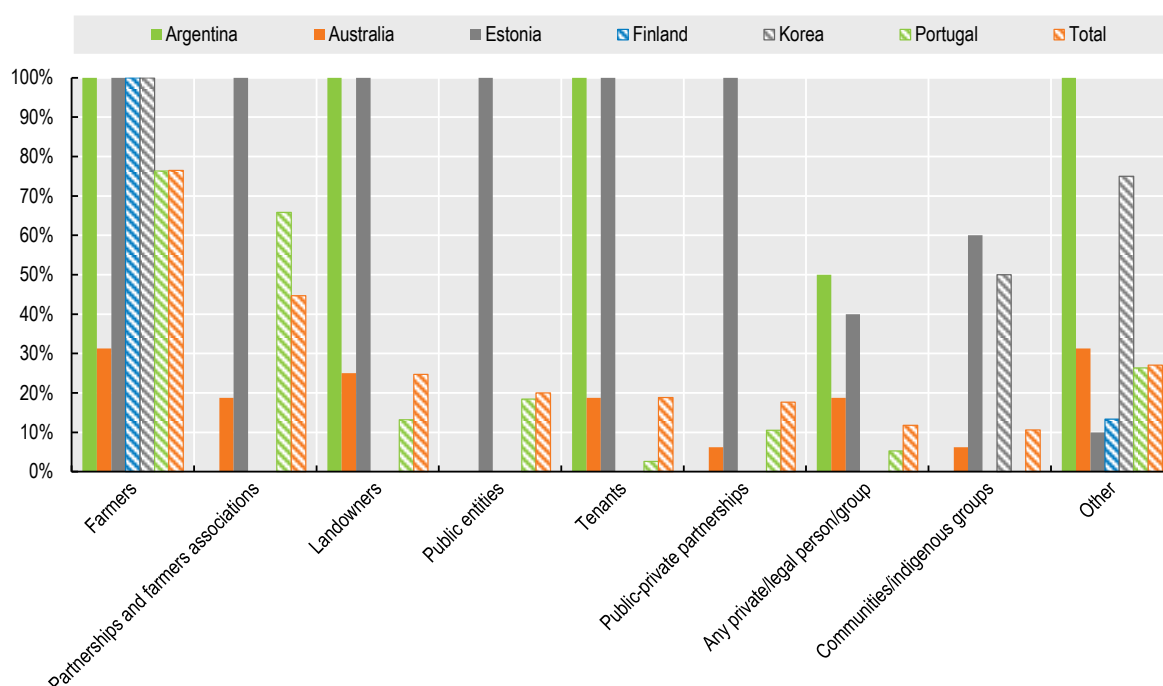
The overall objectives of the agri-environmental schemes are selected according to different processes. In Australia, entities such as trusts, expert panels, intergovernmental partnerships or oversight groups often play a role in defining the key themes of the schemes. In many cases, these entities work in co-ordination with agricultural stakeholders, holding public consultations to help select the themes. In EU Member States, the themes for agri-environmental schemes are aligned with the Rural Development Priorities (RDP), which are set at the EU level; the agri-environmental schemes are then designed by each Member State. In Finland, programmes presented to the EU Commission for approval are prepared by broad-based working groups, which include government, farmers and industry representatives, as well as experts. In Portugal, selection of agri-environmental schemes relies on keeping those that were successful in the past in force. In Korea, themes are selected after an assessment of the current state of the environment and consultations with rural residents. Funding for schemes comes from the general budget in most countries; in few cases, specific funds are created to support the schemes.

To inform their decisions on the design of agri-environmental schemes, ministries or government agencies of participating countries conduct *ex ante* evaluations and hold consultations with scientific bodies, technical experts and stakeholders. In Australia, pilot programmes and digital tools such as computer software, are common tools for assessing the expected impacts of agri-environmental schemes. In EU Member States, *ex ante* evaluation is mandatory for preparing RDP and the evaluation results are used to improve the planning, content, quality of the implementation, functionality, and effectiveness of programmes. In some cases, like in Finland, evaluations are conducted by independent agencies. In Korea, *ex ante* evaluations are required to assess the potential effects, required budgets, and related costs of new policies; inputs from those evaluations are then used to design programmes.

There are different types of recipients under the agri-environmental schemes of surveyed countries. While most of the schemes are directed at farmers and farmer associations, some schemes also target public entities, public-private partnerships and communities (Figure 4).

Figure 4. Recipients of agri-environmental schemes in surveyed countries

% of schemes



Engagement with potential recipients of the agri-environmental schemes occurs at different stages of the policy cycle. In Australia, key stakeholders, including farming groups, participate in the design, implementation and evaluation of selected policies. Engagement is undertaken through a variety of mechanisms, including: informal discussions with industry groups, committees, social media, information passed on through natural resource management groups, interaction and consultation with local governments, town hall meetings, written submissions and separate consultations with major stakeholders. In Estonia, farmers, scientists, practitioners and communities are involved in the design stage in working groups. In Finland, the Ministry of Agriculture and Forestry appoints working groups with broad-based representation of various stakeholders to work on preparation of the RDP. The proposed measures are then tabled for discussion at a public debate, and the final measures take into account the comments received in the consultation process. In Portugal, the government organises a consultation with the main organisations representing farmers, some relevant environmental NGOs, the Ministry of Environmental Policy and other relevant entities at an early stage of policy design. In Korea, the residents of affected rural areas are often consulted in the policy design and evaluation stages; farmers are also consulted to determine payment rates and contract periods.

In some of the surveyed countries, the eligibility criteria for the agri-environmental schemes are established following rules set out in national and international legislation. Grant schemes in Australia follow general rules for grant programmes. Eligibility criteria are sometimes mandated by the national government, with state governments aligning their policies to national criteria. Oversight committees, past learnings and expert consultation also serve as key inputs for establishing the criteria. In Estonia, most of the rules come from European Union law and from working groups that are specifically created for designing agri-environmental schemes. In Finland, eligibility criteria are based on political decisions. Some of the criteria (e.g. minimum eligible area) are applied to several area-based payments.

Agri-environmental schemes in participating countries can be revisited and modified at different stages. In Argentina, revisions can be undertaken annually. In Australia, several programmes have provisions that mandate periodic revision and modification of the programmes by law. In some cases, state legislation requires that regulations be reviewed every ten years to determine their continued relevance. Some programmes are conducted in rounds and, before each round opens, it is possible to modify the programme and develop new grant guidelines. In Estonia, Finland and Portugal, agri-environmental

schemes can be modified in co-ordination with the European Commission. In Korea, revisions and changes to agri-environmental schemes are allowed in the design and review stages.

Characteristics of agri-environmental schemes in pilot countries

To map the information on agri-environmental schemes of the six pilot countries (Argentina, Australia, Estonia, Finland, Korea and Portugal) into the taxonomy, country surveys were translated into a set of indicator variables. These variables were assigned a value of one when the scheme held the attribute in question. In some cases, several categories applied to a given programme. This was the case for programme objectives, for instance, since agri-environmental payment schemes often have multiple objectives.

In total, the six countries have 85 agri-environmental payment schemes, unevenly distributed across the countries²³ (detailed information of number of schemes with a given feature is presented in Annex B). Although data collected on budget, enrolled area and number of recipients is sparse in the covered countries, available data suggest large variations in these variables between and among schemes within pilot countries (Table 1). In most countries, either one or two programmes concentrate most of total outlays or of total enrolled area. Agri-environmental payment schemes in Estonia, Finland and Portugal tend to cover a large proportion of the total agricultural land²⁴ and these schemes, as well as the ones in Australia, represent at least 12% of the budgetary producer support. In contrast, agri-environmental schemes outlays in Argentina and Korea represent only 1% of total budgetary support.

Table 1. Enrolled area, outlays and number of recipients per year

Average 2015-2020

	Argentina	Australia	Estonia	Finland	Korea	Portugal
Number of agri-environmental schemes	2	16	10	15	4	38
Total area enrolled (1000 ha) ¹	873 ¹	621 [3]	653 [8]	4 107 [13]	42 [3]	2 481 [30]
Total agricultural area (1000 ha)	148 700	383 144	991	2 273	1 682	3 631
Share of area enrolled to total agricultural area	1%	0%	66%	181%	2%	68%
Total outlays (US million dollars) ²	4 ¹	217 [15]	51 [10]	282 [1]	42 [4]	172 [35]
Total budgetary support (US million dollars)	400	1 881	367	1 803	5 608	1 257
Share of total outlays to budgetary support	1%	12%	14%	16%	1%	14%
Total number of recipients ³	2 514 [1]	369 [11]	6 196 [10]	151 557 [15]	43 857 [4]	96339 [33]

Notes: Numbers in brackets reflect number of schemes with non-missing values.

1. In some cases, enrolled area is missing because the payment scheme supports livestock or stonewalls. Enrolled area could be higher than total agricultural land because a single recipient can be enrolled in multiple programmes.

2. For Australia, information not provided in an annual basis for some schemes by country contacts was prorated to obtain an approximate annual figure. For Finland, outlays reflect total annual funding of the agri-environment-climate measures.

3. Only reflects individuals. Agri-environmental schemes that support communities or organisations are not considered in these figures. Number of recipients could be overestimated because a single recipient can be enrolled in multiple programmes.

Source: Budgetary support for Argentina, Australia and Korea was obtained from OECD Producer Support Estimate (OECD, 2019^[23]). For Estonia, Finland and Portugal the figures were obtained from CAP budgetary support grantee databases (Estonia, <https://www.pria.ee/>; Finland, <https://tietopalvelu.ruokavirasto.fi/>; Portugal, <https://apl13.ifap.min-agricultura.pt/>).

²³ For Finland, only policies on mainland Finland are considered here.

²⁴ Data on enrolled area can represent more than total agricultural area since a single recipient could be enrolled in more than one scheme.

It is important to highlight that the cost-effectiveness of agri-environmental schemes does not depend on the importance of payments. Instead, what matters is the capacity of a scheme to modify recipients' behaviour in areas where it is more effective to do so at the least cost. The effectiveness of agri-environmental schemes can also be offset if they are instrumented in conjunction with distortive policies such as market price support or output and input based support (OECD, 2019^[9]).

This section discusses the characteristics of payment schemes in pilot countries, particularly those that have strong implications on their cost-effectiveness (OECD, 2010^[18]) such as the metrics used as basis of payment (e.g. practices or performance), the mechanisms to select participating farmers, the basis for payment rates, enforcement mechanisms, contract flexibility, training provision and policy evaluation.

