Institute for European Environmental Policy

Instruments for financing action on invasive alien species (IAS)

Review and assessment of selected examples and their applicability in Finland

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Table of Contents

Summary and Conclusions

The purpose of the review was to identify and assess a range of innovative instruments for financing and/or covering the costs of policy action on invasive alien species (IAS). The analysis focused on IAS instruments financed through private funding. In addition, examples of cost-effective ways to combine public and private funding were identified.

The overall aim of this work was to support the future implementation of Finnish national IAS strategy, adopted in 2012[1]. It was carried out in the context of a broader project on increasing knowledge on IAS in Finland (e.g. distribution, dispersal, risk management and pathways for entry)[2]. The project, supported by IEEP, was led by the Finnish Environment Institute (SYKE) and financed by the Finnish Ministry of Agriculture and Forestry.

Ten instruments were identified and assessed in the context of the study. The selection was based on the researchers' expert knowledge as well as a call for examples to the international experts of the IUCN Invasive Species Specialist Group (ISSG). The selection of examples was aimed to be illustrative only and it was not intended to produce a comprehensive overview of all existing instruments for financing or covering the costs policy action on IAS.

The identified instruments were systematically assessed (see below) and their possible applicability in Finland was estimated. Six criteria were used to evaluate the identified instruments:

1. Coverage and scope (type of IAS, phase of invasion etc.)
2. Cost-effectiveness (covering costs of action, reducing the risk of IAS)
3. Legal requirements
4. Administrative burden
5. Requirements for public funding
6. Acceptability and legitimacy

An overview of the identified instruments is presented in Table 1 and detailed assessments are available in Chapters 1-10.

In general, the assessment of identified instruments shows that the majority of the available innovative instruments for financing and/or covering the costs of action on IAS are suitable for deployment in Finland. Several instruments, such as cost recovery due to non-compliance, payments and fines based on liability, and guidance for public procurement, could be taken up in Finland without delay. Some cost-effective instruments, such as mechanisms for cost sharing and recovery of risk assessment costs, require further development of national IAS legislation. However, such mechanisms can offer interesting opportunities in the near future, for example when implementing the upcoming EU

[1] http://www.mmm.fi/fi/index/etusivu/ymparisto/luonnonmonimuotoisuus/vieraslajit.html
[2] http://www.mmm.fi/fi/index/etusivu/tiedotteet/121127_havina.html

Regulation for IAS[3]. Only two identified and assessed instruments, earmarked taxes and financial incentives for voluntary IAS control, were considered to be inappropriate for Finland.

Based on the assessment, a number of recommendations were identified for future policy action on IAS in Finland:

- Implementing a mechanism to recover the costs of non-compliance with IAS regulations, in particular related to high priority species such as giant hogweed.
- Assessing the possibility of introducing an earmarked temporal ballast water levy / fee for commercial vessels using the Baltic Sea, with a view to raising money for monitoring and research on Baltic Sea IAS
- Developing a regulation or voluntary guidelines for public procurement related to public green areas in order to minimise the risks of IAS.
- Carrying out a more comprehensive and systematic assessment of innovative and cost-effective means to finance IAS policy action in Finland, particularly in relation to the upcoming EU Regulation on IAS.

[3] Proposal for EU Regulation on the prevention and management of the introduction and spread of invasive alien species (COM/2013/620): http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0620:FIN:FI:PDF

Table 1. Overview of the identified innovative instruments for financing and/or covering the costs of policy action on IAS.

Note: Financing IAS action through earmarked taxes refers to revenue collected as a part of the common state taxation system, such as conveyance tax. IAS related (earmarked) fees and levies refer to dedicated payments established and carried out to address IAS.

Instrument	Description of the example in practice	Focus	Geographic coverage	Obligatory / voluntary	Public / private funding	Applicability in Finland
Impact based cost sharing and recovery	Australia: The instrument collects funding in a pre-determined way to finance the emergency eradication of new invasive plant pest incursions.	Eradication (intentional and unintentional)	National	Mostly obligatory, if sector is party to the agreement	Private and public	Could be applied in Finland but requires further development of national IAS regulation
Risk assessment cost recovery	Australia: The instrument covers the costs of secondary risk assessments for species that are proposed for import and for which an initial risk assessment has already been carried out.	Prevention (intentional)	National	Obligatory	Private	Could be applied in Finland but requires further development of national IAS regulation
Earmarked ballast water levy (temporary)	Australia: : A levy on commercial vessels is collected with a view to funding invasive species research and development. In addition to collecting funding, the levy increases awareness.	Not specified, can be used to support all the different stages of IAS action	National / regional	Obligatory	Private (commercial shipping)	Could be taken up in Finland
Cost recovery resulting from non-compliance or non-action	Several countries: These instruments allow the recovery of the costs of IAS measures (e.g. emergency eradication) from liable parties that have breached IAS-related regulations.	Applicable to all stages of IAS action	National / regional	Obligatory	Private (party responsible for introduction / spread of IAS)	Could be taken up in Finland
Monetary incentives to support use / control of IAS	England and Argentina: Relevant stakeholders are paid for participating in management of IAS or given permission for commercial exploitation of the species.	Control and eradication (intentional / unintentional)	National / regional / local	Voluntary	Public and/or private	Not very applicable in Finland

Earmarked fees	Oregon: The instrument requires boat users to go through check-ups and buy an annual or biannual compulsory permit. If invasive species are found in the check-up, the boat must be cleaned. The instrument thereby controls the spread of invasive species, collects funding for implementing IAS legislation, and increasing awareness of aquatic invasive species.	Prevention	Regional (state level)	Obligatory	Private (boaters)	Could be taken up in Finland (for certain species)
Economic incentive based on the avoidance of risk-based costs	Australia: The instrument works through setting lower inspection and sampling costs for those traders and agents who utilise low-risk pathways in their import activities.	Prevention	National	Obligatory	Private (importers)	Could be applied in Finland but requires further development of national IAS regulation
Liability-based fines and payments related to non-compliance	The UK: The instruments collect funding in the form of fines and other payments from parties that have breached some IAS-related regulation. These fines or payments are intended to provide incentives to comply with the regulations (i.e. desired way of action).	prevention and control (deliberate release), restoration	National	Obligatory	Private	Could be taken up in Finland
Public procurement as a means for reducing the risk of spread	Belgium, the UK and Ireland: Obligatory requirements or voluntary guidelines and codes of conduct that restrict or guide the procurement activities of public bodies (cities, local authorities etc.). The aim is to encourage the use of native species instead of non-native species in order to limit the risk of IAS invasions or restrict the spread of already established species.	Prevention (intentional)	National / regional / local	Obligatory or voluntary	Public	Could be taken up in Finland
Earmarked taxes related to IAS	Hawaii: The instrument works by collecting funding for IAS management through conveyance taxes.	varying focus, depending on the use of tax	National / regional (state)	Obligatory	Public	Not very applicable in Finland

1 Sharing the costs of pest eradication under the Emergency Plant Pest Response Deed (EPPRD), Australia

Instrument in a nutshell: The instrument collects funding in a pre-determined way to finance the emergency eradication of new invasive plant pest incursions.

Type of instrument: impact based cost sharing and recovery

Participation: mostly obligatory, if sector is party to the agreement

Source of funding: private and public

Focus in terms of hierarchical approach to IAS: eradication (intentional and unintentional)

Scale of application: national

Current status: ongoing

1.1 Description of mechanism

In Australia, the Emergency Plant Pest Response Deed (EPPRD) outlines the course of action taken in the event of plant pest incursion, including plant pests that are IAS. EPPRD was adopted in 2005 and is a formal legally binding agreement between Plant Health Australia (PHA) (i.e. the national plant health authority), the national, state and territory governments, and the national plant industry representatives that are signatories to the Deed.

The system currently covers about 25 sectors and 78 priority species, and in addition new species that fulfil the system criteria.

In short, EPPRD establishes an obligation for both government and industry parties to raise an alert in the case of a possible plant pest incursion. The alert triggers the development of a response plan for emergency eradication.

Among other things, EPPRD sets out the principles for covering the costs of emergency responses, including the sharing of costs between relevant private and public stakeholders. The cost recovery and sharing build on the classification of plant pests according to their estimated impacts. These impacts include negative impacts on nature, social and economic wellbeing (broader public) and crop sector (private). All species considered as pests are categorised in one of four cost sharing categories relating to their potential impacts on public and private resources. The category chosen dictates the appropriate split of eradication costs between government and private funding sources (Table 1).

The National Management Group (NMG) is responsible for making the key decisions concerning the response to an emergency plant pest (EPP) incursion under the EPPRD. The group is formed when an incident is identified. It consists of representatives from all affected parties signatory to the EPPRD. The group is responsible for approving a response plan, including the budget if it is agreed that eradication is feasible and cost beneficial. The NMG is advised on technical matters by the Consultative Committee on Emergency Plant Pests (CCEPP). CCEPP is a technical committee that advises the NMG on EPP incursion responses. Similar to the NMG, the CCEPP is formed when an EPP is detected or suspected to be present. The CCEPP is responsible for assessing the grounds for eradication and for providing the technical advice needed for the NMG to make decisions. A scientific advisory panel (SAP) may be convened by the CCEPP to review and provide advice on specific technical matters.

