

## African swine fever – beyond the numbers

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### ABSTRACT



African swine fever (ASF) is a highly fatal disease of pigs, with no effective treatment or vaccine. Since it emerged in China in 2018 the disease has killed millions of pigs across 13 countries in the Asia Pacific Region where the overwhelming majority of pig-keepers are smallholders. The impact in numbers, such as financial cost to the industry and national protein deficits, is staggering, and the lesser-reported human impacts are profound. This presentation gives an overview of pilot applications of the Socioeconomic and Livelihood Impact

Assessment (SELIA) framework to ASF in the Philippines and Timor-Leste. In Timor-Leste, university and government researchers applied spatial group model building techniques to yield insights into the dynamics of ASF impact. With a range of stakeholders, the group prioritised problems associated with ASF and then developed causal-loop diagrams to identify important relationships and identify potential leverage points for intervention. Important features included building trust between farmers and the government veterinary services, strengthening veterinary services, and providing cash grants to farmers conditional on biosecurity investments. In the Philippines, university and government researchers applied a suite of participatory tools with farmers and associated value chain actors to develop a rich understanding of the impact of ASF along value chains. While overwhelmingly negative, the livelihood impacts of ASF were not equal among value chain actors, thus suggesting the need for tailored support. Another important finding for further consideration was around the need for sensitive and safe pig-depopulation practices to reduce the distress of affected farming communities and veterinary staff.

African swine fever (ASF) is a highly contagious viral disease killing up to 100% of pigs in herds and across communities. It is spread by a variety of means – wild and domestic pigs, pork and pork products, and on inanimate objects (fomites) – which means it can spread across the globe very quickly. There is no effective vaccine or treatment. The disease was first described in Africa in the early 1900s. It moved to Europe in the 1950s and has remained there. In 2018 it emerged in China, and since then has spread to 15 countries in Asia and the Pacific, including our very near neighbours Timor-Leste and Papua New Guinea (OIE 2021). In 2019 alone ASF was responsible for a drop of 12% in the global pig herd, partly because 55% of pigs are in China alone – or were before ASF hit. That equated to 11 million tonnes of pork production lost, causing a protein deficit and a mass shift to other livestock protein products (Bruce *et al.* 2021).

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This record has been prepared from a transcript and the slides of the Zoom presentation.

## African Swine Fever Socioeconomic and Livelihood Impact Assessment Framework (ASF-SELIA)

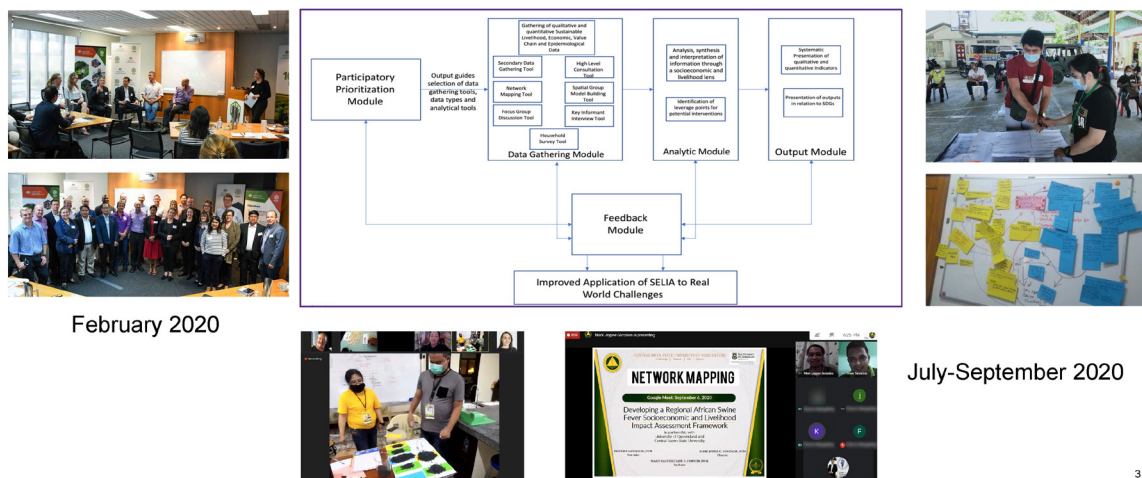


Figure 1. ACIAR project to develop a framework to look beyond numbers of pigs deaths from ASF.

