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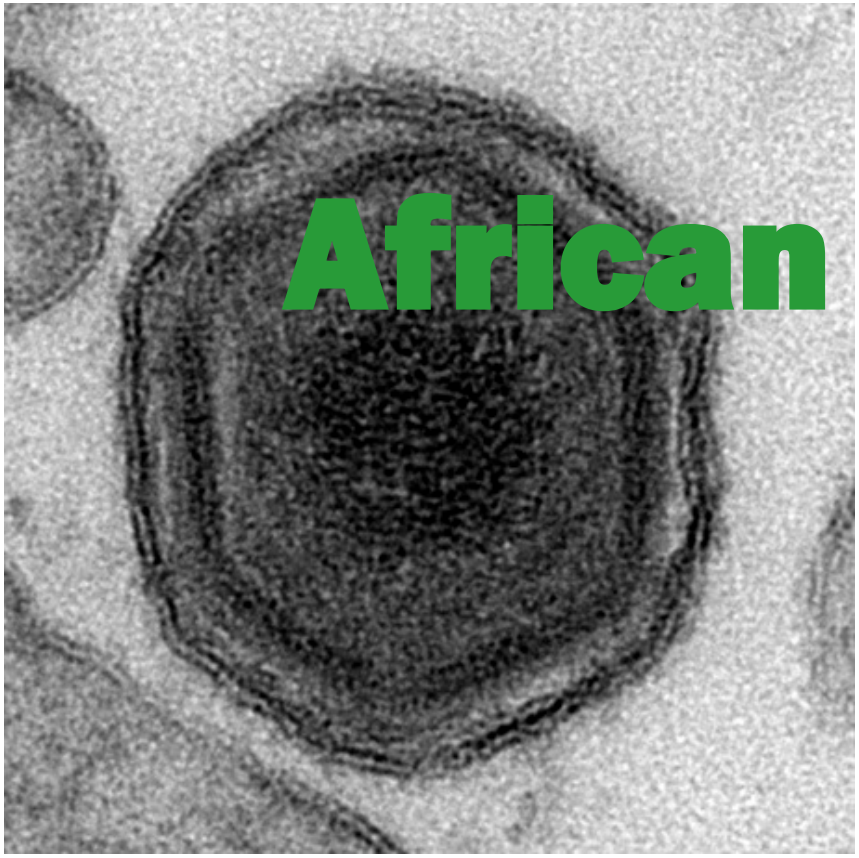

African Swine Fever

Global situation & economic impact

Vincent ter Beek

Wednesday, March 13, 2019

Bangkok, Thailand

A little bit about Pig Progress

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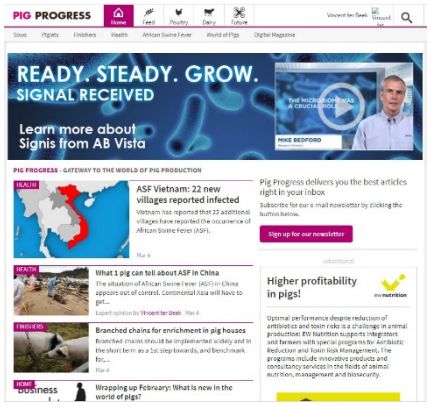

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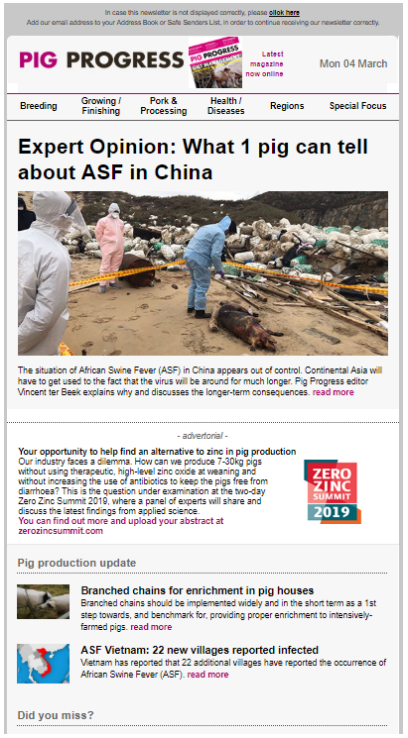

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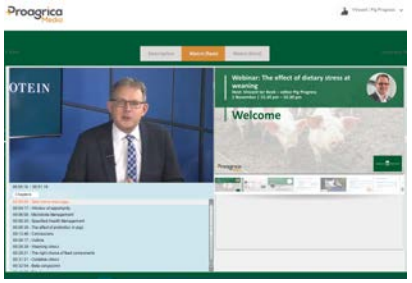
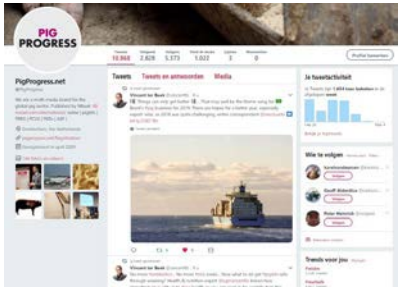


Social Media



A little bit about myself…

- 42 years old
- MA in History & Journalism
- College teacher
- At *Pig Progress* since 2005
- Married to Saowanee

Should there be fear of tropical pig diseases?

The outbreak of the tropical bluetongue disease in Western European cattle and sheep herds, rose the question if the outbreak could be related to global warming. For sure, the Netherlands have their plans listed, in case African Swine Fever would hit Northern Europe.

By Vincent ter Beek

Soft ticks can be long-term reservoirs for African Swine Fever. In ticks, the virus can be transmitted from generation to generation, waiting for a wild boar or pig to take a sand bath. (Photo: Institute for Animal Health, UK)

Anyone in livestock industry held his breath when in August 2006, news of a bluetongue outbreak in the south of the Netherlands was made public. Quickly, the tropical sheep and cattle disease, transported by midges, was reported on farms in Belgium, Germany and France as well.