Plant pest category	Characteristics	Government funding	Industry funding
Category 1	**Very high public benefits of eradication** - Major damage to natural ecosystems - Potential impacts on human health - Relatively little impact on commercial crops; difficult to determine which cropping sectors benefit from eradication	100%	0%
Category 2	**High public benefits of eradication** - Significant pubic losses (direct or indirect) - Major costs to affected cropping sector	80%	20%
Category 3	**Moderate public benefits of eradication** - Most negative impacts occurring to the cropping sector - Some significant negative impacts / costs to public	50%	50%
Category 4	**Mainly private benefits of eradication** - Little or no public cost - Little or no impact on natural ecosystems - No significant trade issues affecting national and regional economies	20%	80%

Table 1. Categorisation of plant pests according to their estimated impacts

Source: Emergency Plant Pest Response Deed http://www.planthealthaustralia.com.au/wp-content/uploads/2013/08/EPPRD-9-August-2013.pdf

1.2 Experience of effectiveness

No documented information could be found on the effectiveness of the cost recovery and sharing mechanism under EPPRD. This is because, due to the confidentiality requirements associated with the EPPRD, certain information relating to the EPPRD or specific responses to incursions is not publically available.

In general, it seems to be considered that the systematic and structured EPPRD response has been able to deliver quality and timely outcomes, increasing the chance of achieving the set goals of emergency response. However, the existing information also highlights a

number of broader issues with effectiveness of EPPRD. The perceived deficiencies include, for example, slowness and lack of staff and resources of the government agencies managing the response, leading to unsuccessful eradication. Furthermore, one of the key sectors, i.e. the forest sector, has not yet agreed to sign EPPRD. Consequently, it has been recommended that EPPRD should be further developed to ensure an appropriate length of time for the initial investigation and alert phases, to enable the right decision to be made. In addition, priority is needed to be given to both resourcing and funding during the early stages of an emergency response. Finally, it is important to ensure that a strategy to address IAS invasions is available even if the required response does not fall under EPPRD.

1.3 Assessment of pros and cons

Coverage: Moderate. The mechanism covers only the costs of one IAS group (plant pests) and one area of IAS policy implementation (eradication).

Cost-effectiveness: Relatively high. In principle, the EPPRD cost sharing mechanism appears cost-effective. The procedure for emergency eradication cost recovery is a targeted measure aimed at covering all costs of an eradication event and, therefore, it can be considered cost-effective. Furthermore, the arrangements and funding have been agreed beforehand and therefore no time needs to be wasted for negotiations at the time of the invasion. Additionally, in most categories there is some industry funding, providing incentives for the industry to act in a precautionary manner.

However, it is to be noted that the cost-efficiency of the cost-sharing mechanism does not guarantee the effectiveness of eradication itself which depends on the effectiveness of the overall mechanism, location in question and eradication means used, etc. As highlighted above, insights from the application of the EPPRD in practice indicate that there are still issues to be addressed.

Legislative requirements: Required. EPPRD is a formal legally binding agreement between Plant Health Australia (PHA) and industry stakeholders.

Administrative burden: Relatively high (initial) – Relatively low (additional). The procedure for emergency eradication cost recovery does not introduce a great administrative burden. However, the cost recovery builds on to the overall EPPRD procedure which can be rather resource intensive. For each emergency plant pest (EEP) incursion there is a need to establish an NMG supported by CCEPP. Each of these groups requires the involvement of several experts, for example CCEPP consists of the national Chief Plant Protection Officer, all state and territory Chief Plant Health Managers, as well as nominated representatives from each Affected Party.

Requirements for public funding: Relatively high (initial) – Relatively low (additional). As above, the procedure for emergency eradication cost recovery introduces limited additional requirements for funding. However, the overall EPPRD procedure is mainly funded from public sources (government and state budgets).

Acceptability / legitimacy: Relatively high. The share of costs recovered from different public and private stakeholders is linked to the assessment of foreseen negative impacts of IAS invasion. Thus, the benefits of avoided negative impacts and/or costs to stakeholders should be similarly shared, increasing acceptability and legitimacy of the measure.

Links to addressing fundamental aspects of IAS problem: Moderate. Rapid response can be considered a fundamental aspect. Also, EPPRD can be considered to (indirectly) increase awareness of IAS among private stakeholders.

1.4 Assessment of applicability in Finland

Required legislative support: EPPRD is a formal legally binding agreement between relevant public and private stakeholders. In addition, EPPRD builds on a broader legislative framework on managing risks of IAS that are plant pests.

Existing legislation hindering application in Finland: N/A

Administrative burden: Depends on the scope of the measure. Foreseen additional administrative burden is relatively limited if the emergency eradication cost recovery is developed for IAS falling under the current plant pest framework. However, if the plant pest framework is expanded to cover 'additional' IAS (e.g. IAS with negative impacts on biodiversity only) then there may be requirements for additional administration.

Requirements for public funding: The procedure for emergency eradication cost recovery introduces limited additional requirements for funding. However, there may be the need to adjust the existing regulative framework for plant pests which might require additional public funding (see above).

Acceptability / legitimacy: Linking the share of costs recovered to the benefits of eradication to stakeholders is likely to result in relatively high acceptability and legitimacy of the measure also in Finland.

→ Establishing a procedure for emergency eradication cost recovery, similar to Australia, could be a possible IAS policy measure in Finland, especially if at first instance building on the current regulative framework for plant pests.

However, for plant pests, it has recently been agreed that the state will cease to compensate producers for eradication. Consequently, following the Australian system would mean back-tracking somewhat towards the old system where compensation was paid.

1.5 Key references

Emergency Plant Pest Response Deed, http://www.planthealthaustralia.com.au/wp-content/uploads/2013/08/EPPRD-9-August-2013.pdf

Plant Health Australia, http://www.planthealthaustralia.com.au/biosecurity/emergency-plant-pest-response-deed/

National Plant Biodiversity Status Report (2012) (Chapter 4), http://www.planthealthaustralia.com.au/wp-content/uploads/2013/06/2012-Status-Report-Chapter-4.pdf

Carnegie, A. and Cooper, K. (2011) Emergency response to the incursion of an exotic myrtaceous rust in Australia. Australasian Plant Pathology 40, 346-359.

Contact: Susanna Driessen, General Manager Emergency Response and Preparedness

2 Cost recovery in the context of Weed Risk Assessment (WRA), Australia

Instrument in a nutshell: The instrument covers the costs of secondary risk assessments for species that are proposed for import and for which an initial risk assessment has already been carried out.

Type of instrument: cost recovery

Participation: obligatory

Source of funding: private

Focus in terms of hierarchical approach to IAS: prevention (intentional)

Scale of application: national

Current status: ongoing

2.1 Description of mechanism

In Australia, a systematic science-based weed risk assessment (WRA) process was adopted in 1997 with a view to determine the weed potential of proposed new plant imports. If a species is determined as a 'weed' in the WRA process then its import to Australia is not permitted.

The Department of Agriculture, Fisheries and Forestry (DAFF), the main body responsible for national biosecurity, conducts WRAs on all new plant species proposed for introduction into Australia as seeds, tissue culture or any other material for propagation.

The WRA process is a three-tiered system that involves the importer and DAFF.

- Tier 1: In the first instance, the status of the plant in Australia is determined as 1) present in Australia and not under official control or 2) listed on the import conditions database (ICON) and/or 3) listed on the permitted seeds list. This instance can be initiated by the importer by checking whether the plant proposed for introduction is present in the ICON database or added to the permitted seeds list. If the species is absent from both of these lists, the importer must complete a new plant introduction form and submit it to DAFF. This initiates the WRA process.
- Tier 2: WRA is administrated by DAFF. It is a question-based assessment of the weed potential of plants proposed for import. Assessment involves answering up to 49 questions on specific characteristics of a plant. The answers generate a numerical score relating to the weed potential of that plant. The score is used to determine an outcome: accept the species for importation; reject the species for importation; or reject pending

further evaluation of the species' weed potential. While DAFF is the usual body responsible for carrying out WRAs, they can be also completed by the importer by following the set WRA process. However, all WRAs must be validated by DAFF.

- Tier 3: If import conditions cannot be determined following a WRA, importers may be given the opportunity to provide more information for re-assessment of the species or to continue to post-entry evaluation under Tier 3.

The first WRA is funded by the Australian government and there is no specific cost to the applicant. However, if the importer wishes to carry out a new WRA then they must bear the costs, e.g. in the case that the importer wishes to contest the results and/or carry out a new WRA for a species earlier deemed to be a weed. Also, if import conditions for a species cannot be determined following a WRA the costs of any further re-assessment should be covered by the importer under Tier 3.

2.2 Experience of effectiveness

No information allowing general conclusions on effectiveness is available in the public domain.

2.3 Assessment of pros and cons

Coverage: Moderate. Covers only the costs of one IAS group (weeds) and one area of IAS policy implementation (prevention).

Cost-effectiveness: Moderate. Risk assessment procedure targets and prevention is considered as one of the most cost-effective means to address IAS problems. However, the cost recovery is focused on 'secondary' / additional RAs only and therefore it only covers a limited amount of the total RA costs.

Legislative requirements: Required.

Administrative burden: Relatively high. RA recovery systems do not introduce a great administrative burden. However, the cost recovery builds on an established national risk assessment framework which, in turn, introduces quite some administrative requirements.

Requirements for public funding: Relatively high. RA recovery systems introduce limited additional requirements for funding. However, the overall RA framework is mainly funded from public sources (government budget). Furthermore, RA cost recovery only applies to 'secondary' RAs requested to be carried out by the importers; the initial RA is carried out by relevant national authorities using public funding.

Acceptability / legitimacy: Relatively high. Cost recovery from importers is limited to the 'secondary' / additional RA only. The system is consistent with the polluter (risk imposer) pays principle.

Links to addressing fundamental aspects of IAS problem: RAs in general relate to prevention and therefore directly address the root causes of IAS invasion. Furthermore, the recovery payments can indirectly support awareness-raising and consideration of risks among industry stakeholders. However, given the cost recovery is restricted to a limited number of RAs only, the overall impacts on industry awareness are likely to be limited.