Setting objectives

Defining quantifiable targets helps in identifying the appropriate instruments for selecting recipients and improves the ability to evaluate a given policy (OECD, 2007^[20]). Policy targets can be defined in terms of participation targets (category "Quantifiable targets-Participation"). In some cases, more effective policy targets are specified in terms of environmental outcomes (category "Quantifiable targets – Outcome - Environmental").

Agri-environmental payment schemes in pilot countries have different priorities (Table 2).²⁵ For example, in Australia, the majority of schemes focus on capacity building, water quantity protection, ecosystems and landscape protection and sustainable farming; in Estonia, agri-environmental payment schemes focus on biodiversity, ecosystem and landscape protection, preservation of soil quality, nutrient management and protection of cultural heritage; in Finland, agri-environmental schemes emphasise organic and sustainable farming, biodiversity protection, nutrient management and reduction of greenhouse gas emissions, while in Portugal, programmes tend to protect traditional practices, biodiversity and ecosystem and landscape protection and preservation of soil quality. In Korea, schemes tend to focus on organic and sustainable farming. In Argentina, the two schemes in place have a diversity of objectives.

Only 10% of the studied schemes have quantifiable targets for environmental outcomes (Figure 5) and those are mainly from Australia, which sets environmental outcomes on half of its schemes. The most commonly used quantifiable targets are enrolled area (65%) and number of recipients (35%).

²⁵ A more precise analysis of agri-environmental schemes' priorities in each country could have focused on the budgetary share of each programme. Unfortunately, it was not possible to obtain data on outlays for several programmes.

Table 2. Specific objectives of the schemes

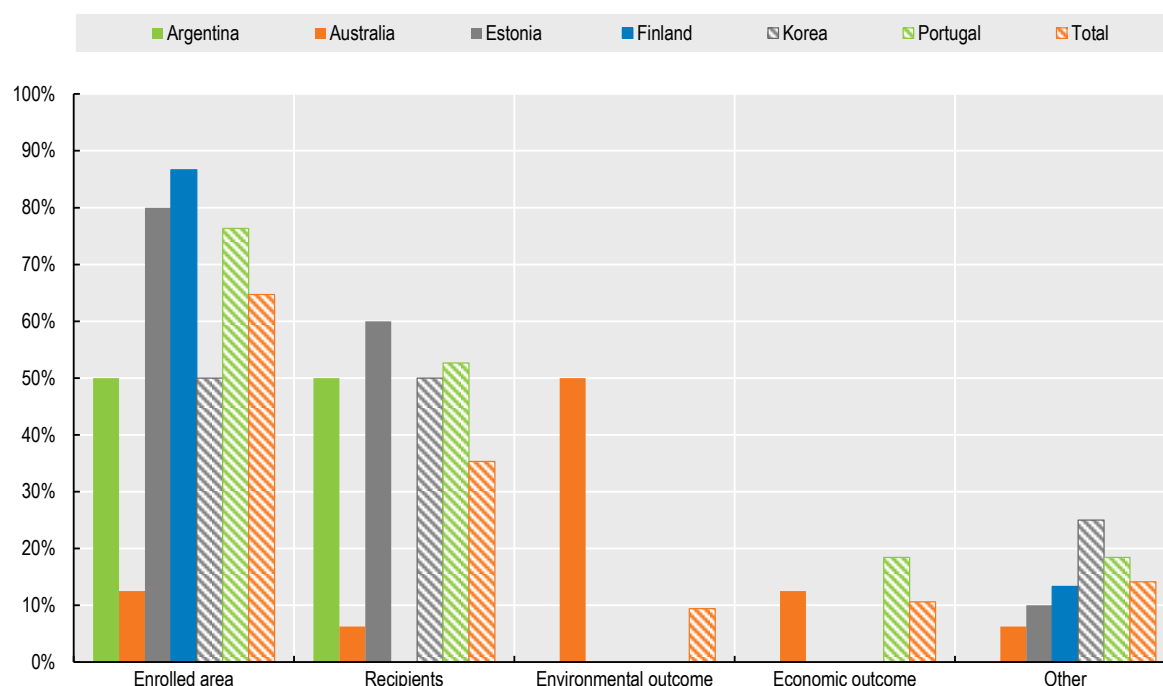
Number of schemes

Environmental objectives	Specific environmental objectives	Argentina	Australia	Estonia	Finland	Korea	Portugal	Total
Protection of biodiversity	Broad biodiversity goal	0	4	4	11	0	12	31
	Ecosystems/landscape protection	2	6	4	8	1	11	32
	Protection of wild native species or species at risk	0	5	1	6	0	4	16
	Protection of pollinators	0	0	1	7	1	4	13
	Protection of local livestock breeds	0	0	1	2	0	2	5
	Protection of local crops varieties	0	0	0	1	1	1	3
	Protection of other species	0	0	1	0	0	0	1
Natural resources protection	Preservation of the soil quality/fertility	2	4	4	10	1	10	31
	Water quantity protection	2	8	1	1	0	2	14
	Water infrastructure improvement	2	2	0	1	0	3	8
Water quality improvement	Nutrients management, runoff/leaching reduction	2	5	4	11	1	4	27
	Sediment runoff reduction	2	3	2	8	1	1	17
Climate protection and air quality improvement	Reduction of GHG emissions	0	0	2	11	1	4	18
	Carbon sequestration	0	1	1	10	0	6	18
	Reduction of ammonia emissions	0	0	0	4	0	1	5
Adaptation and resilience	Climate change	0	3	0	1	0	4	8
	Natural hazards	0	1	0	1	0	1	3
Protection of genetic resources	Livestock	0	0	1	1	0	4	6
	Crops	0	0	1	0	0	3	4
	Protection of forest genetic resources	0	0	0	0	0	1	1
Other objectives	Specific objectives other than environmental							
Support farming activities and specific activities	Organic and/or sustainable farming	1	6	3	15	3	9	37
	Traditional practices/systems	0	0	1	1	0	14	16
	Capacity building	0	10	0	1	0	0	11
	Pest management	2	3	1	4	0	1	11
	Productivity and input efficiency	2	5	0	4	0	0	11
	Infrastructure improvement	2	5	0	1	0	0	8
	Income support	0	0	1	0	0	1	2
Economic, societal and cultural objectives	Landscape preservation	2	2	2	4	2	11	23
	Protection of cultural heritage	0	0	4	5	1	5	15
	Production of safe and nutritious food	1	0	1	3	0	3	8
	Maintenance of stonewalls	0	0	1	0	0	4	5
	Empowerment of farmers	1	3	0	0	2	0	6
	Promotion of economic development	0	2	0	0	1	0	3
	Empowerment of women farmers	0	0	0	0	0	0	0
	Public access to land for recreation	0	0	0	0	0	0	0
Animal welfare	Animal welfare	0	0	1	1	0	0	2
Other	Other	0	3	2	1	0	9	15

Note: Schemes have multiple objectives and, hence, categories are not mutually exclusive.

Figure 5. Quantifiable targets

% of schemes

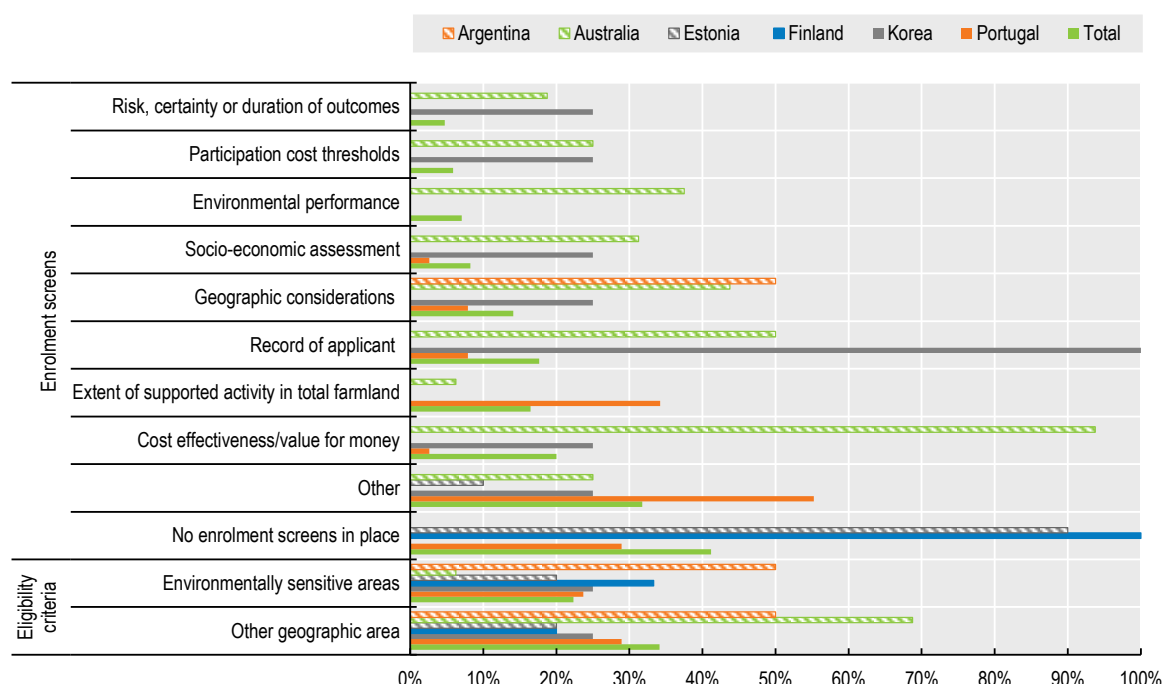
**Targeting**

According to OECD (2007^[20]), a targeted policy “pursues specific outcomes set in policy objectives, identifying the most appropriate actions (including level and scope of intervention), groups and/or areas, while minimising unintended transfers and negative spill-over effects”. When evaluating the degree to which a policy or programme is targeted, both environmental and cost dimensions need to be considered. The environmental dimension is defined by the level of spatial granularity at which the policy selects beneficiaries and by the type of actions or results for which it pays. Minimal spatial targeting can be achieved by pre-selecting regions or areas where the policy is to be implemented (OECD, 2007^[20]) (category “Eligibility criteria-Geographic location-Environmentally-sensitive areas”). A high level of spatial granularity can be achieved by using environmental performance enrolment screens to identify recipients according to the potential environmental performance of their actions (OECD, 2010^[18]); such type of screening is often used in combination with auction-based instruments (category “Enrolment screens-Cost effectiveness/value for money or Environmental performance”).