Both the virus, being a tropical one, as the variety of the virus puzzled scientists – as this one had only been reported south of the Sahara and in the Caribbean – but not in Europe. "Quite frankly, for this specific Dutch vet, to realise that the disease he found in a sheep herd could be bluetongue instead of Foot-and-Mouth Disease – and had it sent for testing for bluetongue, was an extraordinary move. It takes some experience to think of bluetongue when you don't expect it." Said Dr Piet van Rijn, project leader for exotic viral diseases at the Central Institute for Animal Disease Control (CIDC) part of Wageningen University Research Center, the Netherlands. Usually, this department is focusing on several different exotic diseases in the Netherlands, but in August 17th, 2006, all signals went red alert, and concentrated only on bluetongue. Eventually, Northern Europe reported 2,000 holdings infected and also the disease was reported as far off as Bulgaria by animals having antibodies specific for this type of bluetongue.

Dr Piet van Rijn: "My main concern for western and northern Europe for ASF would be Sardinia."

Propelled by Al Gore's film *An Inconvenient Truth*, several media have linked the emergence of bluetongue to global warming. For Van Rijn, this is too hasty a conclusion, saying: "I am not a climatologist but the least one can say is that the very hot summer in Europe in 2006 was too a-typical to speak of a pattern in climate change." However, what *does* worry Van Rijn about the bluetongue epidemic is that a tropical livestock disease can spread in Northern Europe. "It shows that apparently for that, the climate is good enough."

Swine

The CIDC compiled a list of tropical diseases that, just like bluetongue, could hit the livestock industry unexpectedly and should be carefully surveilled, as they are highly contagious. Apart from bluetongue, African Horse Fever is listed, and, for pig producers extremely interesting, African Swine Fever. The last disease is in name and clinical symptoms similar to Classical Swine Fever (CSF), although casualties are usually more likely, but the diseases are not related in their origin (see *Table 1*). Main difference to CSF is the way the ASF virus is transported: not only through pig-to-pig contact, but also through a vector, in this case soft ticks (*Ornithodoros moubata*), making the cause of the disease rather hybrid.

"Outbreak of ASF in northern Europe is in some way less likely than in bluetongue as it is not carried by flying insects but by non-flying ticks," Van Rijn says. "However, there are other ways of infection. In 1985-86 in the Netherlands and Belgium there was an ASF outbreak due to contaminated swill." It remains to be seen if the cold northern European climate would be suitable for ASF carrying ticks to survive, even if the climate is going to change as some infer. Soft ticks prefer a minimum temperature of 17°C during the night but shun daylight – this would suggest they could survive inside a European pig house rather than outside. Anyway, Van Rijn says, if an ASF outbreak would take place, is would not be ticks being its cause. "My main concern for western and northern Europe in this respect would be the Italian island of Sardinia, as that is the only place in Europe where ASF is virtually endemic. Many people on the island have backyard pigs – the insects quickly jump on wild boars. Exports, legal or not, to the rest of Italy could do the rest." In recent years, an ASF outbreak was only reported in Portugal (1999), in which 44 animals had to be slaughtered; this outbreak did not have any major consequences. Van Rijn says he does not dare to think of what could happen if an outbreak could spread through Europe. "Theoretically, the disaster could be enormous. A doom scenario would be if the disease would enter an AI station, allowing it to spread to breeding farms very quickly. In that case it would spread very fast and have loads of consequences."

Table 1. African Swine Fever vs Classical Swine Fever.

The name suggests a coherence between African Swine Fever and Classical Swine Fever, but the diseases are only connected through their names and clinical signs.

	African Swine Fever	Classical Swine Fever
Also known as	Warthog fever	Hog cholera
First recorded	1921, Kenya	1830, Ohio, US
Endemic in	Africa, south of the Sahara, mainly Mozambique but also Togo, Madagascar, Benin; Sardinia (Italy)	Asia, Central & South America, parts of Europe & Africa. USA, Australia and Canada are free of CSF, just like Ireland, Scandinavia and New Zealand
Clinical signs	Fever, skin lesions, convulsions, death in young animals, abortion – usually to a heavier extent than CSF	Fever, skin lesions, diarrhoea, convulsions, dyspnoea, death in young animals, abortion, mummies
Caused by	African Swine Fever Virus (Asfivirus)	Classical Swine Fever Virus (Pestivirus)
Type of virus	Large DNA virus, 150+ genomes	RNA virus
Transmission	Contact; infected meat; fomites; ticks (Ornithodorus)	Contact; infected meat; fomites
Cure/treatment	No effective treatment; slaughter is necessary	Vaccination is possible – not allowed in the EU however; there is no effective treatment

Prevention

In the European Union, legislation has been drawn up, to take care of a possible African Swine Fever outbreak, by Council Directive 2002/60. This directive rules that, similar to outbreaks for Classical Swine Fever, authorities should be noted, necessary Protection Zones (3 km) and Surveillance Zones (minimum 10 km) should be impositioned around the centre of the outbreak, infected or contact animals should be slaughtered, their premises cleansed and feral pigs surveilled.

In addition, the Netherlands' ministry of Agriculture, Nature and Fisheries drew up a minute emergency plan for an ASF outbreak. In it, detailed plans are put down for authorities and institutions on how to handle in case of suspicion of an outbreak or when an outbreak is reported – either in the Netherlands themselves or in any relevant foreign country. Van Rijn: "We made a similar plan for a bluetongue outbreak and last year it was shown that this kind of approach is definitely very helpful. We received a lot of praise for the way the Netherlands dealt with it. Even Germany made use of it."