2.4 Assessment of applicability in Finland

Required legislative support: Requires development: RA cost recovery builds on a broader legislative framework for IAS risk assessments. Integration of the upcoming EU Regulation on IAS into national legislation is likely to require the establishment of a RA framework.

Existing legislation hindering application in Finland: N/A

Administrative burden: Foreseen additional administrative burden related to RA cost recovery is relatively limited. However, the adoption of such a measure first requires the establishment of a national RA framework for IAS.

Requirements for public funding: The procedure for RA cost recovery introduces limited additional requirements for public funding. However, it requires the establishment of national RA framework for IAS which requires public investment.

Acceptability / legitimacy: The system is consistent with the polluter (risk imposer) pays principle and this is likely to result in high acceptability also in Finland. Furthermore, limiting the cost recovered to 'secondary' RAs / additional information only might further increase acceptability.

→ Establishing a procedure for RA cost recovery could be a possible IAS policy measure in Finland, linked with the foreseen required establishment of broader national IAS RA framework.

2.5 Key references

The Australian weed risk assessment process, http://www.daff.gov.au/ba/reviews/weeds/system

3 Ballast Water Research and Development Funding Levy, Australia

Instrument in a nutshell: A levy to commercial vessels is collected with a view to fund invasive species research and development. In addition to collecting funding, the levy increases awareness.

Type of instrument: levy (earmarked)

Participation: obligatory

Source of funding: private

Focus in terms of hierarchical approach to IAS: not specified (prevention)

Scale of application: national

Current status: temporary instrument, not active anymore

3.1 Description of mechanism

In Australia a temporary ballast water levy was adopted in 1998 with a view to create funding for the national Strategic Ballast Water Research and Development Programme developed by the Australian Ballast Water Management Advisory Council.

The levy was based on a legislative Act that allowed the collection of an earmarked payment from the commercial shipping sector during a two-year period. The underlying rationale for the levy was that those responsible for the increased risk of IAS invasions in the marine and coastal environment – while also commercially benefiting from the activity – would contribute to financing the policy actions to minimise these risks.

The levy consisted of two types of payments: AUD 210 (around EUR 140) for bulk carriers and AUD 140 (around EUR 95) per vessel for all other ships (e.g. tankers) with a length of 40 metres or longer. The process for paying the levy varied between vessels, depending on the destination and length of their route. However, it was capped to be paid maximum four times per year (once in every quarter of the year).

The levy payments were earmarked to create funding for the national ballast water programme with a target of AUD 2 million (around EUR 1.4 million) to be reached. Once the AUD 2 million was reached in 2000, the levy ceased to exist.

3.2 Experience of effectiveness

No information allowing general conclusions on effectiveness is available in the public domain.

3.3 Assessment of pros and cons

Coverage: Relatively low / moderate direct coverage. The programme was focused on addressing one IAS pathway only, namely ballast water. Funding collected via levy was earmarked to be used for research and development related to the spread of IAS through ballast water. This can be an effective way to ensure that national policy measures build on comprehensive, best available information and knowledge. However, research and development activities only form a basis for policy action on IAS and in the long-term a systematic uptake of results, best practises, innovations etc. is needed.

Cost-effectiveness: Relatively high for creating funding / Relatively low broader effectiveness. Establishing a temporary levy can in itself be considered as a rather straight forward, cost-effective policy measure for creating earmarked funding for IAS research and development. Furthermore, in general IAS policy measures related to ballast water are first and foremost linked to prevention which is the most cost-effective means to address IAS problems. However, the final effectiveness of the levy is determined by the effectiveness of the national Strategic Ballast Water Research and Development Program in decreasing the risk of IAS invasion via ballast water. No information could be found to support such an assessment.

Finally, it is to be noted that the levy has a limited cost-effectiveness from the perspective of the broader IAS policy. For example, the levy is set at a very low level and therefore, although creating funding, it is unlikely to function as a means to reduce risk behaviour in general. See also 'links to addressing broader IAS policy' below.

Legislative requirements: Required. The levy was based on a dedicated legislative Act.

Administrative burden: Relatively low. There are no significant administrative requirements beyond the administration of the levy and Ballast Water Research and Development Program.

Requirements for public funding: Relatively low. There is no need for significant new public funding beyond the administration of the levy.

Acceptability / legitimacy: Relatively high. The levy is temporary and relatively low cost which increased acceptability among the key stakeholders. The impact assessment (2007) stated that the levy obtained the full support of the shipping industry. Furthermore, political acceptability of the levy is likely to be high given that both the need for public funding and risk of political failure are low.

Links to addressing fundamental aspects of IAS problem: The levy supports awareness-raising within the shipping industry. Furthermore, ballast water pathway control is, to a large extent, preventative by nature, aiming to limit the spread of IAS. However, the levy is set at a very low level and therefore, although creating funding, it is unlikely to function as a means to reduce risk behaviour in general.

3.4 Assessment of applicability in Finland

Required legislative support: Establishment of such a levy in Finland is likely to require a legislative basis. Integration of the upcoming EU Regulation on IAS into national legislation could facilitate the establishment of such a basis.

Existing legislation hindering application in Finland: N/A

Administrative burden: Very limited increase in administrative requirements is likely; resources are needed for administration of the levy system and the earmarked fund.

Requirements for public funding: Likely to require some public funding to cover start-up costs, however the private funding obtained via the levy is designed to cover all other costs.

Acceptability / legitimacy: Keeping the levy fees low is likely to increase legitimacy among stakeholders whereas limited needs for public funding should increase political support. However, it is difficult to predict what the general attitude among the shipping industry towards such a measure might be.

→ A temporary levy targeting the shipping industry and creating earmarked 'seed funding' for IAS research and development could be a possible IAS policy measure in Finland, for example in the context of the Baltic Sea, possibly focusing on preventing the spread of IAS though hull fouling. Unlike ballast water, hull fouling is an IAS pathway that remains to be systematically addressed.

3.5 Key references

Ballast Water Research and Development Funding Levy Bill (1997), http://www.austlii.edu.au/au/legis/cth/bill_em/bwradflb1997486/memo_0.pdf

Ballast Water Research and Development Funding Levy Collection Act (1998), http://www.comlaw.gov.au/Details/C2004A05351

Ballast Water Research and Development Funding Levy Collection Regulations (1998), http://www.comlaw.gov.au/Details/F1998B00133/Download

4 Cost recovery related to non-compliance with IAS regulations

Instrument in a nutshell: The instruments allow recovering the costs of IAS measures (e.g. emergency eradication) from liable parties that have breached IAS-related regulation.

Type of instrument: cost recovery resulting from non-compliance or non-action

Participation: obligatory

Source of funding: private

Focus in terms of hierarchical approach to IAS: applicable to all stages

Scale of application: national / regional

Current status: ongoing

4.1 Description of mechanism

Cost recovery due to non-compliance (prevention / control of prohibited species): Since 2009 in the state of Wisconsin (US), the invasive species rule (Wis. Adm. Code ch. NR 40) makes it illegal to possess, transport, transfer, or introduce certain invasive species without a permit. The rule applies to individuals, businesses and organisations alike. Invasive species are classified into two categories: prohibited and restricted. For prohibited species, the transport, possession, transfer and introduction is banned. Individuals, businesses or organisations found responsible for a prohibited species' presence on the property they own, control or manage may be ordered to carry out control measures. If a control order is not followed, the state authority is allowed to carry out the control measures with an option to seek cost-recovery. Restricted species are also subject to a ban on transport, transfer and introduction, but possession is allowed (with the exception of fish and crayfish). Control of restricted species is encouraged, but not required. Unintentional transport, possession, transfer or introduction of invasive species without a permit is exempt, however only if it is determined that reasonable precautions were taken to prevent accidental introductions.

Cost recovery and fines due to non-compliance (emergency measures for non-established species): Several Eastern states of the US have implemented emergency bans on the transport of wood (including firewood) to prevent the spread and outbreaks of Emerald Ash Borer. For example, in Iowa the ban entered into force in November 2013 and it stipulates that wood products cannot be moved from a county under quarantine unless a permit has been issued by the regional authority or the article has been appropriately treated, under supervision, to exterminate any pests. The cost of treatment or destruction of an emerald ash borer-infested regulated article, in violation of the quarantine, shall be borne by the owner or person in charge of the regulated article or place of production. If the owner or person refuses or neglects to obey the emergency ban provisions, the expenses related to

treatment or destruction of an article shall be collected retrospectively, e.g. if necessary via the annual tax procedure.

Fines and/or cost recovery for non-compliance (control of established species): In Finland, a regulation to control common wild oat was updated in 2002. The law bans sale and release of items that may be infested with the common wild oat. It aims at eradication of infestations found on fields, and requires the farmers to notify the authorities of infestations and subsequently to eradicate the infestation. Once the authorities have been notified, they survey the field and prepare a control guidance (for minor infestations) or control plan (for major infestations or if the previous guidance has not been followed). If the plan is not followed, agricultural subsidies may be denied, a fine may be issued and the control action may be carried out at the farmer's expense.

4.2 Experience of effectiveness

No information allowing general conclusions on effectiveness is available in the public domain.

4.3 Assessment of pros and cons

Coverage: Relatively high – relatively low. Coverage related to the use of cost recovery depends on the coverage of the targeted regulation. The mechanisms can be applied to all species under restriction. It can also be applied to both intentional and unintentional human actions. Can be applied to all control strategies (from prevention to control). In practice, including the examples above, the focus is often limited to the eradication of new or already established species.