Around a quarter of the schemes in the pilot countries (22%) stipulate that eligible projects need to be located in environmentally sensitive areas, while only one-fifth have enrolment screens with cost-effectiveness and few use environmental performance criteria (7%) (Figure 6). Cost-effectiveness enrolment screens are only used in Australia (94%), Korea (25%) and Portugal (3%). Environmental performance screens are only used in Australia (38%). Remarkably, 41% of the schemes studied do not have enrolment screens in place.

Figure 6. Geographic considerations in eligibility criteria and enrolment screens

% of schemes



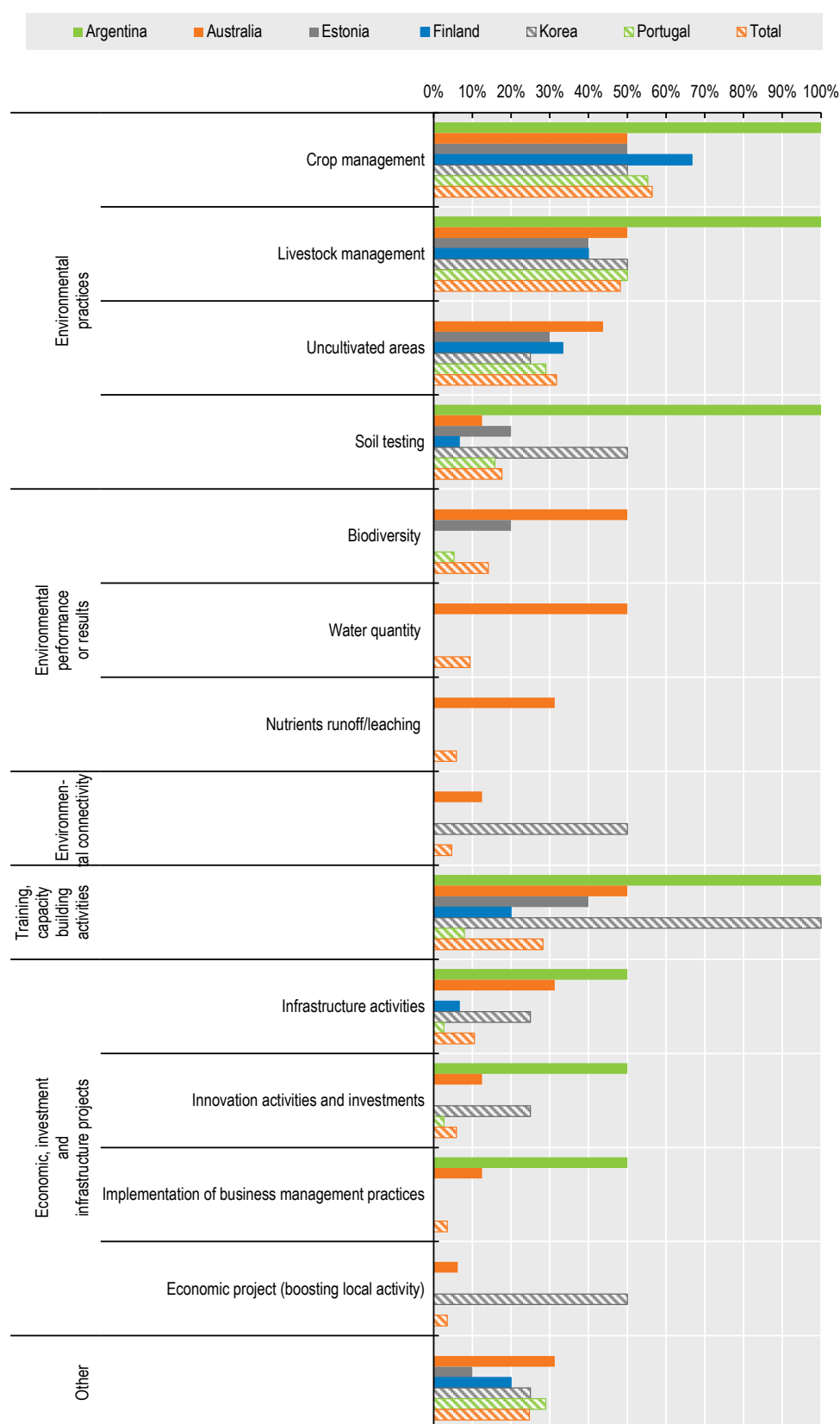
The actions, processes or outcomes that beneficiaries have to implement to access payments are specified under the category “Supported activity” of the taxonomy. Successful targeting is more likely when the policy pays for environmental performance or results, as these are potentially more directly related to policy objectives (Burton and Schwarz, 2013^[24]; Lankoski, 2016^[15]) (taxonomy category “Supported activity-Environmental Protection-Environmental performance or results”).

Most of the agri-environmental schemes in pilot countries pay for the adoption of crop practices (56%), livestock management practices (48%) and for the management of uncultivated areas (32%) (Figure 7). A total of 14% of schemes specifically support the attainment of biodiversity results or outcomes, 9% support water quantity results and 6% nutrients runoff-leaching results. Environmental-outcomes-based schemes are mostly used in Australia. Some schemes in Estonia and Portugal are also outcome based. Interestingly, certain schemes not only support the implementation of environmental practices, but also activities related to training and capacity building (28%).

As shown in Figure 6, less than a fifth of reviewed schemes include cost criteria in their enrolment screens. Regulators often lack information on farmers’ compliance costs; identifying those costs is challenging and can be resource-intensive. Cost-based or bid-based enrolment screens are useful mechanisms to identify those farmers with lowest costs (OECD, 2010^[18]). Cost-based enrolment screens can be proportional to actual compliance costs or can be based on estimated compliance costs; the former are also a fundamental feature of cost-share programmes (OECD, 2010^[18]), which pay recipients a share of the costs involved in adopting certain environmental practices. Bid-based enrolment screens are often used in auction schemes to reveal farmers’ compliance costs (OECD, 2010^[18]). While bid winners tend to gain information rents (be overcompensated for their actions), auctions have the potential to limit information rents (OECD, 2010^[18]). Hence, cost-based enrolment screens can be used to minimise policy costs (category “Enrolment screens – Participation costs thresholds or Cost-effectiveness / value for money”).

Figure 7. Supported activities

% of scheme



Unintended consequences and additionality

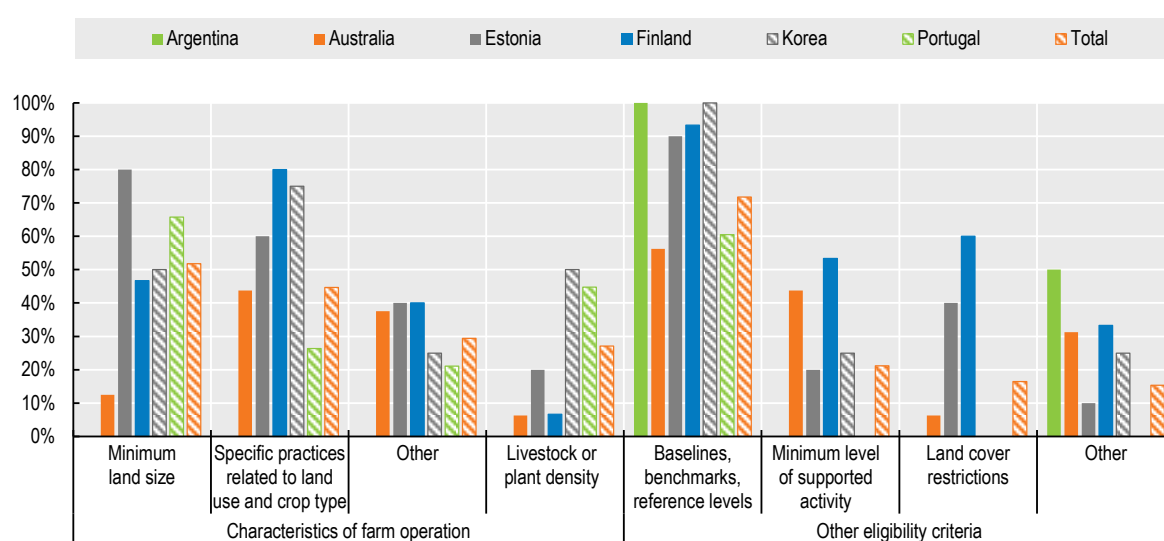
A common concern in relation to agri-environmental payments (and any farm-level payment) is their potential to incentivise the conversion of non-agricultural land to agricultural land. Clauses that either restrict practices in newly converted cropland or that do not permit transfers to be made to recipients in newly converted cropland tend to improve overall policy effectiveness by reducing these potential unintended consequences (Claassen et al., 2001^[21]) (category “Eligibility criteria-land cover restrictions”).

Establishing baselines, benchmarks or reference levels improves the effectiveness of policies, as payments will go to those beneficiaries who adopt practices or produce outcomes that are above those reference levels. Clearly, the likelihood that the policy pays for additional gains is increased when those reference levels are binding (Cattaneo et al., 2005^[25]; OECD, 2012^[2]; OECD, 2010^[18]) (category “Eligibility criteria- Baselines, benchmarks, reference levels”). Moreover, some policies stipulate that in order to be eligible, recipients need to show a minimum level of additionality (category “Eligibility criteria- Minimum level of supported activity”).

More than 70% of schemes specify baselines or benchmarks in their eligibility criteria (Figure 8) but a few schemes establish land cover restrictions clauses (16%) or a minimum level of supported activity (21%). Minimum land size and specific practices requirements are also common elements in eligibility criteria of analysed agri-environmental schemes.