Vaccination

In 'peace time', when no major livestock outbreaks hit the news, several other exotic diseases are studied at CIDC in Lelystad, for instance to gain more knowledge on ASF. Up until now, no vaccine has become available for the disease. On one hand this is due to the fact that the ASF virus is a virus with a huge DNA genome, meaning that research is rather complex. On the other, as the disease has not been existing in major pig production areas, the return of investment is too low for large companies to set up broad scale research. However, it is not difficult to imagine a climate change in this respect, because only one outbreak can change that picture. "One year before the FMD outbreak in 2001, some European governments were wondering whether we should carry on doing these kinds of research *at all*. One year later, after FMD, we knew we definitely should!" Bluetongue once more proved constant surveillance continues to be of major importance. Now 'peace time' is back again; for pig production it is hoped a treatment or vaccine for ASF can be developed before the disease finds the main European pig production areas. PP

In June, ASF hit the country of Georgia. For a full account, check the news section on page 6 and 7.

Global efficiency network

EPIZONE (Network of Excellence for Epizootic Disease Diagnosis and Control) is a new, EU guided, association to increase cooperation between the several member states in the field of animal health and diseases. On its website (www.epizone-eu.net) it says that the authority wants to 'improve research on preparedness, prevention, detection, and control of epizootic diseases within Europe to reduce the economic and social impact of future outbreaks'. Altogether, it includes 20 institutes across 13 countries, including China, France, UK, Germany, the Netherlands, Turkey, Poland and Spain. Together they hope to help and create a synergy and to find out where gap management should focus on. Final aim is to facilitate knowledge transfer. For ASF, especially Spain and the UK are nuclei of knowledge, of which other member states could profit.

Cover, Sept 2015

Question...

Will African Swine Fever come to Thailand?

- ☐ Yes
- ☐ No
- ☐ I have no idea

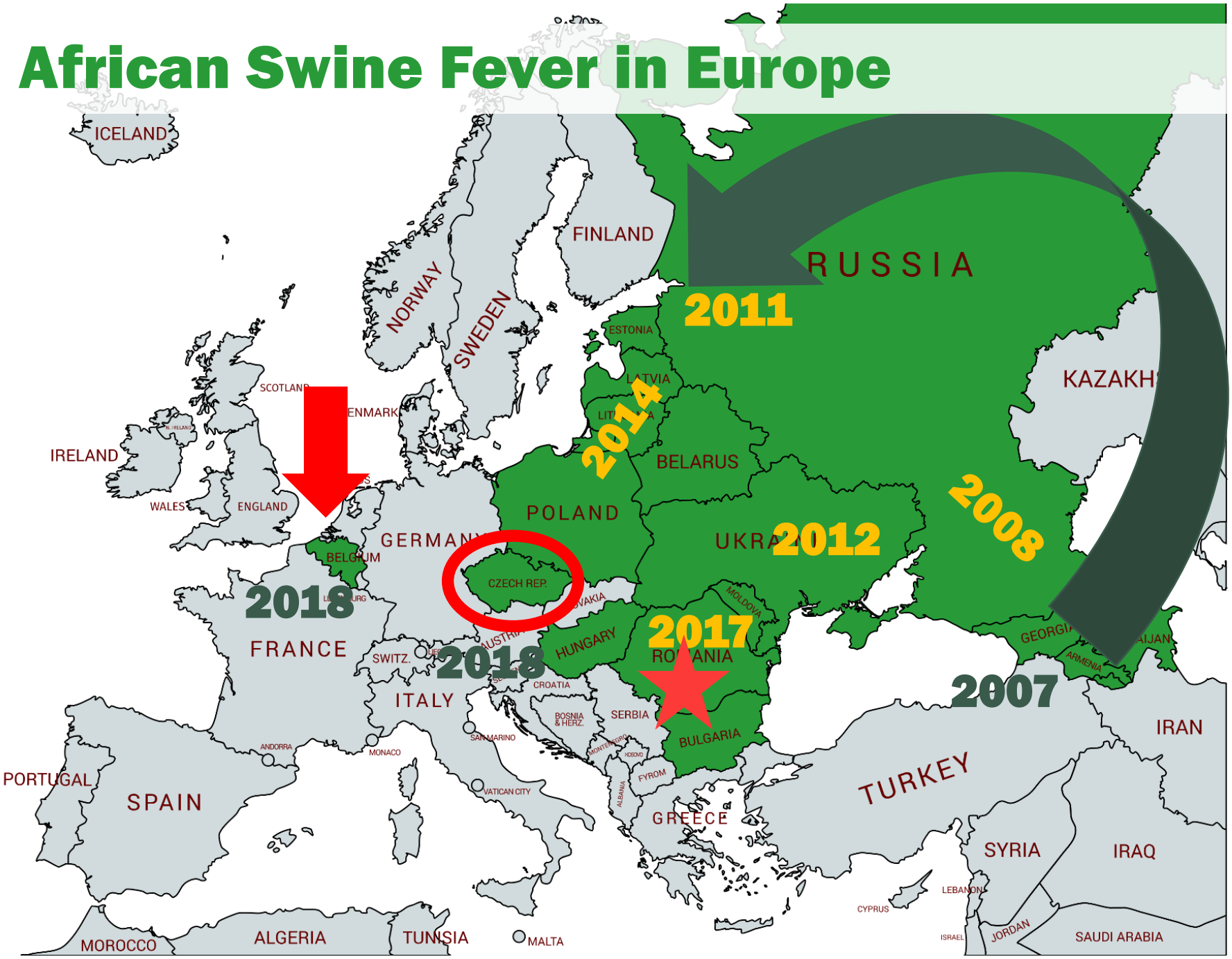
Contents

- Global situation in 2019
- Europe
  - Belgium
  - Czech Republic
  - Romania
- Asia
  - China
  - Russia
  - Mongolia
  - Vietnam
- Future consequences?