Cost-effectiveness: Relatively high - Moderate. The cost-effectiveness depends on the scope and coverage of the targeted regulation. In general, targeting prevention (e.g. intentional introduction of IAS) is commonly considered as one of the most cost-effective means to address IAS problems whereas targeting control and eradication are known to be less cost-effective. Consequently, in terms of overall IAS policy implementation cost recovery related to the eradication of species that are not yet established can be considered most cost-effective. Furthermore, cost-effectiveness also depends on the ratio between the costs to be recovered and the burden of proof required to do so, i.e. if detecting and/or demonstrating non-compliance requires significant efforts then these costs might become higher than the actual costs foreseen to be recovered.

Legislative requirements: Required.

Administrative burden: Low additional burden. Established control and monitoring systems for movement / establishment of IAS (e.g. imports and movement within country) are required. However, where these systems already exist the payment system for non-compliance results in limited additional burden.

Requirements for (additional) public funding: Low additional funding. Established control and monitoring systems for movement / establishment of IAS require public funding. However, the payment system for non-compliance does not introduce new requirements for public funding. It is also to be noted that revenue collection by the instrument is likely to be minor.

Acceptability / legitimacy: Relatively high. Cost recovery related to non-compliance is, to a large extent, based on the polluter pays principle. Consequently, they should be generally supported by stakeholders, decision-makers and broader public.

Links to addressing fundamental aspects of IAS problem: Depends on the coverage of the targeted regulation. Cost recovery related to prevention (e.g. introduction and movement of IAS and related emergency eradication) is considered to be more effective in addressing the root causes of the IAS problem than cost recovery related to the eradication and control of already established species. Furthermore, the payments can indirectly support awareness-raising.

4.4 Assessment of applicability in Finland

Required legislative support: As elsewhere, the establishment of non-compliance related cost recovery in Finland is foreseen to require a legislative instrument.

Existing legislation hindering application in Finland: N/A

Administrative burden: The requirements for (additional) administrative burden depend on the scope of the cost recovery and already existing framework. If the payment would be focused on a certain high priority IAS only (e.g. Giant Hogweed) then the administrative requirements would be relatively limited, focusing mainly on identification and inspection of key sites for invasion. However, non-compliance cost recovery related to intentional introduction of IAS requires the development of a more comprehensive national framework for such introductions.

Requirements for public funding: The requirements for (additional) public funding depend on the scope of the cost recovery. Requirements for (additional) public funding are limited when the cost-recovery payment would be focused on a certain IAS only (e.g. covering costs of targeted inspections). Non-compliance payments related to intentional introduction of IAS require the development of a more comprehensive national framework with requirements for additional public funding.

Acceptability / legitimacy: Payments related to non-compliance are, to a large extent, based on the polluter pays principle and therefore they should be generally acceptable also in Finland. Furthermore, the required (additional) public funding is limited.

→ Non-compliance related cost recovery, targeting either all or certain IAS, could be a possible IAS policy measure in Finland. Similar payments are already used in the context of

plant pest and animal health management and they could provide a basis for extending the mechanism to a broader group of IAS.

In the first instance, cost recovery could be applied to the eradication of certain high priority species such as the Giant Hogweed. In the long run, non-compliance cost-recovery payments could be linked to the broader regulative EU / national framework for preventing the entry / movement of IAS in Finland, for example extended to all species identified as 'IAS of Union concern' under the EU Regulation.

4.5 Key references

Invasive species rule in the state of Wisconsin (US), http://dnr.wi.gov/topic/Invasives/classification.html and http://docs.legis.wisconsin.gov/code/admin_code/nr/001/40.pdf

Regulation to prevent moving fire wood in the state of Wisconsin (US), http://dnr.wi.gov/topic/Invasives/firewood.html

Wisconsin Department of Natural Resources Report (2012) Invasive Species Programs, http://dnr.wi.gov/topic/invasives/documents/islegreport2012.pdf

Emergency quarantine of firewood and ash products established in Iowa (US), http://www.iowaagriculture.gov/press/2013press/press11012013.asp

Legislation on common wild oat in Finland, http://www.finlex.fi/fi/laki/ajantasa/2002/20020185

5 Incentives for the use and/or voluntary control of IAS

Instrument in a nutshell: Relevant stakeholders are paid for participating in management of invasive species or given permission for commercial exploitation of the species.

Type of instrument: monetary incentives to support use / control of IAS

Participation: voluntary

Source of funding: public and private

Focus in terms of hierarchical approach to IAS: control (intentional / unintentional)

Scale of application: varies

Current status: ongoing

5.1 Description of mechanism

Payment for trapping IAS: In Argentina Tierra del Fuego, the invasion of Canadian beaver has caused significant negative impacts on both biodiversity and human wellbeing over the past years. The recent plans to manage the beaver population include the establishment of a payment targeting independent hunters and inhabitants of rural areas to prevent re-invasion. The payment is foreseen as part of a broader beaver management programme piloted in the area, aimed at controlling the overall density of beavers and eradicating the species in certain key locations. The hunting activities will be financed by a combination of funds from the government, private co-financing and international GEF funded project, amounting to close to USD 5 million over a 4 year period (2012 – 2016). The hunting activities will focus especially in forest areas and the hope is to establish a continuous beaver trapping culture that helps to decrease the pressure of the species and the possibility of re-invasion on eradicated areas. In addition to providing financial incentives, the programme will focus on the development of tools and capacity building for control and containment of the beaver, establishment of a monitoring system for rehabilitation of biodiversity and native ecosystems, development and implementation of eventual rehabilitation support strategies, and capacity building in systematic monitoring and control of re-invasion.

Commercial use of IAS: Encouraging (commercial) use of Chinese mitten crab population (*Eriocheir sinensis*) in the Thames River, the UK is considered one of the means used to control the population size of the invasive species. The fishing activities are regulated by the Environment Agency and can be carried out only by authorised parties. The costs of authorisation are recovered through fees paid by applicants. However, the possible negative side effects on the endangered eel (below) have so far hindered the uptake of (commercial) use of mitten crab as a means for its control (see effectiveness below).

The decision for allowing commercial use of mitten crab was based on a feasibility study by the Natural History Museum (2008). The study concluded that the Thames mitten crab was edible (e.g. free of parasites) and its population was large enough to support an artisanal fishing industry and that the commercial use of mitten crab had the potential to reduce species numbers from the catchment while providing additional financial benefits for local fishermen. However, it was also concluded that increased fishing of mitten crab would result in negative side effects to the eel population: the latter species would be a considerable part of the by-catch. Consequently mitten crab fishing was recommended to be controlled and licensed, including possible monitoring of eel captures. Furthermore, any commercial use of mitten crab should be considered as temporary, aimed at depleting, not maintaining, the population.

5.2 Experience of effectiveness

Canadian beaver in Tierra del Fuego / Argentina: The pilot programme has been initiated only recently and therefore it is too early to draw conclusions about its effectiveness, possible risks etc.

Chinese mitten crab in the Thames / the UK: although the authorisation process has been established (e.g. charges for different mitten crab fishing methods), no fishing other than for monitoring or scientific purposes has been authorised in 2012 and 2013.

5.3 Assessment of pros and cons

Coverage: Relatively low. The measure is commonly limited to one, usually rather easily recognisable, IAS species only. Moreover, effective means of catching the species must exist (fishing, shooting, trapping etc.).

Cost-effectiveness: Moderate. Depends on the feasibility for stakeholders to trap / catch the species in question and this way effectively contribute to the eradication / control. In general, eradication and control are considered less cost-effective means for addressing IAS than prevention.

Legislative requirements: Not necessarily required.

Administrative burden: Moderate. The mechanism requires resources to administrate the payment system. Furthermore, requires the establishment of a reliable monitoring system to monitor the eradication of IAS and establish / manage possible negative impacts on non-IAS species.

Requirements for (additional) public funding: Relatively high. Economic incentives are commonly based on public funding.

Acceptability / legitimacy: Relatively high – relatively low. Economic incentives for eradication / control of IAS are voluntary and therefore depend on uptake by stakeholders.

The relevant stakeholders (hunters, fishermen) are generally willing to support the initiative as there are direct benefits to them. However, IAS experts are often sceptical about such economic incentives as, if not carefully managed, they might have a perverse impact on IAS policy implementation, ending up supporting the maintenance of the IAS population rather than eradicating it. In some cases environmental NGOs may also be opposed to the schemes.

Links to addressing fundamental aspects of IAS problem: Limited links to addressing underlining causes of the IAS problem. Furthermore, economic initiatives for hunting / capturing IAS and encouraging their utilisation can be counterproductive for IAS policy implementation, encouraging attitudes towards the maintenance of populations rather than eradication. Therefore, economic incentives for trapping or hunting are not commonly considered to be a good management strategy on their own.

5.4 Assessment of applicability in Finland

Required legislative support: No legislative support necessarily required.

Existing legislation hindering application in Finland: N/A

Administrative burden: There are some foreseen additional administrative requirements related to the administration of payments and also possibly to the increased monitoring of payment related impacts (i.e. targeted IAS and possible negative impacts of non-IAS species).

Requirements for public funding: There are new requirements for public funding as the economic incentives would most likely be based on public funding. The additional administrative requirements may also require some increased public funds.

Acceptability / legitimacy: Economic incentives encouraging fishing or hunting of IAS are likely to be well accepted by hunters and fishermen. On the other hand, IAS experts are likely to be sceptical towards such measures due to the risks involved (see above). It may also be that environmental NGOs will object such schemes.

