



To the Department of Agriculture, Fisheries and Forestry *Have Your Say*:

### **How do we make national biosecurity funding sustainable?**

Submission from the Centre of Excellence for Biosecurity Risk Analysis<sup>1</sup> (CEBRA) and the Centre for Market Design<sup>2</sup> (CMD), University of Melbourne.

#### **1. Considering the potential funding options and opportunities outlined in the discussion paper, as well as from your experience, what elements do you think a sustainable biosecurity funding model should include? Are there elements that should not be included; if so, why?**

A sustainable national biosecurity funding model should be efficient, scalable, incentive-compatible, financially sustainable, and focused on ‘risk-creator’ pays. We propose **biosecurity risk insurance** as a model that achieves the required elements. Biosecurity risk insurance relies on the application of actuarial pricing of risk (i.e., higher premiums for higher risk activities) that are standard practice in pricing other classes of risk in the economy. A biosecurity risk insurance approach looks forward, rather than backwards (as is the case with a cost-recovery approach), aligning the funds available for biosecurity to be aligned with the national risk exposure in the future. This approach introduces incentives for risk creators to find ways to mitigate biosecurity threats that reduce Australia’s exposure to biosecurity threats.

#### **2. How would your proposed model operate at a practical level and who would it apply to?**

Biosecurity risk insurance would focus on the risk creators, and at a practical level would work as follows:

- i) Risk creators (e.g. importers and vessel operators) would be required (under legislation) to purchase biosecurity risk insurance from a government-run insurance agency.

Biosecurity insurance would need to be compulsory (like third third-party motor vehicle insurance) on all inbound movement of goods and vessels and could even be extended to inbound passengers. The premium would be based on the level of risk associated with the type and origin of imported good, or vessel — higher premiums for higher-risk imports/vessels.

- ii) Biosecurity risk insurance premiums are determined by actuaries, using the same principles used to determine insurance premiums relevant to other classes of insurable risk.

Importers/vessel operators (and potentially passengers) would pay premia based on the expected losses determined from the risk rating of the relevant import/vessel/passenger. Higher-risk imports/vessels/passengers would pay higher insurance premia than low-risk imports.

- iii) Biosecurity risk insurance premiums would be pooled by a government insurance agency.

The pooled premia would fund: a) biosecurity system costs (pre-border interventions) and b) the cost of controlling outbreaks (post-border) of pests and diseases as they occur. Extreme biosecurity risks would continue to be regulated and prohibited as necessary.

Attribution of financial losses arising from the introduction of pests and diseases to specific importers/vessels/passengers is not required – the insurance pool funds a) and b) above without any requirement to identify which risk creator (importer) actually introduced the relevant biosecurity threat.

### **3. How would your proposed model impact you and others? What would be the benefits or disadvantages to you and/or other stakeholders?**

We contend that our model of biosecurity risk insurance would lead to a fairer biosecurity system. Those who create higher biosecurity threats pay higher (actuarially determined) premiums. Because this approach identifies the efficient price for biosecurity risk, it creates incentives needed to align risk creator behaviour with national biosecurity objectives. It results in the “right” (efficient) level of biosecurity effort in the Australian economy. It also identifies the type of biosecurity effort needed based on the revenue (insurance premia) collected from different biosecurity threat pathways (i.e., imported goods, biofouling, hitchhiker pests etc.). This would allow biosecurity funds to be allocated efficiently. Under the current biosecurity system, these incentives do not exist (it is inefficient) and unfair (creators of biosecurity risks do not contribute to management of biosecurity threats). Rather, the cost of responding to biosecurity incursions is met by Australian taxpayer, affected industries and/or the environment.

Under biosecurity risk insurance, risk-creators (importers) would have an incentive to seek alternative lower-risk alternatives (products/suppliers/trade routes). The system would ensure risk creators pay for biosecurity effort imposed on Australia and high-risk imports pay higher premia than low-risk imports.

### **4. Is the proportionality between those who contribute to the funding system and those who benefit the most, right?**

No, deferring to principles of economic efficiency, the proportionality between those who contribute to the funding system and those who benefit the most, is not right. Under the current system, risk creators do not need to consider the biosecurity risks their imports or vessels pose to the Australian economy, environment and community.