Figure 8. Eligibility criteria

% of schemes



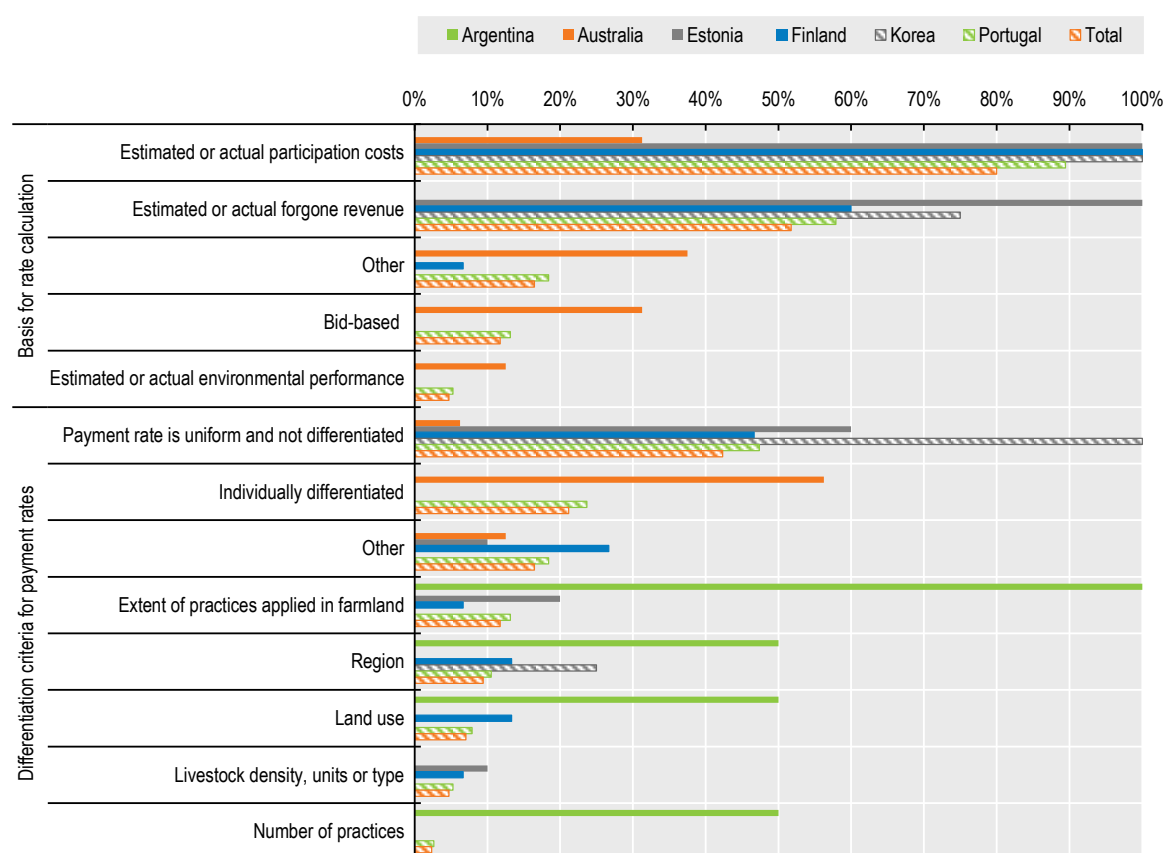
Tailoring payment rates

Tailoring payment rates refers to providing transfers no greater than necessary to obtain the desired outcomes (OECD, 2007^[20]). At the very basic level, payment rates should reflect recipients' adoption or participation costs (category “Payment rate characteristics-Basis for rate calculation-Estimated or actual participation costs or Bid-based”). The majority of schemes studied use estimated or actual participation costs (80%), followed by forgone revenue (52%). Only 12% use bid mechanisms to set the payment rates. While a large proportion of the schemes offer non-differentiated payment rates²⁶ (42%), some countries like Australia and Portugal also offer individually-differentiated rates (Figure 9).

²⁶ While the total payment is almost always differentiated by farmer, provided most of the payment are on a per hectare basis, payment rates are seldom differentiated across individuals.

Figure 9. Characteristics of payment rates

% of schemes

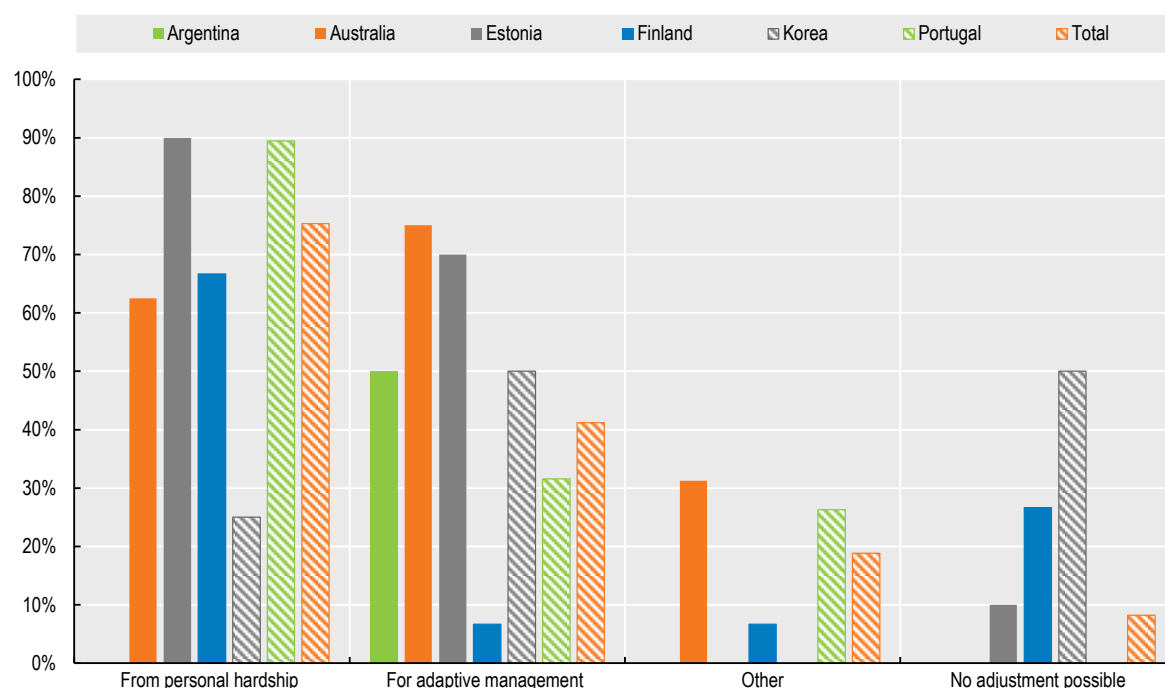
***Flexibility for the farmer***

Performance-based instruments and outcome-based instruments tend to be more flexible than instruments that pay for the adoption of specific practices. In the case of performance/outcome-based instruments, recipients are free to choose the set of practices that can give rise to higher performance or that can achieve a particular outcome (e.g. number of nests in farmland, kilogramme of avoided nitrogen runoff), while in the case of practice-based instruments, recipients are paid on the adopted practices. There are two categories in the taxonomy that indicate whether schemes provide more flexibility for farmers to choose practices: one is if the supported activity is environmental performance or results (category “Supported activity-Environmental protection-Environmental performance or results”); the other is if programmes use performance-based screens to identify farmers (categories “Enrolment screens-Environmental performance” or “Cost effectiveness/value for money”). In both cases, only 14% of programmes in pilot countries support performance-results (Figure 7) and only 7% have enrolment screens based on environmental performance (Figure 6).

Given that there are several sources of policy uncertainty – weather conditions, faulty design features, unpredictable outcomes or results due to the voluntary nature of farmer participation – some degree of flexibility to modify contracts and design features may help to improve the effectiveness of the policy (OECD, 2012^[2]) (category “Contract length and flexibility-Adjustable due to unforeseen circumstances”). Most of the programmes allow for modifications to the contracts due to personal hardship (75%). A few also permit modifications for adaptive management (Figure 10) (41%).

Figure 10. Possibility to adjust contracts

% of schemes



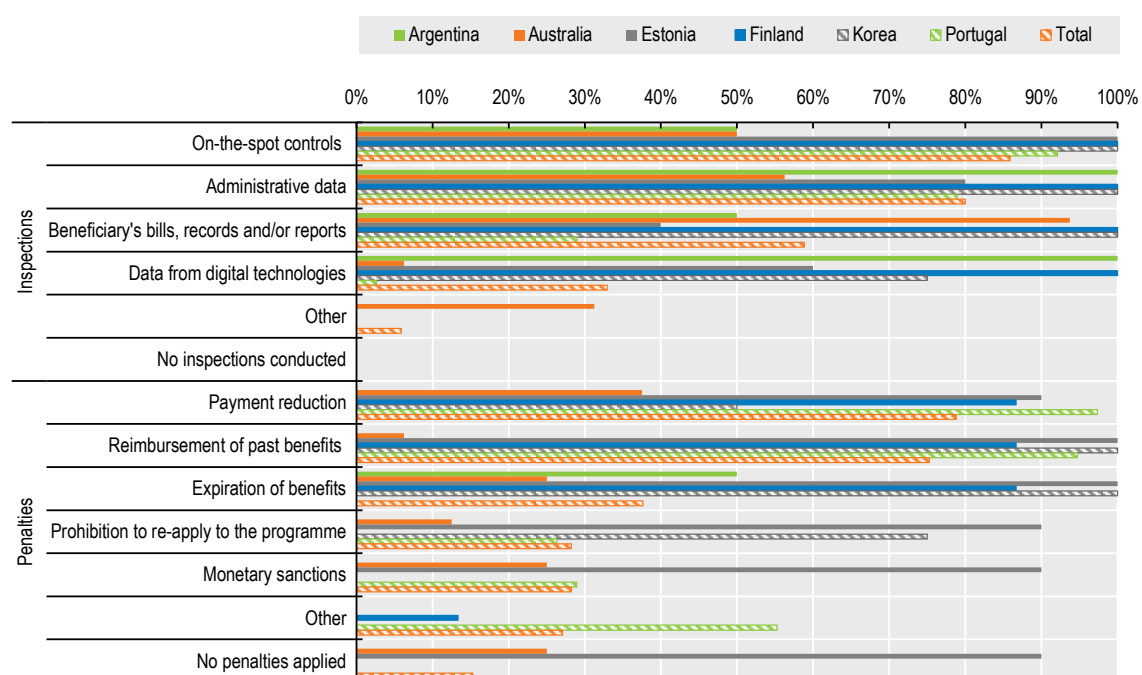
Enforcement

Enforcement mechanisms, such as inspections and penalties, can improve the effectiveness of the payment schemes by ensuring that beneficiaries comply with policy requirements (OECD, 2012^[2]) (categories “Enforcement-Inspections” and “Enforcement-Penalties”). In pilot countries, inspections are a common enforcement mechanism, particularly on-the-spot inspections (86%), or based on beneficiaries’ records and administrative data (80%) (Figure 11). Digital technologies are also a common source of information for verifying compliance in some countries. Most policies impose penalties on recipients that do not comply with the contract. The most common types of penalties are payment reductions (79%) and reimbursement of past benefits (75%). Less common penalties for non-compliance include expiration of benefits (38%), prohibitions for re-applying to the programme (28%), and monetary sanctions (28%).