→ Using economic incentives such as payments to promote voluntary IAS management is not considered the most feasible option for Finland in the immediate future. This is because it needs to be ensured that such incentives are not counterproductive toward IAS policy objectives in general (i.e. encourage utilisation rather than prevention / eradication) and therefore using such economic incentives should build on a more comprehensive, prevention based IAS legislation than currently in place.

5.5 Key references

Management of Canadian beavers in Argentina, information on GEF project (2012-2016), http://www.thegef.org/gef/project_detail?projID=4768

Commercial use of Chinese mitten crab in Thames - feasibility study (2008), http://www.nhm.ac.uk/resources-rx/files/mitten-crab-report-executive-summary-57669.pdf

Fishing authorisation for Chinese mitten crab in England and Wales (2013), http://www.environment-agency.gov.uk/business/sectors/32645.aspx

6 The Aquatic Invasive Species Permit Programme, Oregon (the US)

Instrument in a nutshell: The instrument requires boaters to go through check-ups and buy an annual or biannual compulsory permit, and thereby collects funding for implementing IAS legislation as well as increases awareness of aquatic invasive species. If invasive species are found in the check-up, the boat will be cleaned.

Type of instrument: permit fees (earmarked)

Participation: obligatory

Focus in terms of hierarchical approach to IAS: prevention

Type of funding: private

Scale of application: regional (State)

Current status: ongoing, since 2009

6.1 Description of mechanism

The Aquatic Invasive Species Permit Programme was adopted in Oregon State, the US, in 2009. The programme's goal is to protect Oregon against the introduction and spread of aquatic invasive species (AIS) such as Quagga and zebra mussels (*D. polymorpha*). The programme stipulates that the owners of non-motorised and motorised boats, from 10 feet long, must go through official check-ups and get permits for using the State waterways. The permits must be renewed every 1 or 2 years, depending on the boat.

Boaters without an aquatic invasive species permit will be fined USD 30 - 50. In addition, for the current recreational boating season inspection stations have been set up at the points of entry into Oregon and at other random locations. Failure to stop at an inspection station could result in a USD 110 fine.

The administrative responsibilities of the programme are divided institutionally between The Oregon Department of Fish and Wildlife (ODFW), the Oregon State Marine Board (OSMB) and the State Department of Agriculture. OSMB is the agency responsible for coordination and administration of the programme whereas ODFW is primarily responsible for conducting craft inspections and contaminations. In the latter case, ODFW may require a person operating or transporting a recreational or commercial craft to stop at a check point for the purpose of an inspection for the presence of aquatic invasive species. In these cases, the inspector may decontaminate or recommend decontamination of any recreational or commercial watercraft.

The permit fees are earmarked to be used to support the implementation of AIS (Aquatic Invasive Species) legislation. All permit revenues are deposited into the Aquatic Invasive Species Prevention Fund, which covers all expenses of the AIS Permit Programme (e.g. costs of decontamination above). OSMB administers this fund and distributes funds to ODFW and other relevant law enforcement agencies under intergovernmental agreements and contracts for services.

During the 2012 fiscal year (July 2011 -June 2012), the revenue collected from permit sales was USD 731,474, showing a slight decrease from the 2011 fiscal year. With the early programme start-up costs completed, more funding is foreseen to be allocated to ODFW during the 2013/2015 biennium to increase their summer field inspection activity.

A programme similar to Oregon is also in place in Idaho, called the Idaho Invasive Species Program. In Idaho, all owners of non-motorised and motorised boats, from 10 feet long, must purchase an Invasive Species Fund sticker, to assist in funding the prevention of invasive aquatic species within the state. The fees generated from the sale of the stickers will fund vessel inspections, washing stations and information materials that will assist Idaho with preventing the introduction of IAS. The sticker is to be renewed every year; boats not displaying the required sticker will be fined a fixed penalty of USD 57.

6.2 Experience of effectiveness

Existing documentation regarding the by-passing of inspection sites indicates a 70% compliance rate. Furthermore, the compliance rates have been increasing by at least 20% each year since the start of the programme in 2009.

Due to the relatively short time period of the programme in action, it is hard to assess effectiveness considering the population growth of AIS.

As regards legitimacy and awareness-raising, according to experts the boating public was at first sceptical towards the fee. For example, the boaters were not convinced that the government would use the revenue generated specifically for AIS prevention and they perceived the fee as a new government tax aimed at raising needed money for other state programs. However, contact with boaters did provide an opportunity to engage them in conversation about the issues surrounding AIS and the risk associated with the establishment of certain species. In most cases this created an opportunity to educate the boaters on AIS issues and explain how the prevention programme benefitted all Oregon boaters and the general public. Generally speaking, after their conversation with the AIS officials, people were much more understanding of AIS issues and supportive towards the fee and prevention programme.

In the state law that created the permit programme it states that the revenue must be only used on AIS prevention work and that an annual report would be written to explain the use of the fees and what work was completed. Having the fee revenue deposited into a dedicated fund with specific purpose helped to calm the public's distrust.

6.3 Assessment of pros and cons

Coverage: Moderate. Covers the prevention of those aquatic IAS that are transferred by boats and a certain group of stakeholders directly related to spread of IAS in inland water bodies. The mechanism does not address the broader group of stakeholders with links to aquatic IAS, such as aquarium trade and on-shore anglers.

Cost-effectiveness: Moderate - Relatively high. High compliance rate indicates relatively good effectiveness in terms of take-up of the measure. It also appears that the sales of permits are, at least at this stage, able to cover a significant part of programme's costs. While it is not yet possible to assess the effectiveness of the programme in terms of spread and development of AIS, targeting prevention in a successful manner can be considered as one of the most cost-effective means to address IAS problems.

On the other hand, the fines are also fairly low and therefore there is a risk that they fail to be effective in changing stakeholder behaviour. However, the reported high compliance rate above indicates that in Oregon this has not been the case.

Legislative requirements: Required. There are 16 statutes and rules released related to the AIS Prevention Programme. The programme is based on the legislative Acts and their implementation (inc. boat check-ups) as core mechanisms: roadside inspection stations established, mobile decontamination units, additional inspections at by-passing inspection sites and inspections on-call, at public boating events or requested inspections.

Administrative burden: Relatively low. ODFW provides one Invasive Species Coordinator (partial funding) and OSMB provides one AIS coordinator and one quarter-time accounting technician.

Requirements for public funding: Low. There is no need for significant new public funding. The funds generated through fees are designed to support the implementation of the programme itself (e.g. to fund the mobile watercraft inspection teams). In addition, funds are used to support public education and outreach efforts and other relevant AIS activities.

Acceptability / legitimacy: Moderate - Relatively high. Permits are of low cost which is likely to increase acceptability among the key stakeholders (USD5 or USD10, depending on the boat type). Furthermore, the inspection costs are mainly funded through the permit fees making requirements for additional / new public funding low. This is likely to increase political acceptability of the programme. However, the introduction of a fee might be considered as an additional regulatory burden which might reduce its acceptability both from the perspective of stakeholders and decision-makers. Consequently, dedicated efforts in stakeholder engagement are needed to address this.

Links to addressing fundamental aspects of IAS problem: The programme is focused on prevention and limiting risks of invasion by intercepting IAS 'infested' boats at inspection stations. The programme also supports awareness-raising. Education and outreach is a key component of the AIS Prevention Programme. This is achieved by providing printed materials and interacting with the public at inspection stations, attending boating events,

teaching watercraft inspection and invasive species workshops, or attending public meetings to speak about the programme. There are also public information signs installed at 20 locations on highways at boarder locations.

6.4 Assessment of applicability in Finland

Required legislative support: Establishment of such permit system in Finland is likely to require a legislative basis. Integration of the upcoming EU Regulation on IAS into national legislation could facilitate the establishment of such basis.

Existing legislation hindering application in Finland: N/A

Administrative burden: Some increase in administrative requirements is likely, resources are needed to administrate the permitting process, and coordinate and carry out the inspections.

Requirements for public funding: Likely to require public funding to cover start-up costs, however, as in Oregon, the private funding obtained from permit fees should be able to cover costs in the long run.

Acceptability / legitimacy: Keeping permit fees low is likely to increase legitimacy among stakeholders whereas the promise of limited public funding should increase political support. However, it is also possible that the boat owners in Finland will, as a matter of principle, object to such a fee and consider that it interferes with the 'freedom of boating'. For example, boats can be used without acquiring an official driving licence and also the limit for driving under the influence of alcohol is more relaxed for boating than driving. This means that boating is a more 'official-free' zone in Finland and any fee on it is likely to raise objections.

→ Permit programme(s) similar to Oregon and Idaho could play role in implementing IAS policy in Finland. However, the coverage of such permit programmes would be rather limited as there are currently only a few IAS spreading via boats between inland waters or between inland water and the Baltic Sea. Furthermore, it may be that the acceptability of such a fee among key stakeholders would be low.

6.5 Key references

Aquatic Invasive Species Permit Programme, http://www.oregon.gov/osmb/clean/pages/aisppfaqspage.aspx#About_the_Aquatic_Invasive_Species_Permit_Program_%28AISPP%29

Aquatic Invasive Species Permit Programme Programme Report 2012, http://www.oregon.gov/OSMB/Clean/docs/AISPP2012AnnualReportFinal.pdf

Idaho's Invasive Species Council, Invasive Species Program, http://www.agri.idaho.gov/Categories/Environment/InvasiveSpeciesCouncil/indexInvSpCouncil.php

Personal communication with experts: Glenn Dolphin, Aquatic Invasive Species Coordinator, Oregon State Marine Board

7 Economic incentive based on encouraging low risk behaviour via lower costs of inspection and sampling, Australia

Instrument in a nutshell: The instrument works through setting lower inspection and sampling costs to those agents that utilise low-risk pathways in their import activities.

