# Proxy driven approach to assess risk of African Swine Fever introduction into EU countries via illegal imports

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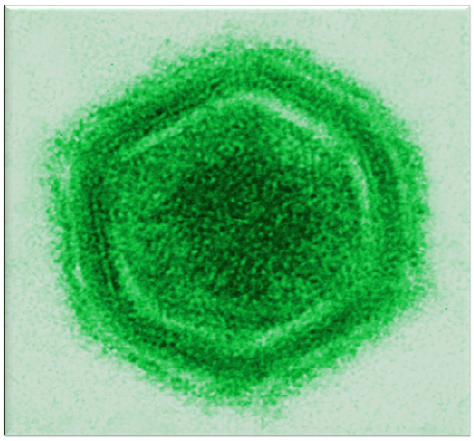
## Background

Since the outbreaks of African Swine Fever (ASF) in the Caucasus region in 2007 and the subsequent spread to parts of Russia, ASF potentially is a risk for European Union (EU) member states.

The most effective transmission of ASF virus is through direct contact between pigs, but the virus can also survive in the environment and for a prolonged time in meat products (reviewed in Costard et al. 2009).

Besides legal import of pig and pork products, wild boar, and fomites, illegal import potentially is an important way of introducing ASF into the EU (EFSA ASF working group, 2010; Wieland et al, 2010). However data to estimate the resulting risk objectively following a detailed risk pathway is scarce.



## M&M

Proxy variables for which data was available in the public domain or could easily be obtained from the respective countries were identified to assess the release and exposure risk for illegal import.

To account for the different weight proxies have on the risk estimate, expert opinion was elicited from experts during a workshop related to the project. Relative weights of proxies were derived through pairwise comparison of proxies.

Quantitative variables were then converted into qualitative risk estimates and then combined using a pre-defined risk matrix. The model structure is implemented in a Microsoft Excel worksheet which is linked to the various tables containing the input data for each country.

## Objective

To develop a semi-quantitative generic risk assessment framework that allows EU countries to model the risk of introduction via illegal import of pigs and/or pork products

## Results

Illegal import of pigs and/or pork products either happens for personal use/consumption or for commercial purpose.

For personal use, it was assumed that pork products are the predominant commodity in illegal import. Such imports are linked to tourism or result of residents of at risk countries living and working in the EU wanting to consume products from their home country.

Illegal imports for commercial purpose are influenced by the geography of the country, economic factors (price differences of products, demand of products) and the number of residents from countries at risk. The data sources and weights of the different proxies as determined through expert elicitation are presented in Figure 1.

For the exposure following release of ASF through illegal import, the level of biosecurity in pig production, number of pig workers from ASF affected areas and occurrence of wild boar were considered (Figure 2). The contribution of each proxy to the calculation of the risk of introduction through illegal import are summarised in Figure 3.

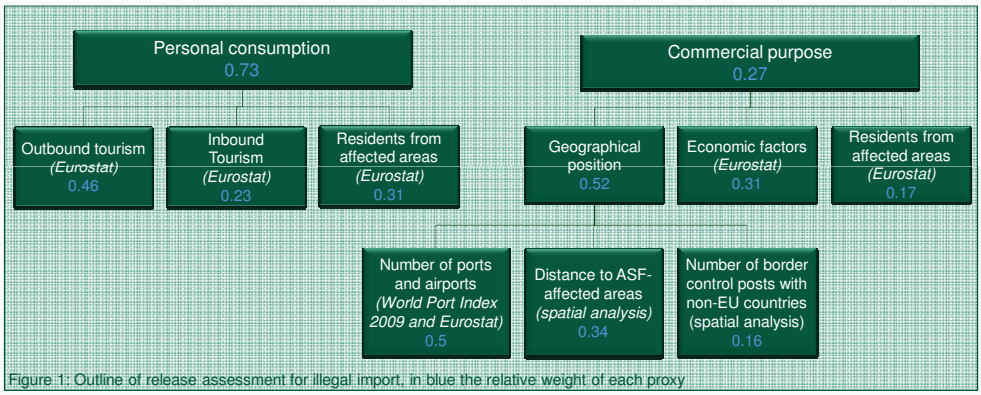



Figure 1: Outline of release assessment for illegal import, in blue the relative weight of each proxy

Experts considered the release more important than the exposure with weights of 0.66 and 0.34, respectively.

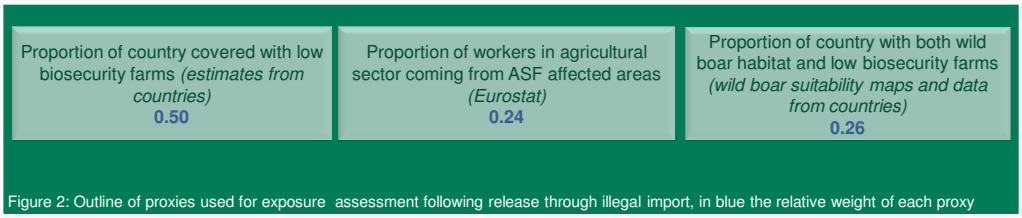



Figure 2: Outline of proxies used for exposure assessment following release through illegal import, in blue the relative weight of each proxy

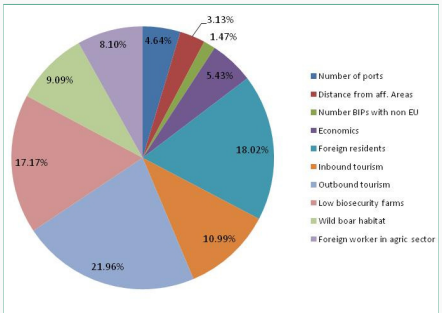



Figure 3: summary of contribution of proxies in release and exposure

## Discussion & Outlook

The approach presented here will result in relatively crude risk estimates for each country. However, using this standardised approach will allow objective comparison of risk due to illegal import between countries. In the absence of any data on illegal import and trade of pork products, the use of expert elicitation was a good way to gather estimates on the relative importance of proxies identified.

The illegal import pathway presented here is part of an overall generic framework to assess risk of ASF introduction. The other risk pathways, legal import of pigs and pork products, fomites (incl. vehicles and ticks), and wild boar are developed in a similar fashion.

The resulting semi-quantitative models of each pathway are combined in a semi-automated Excel worksheet and will allow EU countries to identify the risk pathways that merit further consideration for risk mitigation. In addition, countries will be able to enter more up to data into the Excel model to replace the open access data that may be out of date.

To validate the approach, for four countries (Spain, UK, Denmark and Poland) the outcomes of the generic risk model will be compared with country specific risk assessments.

**References**

Costard et al, (2009), Phil. Trans. R. Soc. B 364, 2683–2696

EFSA AHAW, Scientific Opinion on African Swine Fever (2010)

Wieland et al, (2011), PVM 99(1):4-14

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