Technical assistance tends to improve effectiveness by increasing compliance and adoption rates (OECD, 2012^[2]) (category “Technical assistance”). Few programmes provide technical assistance, mostly in the form of training (46%), extension services (38%) and digital technologies (32%) (Figure 12).

Figure 11. Enforcement mechanisms of agri-environmental schemes in pilot countries

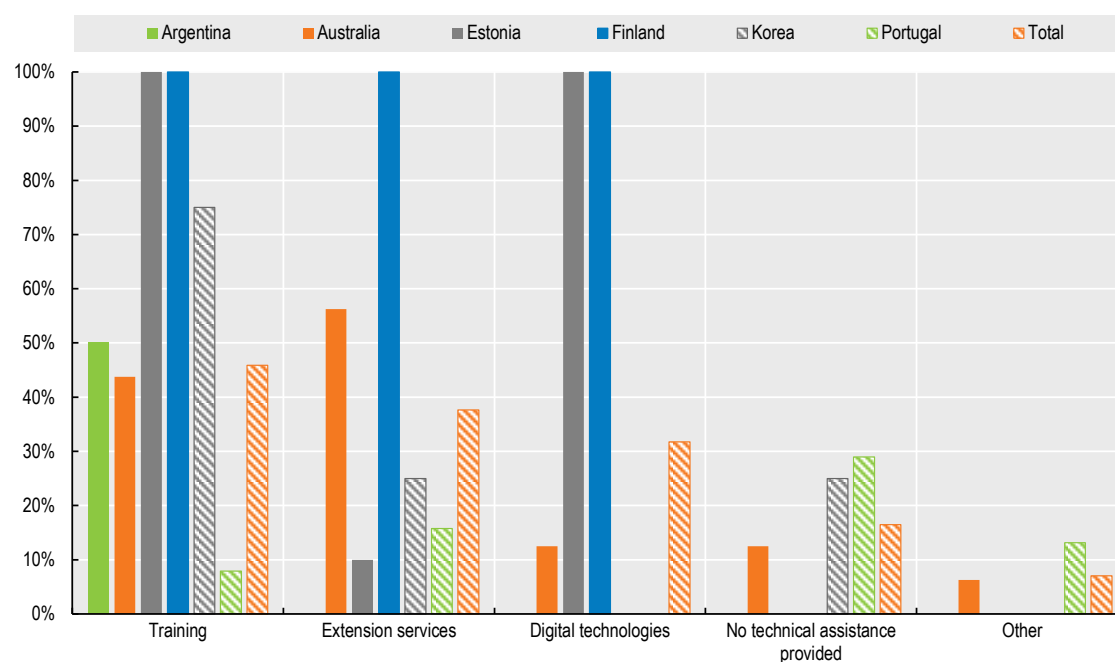
% of schemes



Technical assistance

Figure 12. Technical assistance in agri-environmental schemes of pilot countries

% of schemes

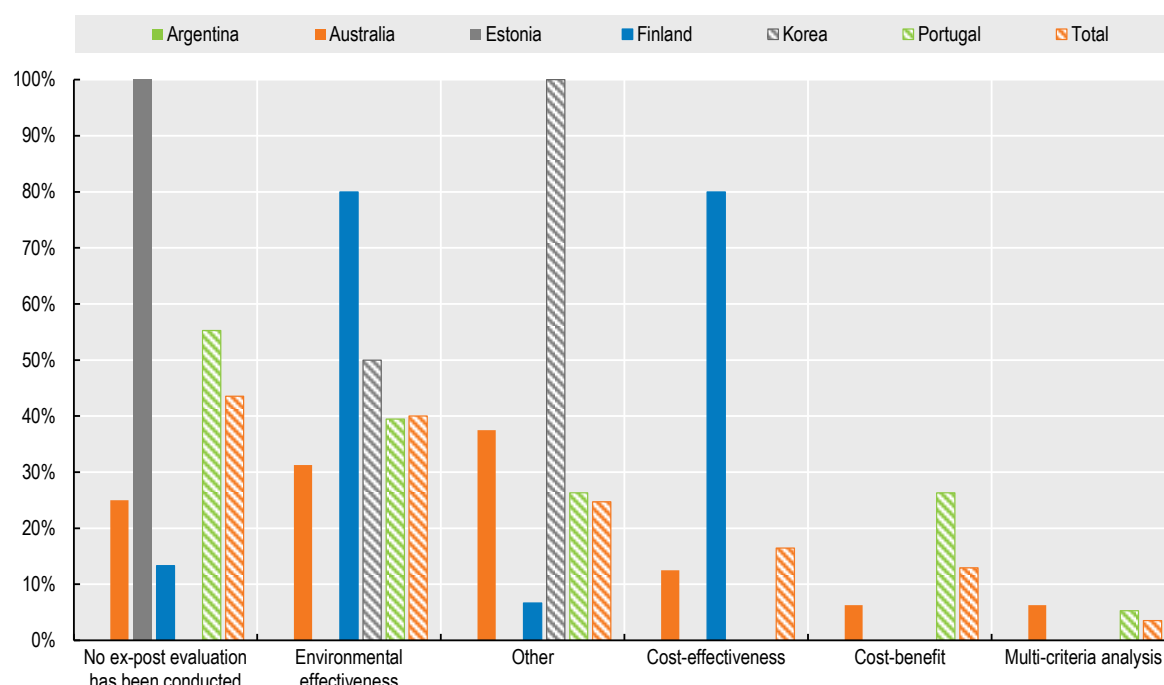


Policy evaluation

Regular evaluation of policies helps to detect flaws and strengths and point to areas for improvement (OECD, 2012^[2]). As such, policy evaluation tends to play an important role in improving the cost-efficiency of a given policy (category “Policy evaluation”). Such evaluation can be undertaken before (*ex ante*) or after (*ex post*) a given policy is enacted. The survey included two questions to gather information on *ex post* policy evaluation. One question asked about *ex post* policy evaluation methods (Q.30. “What kind of *ex post* evaluation of the policy has been conducted?”) and another elicited the relative environmental effectiveness of each policy (Q31. “Relative to other agri-environmental schemes in your country, how would you rate the environmental effectiveness of the scheme?”).

No *ex post* evaluation had been conducted in the case of almost half of the studied schemes.²⁷ The most common type of *ex post* evaluation is environmental effectiveness (Figure 13). However, most respondents were also unable to assess the effectiveness of the agri-environmental schemes relative to other schemes (Figure 14).²⁸

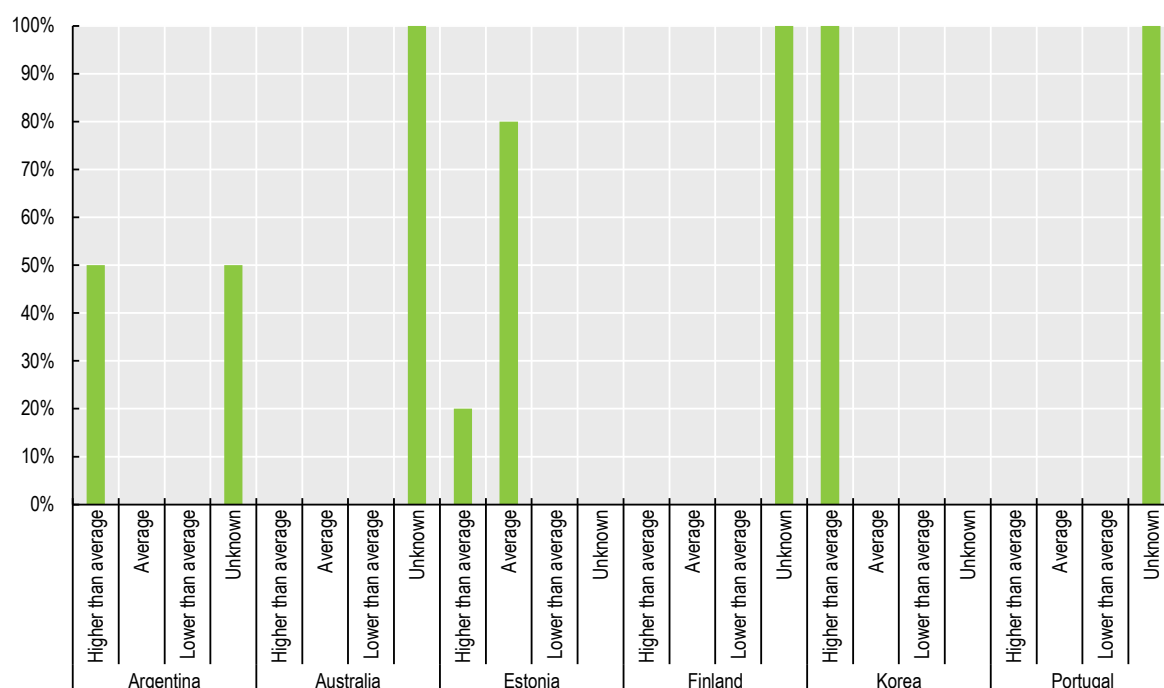
Figure 13. Policy evaluation methods



²⁷ Or the respondent was unaware if they had been evaluated. The European Commission has conducted *ex ante* evaluations of current RDP and *ex post* evaluations of RDP in CAP 2007-2013, but not at the agri-environmental payment scheme level for each of the EU countries considered in this report (European Commission, 2015^[30]; European Commission, 2018^[31]).

²⁸ Low response rates on this question were either due to the respondent's unawareness of environmental effectiveness assessments or to the lack of a well-defined reference group.

Figure 14. Relative environmental effectiveness of the policy



Policy-related transaction costs

High transaction costs could limit the use of more sophisticated policy design, as more targeted and effective policies usually involve higher transaction costs per unit of payment (OECD, 2007^[17]) (category “Policy-related transaction costs”). It is well documented that collecting information on transaction costs is difficult, particularly when recipients are asked about costs directly (Ollikainen, Lankoski and Nuutinen, 2008^[26]). While there are several sources of PRTCs, this report focuses on the policy design, implementation costs and recipients’ participation costs. To minimise the non-response rate, the survey included a question that asked for transaction costs in relative terms (Q.15 “Relative to the total budget outlays of the scheme, what is the percentage of the transaction costs associated with the set-up, implementation and farmers’ participation into the scheme?”). Nonetheless, as expected, most of the transaction costs were unknown to the respondents (Table 3). For those policies for which respondents identified transaction costs, set-up and implementation costs were in the range of 0-30% of budget outlays. Farmers’ participation costs were larger, mostly in the range of 10-30% of budget outlays. One scheme in Australia reported farmers’ participation costs higher than 70%.