Type of instrument: economic incentive based on the avoidance of risk-based costs

Participation: obligatory

Source of funding: private

Focus in terms of hierarchical approach to IAS: prevention (unintentional)

Scale of application: national

Current status: ongoing

7.1 Description of mechanism

In Australia, the process of quarantine inspections has been established to monitor different pathways of commodity imports with a view to detect possible IAS contamination. Once identified, contaminated pathways can be mitigated against IAS occurrence, helping to safeguard Australia's biosecurity status.

Information on inspection history (i.e. information on contaminated and 'safe' pathways) is used to identify pathways with high risk for unintentional introductions. During the past few years, the Australian Department of Agriculture (DA) and the Centre of Excellence for Biosecurity Risk Analysis (CEBRA) have also trialled a system for identifying low-risk product pathways.

The information on high and low risk pathways can be used to ensure that inspection regimes and resourcing are allocated according to a commodity's risk profile and pathway failure rate. In short, the attempt is to target quarantine inspection resources towards pathways that statistically present higher risks. Based on the results of the trial carried out in 2008, of 10 pathways examined 7 were found to be low risk.

The identification of high and low risk pathways is based on an algorithm called Continuous Sampling Plans (CSP). The algorithm works by looking at the history of a certain pathway: the more incidents of contamination a pathway has the more likely it is to receive attention from quarantine inspectors. Similarly, the lack of data for a pathway, reflecting high level of uncertainty, triggers inspections.

From the perspective of importers, the pathway risk analysis results in creating an economic incentive for responsible 'importer behaviour' and selecting for low-risk pathways. This is

because inspection intensity will be lowered on low-risk pathways meaning that products reach the market faster, rather than being held at a quarantine facility. The likelihood for losing goods and related revenue due to sampling is also lower when using low-risk pathways. Building on the above, importers have an incentive to look for relatively safe commodities and pathways, enforcing low-risk behaviour. Furthermore, by not creating contamination incidents over time the importers can improve their rating with the inspection authorities, further minimising their costs related to inspection and sampling. Consequently, in the long term the pathway risk analysis is foreseen to reward good performance and result in a change in risk behaviour.

7.2 Experience of effectiveness

Evidence shows the changes implemented have led to improvements to cargo systems at the border. A study of cargo data showed that in 2008 – 2009 and 2011 – 2012 non-compliance rates decreased 36% for air cargo and 10% for sea cargo, despite increases in cargo volumes.

From the perspective of the importer, the median arrival-to-release time decreased by 84% for air cargo and 15% for sea cargo. Compliant cargo was processed significantly more quickly (1.2 hours for air cargo and 0.7 days for sea cargo) than non-compliant cargo (122 hours for air cargo and 11 days for sea cargo). This shows that where clients appropriately manage risks they can expect to save both time and money.

To conclude, there is no direct conclusive evidence on how the instrument has affected the overall risk of species invasions. However, it seems to have increased the rate of compliance - which can be considered as an indirect indicator for reduced invasion risk - and reduced the costs related to prevention.

7.3 Assessment of pros and cons

Coverage: Relatively high. Systematically addressed all key pathways for unintentional IAS introduction at national level, encouraging where possible the use of low-risk pathways (i.e. low-risk imports) and allowing authorities to focus more inspection effort and resources on high-risk pathways.

Cost-effectiveness: Relatively high. Targeting prevention in a successful manner can be considered as one of the most cost-effective means to address IAS problems. The data (above) confirms the predicted decrease in non-compliance and increase in low-risk behaviour, including increasing economic rationale to opt for low-risk pathways.

Legislative requirements: Required. An elaborated system of inspection and sampling, and related monitoring and analysis is possible due to the high importance given to IAS issues in Australia, including a comprehensive legislative basis.

Administrative burden: Low additional burden. Established border control / check systems for imports, as well as monitoring and statistics of pathways, are required. However, these systems already exist; the pathway risk analysis results only in reallocation of the existing resources and administrative burden according to the identified high-risk areas.

Requirements for (additional) public funding: Low additional funding. Established border control and monitoring systems for imports requires public funding. However, pathway risk analysis does not introduce new requirements for public funding. Furthermore, increased effectiveness might in the long-run even reduce funding requirements.

Acceptability / legitimacy: Relatively high. The acceptability of pathway controls based on pathway risk analysis is likely to be high as the system relies on cost avoidance, rather than creating additional fees and costs.

Links to addressing fundamental aspects of IAS problem: In a long run, the application of the mechanism results in low-risk behaviour among importers, this way raising awareness and successfully addressing one of the underlying factors for unintentional introductions.

7.4 Assessment of applicability in Finland

Required legislative support: Encouraging low risk behaviour in similar manner as in Australia would require the development of a comprehensive IAS pathway control framework for Finland, including legislative basis for its establishment. Integration of the upcoming EU Regulation on IAS into national legislation could facilitate the establishment of such basis.

Existing legislation hindering application in Finland: The mechanism is related to trade pathways, therefore there might be some complications regarding regulations for intra-EU trade that need to be clarified.

Administrative burden: Likely to require considerable new administrative resources. This is because requires the establishment of a comprehensive system for IAS pathway control in Finland, beyond plant and animal pests. However, more detailed and realistic conclusions on the foreseen additional administrative burden require a dedicated assessment of the current level of administrative resources used for pest border control.

Requirements for public funding: Likely to require significant public funding to establish a comprehensive system for IAS pathway control. However, when such a system has been established the low risk analysis itself is not foreseen to require a significant amount of additional sources. However, more detailed and realistic conclusions on the foreseen additional funding require a dedicated assessment of current level of funding used for pest border control.

Acceptability / legitimacy: There is no existing overarching framework for IAS pathway control in Finland and the development of such system is foreseen to require quite a and a significant amount of resources are required. Therefore it is likely that ensuring the

acceptability of such framework requires further work (e.g. awareness raising) and policy development (e.g. adoption of the EU IAS Regulation). However, when the pathway control framework is established, the low risk measure does not result in further additional burden or costs to importers and, in addition, it should provide the importers of low-risk products economic benefits in long-term.

→ Using economic rationale to encourage low risk behaviour, as in Australia, does not seem a feasible option for Finland in the immediate future. This is because such a mechanism builds on an existing comprehensive framework for IAS pathway control. However, the mechanism could be considered in the future when the national regulative framework for IAS pathways becomes further developed.

7.5 Key references

AQIS Quarantine Operations Risk Return ACERA 1001 Study J Imported Plant-Product Pathways. Final Report (2012), http://www.acera.unimelb.edu.au/materials/endorsed/1001j.pdf

DAFF Annual Report 2012-2013, http://www.daff.gov.au/about/annualreport/2012-13

Daff Annual Report 2012-2013 (Part 3) Report on performance (96), http://www.daff.gov.au/__data/assets/pdf_file/0020/2351513/part3-report-performance.pdf

8 Liability-based fines related to non-compliance, the UK

Instrument in a nutshell: The instruments collect funding in the form of fines and other payments from parties that have breached some IAS-related regulation. These fines or payments are intended to provide incentives to comply with the regulations (i.e. desired way of action).

Type of instrument: liability-based fines and payments related to non-compliance

Participation: obligatory

Source of funding: private

Focus in terms of hierarchical approach to IAS: prevention and control (deliberate release), restoration

Scale of application: national

Current status: ongoing

8.1 Description of mechanism

Several EU Member States have implemented legal instruments that allow them to impose fines and/or criminal proceedings against individuals or groups who deliberately or through negligence release IAS into the wild. The instruments are designed as deterrents, used as a last resort in particularly clear and damaging cases, and not as cost-recovery mechanisms, but in some cases they allow the recovery of some costs.

In **the UK**, it is illegal to release or allow the escape into the wild of any non-native and non-resident animal, or any plant, fungal or algal species specifically listed in the legislation. This is considered to pertain only to natural or semi-natural habitats but should be judged on a case-by-case basis (Defra 2010). In England and Wales, offences can be penalised with a £5000 fine and/or a 6 month imprisonment. In Northern Ireland, there is no upper limit to sanctions.

Similar fees can also be applied to the accidental release of IAS or control of already established IAS. In **Germany**, it is illegal to release or allow to escape into nature ('freie Natur') any non-native invasive species (with exemptions for agricultural, forestry, fishing and hunting purposes). Federal states can enact laws allowing species control orders (BfN 2010). A fine of up to 10 000 Euro can be applied, and federal states have the freedom to implement further sanctions if they wish. In **Denmark** a Statutory order on eradication of giant hogweed adopted in 2009 (Stat. Order No. 862 of 10.09.2009) stipulates that the municipality can impose orders on owners or users of areas (including public agencies) to eradicate the plant from their land. This obligation is subject to the existence of a dedicated action plan for Giant hogweed, outlining agreed requirements for its management and control. As an outcome, the eradication should lead to the extinction of the plant in the area

in question while also preventing further reproduction. Failure to comply with an order to carry out eradication is punishable by a fine.

8.2 Experience of effectiveness

Limited information was available in the public domain to draw general conclusions on effectiveness. Consequently, the conclusions are based on information from the UK (including an expert interview).

In **the UK**, the public authorities can currently only impose a fine on a landowner (or other operator) through a legal prosecution. Legal prosecutions are difficult to win in court because of the need to prove liability and/or causality, and so far there have been none in England (pers comm Dr Edward Blane, Natural England). In England (UK) there are numerous barriers to the use of legal prosecutions (pers comm Dr Edward Blane, Natural England): for most species, it is not illegal to sell, advertise or supply the species, only to release it; it is very difficult or impossible to get enough evidence to connect the release of a species to a particular person, and any damage caused may come years or decades after the release; there is often a lack of evidence to pinpoint the genetic identity of the animals or plants being released and a lack of legal clarity regarding subspecies or races; and illegal releases are rarely reported to the authorities.