Even though the title of my presentation says ‘beyond the numbers’, it is clear the numbers in ASF are very large. It is a very significant disease in a growing number of countries. Our research, led by Dr Dominic Smith and funded by ACIAR, involved developing a Socioeconomic and Livelihood Impact Assessment (SELIA) framework to look beyond those numbers; to look at the broader impacts of ASF and other livestock diseases (Smith & Cooper 2021).

The project started in 2020, and we were able to have one meeting in Canberra with many people from different organisations who formed a Community of Practice to help brainstorm and workshop the SELIA framework (Figure 1), but very quickly we had to move our collaborative efforts online and become adaptive to the local situation in the field.

### Pilot studies: Timor-Leste

This morning Stacey Lynch touched on how important pigs are in Timor-Leste. They are important for ceremonies, for religious practices, for funerals, for selling to pay for education and health care (Figure 2). This drives the value of live pigs up very high. Seventy per cent of households in Timor-Leste kept pigs in the last published census, which was before ASF hit – or US\$160 million-worth of pigs in Timor-Leste, and US\$1000-worth per pig-keeping household. This is a huge amount in a country where more than 70% of people live on less than US\$3.20 a day (Smith *et al.* 2019). We worked with the International Livestock Research Institute (ILRI) to partner with people involved in the value chain to explore what would be likely to occur when ASF hit communities, and then to look for leverage points for intervention (Berends *et al.* 2021).

## Impact of ASF in Timor-Leste

- The ceremonial and cultural importance of pigs in Timor-Leste cannot be overstated
- Value of national pig herd was more than USD 160 million
- ASF is estimated to have killed 150,000 head of pigs to date
- Spatial Group Model Building with value chain actors revealed complex impact pathways
- Potential leverage points identified:
  - i. Build trust between small-scale pig farmers and veterinarian technicians
  - ii. Strengthen services available from the Ministry (MAF)
  - iii. Provide start-up loans/cash grants to small-scale pig farmers conditional on application of farm biosecurity practices



Community members load their pig, worth about USD 600 and roofing materials onto a truck, both to be used in their clan's Uma Lulik (Sacred House) ceremony.

Figure 2.

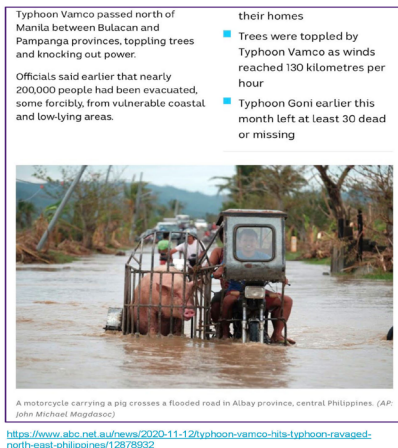
Three high-potential leverage points were identified. One of those was the dynamic of trust that veterinary and livestock technicians had with pig owners. It was seen that if the livestock workers could improve their engagement with farmers – which partly depended on resourcing by the Ministry of Agriculture and Fisheries – then trust would increase through that relationship building. That would lead to an increase in reporting of animal health issues and of cases of ASF, which would mean that action could be taken – so long as it was resourced – thus increasing the trust even more as mortality decreased and pigs were protected.

Just this weekend, Dr Joanita Bendita da Costa Jong, the Director of the Veterinary Directorate in Timor-Leste, told me that the Market Development Facility (MDF) from Australia has been supporting a lot of farmer engagement campaigns in Timor-Leste, and they are seeing a real increase in that trusting relationship around biosecurity and African swine fever.

Dr Tamsin Barnes from The University of Queensland has also completed a study on basic biosecurity interventions that could be implemented on smallholder farms to potentially decrease the incidence of ASF (Barnes *et al.* 2020).

Another leverage point was identified in relation to resource-poor farmers buying new pigs. The poorest farmers were unable to restock with pigs once ASF went through because the ceremonial demand for pigs remained high when supply was low, so the price of live pigs 'had gone through the roof'. Dr Joanita said that the restocking campaign (which Professor Robyn Alders asked Dr Stacey Lynch about in this morning's Q&A for Session 2) is going very well. They are breeding pigs in areas free of ASF to pass on at no cost to smallholder farmers, the poorest farmers, after they have enhanced their biosecurity practices and undergone training.