Table 3. Transaction costs as % of total outlays

Country	Concept	Unknown	<5%	5% to 9%	10% to 29%	30% to 49%	>70%
Argentina	Set-up	100%	0%	0%	0%	0%	0%
	Implementation	100%	0%	0%	0%	0%	0%
	Farmers' participation	100%	0%	0%	0%	0%	0%
Australia	Set-up	38%	25%	13%	25%	0%	0%
	Implementation	19%	38%	13%	31%	0%	0%
	Farmers' participation	75%	0%	6%	6%	6%	6%
Estonia	Set-up	100%	0%	0%	0%	0%	0%
	Implementation	100%	0%	0%	0%	0%	0%
	Farmers' participation	100%	0%	0%	0%	0%	0%
Finland	Set-up	0%	0%	0%	0%	0%	0%
	Implementation	0%	0%	0%	0%	0%	0%
	Farmers' participation	0%	0%	0%	100%	0%	0%
Korea	Set-up	100%	0%	0%	0%	0%	0%
	Implementation	100%	0%	0%	0%	0%	0%
	Farmers' participation	100%	0%	0%	0%	0%	0%
Portugal	Set-up	100%	0%	0%	0%	0%	0%
	Implementation	100%	0%	0%	0%	0%	0%
	Farmers' participation	100%	0%	0%	0%	0%	0%

Identifying areas of improvement

Focusing on the set of eight key essential features discussed in Section 3, Table 4 shows a large proportion of the analysed schemes tend to have some design features that are conducive to cost-effectiveness: baselines, cost-based payment rates, enforcement mechanisms (inspections and penalties), contract adjustment clauses and provision of technical assistance to recipients.

Table 4. Presence of key design features in agri-environmental schemes

% of total schemes

Key features	Taxonomy categories	Argentina	Australia	Estonia	Finland	Korea	Portugal	Total
1. Baselines	Baselines, benchmarks	100%	56%	90%	93%	100%	61%	72%
2. Effective targeting	Supported activity: Performance or results based	0%	81%	20%	0%	0%	5%	20%
	Enrolment screens: Cost-effectiveness	0%	94%	0%	0%	25%	3%	20%
	Enrolment screens: Environmental performance	0%	38%	0%	0%	0%	0%	7%
3. Tailoring	Basis for payment: Participation costs	0%	31%	100%	100%	100%	82%	76%
	Basis for payment: Bid-based	0%	31%	0%	0%	0%	3%	7%
4. Flexibility	Contract adjustment	50%	81%	100%	73%	50%	95%	86%
5. Inspections	Inspections	100%	100%	100%	100%	100%	92%	96%
6. Penalties	Penalties	50%	50%	100%	100%	100%	97%	88%
7. Technical assistance	Technical assistance	50%	69%	100%	100%	75%	37%	64%
8. Policy evaluation	Policy evaluation	0%	50%	0%	80%	100%	42%	47%

However, few countries have effective targeting mechanisms in their agri-environmental schemes. Targeting mechanisms can be improved by adopting cost-effectiveness or environmental performance criteria in enrolment screens or by directly supporting the achievement of environmental performance or results (result-based schemes).

While targeted mechanisms for identifying recipients tend to increase transaction costs, those could be kept limited as the Australian case illustrates. All of Australia's agri-environmental schemes include either cost-effectiveness, environmental performance criteria or both in their enrolment screens (Figure 6). Nonetheless, Australia's schemes set-up and implementation transaction costs are, for the most part, limited to 5-30% of outlays.

The lack of some essential features in each country is more evident when looking at the presence or absence of a particular feature in schemes' share of total outlays (Table 5). The use of baselines, cost-based payment rates, enforcement mechanisms and technical assistance, policy evaluation, is less prevalent in those programmes that operate larger budgets.

Table 5. Presence of key design features in agri-environmental schemes

% of total outlays

Key features	Taxonomy categories	Argentina	Australia	Estonia	Finland	Korea	Portugal	Total
1. Baselines	Baselines	100%	61%	97%	NA	100%	80%	55%
2. Effective targeting	Supported activity: Performance or results based	0%	63%	11%	NA	0%	0%	19%
	Enrolment screens: Cost-effectiveness	0%	100%	0%	NA	23%	0%	29%
	Enrolment screens: Environmental performance	0%	24%	0%	NA	0%	0%	7%
3. Tailoring	Basis for payment rate: Participation costs	0%	30%	100%	NA	100%	93%	49%
	Basis for payment rate: Bid-based	0%	51%	0%	NA	0%	0%	14%
4. Flexibility	Contract adjustment	0%	88%	87%	NA	25%	99%	62%
5. Inspections	Inspections	100%	97%	97%	NA	100%	98%	69%
6. Penalties	Penalties	0%	49%	100%	NA	100%	100%	56%
7. Technical assistance	Technical assistance	0%	59%	100%	NA	77%	53%	47%
8. Policy evaluation	Policy evaluation	0%	56%	0%	NA	100%	9%	23%

Note: Only schemes that had information on budget outlays were considered in this figure. Number of schemes with non-missing values on budget outlays: Argentina=1, Australia=15, Estonia=10, Finland=1, Korea=4 and Portugal=35. Total number of schemes Argentina=2, Australia=16, Estonia=10, Finland=15, Korea=4 and Portugal=38.

Illustrating the use of the taxonomy for country assessments: The Korean case

This section illustrates how the taxonomy can be used for evaluating agri-environmental schemes with an application to Korea's agri-environmental payment schemes.

A first step to identify the schemes and their characteristics that may be subject to improvement is to determine if schemes' objectives target the main environmental challenges associated with the agricultural sector of a particular country. Although Korea has made significant progress at reducing the use of fertilisers since 2000, nutrient surplus remain high relative to OECD countries (Table 6). High nutrient surplus in Korea are mainly due to high levels of manure per area of agricultural land (OECD, 2019_[19]).

Table 6. Agri-environmental indicators in Korea

Environmental indicators	Korea		OECD average	
	2000	2018*	2000	2018*
Nitrogen balance, kg/ha	254	212.2	33.3	29.1
Phosphorus balance, kg/ha	50.3	45.9	3.3	2.3
Agriculture share of total energy use (%)	2.9	0.8	1.7	2
Agriculture share of GHG emissions (%)	4.3	3.1	8.1	8.9
Share of irrigated land in AA (%)	45.4	42.8	-	-
Share of agriculture in water abstractions (%)	53.4	52.8	46	49
Water stress indicator	27.1	34.7	9.9	8.9

Note: * or closest available year.

Source: (OECD, 2020^[27]).

Korea's agri-environmental payment schemes could be enhanced by aligning their objectives to the environmental challenges of its agricultural sector. While Korea is implementing some policy measures, like the Manure Recovery Programme (Gruère, Ashley and Cadilhon, 2018^[28]), to improve the environmental performance of livestock production, its main agri-environmental schemes do not have nutrient management objectives.

The Environment-Friendly Farming and Environmental-Friendly Livestock schemes, which are the main agri-environmental payment programmes in Korea in terms of budget share, focus on organic production but not directly on tackling nutrients management (Table 7). Only the Agricultural Environmental Conservation Programme directly targets nutrients management but this programme has a marginal share in terms of budget, area and recipients.

Table 7. Korea's agri-environmental payment schemes objectives

Category	Sub-category	Direct Payment for Environment-Friendly Farming (1999)	Direct Payment for Environment-Friendly Livestock Farming (2009)	Direct Payment for Landscape Conservation (2005)	Agricultural Environmental Conservation Program (2019)
Environmental objectives					
Water quality improvement	Nutrients management, runoff/leaching reduction				Yes
	Sediment runoff reduction				Yes
Climate protection and air quality improvement	Reduction of GHG emissions				Yes
Natural resources protection	Preservation of the soil fertility/quality				Yes
Protection of biodiversity	Ecosystem and landscape protection				Yes
	Protection of pollinators				Yes
	Protection of local crops varieties				Yes

Category	Sub-category	Direct Payment for Environment-Friendly Farming (1999)	Direct Payment for Environment-Friendly Livestock Farming (2009)	Direct Payment for Landscape Conservation (2005)	Agricultural Environmental Conservation Program (2019)
Other specific objectives					
Support farming activities and specific activities	Organic and/or sustainable farming	Yes	Yes		Yes
Economic, societal and cultural objectives	Promotion of economic development			Yes	
	Landscape preservation			Yes	Yes
	Protection of cultural heritage				Yes
	Empowerment of farmers			Yes	Yes
Budget share in agri-environmental schemes		40%	35%	23%	2%
Recipients share in agri-environmental schemes		71%	3%	24%	2%
Area share in agri-environmental schemes		69%	NA	29%	1.6%

Secondly, the taxonomy can be used to classify and compare the characteristics of the eight key features that are relevant for cost-effectiveness and to identify areas for improvement. Table 8 shows the supported activities of Korea's agri-environmental schemes, Table 9 shows the use of baselines, enrolment screens and basis for payment rates, Table 10 looks into contract flexibility, inspections, penalties, technical assistance and policy evaluation mechanisms.

The three most relevant schemes in terms of budget support the implementation of crop and livestock practices and management of uncultivated areas rather than the achievement of environmental performance or results. The Agricultural Environmental Conservation Programme supports multiple activities including economic, infrastructure and innovation.

Table 8. Supported activities by Korea's agri-environmental schemes

Category	Sub-category	Direct Payment for Environment-Friendly Farming (1999)	Direct Payment for Environment-Friendly Livestock Farming (2009)	Direct Payment for Landscape Conservation (2005)	Agricultural Environmental Conservation Program (2019)
Implement practices	Crop management	Yes			Yes
	Livestock management		Yes		Yes
	Soil testing	Yes			Yes
	Uncultivated areas			Yes	
Achieve environmental performance or environmental results	Nutrients runoff/leaching				
	Water quantity				
	Biodiversity				
	Land retirement				
Environmental connectivity projects				Yes	Yes
Economic, investment and infrastructure projects	Economic project (boosting local activity)			Yes	Yes
	Infrastructure activities				Yes

Category	Sub-category	Direct Payment for Environment-Friendly Farming (1999)	Direct Payment for Environment-Friendly Livestock Farming (2009)	Direct Payment for Landscape Conservation (2005)	Agricultural Environmental Conservation Program (2019)
	Innovation activities and investments				Yes
	Implementation of business management practices				
	Training, capacity building activities	Yes	Yes	Yes	Yes
	Other				Yes
Budget share in agri-environmental schemes		40%	35%	23%	2%
Recipients share in agri-environmental schemes		71%	3%	24%	2%
Area share in agri-environmental schemes		69%	NA	29%	1.6%

All of Korea's agri-environmental schemes have baselines and features for tailored payments, but a few lack effective enrolment screens and contract flexibility adjustment clauses. All the schemes base the payment rates on estimated participation costs and on foregone revenue, which help to not overcompensate recipients for their actions (Table 9). Enrolment screens based on cost-effectiveness are only used in one agri-environmental scheme, while contract adjustment clauses are only used in two schemes.