Many players are involved in alien species supply/import chains and enforcement of regulations, and this hinders coordination. An illustrative example is given by the difficulty of regulating the importation of non-native bumblebees in England (which are currently imported as Balkan and German subspecies that differ genetically from the British wild species). Importation is controlled by the Animal Health agency in conjunction with the National Bee Unit, but any breaches of the import regulations are enforced by Council Trading Standards; their release is licensed by Natural England, but any illegal release is enforced by the police; whilst their disposal at the end of use is regulated by Animal Health, but again enforced by local councils.

8.3 Assessment of pros and cons

Coverage: Moderate - relatively low. Legal provisions usually only cover a limited list of species, and it may be very difficult to update the list flexibly to allow legal action to control new problematic species. For example, the UK law covers all alien animals, as well as specifically listed species, but only covers those plant, fungal or algal species that are listed in the legislation. This currently includes some 26 plant, fungal or algal species (compared to the more than 1400 alien species recorded in the UK) (Roy et al 2010). The revision of this list is currently only possible through a legislative act, which is a barrier to extending the coverage because of the long process; however the list was revised in 2010 in each region (England, Scotland, Wales, N Ireland) (Law Commission 2012).

Cost-effectiveness: Moderate - relatively low. The overall cost-effectiveness depends on the ratio between the size of the fine and the costs of required action, i.e. if the fine is

significantly lower than the costs of required action then the stakeholders might deliberately opt to pay the fee rather than support the implementation of the primary measure. The likelihood of being found guilty for breaching a regulation also affects the effectiveness of fines. This is clearly linked to the availability of resources to monitor compliance. Furthermore, cost-effectiveness also depends on the ratio between the size of fine and costs of surveillance, i.e. if detecting and/or demonstrating non-compliance requires significant efforts - such as in the case of the UK, where fines can only be issued through a legal prosecution - then the fine might not be able to offset the related costs.

Legal provisions are generally not designed – nor considered - as a cost-recovery mechanism. In the UK, legal procedures for wildlife crime can cost more than the fine, so it is likely that any court cases on behalf of the authorities to establish liability would not be cost-effective (Law Commission 2014). If a fine is imposed by a legal prosecution, the money goes into the government Treasury and is not specifically allocated to nature conservation or to the control of invasive alien species.

A review of the UK legislation recommends that it should include the possibility of a range of civil sanctions (Law Commission 2014). This would allow the regulators to issue fixed monetary penalties, discretionary requirements, or stop notices, and to accept enforcement undertakings, as alternatives to criminal prosecutions. The financial income from fines could contribute to the recovery of administrative costs.

Legislative requirements: Required. Legislative requirements form the basis for fines on non-compliance. Furthermore, additional legislative requirements can enhance control and prevention of impacts. For example, in the UK it is illegal to dispose of certain invasive non-native species in waste without notification and proper measures, also punishable by fine and/or imprisonment. Costs incurred in removing illegally deposited IAS waste (Japanese knotweed) or in reducing the damage associated with the disposal can be recovered. Soil from contaminated sites is regulated as controlled waste and its disposal is subject to regulatory safeguards and volume-based charging.

Administrative burden: Relatively high. Enforcement of the legislation requires well-trained public staff time and public funding to investigate infringements.

Requirements for public funding: Relatively high. Enforcement of the legislation requires well-trained public staff time and public funding to investigate infringements.

Acceptability / legitimacy: Moderate. Liability based fees build on the polluter pays principle and therefore they are generally well accepted by decision-makers and the general public. However, if the level of fee is very low it might simply be treated as 'a license for non-compliance' by the stakeholders in question.

Links to addressing fundamental aspects of IAS problem: The enforcement of legal sanctions supports awareness raising because of the need to inform affected parties of their legal obligations and the consequences. There is less evidence of the effectiveness of legal provisions as a deterrent to the introduction and release of invasive alien species.

8.4 Assessment of applicability in Finland

Required legislative support: As elsewhere, the establishment of non-compliance related fees is foreseen to require a legislative instrument.

Existing legislation hindering application in Finland: N/A

Administrative burden: The requirements for (additional) administrative burden depend on the scope of the fee and already existing framework. If the non-compliance fees were focused on certain high priority IAS only then the administrative requirements could be relatively limited. However, non-compliance fees related to the overall intentional introduction of IAS (e.g. as in the UK) requires the development of a more comprehensive national framework for such introductions. Finally, the administrative burden is determined by the procedure required for demonstrating liability: civil sanctions by regulating bodies (such as the Finnish ELY-centres) are likely to be less burdensome than a legislative procedure.

Requirements for public funding: The requirements for (additional) public funding depend on the scope of the fee. Requirements for (additional) public funding are limited when the fee is focused on a certain IAS only (e.g. covering costs of targeted inspections). Non-compliance payments related to the overall intentional introduction of IAS require the development of a more comprehensive national framework with requirements for additional public funding. Finally, fees based on civil sanctions by regulating bodies (such as the Finnish ELY-centres) are likely to be less costly than legislative procedures.

Acceptability / legitimacy: Payments related to non-compliance are based on the polluter pays principle and therefore they should be generally acceptable also in Finland.

→ Non-compliance related fees, targeting either a group of or certain specific IAS, could be a possible IAS policy measure in Finland. Similar payments are already used in the context of animal health management and they could provide a basis for extending the mechanism to a broader group of IAS.

It is highly likely that non-compliance related fees will be required in the future when establishing national prevention and control measures for all species identified as 'IAS of Union concern' under the EU Regulation.

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Contact: Dr. Edward Blane, Natural England, interview 18 December 2013

9 Public procurement as a market-based mechanism supporting IAS policy action

Instrument in a nutshell: Obligatory requirements or voluntary guidelines and codes of conduct that restrict or guide the procurement activities of public bodies (cities, local authorities etc.). The aim is to encourage the use of native species instead of non-native species in order to limit the risk of IAS invasions or restrict the spread of already established species.

Type of instrument: public procurement as a means for reducing the risk of spread

Participation: voluntary

Source of funding: private and public

Focus in terms of hierarchical approach to IAS: prevention (intentional)

Scale of application: regional

Current status: ongoing

9.1 Description of mechanism

Public procurement may involve the purchase and release of IAS, for example through the management of public green spaces. The European Commission recommends that public procurement contracts oblige the contractor to report the presence of any invasive alien species on managed areas, and to dispose of waste with IAS material correctly (EC 2011). However, there are few examples of IAS being taken into account in public procurement. Although the new EU public procurement directive includes measures to include environmental issues in public procurement, the accompanying handbook on green public procurement does not mention invasive alien species (European Commission 2013).

A few Member States have implemented binding rules on public procurement on IAS which public organisations and service contracts must follow. Most Member States rely on voluntary guidelines or codes of conduct on IAS. For example, a 2011 survey of the European code of conduct on IAS for the horticulture sector found national initiatives either on-going or planned in 10 Member States (BE,DK,EE,IE,NL,PO,SK,SI,ES,UK); however not all of these target the public sector as well as private retailers (EPPO 2011a).

The Government of the Walloon Region (**Belgium**) has issued a dedicated IAS Circular that builds on its social and environmental public procurement plan and applies to all public authorities within their area of competence since 2009 (Wallonie 2013). This specifies that all public procurement contracts (cahiers spéciaux des charges) involving the supply or use of animal and plant species must prohibit any intentional introduction of specific IAS. The 2012 version refers to the IAS listed in the Belgian Code of Conduct on invasive alien species,

thereby linking the obligatory Circular with use of the voluntary Code. Users of the Code are asked to sign up online and commit voluntarily to not selling or planting any species listed in the code, disseminate information, and report IAS occurrences.

In **the UK**, all products and services procured by public authorities should comply with the Horticulture Code of Practice covering invasive non-native plants (England and Wales) or the Code of practice on non-native species (Scotland) (Defra 2011; Scottish Government 2012). Failure to comply with the code is not an offence, but compliance with the code is considered to play a role as evidence in the case of a prosecution. The code covers compliance with the Wildlife and Countryside Action 1981, which makes it illegal to plant or propagate certain listed plants, but goes further by listing good practices and referring users to the national non-native species database, which provides information on all known invasive alien species in the UK.

In Ireland, the statutory nature conservation organisations led the publication of a code of conduct on horticulture in 2008 (Kelly 2012), which is targeted at the public bodies in Ireland as well as at private retailers and citizens. The code is now being promoted in a public awareness campaign based on a previously successful UK campaign (Invasive Species Ireland website).

9.2 Experience of effectiveness

Limited information was available in the public domain to draw general conclusions on effectiveness.

According to the national experts, in Belgium the Circular in Wallonia is generally respected by public authorities, but it only applies to federal and regional government, not to municipalities and local government (M Halford pers. comm.). The voluntary Code of Conduct on IAS in the horticultural sector on the other hand has become well known. Currently 150 municipalities (out of 589 altogether) have adopted it (M Halford pers. comm.). It is well supported because it was developed in consultation with and then approved by the main horticultural associations at the national level, and has been made easy to adopt (AlterIAS 2011). A LIFE project (LIFE08 INF/B/000052) focussed on increasing awareness of the Code succeeded in achieving a very high rate of awareness amongst public green space managers but only a 35% adoption rate of the code of conduct by 2013, indicating the need for long-term promotion (Halford et al 2013). In addition Belgium has IAS alert lists available online (Harmonia online database).