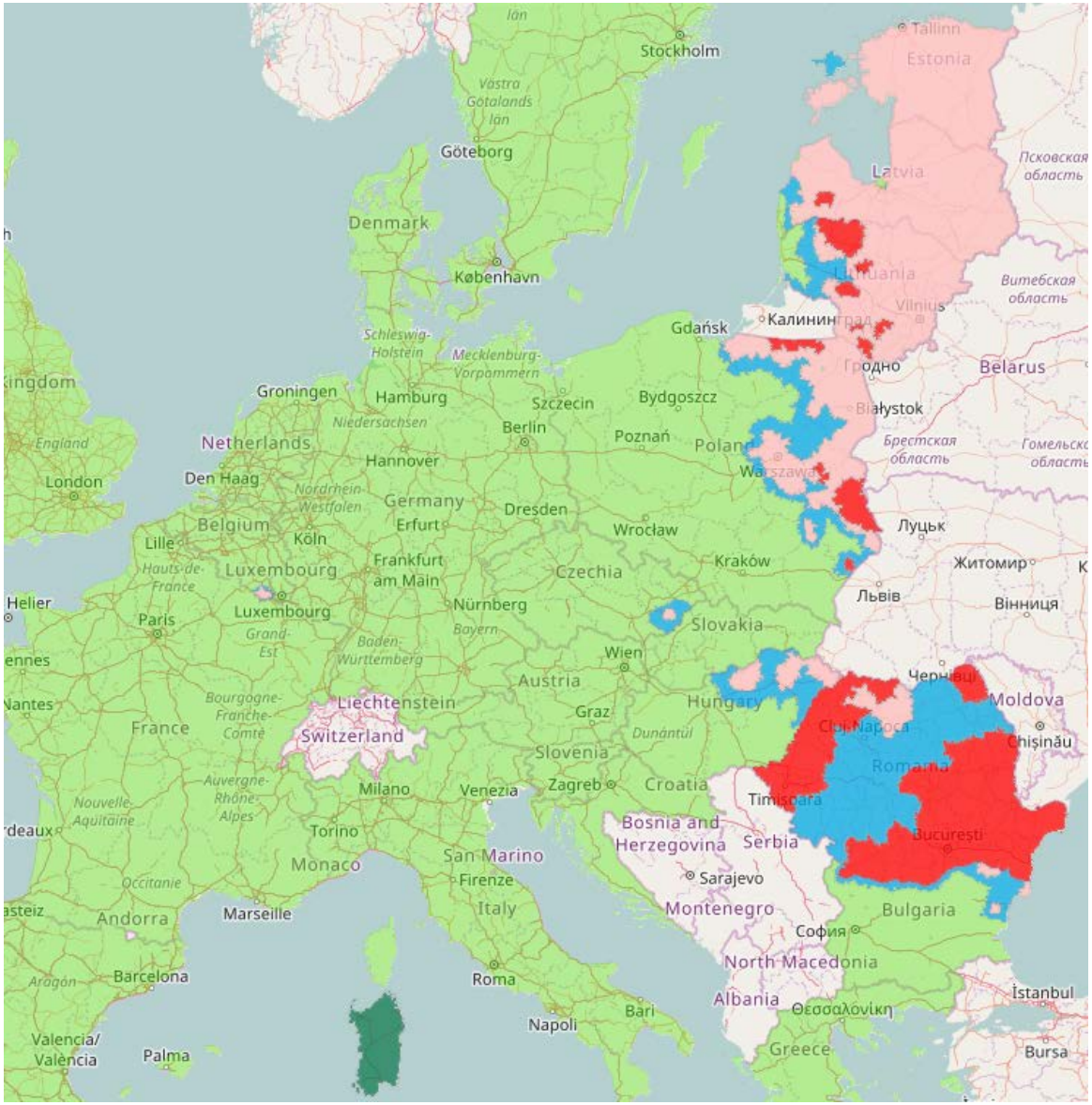
African Swine Fever worldwide (2018-9)