Table 9. Baselines, enrolment screens and basis for payment in Korea's agri-environmental schemes

Category	Sub-category	Direct Payment for Environment-Friendly Farming (1999)	Direct Payment for Environment-Friendly Livestock Farming (2009)	Direct Payment for Landscape Conservation (2005)	Agricultural Environmental Conservation Program (2019)
Baselines		Yes	Yes	Yes	Yes
Enrolment screens	Environmental performance				
	Participation cost thresholds			Yes	
	Cost effectiveness / value for money			Yes	
	Geographic considerations			Yes	
	Extent of supported activity in total farmland				
	Record of applicant	Yes	Yes	Yes	Yes
	Risk, certainty or duration of outcomes			Yes	
	Socio-economic assessment			Yes	
	Other				Yes
	No enrolment screens in place				
Basis for payment rate	Estimated or actual participation costs	Yes	Yes	Yes	Yes
	Estimated or actual foregone revenue	Yes	Yes	Yes	

Category	Sub-category	Direct Payment for Environment-Friendly Farming (1999)	Direct Payment for Environment-Friendly Livestock Farming (2009)	Direct Payment for Landscape Conservation (2005)	Agricultural Environmental Conservation Program (2019)
	Estimated or actual environmental performance				
	Bid-based				
	Other				
Contract adjustment	From personal hardship (e.g. drought, financial problems)			Yes	
	For adaptive management (making changes to better meet the objectives of the contract)			Yes	Yes
	Other				
	No adjustment possible	Yes	Yes		
Budget share in agri-environmental schemes		40%	35%	23%	2%
Recipients in agri-environmental schemes share		71%	3%	24%	2%
Area share in agri-environmental schemes		69%	NA	29%	1.6%

All of Korea's agri-environmental payment schemes have enforcement mechanisms in place such as inspections and penalties and the majority of schemes also provide technical assistance (Table 10). With regards to evaluation, most of the policy evaluations focus on the extent of participation but few assess environmental effectiveness and none focus on cost-effectiveness.

Table 10. Enforcement, technical assistance and contract adjustment

Category	Sub-category	Direct Payment for Environment-Friendly Farming (1999)	Direct Payment for Environment-Friendly Livestock Farming (2009)	Direct Payment for Landscape Conservation (2005)	Agricultural Environmental Conservation Program (2019)
Inspections	On-the-spot controls	Yes	Yes	Yes	Yes
	Administrative data	Yes	Yes	Yes	Yes
	Beneficiary's bills, records and/or reports	Yes	Yes	Yes	Yes
	Data from digital technologies	Yes	Yes	Yes	
	Other				
	No inspections conducted				
Penalties	Prohibition to re-apply to the programme	Yes	Yes	Yes	
	Expiration of benefits	Yes	Yes	Yes	Yes
	Monetary sanctions				
	Reimbursement of past benefits	Yes	Yes	Yes	Yes
	Payment reduction			Yes	Yes
Technical assistance	Training	Yes	Yes		Yes
	Extension services				Yes
	Digital technologies				
	Other				

Category	Sub-category	Direct Payment for Environment-Friendly Farming (1999)	Direct Payment for Environment-Friendly Livestock Farming (2009)	Direct Payment for Landscape Conservation (2005)	Agricultural Environmental Conservation Program (2019)
	No technical assistance provided			Yes	
Policy evaluation	Cost-benefit				
	Cost-effectiveness				
	Environmental effectiveness			Yes	Yes
	Multi-criteria analysis				
	Other	Evaluation of the performance index such as certification rate	Evaluation of the performance index such as certification rate	Evaluation of scheme's extension	Inspection of performance indicators, such as the ratio of participating farmers
Budget share in agri-environmental schemes		40%	35%	23%	2%
Recipients share in agri-environmental schemes		71%	3%	24%	2%
Area share in agri-environmental schemes		69%	NA	29%	1.6%

Finally, the taxonomy can be used to formulate conclusions and recommendations. On the basis of the analysed information, Korea's agri-environmental schemes appear to present some of the essential elements that may be conducive to their cost-effectiveness. The design of these schemes could be improved by making use of enrolment screens with environmental effectiveness or cost-effectiveness criteria, by enhancing the contracts' flexibility and by evaluating their effectiveness and costs. Moving forward, future payment schemes could also target the management of nutrients from livestock to further reduce environmental pressures from high nutrient balances.

6. Conclusions

The pilot exercise undertaken for this study validated a method that could be used by policy makers to characterise, compare and evaluate the design features of agri-environmental schemes. The taxonomy tool allows for the systematic gathering of detailed information on a wide range of characteristics, in particular on the eight features that have been identified as essential in determining the cost-effectiveness of agri-environmental schemes: targeting mechanisms, use of baselines, tailored payments, contract flexibility, technical assistance, inspections, penalties and policy evaluation tools. At the same time, information on other relevant characteristics, such as policy transaction costs and quantitative information on budgets, enrolled area and number of recipients is generally lacking. This is an area where further analysis to support the design of agri-environmental policies is warranted.

The information collected from six pilot countries, Argentina, Australia, Estonia, Finland, Korea and Portugal, shows that more than half of the agri-environmental schemes in those countries have some of the essential features conducive to cost-effectiveness: baselines, tailored payments (payment rates based on participation costs or bid-based mechanisms), enforcement mechanisms (inspections and penalties), contract adjustment clauses; and provision of technical assistance to recipients. However, relatively few schemes have enrolment screens with cost-effectiveness criteria or environmental performance criteria, and even fewer directly support the achievement of environmental results or performance (result-based schemes). While providing payments in return for environmental results or performance may not be optimal for all the stated objectives of analysed schemes, due to the potential high transaction costs and the uncertainty of outcomes associated to such schemes, countries could explore areas where the implementation of such programmes is feasible.

The taxonomy is a flexible tool that can be used to guide the design of agri-environmental payment schemes. The application of the taxonomy to Korea's agri-environmental payments illustrates how the

taxonomy can be used to check for policy coherence and alignment, identifying areas for improvement and providing a roadmap for future developments.

Co-operation and co-ordination with relevant government agencies to collect reliable and complete information on agri-environmental schemes was fundamental for this project. While information collected via web searches and publicly available documents can be helpful and useful for the purposes of drafting the taxonomy and the survey, they are not sufficient to collect all required information on relevant characteristics of agri-environmental schemes.

Collecting information from the countries in which subnational governments are in charge of designing, implementing and evaluating the schemes was challenging, either because little information is publicly available, or because country experts had to co-ordinate with government agencies from multiple jurisdictions to obtain the information.

While the taxonomy is flexible and broad in scope, it by no means constitutes a final, fixed set of categories for all available agri-environmental schemes. The taxonomy can be further improved and modified as information from other countries is collected. For example, objectives can be ranked according to importance, and more details on enrolment screens and bid types can be gathered. It can also be tailored to specific contexts and countries. Moreover, this taxonomy can be expanded in the future to cover other agri-environmental policies.

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Annex A. Agri-environmental schemes survey

1. Designing and implementing agri-environmental programmes

- Q1. Are AE schemes designed separately from other policies or are as part of a broader policy package?
- Q2. How are the AE schemes priority themes (e.g. biodiversity, nutrient management) decided?
- Q3. Are *ex ante* evaluations conducted at the design stage; if so, how? Are these determinant or consultative?
- Q4. At what stage and how do you engage with recipients (farmers, individuals or communities) when designing AE schemes?
- Q5. How are eligibility criteria determined?
- Q6. Can AE schemes be revisited and modified; if so, how (i.e. following a specific calendar or process)?

2. Agri-environmental schemes

Q1. What is the status of the agri-environmental scheme?

- Ongoing (accepting new applicants and contracts)
- Closed (not accepting new applicants or new contracts)
- Other

Q2. Which are the main objectives of the agri-environmental scheme?

Support farming activities and specific activities

- Traditional practices/systems
- Organic and/or sustainable farming
- Infrastructure improvement
- Capacity building
- Income support
- Pest management
- Productivity and input efficiency

Economic, societal and cultural objectives

- Promotion of economic development
- Maintenance of stonewalls
- Production of healthier food
- Landscape preservation
- Protection of cultural heritage
- Empowerment of farmers
- Empowerment of women farmers
- Public access to land for recreation

Water quality improvement

- Nutrients management, runoff/leaching reduction
- Sediment runoff reduction

Air quality improvement

- Reduction of GHG emissions
 - Reduction of ammonia emissions
-

Natural resources protection

Water quantity protection

Water infrastructure improvement

Preservation of the soil fertility/quality

Carbon sequestration

Protection of biodiversity

Broad biodiversity goal

Ecosystem and landscape protection

Protection of pollinators

Protection of wild, native and or at risk species

Protection of livestock species

Protection of crop species

Protection of other species

Protection of forests

Animal welfare**Adaptation and resilience**

Adaptation and/or resilience to natural hazards

Adaptation and/or resilience to climate change

Protection of genetic resources

Protection of crop genetic resources

Protection of livestock genetic resources

Protection of forest genetic resources

Other

Q3. Does the agri-environmental scheme have any quantifiable targets?

Enrolled area

Recipients

Environmental outcome

Economic outcome

Other

Q4. What is the administrative level of the institution responsible for the day-to-day implementation or management of the agri-environmental scheme?

National

Local

International

Other

Q5. Who are the main recipients of the agri-environmental scheme?

Farmers

Tenants

Landowners

Partnerships and farmers associations

Public entities

Public-private partnerships

Communities/indigenous groups

Any private/legal person/group

Other

Q6. Number of recipients enrolled**Year**

2015

2016

2017

2018

 2019

2020

Other period

Q7. Total area enrolled
Year

2015

2016

2017

2018

2019

2020

Other period

Q8. Do eligible recipients need to be located in a specific region?

Environmentally-sensitive areas

Other geographic area

Q9. What are the main administrative requirements to be eligible for payment? (check all that apply)

Registration to other programmes

Have a certification

Submit a management plan

Bid submission

Other

Q10. Are there eligibility conditions related to the following?