9.3 Assessment of pros and cons

Coverage: Relatively low. Public procurement is not one of the major pathways for IAS. In practice, it is limited to non-native plants only (i.e. public green spaces). Therefore, even though the mechanism can be used to prevent both entry and further spread of IAS its scope remains rather limited.

Voluntary codes of conduct have the advantage that they can be promoted at the national and regional level without the need for legislation or political implementation, which can be complicated, particularly in federal governance systems. In contrast, the impact of public procurement legislation is limited as national-level legislation does not always apply to local authorities, whereas most public procurement potentially involving IAS takes place at the municipal and local authority level rather than directly by national government.

Public procurement rules or guidance may be based either on a list of recommended native/non-invasive species or on the exclusion of a black-list. However, the impact of voluntary codes is often limited because they only refer to a selective list of species, due to the need to achieve consensus and acceptance within the sector.

Cost-effectiveness: Relatively high - Moderate. The cost-effectiveness of public procurement rules / guidance depends on the scope and mode of implementation. In principle, compulsory procurement results in a broad and immediate uptake, however ensuring effective implementation in practice requires enforcement (including resources for enforcement). Costs related to the implementation of voluntary codes and guidelines are rather low and therefore, when successful, such measures can be very cost-effective. However, voluntary measures always run the risk of being perceived as ineffective because of the lack of sanctions on non-adopters. Voluntary procurement guidance generally requires a large communication campaign to secure a successful update. For example, in Belgium this was achieved with LIFE funding. However, stakeholders often have a higher acceptance of voluntary codes, particularly if they were involved in their development, and are therefore more willing to contribute to their promotion and implementation.

Legislative requirements: Not required. Legislative basis is not required for voluntary codes. Ideally, however, the voluntary code should be linked to the legislative framework (see cost-effectiveness above).

Administrative burden: Relatively low - Moderate. Public administrations will initially be required to make additional efforts to promote and enforce the public procurement rules, but once these are established there is no additional administrative burden. Voluntary codes are also relatively quick to implement and to revise in order to respond to new risks compared to legislation.

Requirements for public funding: Relatively low - Moderate. Public procurement rules or guidance do not require any additional direct funding for their implementation; however, some additional resources are required to promote the guidance to contractors and to monitor and enforce its implementation in public procurement contracts.

Acceptability / legitimacy: Relatively high - Moderate. Voluntary codes may be positively regarded by stakeholders who are resistant to increased regulation. In general, stakeholders often have a higher acceptance of voluntary codes, particularly if they were involved in their development, and are therefore more willing to contribute to their promotion and implementation. However, public procurement based only on voluntary measures runs the risk of being perceived as ineffective because of the lack of sanctions on non-adopters.

Links to addressing fundamental aspects of IAS problem: Public procurement rules / guidance can address both the prevention and control of IAS. A large proportion of urban green spaces are managed by the public sector, and effective public procurement rules regarding the use of IAS could potentially have an impact on limiting the introduction and spread of invasive alien horticultural species particularly in urban areas. In terms of awareness rising, public green spaces also play an important role by setting an example of what can be achieved through the use of native and non-invasive species, thus influencing the behaviour of private gardeners and land managers.

9.4 Assessment of applicability in Finland

Required legislative support: No legislative support required and voluntary codes of conduct or guidelines can be adopted immediately. However, establishing a legislative basis for public procurement is commonly regarded as increasing the effectiveness of implementation.

Existing legislation hindering application in Finland: N/A

Administrative burden: Depends on the mode of implementation. The adoption and implementation of obligatory provisions for public procurement - especially monitoring the compliance with the provisions – is likely to require some additional administrative input. However, the voluntary codes of conduct can be adopted with very limited or no administrative involvement.

Requirements for public funding: Depends on the mode of implementation. The adoption and implementation of obligatory provisions for public procurement requires some additional funding, e.g. to cover the costs of monitoring. Voluntary codes of conduct can in principle be adopted with very limited costs, however some public resources are required to promote the guidance to contractors and to monitor and enforce its implementation in public procurement contracts.

Acceptability / legitimacy: Depends on the mode of implementation. The acceptability is likely to be high for voluntary codes of conduct but perhaps more difficult for establishing obligatory procurement rules.

→ Establishing voluntary codes of conduct for public procurement could be a possible IAS policy measure in Finland both at national, regional and local level. In addition to a national initiative such codes could also be adopted 'bottom-up' by pro-active regions and cities. Voluntary codes could then pave the way towards a more binding public procurement rules, linked with the foreseen implementation of the EU IAS Regulation.

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Contact: Matthieu Halford, Coordinateur LIFE AlterIAS, Université de Liège, Gembloux Agro-Bio Tech, Belgium (interview 17 December 2013); Etienne Branquart, expert on circulaire Wallonne in Belgium

10 Taxes earmarked to support IAS management, Hawaii (the US)

Instrument in a nutshell: The instrument works by collecting funding for IAS management through conveyance taxes

Type of instrument: tax payments earmarked to IAS

Participation: obligatory

Source of funding: public

Focus in terms of hierarchical approach to IAS: varying focus, depending on the use

Scale of application: national / regional (state)

Current status: ongoing

10.1 Description of mechanism

In Hawaii (US), a proportion of the conveyance tax on certain real estate transactions is earmarked to be paid into the Natural Area Reserve Fund (NARF), a funding instrument dedicated to support the conservation of specific land and water areas important to both biodiversity and local communities. This arrangement is based on the general understanding that the development, sale, and improvement of real estate in Hawaii adds additional pressure on natural areas, coastal access, agricultural production, and Hawaii's water resources and watershed recharge areas. Therefore, there is a link between the source of the conveyance tax and providing funding for watershed protection and other natural resource preservation programmes.

Financing the control of invasive alien species in Hawaii, especially with links to watershed protection, falls within the dedicated scope of NARF. Since its establishment in 2005, the Hawaii Invasive Species Council (HISC), i.e. the organisation responsible for disbursing funds for IAS related projects, has received part of its budget from the fund. Through HISC a part of the funding is distributed to Hawaii's Invasive Species Committees that are responsible for controlling incipient weeds. A part of the funds is taken up by the Watershed Partnerships Program to control weeds that are already established that can no longer be eradicated. The Watershed Partnership Programme also carries out biocontrol projects for priority weed species that have the potential to modify habitats or reduce groundwater infiltration.

Since 1992 NARF has been receiving 25% of the Conveyance tax, except for the period of 2008-2012 when it received 20%.

10.2 Experience of effectiveness

No quantitative information is available on the effectiveness of the instrument. However, according to a national expert the conveyance tax has been an effective mechanism for providing long-term funding for invasive species control under Hawaii's watershed partnerships.

The negative side of using the conveyance tax mechanism is that it is sensitive to economic fluctuations. When the economy is in recession real estate prices and sales decline resulting in a decline in funding for invasive species control as this occurred in 2009-2012. During the period of recession, the Hawaii State legislature also reduced the percentage of the tax supporting NARF, utilising the fund instead to make up shortages in the state general fund.

10.3 Assessment of pros and cons

Coverage: Relatively high – relatively low. Coverage depends on the amount of tax and the use of funds: in principle, the tax earmarked to support IAS policy action can be targeted to any specific IAS group, pathway or measure. In Hawaii, the mechanism is used to fund different IAS projects and also to support the functioning of the Hawaii Invasive Species Council. Since IAS are only one of the NARF focal areas not all of the 25% earmarked tax is used to support the implementation of IAS policy. Therefore, in the case of Hawaii the coverage of the mechanism is likely to be rather limited.

Cost-effectiveness: Relatively high - Moderate. The overall cost-effectiveness of the earmarked tax depends on its use, e.g. whether it is used for preventative measures or control of already established species. In general, if a tax is set at a very low level it is unlikely to function as a means to reduce risk behaviour contributing to (further) spread of an invasive species.

Legislative requirements: Required. The percentage of earmarked tax is integrated in the regulation.

Administrative burden: Low. There are no significant administrative requirements beyond the administration of the funds collected (e.g. allocation of funding to projects and central administration of project cycles).

Requirements for public funding: Relatively low. There is no need for significant new public funding beyond the administration of the funding collected via tax.

Acceptability / legitimacy: Relatively high - Moderate. The acceptability and legitimacy depend on the link between the overall / specific IAS problem and the taxed sector (e.g. in the case of Hawaii the negative impacts of the real estate sector to watershed recharge areas). Furthermore, the acceptability is affected by how well the relevant stakeholders understand and appreciate this linkage.

Links to addressing fundamental aspects of IAS problem: Earmarked tax payments can support awareness-raising among the tax-paying stakeholders. However, this also depends on how well the purpose of earmarking is communicated.

10.4 Assessment of applicability in Finland

Required legislative support: Earmarking (real estate) tax in a similar manner as in Hawaii would require a legislative basis.

Existing legislation hindering application in Finland: N/A

Administrative burden: Additional administrative burden is likely to be limited. The system of earmarked tax does not require specific administration and the funds collected could be administrated by the existing stakeholders (e.g. Ministries and/or regional environment administrators).

Requirements for public funding: Additional public funding is likely to be limited (see above).

Acceptability / legitimacy: Likely to depend on the sector targeted with earmarked tax and the ability to communicate / justify the link between IAS problem and taxed sector to affected stakeholders. These aspects might limit the applicability in Finland.

→ Using earmarked tax to create funding for IAS policy implementation might not be a feasible option for Finland in the immediate future. This is because Finland does not have a very prominent culture of nature-related taxes and furthermore, unlike in Hawaii, issues related to IAS are still relatively new / not recognised as a key environmental problem by stakeholders.

10.5 Key references

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