Source: OIE

African Swine Fever in Europe



African Swine Fever in Europe



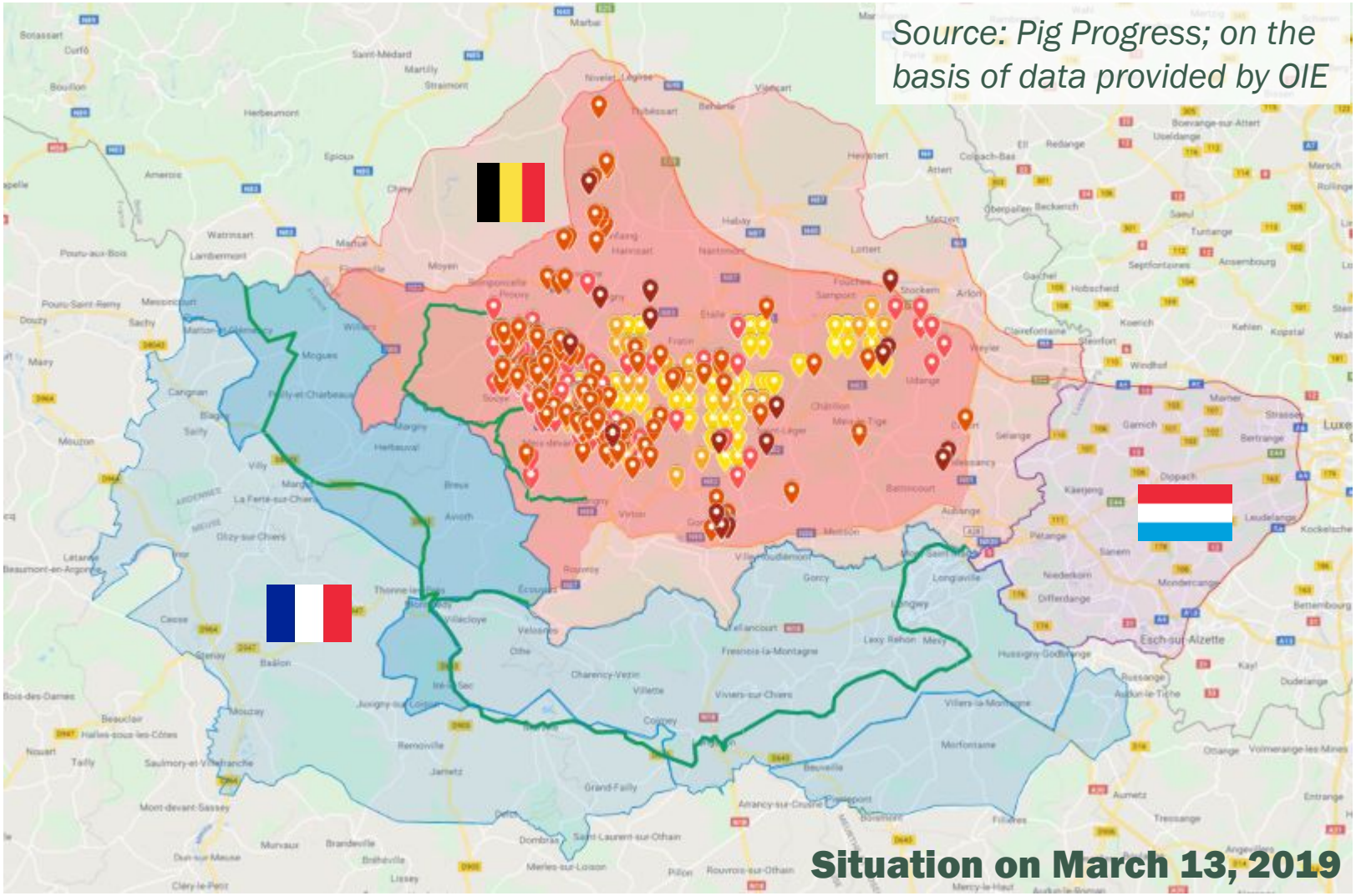
I. Higher risk & surveillance

II. Wild boar only

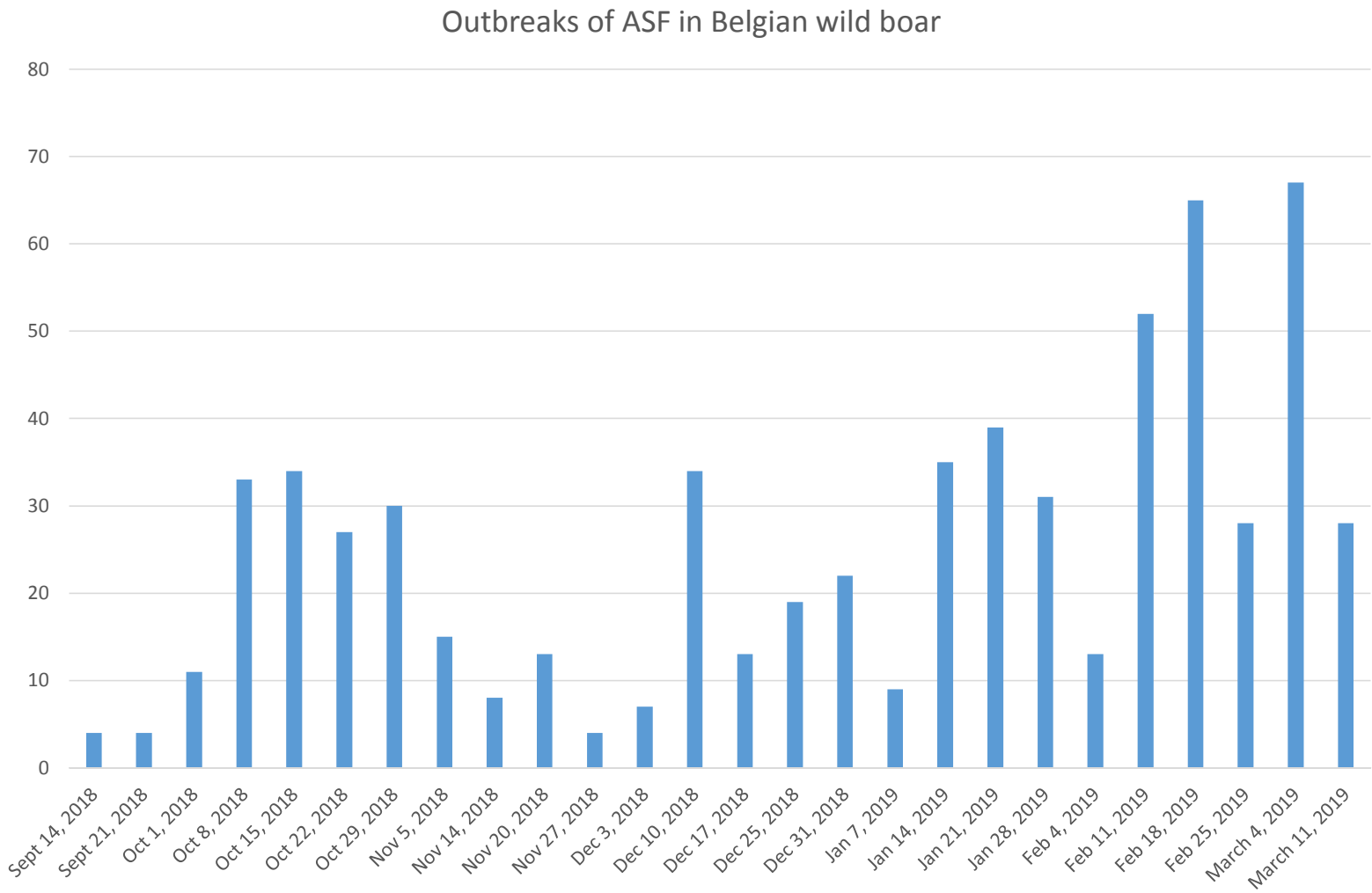
III. Wild boar & pigs

IV. Endemic

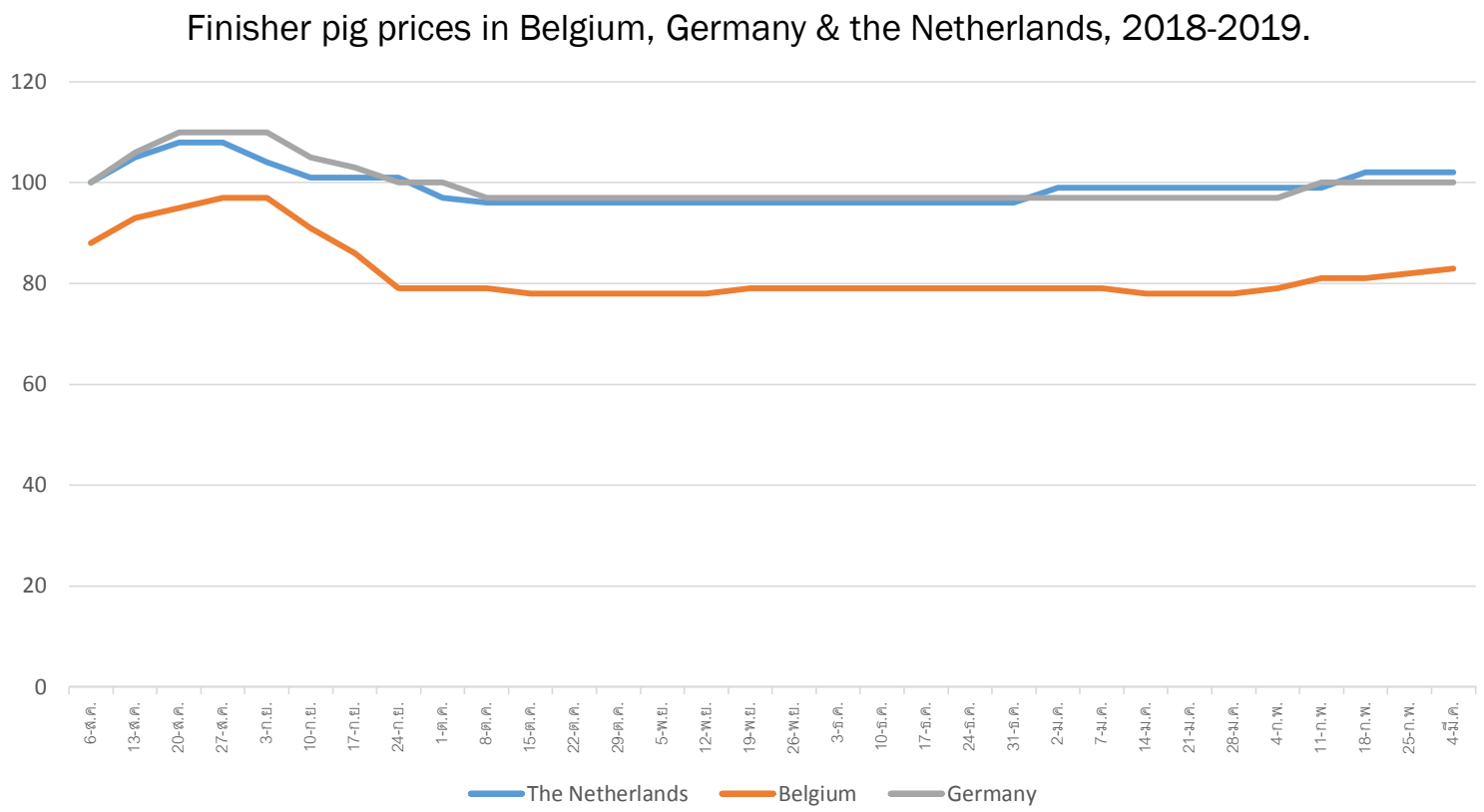
Belgium


Source: Pig Progress; on the basis of data provided by OIE
Situation on March 13, 2019

Belgium


Outbreaks of ASF in Belgian wild boar
80
70
60
50
40
30
20
10
0
Sept 14, 2018
Sept 21, 2018
Oct 1, 2018
Oct 8, 2018
Oct 15, 2018
Oct 22, 2018
Oct 29, 2018
Nov 5, 2018
Nov 14, 2018
Nov 20, 2018
Nov 27, 2018
Dec 3, 2018
Dec 10, 2018
Dec 17, 2018
Dec 25, 2018
Dec 31, 2018
Jan 7, 2019
Jan 14, 2019
Jan 21, 2019
Jan 28, 2019
Feb 4, 2019
Feb 11, 2019
Feb 18, 2019
Feb 25, 2019
March 4, 2019
March 11, 2019