Furthermore, decisions about the level of biosecurity effort (reflected in biosecurity budgets) are based on an administratively determined “appropriate” level of protection (ALOP) and the outcome of national and state budget appropriations. There is no obvious analysis of an efficient level of biosecurity effort. Under a biosecurity risk insurance mechanism, the proportion of funds raised from insurance premia in the various domains of biosecurity reveals the efficient allocation of funds within the biosecurity agency.

Actuarially pricing risk:

- Ensures that the insurance pool (pooled premia) is sufficient to fund biosecurity system costs (i.e., administration, border inspection etc.) and response losses (i.e., costs incurred from controlling disease and pest incursions as outlined in Response Deeds) as they arise.
- Raises revenue that scales with Australia’s exposure to biosecurity threats and volume of trade.

Incentives are created for positive behaviour change among risk creators, because a biosecurity insurance mechanism:

- creates the incentives needed to align the actions of self-interested agents (i.e., importers, vessel operators, passengers) with national biosecurity objectives.
- Rewards importers for taking actions that reduce Australia’s overall exposure to biosecurity risk (i.e., lower biosecurity risk premiums).

### **5. Are there other technologies, current or emerging, that could be employed to increase the efficiency of the biosecurity system, and perhaps reduce operational cost?**

Strategic investment in technologies that improve information about the level, distribution, and spread of pests and diseases, the origin of biosecurity threats, the provenance of goods in the supply chain, transmission pathways and treatment options is likely to have a profound impact on the efficiency and efficacy of biosecurity systems. Other technologies could be important in designing and implementing incentives, regulations, and exchange mechanisms (i.e. markets) to align the actions of individuals and organisations with national biosecurity objectives.

**6. How could the Commonwealth Government improve efficiency in the biosecurity system (consistent with meeting our Appropriate Level of Protection)?**

Decisions about the level of biosecurity effort (reflected in biosecurity budgets) are based on an administratively determined “appropriate” level of protection (ALOP) and the outcome of national and state budget appropriations, rather than an analysis of an efficient level of biosecurity effort. Under a biosecurity risk insurance mechanism, the proportion of funds raised from insurance premia in the various domains of biosecurity reveals the efficient allocation of funds within the biosecurity agency.

**7. What other investments or actions could the Commonwealth Government make or take to sustainably support the delivery of biosecurity activities?**

To progress the biosecurity risk insurance mechanism, the following investments/actions should occur:

- Use of actuaries and market-design economists in biosecurity policy creation
- DAFF needs a systematic data strategy to determine whether existing/future interventions at the border achieve their aims.

Thank you for the opportunity to comment on the terms of reference into this inquiry. We would be happy to further discuss any of the above.

Yours truly,

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**<sup>1</sup>CEBRA: Background and conflict of interest declaration**

The Centre of Excellence for Biosecurity Risk Analysis (CEBRA), an initiative of the Australian government, is a research group supported by the Australian Department of Agriculture, Fisheries and Forestry (DAFF), the New Zealand Ministry for Primary Industries (MPI), and by the University of Melbourne (the university), at which it is based. CEBRA supports DAFF and MPI in protecting Australia and New Zealand’s agriculture, natural environments, and human health from biosecurity threats. CEBRA delivers practical solutions and advice related to the assessment, management, perception, and communication of biosecurity risk. CEBRA enjoys a unique relationship with DAFF and MPI, occupying a research / policy nexus that provides access to and leverage upon the key challenges faced by science-based regulators.

Consequently, **CEBRA declares a conflict of interest** in its commentary on the Australian biosecurity system because of the nature of its financial support and its operating model. CEBRA works very closely with DAFF, which is a key actor in the biosecurity system, and a large proportion of CEBRA research is funded by DAFF or biosecurity regulators in the states and territories.

**<sup>2</sup>The Centre for Market Design**

The Centre for Market Design (CMD) is an innovative economic research centre hosted by the University of Melbourne. We support policy innovation by applying economic design techniques to public policy, procurement and resource allocation problems. We have particular expertise in mechanism design, auction theory, matching markets, experimental economics, and structural econometrics. The CMD was created specifically to build capabilities needed in economic design and to harness these ideas and techniques to create solutions to ‘real world’ public policy problems. CMD has collaborated with CEBRA and DAFF on projects related to the sustainability of the biosecurity system.