

**Submission form** (please attach to your posting per a tool or a method you suggest the Forum to discuss)

Date of posting	7 June 2019
Registered Email Address	<a href="mailto:tim.adriaens@inbo.be">tim.adriaens@inbo.be</a>
Relevant topic/session	<input checked="" type="checkbox"/> A method for cost benefit/effectiveness analysis <input type="checkbox"/> A method or a tool for identification/minimizing risk of e-commerce <input type="checkbox"/> A method, a tool or a strategy considering climate change and others <input type="checkbox"/> A risk analysis on potential consequence of socio-economic and cultural values <input type="checkbox"/> Use of existing databases (if relevant to the sessions above, click above, too)
Stage of introduction	<input type="checkbox"/> Pre-border (incl. maritime/international water channel) <input type="checkbox"/> At the border <input checked="" type="checkbox"/> Established IAS in post border areas <input checked="" type="checkbox"/> Spread of IAS <input type="checkbox"/> Socio-economic cultural impact
what decision has the use of this method been used to support?	<p>The Belgian risk analysis framework includes ecological impact assessment (ISEIA) and full risk assessment (Harmonia+) tools, as well as a risk management protocol based on the Booy et al. (2017) framework for eradication which was extended to evaluate management options for limiting the spread of IAS. Also, a method was developed to prioritize pathways based on species impact and frequency of species in pathway. These tools are used to support decision making, for instance:</p> <ul style="list-style-type: none"> <li>- Identification of species to be included in early warning systems and prioritisation of species for surveillance.</li> <li>- Listing of species in national and EU law.</li> <li>- Drafting species lists to include in codes of conduct with the horticultural supply chain.</li> <li>- Prioritization of pathways as required by EU law in support of drafting pathway action plans for Belgium.</li> <li>- Evaluation of management options (eradication, spread limitation, control) for IAS.</li> </ul> <p>The decision support tools developed are designed to promote consensus building. For example, ISEIA scorings were accompanied by discussions in expert panels to reach consensus around scores and consequent species listing (laret list, watch list, black list). Likewise, assessments with the Harmonia+ risk assessment protocol, which is one of the few protocols in Europe with a mathematical backbone, are facilitated by e-infrastructure that allows for consensus building based on individual assessor scores. The protocol is accessible as an online questionnaire, for which registered users have possibilities of modifying or weighting scores and sharing assessments. The protocol conforms with the EU standards for IAS risk assessments. It is being improved to include marine species and species distribution models</p>

	<p>within the framework of a dedicated project (<a href="#">TriAS</a>).</p> <p>This project will also provide a tool (a software pipeline) to automatically feed IAS indicators and select emerging IAS (candidates for risk assessment) from available alien species checklists and distribution data. This will facilitate (post-border) risk assessment and moves toward a more integrated (data-driven + expert elicitation) risk assessment procedure in support of IAS policy.</p> <p>Full cost-benefit analysis is rare in Belgium (e.g. <a href="#">Reyns et al. 2018</a>)</p>
URL to download/review the information	<p>A number of publications illustrate the tools and their application in Belgium:</p> <ul style="list-style-type: none"> <li>- Pathway prioritisation: report attached</li> <li>- Horizon scanning: <a href="#">Gallardo et al. 2015</a>, <a href="#">Zieritz et al. 2016</a></li> <li>- Impact assessment and risk assessment: Branquart et al. 2009, <a href="#">Vanderhoeven et al. 2015</a>, <a href="#">D'hondt et al. 2015</a></li> <li>- Risk management and prioritisation: report in preparation, adapted after <a href="#">Booy et al 2017</a>, more information on <a href="#">this link</a></li> </ul>
If a file attached	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If the file not attached	Contact author

Explanation on the tool/method or information shared	Highlight its usefulness and applicability	Lessons learned from applying the tool/method
<p>The ecological impact assessment protocol ISEIA scores potential ecological impact by scoring four criteria that match the post-establishment phases of the invasion process: 1) spread potential 2) colonization of natural habitats 3) adverse ecological impacts on native species (hybridisation, predation, competition, pathogen transmission) and 4) on ecosystems (succession, food webs, nutrient cycling).</p> <p>Harmonia+ is a full risk assessment methodology that covers environmental, animal/human/plant health and infrastructure impact domains. The protocol provides quantitative output on invasion stage-specific</p>	<p>ISEIA is a well-established protocol and is widely applied in horizon scanning, prioritization and risk assessment exercises. In Belgium it has catalogued 101 species in alert lists, watch lists and black lists of alien species based on their potential impact and these lists have been used for various preventive policies (e.g. code of conduct on ornamental plant species), to target surveillance and to select species for full risk assessment.</p> <p>The risk management protocol was effectively used to promote discussion between experts and the managerial community in an exercise to determine management options for IAS of Union Concern in Belgium.</p>	<p>It is essential to incorporate an evaluation of risk management options into risk analysis approaches. There is much added value in involving managers, policy makers and scientists together in decision making on IAS management. Beyond providing a correct evidence base for decisions on management of IAS in Belgium, this approach also stimulates co-production and co-ownership of management objectives.</p> <p>Quality control remains an important aspect when performing risk assessments or risk</p>

<p>and general risks, converting answers into summary statistics. This includes a formal way of dealing with confidence. The integrated Pandora protocol allows for integrated risk assessments of pathogens and their alien hosts.</p> <p>The Booy et al. (2017) based risk management protocol provides a structured evaluation of the feasibility of eradicating or limiting the spread of a species. The feasibility scores relate to strategies specifically designed for the Belgian situation. They do not translate directly in a management decision, but are used to foster discussion between managers and scientists to draft management recommendations for policy. The aim of this participatory approach was to have the different perspectives correctly represented.</p> <p>The pathway prioritisation framework was developed in response to EU IAS Regulation requirements. It consists of a formula which ranks pathways based on species impact (ISEIA score + score for establishment potential) and on an expert assessment of the frequency of introduction via the pathway. Expert review is an important part of the prioritisation process.</p>		<p>management assessments (cf. <a href="#">Vanderhoeven et al. 2017</a>).</p> <p>The risk assessment and risk management tools require input from the expert community. In practice, it remains a challenge to involve enough experts to perform assessments without remuneration, as is illustrated by the relative scarcity with which the tools are being used in Belgium.</p> <p>Decision makers also had to be convinced that formalized, structured decision making was useful and necessary to ensure evidence-based decision making and improve uptake of decisions.</p> <p>Although the tools would promote more formal consensus building, in practice this is difficult to apply probably because of lack of experts involved and time required.</p> <p>Risk communication is challenging and seems an area that needs further development in Belgium.</p>
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