Belgium



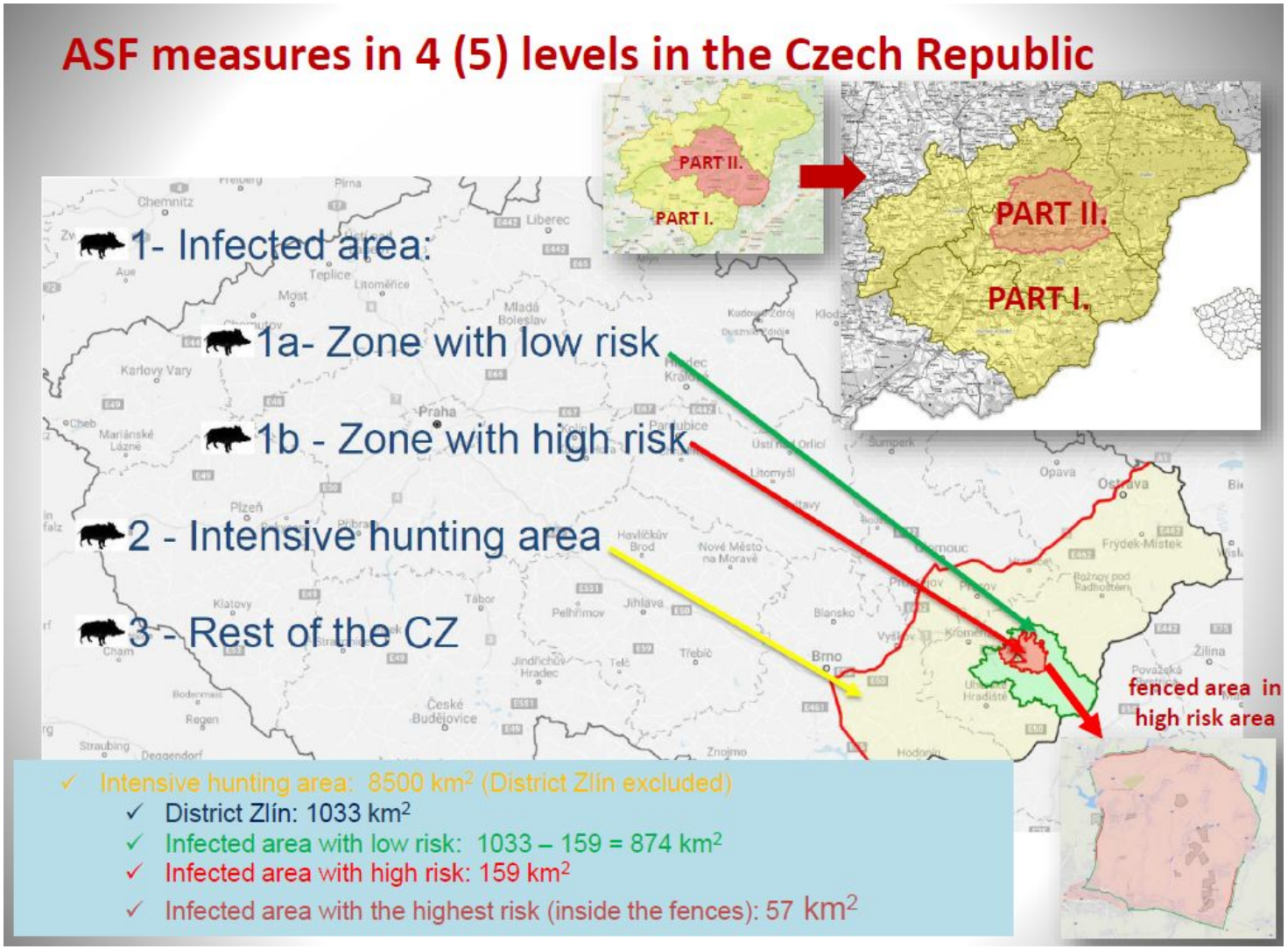
Farm with 1,000 finishers → loses €5,000/week (THB 178,000)

Belgium

- In 6 months: **645** dead wild boar (OIE)
- No infection of domestic pigs; small-scale preventive **culling** (about 4,000 pigs)
- Belgian pig farmers can continue to **export in EU**
- Countries closing **borders** (e.g. China, Philippines, Japan, Taiwan, Singapore, Malaysia, South Korea)
- Belgian pig farmers **suffer indirectly**
- Thoughts of **compartmentalisation**
- Virus still appears to make **more victims**
- Most probable cause of infection: imported as hunting trophy → **human factor**!