Minimum land size

Livestock or plant density

Specific practices related to land use and crop type

Other

Q11. Which of the following conditions do recipients need to comply with to receive the payment?

Baselines, benchmarks, reference levels

Land cover restrictions

Minimum level of supported activity

Other

Q12. List the activities, practices or environmental performance levels or results that the scheme supports
Implement practices

Crop management

Livestock management

Soil testing

Uncultivated areas

Achieve environmental performance or environmental results

Nutrients runoff/leaching

Water quantity

Biodiversity

Land retirement**Environmental connectivity projects****Economic, investment and infrastructure projects**

Economic project (boosting local activity)

Infrastructure activities

Innovation activities and investments

Implementation of business management practices

Training, capacity building activities

Other

Q13. List the criteria (enrolment screens) used to select recipients from the pool of applicants that have already met the eligibility requirements

Environmental performance
 Participation cost thresholds
 Cost effectiveness / value for money
 Geographic considerations (geographic location or characteristics of the management unit)
 Extent of supported activity in total farmland
 Record of applicant (performance, previous funding or participation in former/other programs)
 Risk, certainty or duration of outcomes
 Socio-economic assessment
 Other
 No enrolment screens in place

Q14. Insert the total budget allocated to the agri-environmental scheme
Year

2015
 2016
 2017
 2018
 2019
 2020
 Other

Q15. Relative to the total budget outlays of the scheme, what is the percentage of the transaction costs associated with the set-up, implementation and farmers' participation into the scheme?

Set-up transaction costs
 Implementation transaction costs
 Farmers' participation transaction costs

Q16. What is the funding source of the agri-environmental scheme?

General budget
 Earmarked taxes
 Fund
 Other

Q17. Which administrative level has the entity that provides the funds for the agri-environmental scheme?

Supranational
 National
 Local
 Other

Q18. What is the payment type of the agri-environmental scheme?

Monetary payment per unit (i.e. ha, animal, practice)
 Total or partial reimbursement of investment costs
 Grant
 Tax incentive
 Loan
 Bonus payment
 Other

Q19. What is the payment format of the agri-environmental scheme?

Per hectare
 Per animal unit
 Per practice
 Lump-sum payment
 Per level of environmental improvement
 Other

Q20. What is the payment rate of the agri-environmental scheme?

[OPEN QUESTION]

Q21. What is the basis used to calculate the payment rate?

Estimated or actual participation costs
 Estimated or actual forgone revenue
 Estimated or actual environmental performance
 Bid-based
 Other

Q22. What is the differentiation criteria for payment rates (e.g. \$/ha or \$/animal)? (This question refers to payment rates of a specific practice/outcome and not to the total payment received)

Payment rate is uniform and not differentiated
 Individually-differentiated
 Extent of practices applied in farmland
 Number of practices
 Region
 Livestock density, units or type
 Farmland size
 Land use
 Other

Q23. Is there a limit in the total support that individual recipients can receive?

Yes
 No

Q24. What is the contract length format?

Specific length
 Permanent contract
 Variable according to project

Q25. Is there a limit to the length of contract?

Yes
 No

Q26. Can the contract be adjusted due to unforeseen circumstances?

From personal hardship (e.g., drought, financial problems)
 For adaptive management (making changes to better meet the objectives of the contract)
 Other
 No adjustment possible

Q27. What are the information sources used to verify compliance with the contract?

On-the-spot controls
 Administrative data
 Beneficiary's bills, records and/or reports
 Data from digital technologies
 Other
 No inspections conducted

Q28. What kind of penalties are applied to non-compliant recipients?

Prohibition to re-apply to the programme
 Expiration of benefits
 Monetary sanctions
 Reimbursement of past benefits
 Payment reduction
 Other
 No penalties applied

Q29. What kind of technical assistance is provided to recipients?

Training
 Extension services

Digital technologies

Other

No technical assistance provided

Q30. What kind of ex-post evaluation of the policy has been conducted?

Cost-benefit

Cost-effectiveness

Environmental effectiveness

Multi-criteria analysis

Other

No *ex post* evaluation has been conducted

Q31. Relative to other agri-environmental schemes in your country, how would you rate the environmental effectiveness of the scheme?

Lower than average

Average

Higher than Average

Unknown

Annex B. Agri-environmental schemes characteristics by country

Table A B.1. Quantifiable targets

Number of schemes

Category	Sub-category	Argentina	Australia	Estonia	Finland	Korea	Portugal
Participation	Enrolled area	1	2	8	13	2	29
	Recipients	1	1	6	0	2	20
Outcomes	Environmental	0	8	0	0	0	0
	Economic	0	2	0	0	0	7
	Other	0	1	1	2	1	7

Table A B.2. Supported activities

Number of schemes

Category	Sub-category	Argentina	Australia	Estonia	Finland	Korea	Portugal
Environmental practices	Crop management	2	8	5	10	2	21
	Livestock management	2	8	4	6	2	19
	Uncultivated areas	0	7	3	5	1	11
	Soil testing	2	2	2	1	2	6
Environmental performance or results	Biodiversity	0	8	2	0	0	2
	Water quantity	0	8	0	0	0	0
	Nutrients runoff/leaching	0	5	0	0	0	0
Environmental connectivity projects		0	2	0	0	2	0
Economic, investment and infrastructure projects	Training, capacity building activities	2	8	4	3	4	3
	Infrastructure activities	1	5	0	1	1	1
	Innovation activities and investments	1	2	0	0	1	1
	Implementation of business management practices	1	2	0	0	0	0
	Economic project (boosting local activity)	0	1	0	0	2	0
	Other	0	5	1	3	1	11

Table A B.3. Eligibility criteria

Number of schemes

Category	Sub-category	Argentina	Australia	Estonia	Finland	Korea	Portugal
Recipients	Farmers	2	5	10	15	4	29
	Tenants	2	3	10	0	0	1
	Landowners	2	4	10	0	0	5
	Partnerships and farmers associations	0	3	10	0	0	25
	Public entities	0	0	10	0	0	7
	Public-private partnerships	0	1	10	0	0	4
	Communities/indigenous groups	0	1	6	0	2	0
	Any private/legal person/group	1	3	4	0	0	2
	Other	2	5	1	2	3	10
Geographic location	Environmentally-sensitive areas	1	1	2	5	1	9
	Other geographic area	1	11	2	3	1	11
Administrative requirements	Registration in other programmes	2	1	4	10	0	0
	Have a certification	0	0	2	2	2	7
	Submit a management plan	1	7	0	4	3	12
	Bid submission	0	9	0	0	0	0
	Other	2	7	1	7	1	6
Characteristics of farm operation	Minimum land size	0	2	8	7	2	25
	Livestock or plant density	0	1	2	1	2	17
	Specific practices related to land use and crop type	0	7	6	12	3	10
	Other	0	6	4	6	1	8
Other eligibility criteria	Baselines, benchmarks, reference levels	2	9	9	14	4	23
	Land cover restrictions	0	1	4	9	0	0
	Minimum level of supported activity	0	7	2	8	1	0
	Other	1	5	1	5	1	0

Table A B.4. Enrolment screens

Number of schemes

Category	Argentina	Australia	Estonia	Finland	Korea	Portugal
Environmental performance	0	6	0	0	0	0
Participation cost thresholds	0	4	0	0	1	0
Cost effectiveness / value for money	0	15	0	0	1	1
Geographic considerations (geographic location or characteristics of the management unit)	1	7	0	0	1	3
Extent of supported activity in total farmland	0	1	0	0	0	13
Record of applicant (performance, previous funding or participation in former/other programs)	0	8	0	0	4	3
Risk, certainty or duration of outcomes	0	3	0	0	1	0
Socio-economic assessment	0	5	0	0	1	1
Other	0	4	1	0	1	21
No enrolment screens in place	0	0	9	15	0	11

Table A B.5. Payment type

Number of schemes

Category	Argentina	Australia	Estonia	Finland	Korea	Portugal
Monetary payment per unit (i.e. ha, animal, practice)	1	0	10	15	3	29
Total or partial reimbursement of investment costs	1	1	0	2	0	5
Grant	0	14	0	0	1	2
Tax incentive	1	0	0	0	0	0
Loan	1	0	0	0	0	0
Bonus payment	1	0	2	0	0	0
Other	1	2	0	0	0	0

Table A B.6. Payment rates characteristics

Number of schemes

Category	Sub-category	Argentina	Australia	Estonia	Finland	Korea	Portugal
Basis for rate calculation	Estimated or actual participation costs	0	5	10	15	4	31
	Estimated or actual forgone revenue	0	0	10	9	3	21
	Estimated or actual environmental performance	0	2	0	0	0	2
	Bid-based	0	5	0	0	0	1
	Other	0	6	0	1	0	0
Differentiation criteria for payment rates	Payment rate is uniform and not differentiated	0	1	6	7	4	9
	Individually differentiated	0	9	0	0	0	2
	Extent of practices applied on farmland	2	0	2	1	0	1
	Number of practices	1	0	0	0	0	1
	Region	1	0	0	2	1	0
	Livestock density, units or type	0	0	1	1	0	3
	Farmland size	0	0	0	0	0	11
	Land use	1	0	0	2	0	9
	Other	0	2	1	4	0	5

Table A B.7. Enforcement characteristics

Number of schemes

Category	Sub-category	Argentina	Australia	Estonia	Finland	Korea	Portugal
Inspections	On-the-spot controls	1	8	10	15	4	35
	Administrative data	2	9	8	15	4	30
	Beneficiary's bills, records and/or reports	1	15	4	15	4	11
	Data from digital technologies	2	1	6	15	3	1
	Other	0	5	0	0	0	0
	No inspections conducted	0	0	0	0	0	0
Penalties	Prohibition to re-apply to the programme	0	2	9	0	3	10
	Expiration of benefits	1	4	10	13	4	0
	Monetary sanctions	0	4	9	0	0	11
	Reimbursement of past benefits	0	1	10	13	4	36
	Payment reduction	0	6	9	13	2	37
	Other	0	0	0	2	0	21
	No penalties applied	0	4	9	0	0	0

Table A B.8. Technical assistance modalities

Number of schemes

Category	Argentina	Australia	Estonia	Finland	Korea	Portugal
Training	1	7	10	15	3	3
Extension services	0	9	1	15	1	6
Digital technologies	0	2	10	15	0	0
Other	0	1	0	0	0	5
No technical assistance provided	0	2	0	0	1	11

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