## Impact of ASF in the Philippines



- Financial losses to the sector have been enormous – but not equal
- Impacts of livestock disease are superimposed over a complex vulnerability context
- The psychosocial impacts of ASF depopulation campaigns were immense
- Two proposed areas of intervention for further study:
  1. Tailored support to align with degree and direction of ASF impact
  2. Improved communication and a One Welfare approach to ASF control

Figure 3.

This will be a revolving system: once the farmers get back on their feet, they will give pigs back into that restocking system. So far there have just been some treatable skin diseases reported. The Government of Victoria has been giving support for any veterinary concerns that they have. This system is looking promising.

### Pilot studies: the Philippines

The Philippines is a very different context (Figure 3). There are larger farms there. The financial losses to the sector have been enormous, but not equal. The larger farms have had more of a buffer, allowing them to rebound. They have also been better at biosecurity and able to be flexible and reduce the incidence of ASF. Communities have differed in vulnerability context, with some communities we spoke to having had typhoons, superimposed over the top of ASF, putting them under great strain. And having COVID-19 and ASF at the same time has also put these farmers under pressure. This has been described as a ‘double punch’ (Neubauer 2020).

Professor Pingali earlier today said that during the COVID-19 pandemic the problem is not so much a lack of food across the globe; it is access. This is where we need to support smallholders, because even though larger farms are rebounding – and China’s pork production is increasing hugely – there are millions of smallholders that have gone out of business because of ASF. It is a very complex situation.

As a research team, we were taken aback by the immensity of the psychosocial impacts of ASF in the Philippines. Echoing the findings of ethnographers in the UK in relation to foot-and-mouth disease (Mort *et al.* 2008), farmers in the Philippines are used to seeing their properties as places of life and of breeding; they build relationships with their livestock. Some farmers were describing their

pigs as ‘family’. Their forefathers had built up the genetics in their breeding stock over generations, and they had been passed down by family members. Now they were seeing these pigs slaughtered in huge numbers. They were hearing gunshots. Their accounts were very harrowing descriptions of what they went through.

The veterinary and animal health staff that we spoke to were feeling traumatised too, because they were having to conduct mass depopulation campaigns to control ASF in communities – sometimes in their own communities. We also spoke to people who had been ostracised, and whose personal security had been threatened at times.

In this case we proposed two areas of further research (intervention was not possible within this small pilot trial). One area is to tailor support according to need; that is, recognising that ASF does not affect all groups equally. The other area is to improve communication and consider a ‘One Welfare’ approach to depopulation campaigns. In this, the welfare of humans involved is considered alongside the welfare of pigs and humane practices (Cooper *et al.* 2022).

An encouraging initiative that I have seen is that the UN Food and Agriculture Organization (FAO) under Dr Mary-Louise Penrith has started online training for veterinary staff to learn how to use context-appropriate control measures for ASF. Mass depopulation campaigns do not always work, and sometimes they do more harm than good.

The next step for this work is that the Socioeconomic and Livelihood Impact Assessment Framework (SELIA) that we developed during the project is going to be applied via Dr Dominic Smith and myself and the Griffith Asia Institute as part of the Bill & Melinda Gates-funded Global Burden of Animal Disease (GBAD) program, in a sub-project led by Dr Dianne Mayberry at CSIRO.

Some publications are listed below. I wish I had time to acknowledge all the people who collaborated with us. The people I most want to thank are the field staff who, despite the challenges posed by COVID, managed to contribute so much to this research.

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Tarni Cooper is a veterinarian experienced in One Health and social research with smallholder livestock farmers in South East Asia and East Africa. Tarni has collaborated on a range of ACIAR-funded research for development initiatives including ‘Developing a Regional ASF Socioeconomic and Livelihood Impact Assessment Framework’. She is currently contributing to the FAO-led Global Pool of Expertise on ASF. In 2013–14 Tarni was an Australian Youth Ambassador for Development (now AVP) in Kenya, and in 2016 she was a Crawford Fund in Queensland Postgraduate Awardee. Tarni is completing her PhD at The University of Queensland with the International Livestock Research Institute in Vietnam. Tarni is a Queensland representative of the RAID network and a volunteer with the Kyeema Foundation.