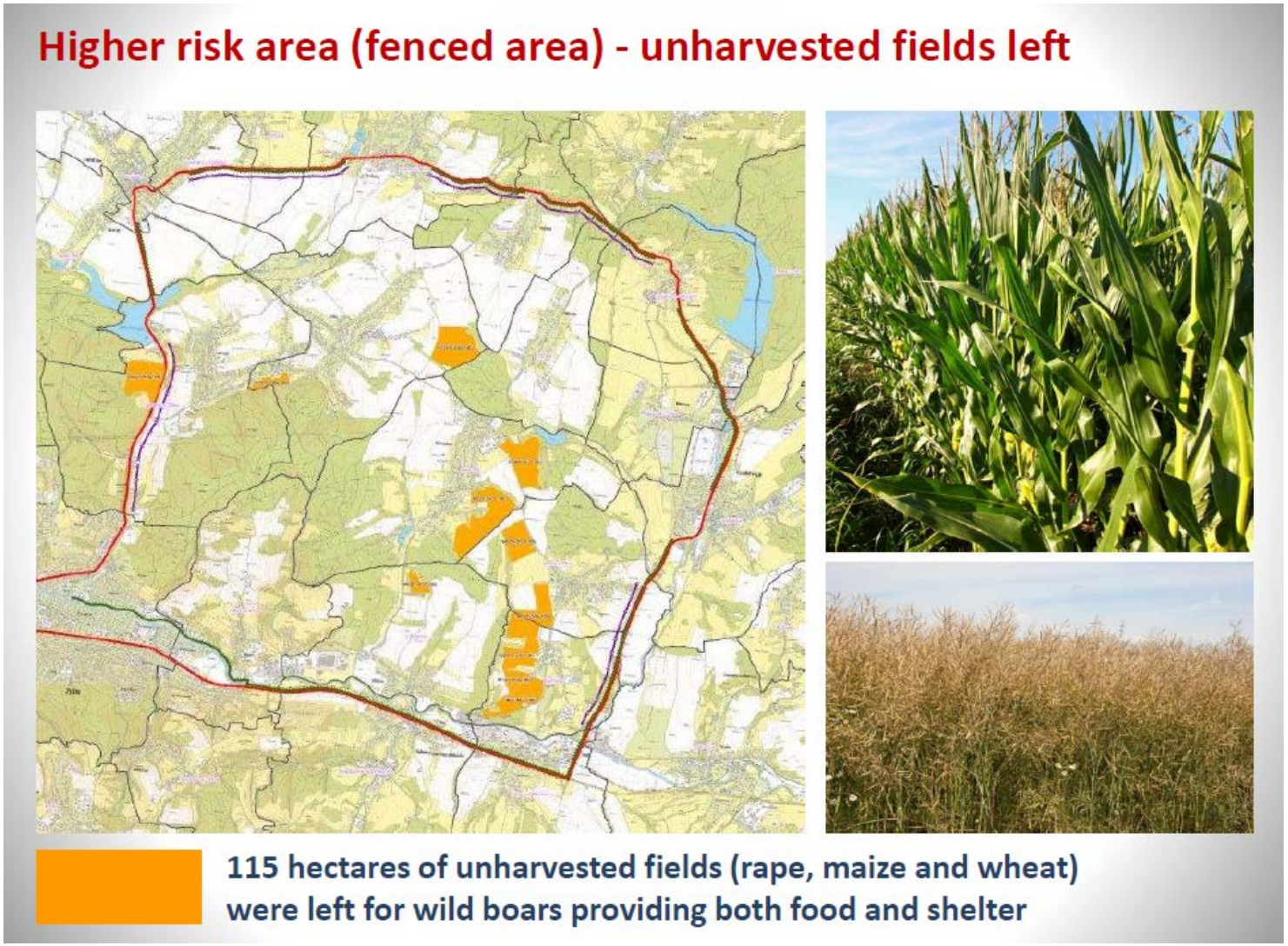
Czech Republic

Czech Republic



Source: African Swine Fever in wild boar in the Czech Republic (Feb 25, 2019)

Czech Republic

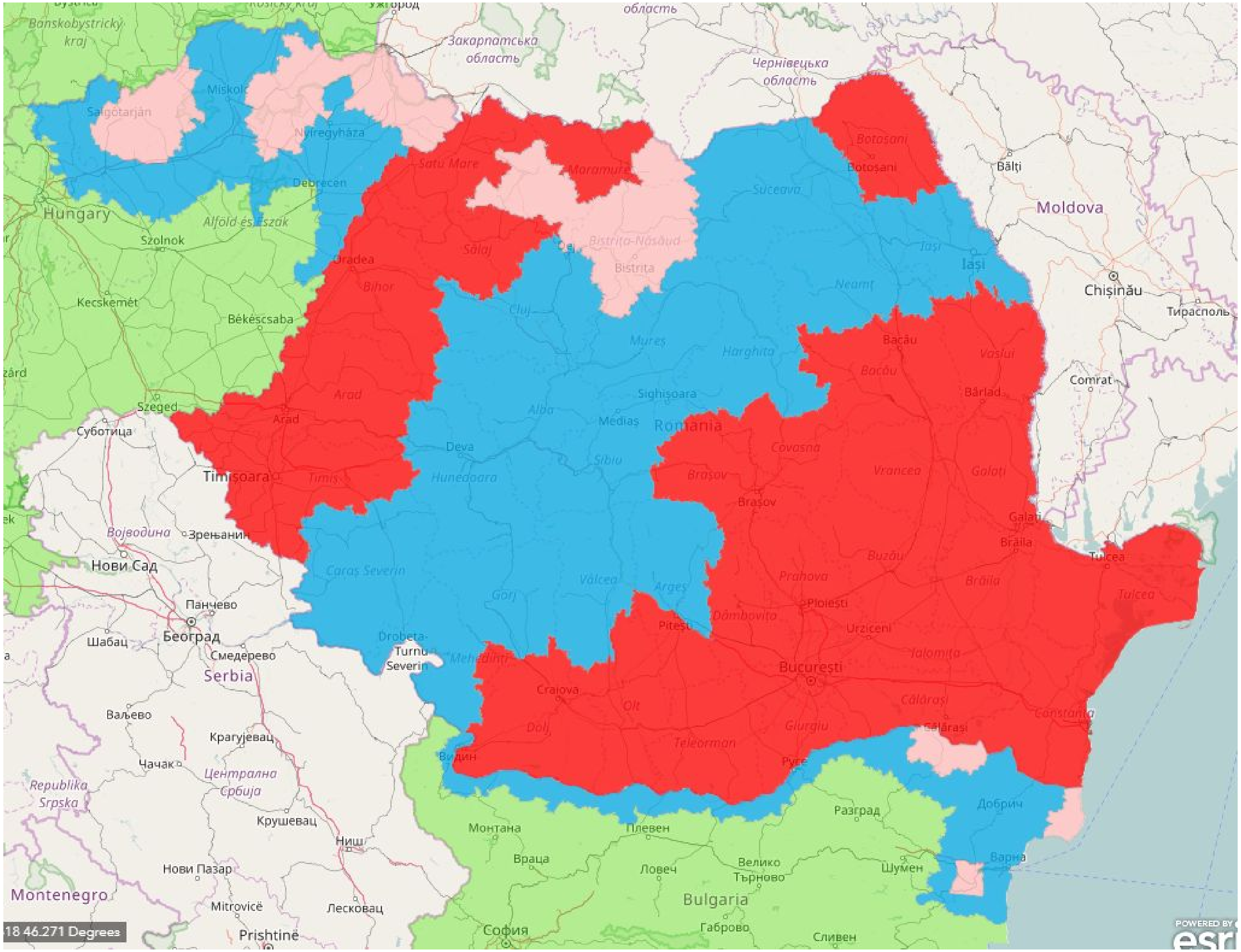


Source: African Swine Fever in wild boar in the Czech Republic (Feb 25, 2019)

Czech Republic

- Virus was around from **June 2017-April 2018**
- Only country in the EU declared **free from ASF**
- All outbreaks occurred around city of **Zlín**
- **No domestic pigs** got infected
- Between **220-230** dead wild boar were found testing positive for ASF (OIE/Czech figures)
- **Intelligent** hunting
- **Key words:** Dedication, focus, cooperation, compensation
- Importance of the **human factor**

Romania



Hungary
Miskolc
Salgótarján
Nyíregyháza
Debrecen
Alföld és Észak
Szolnok
Kecskemét
Békéscsaba
Szeged
Закарпатська область
Чернівецька область
Moldova
Bălți
Chișinău
Тирасполь
Comrat
Satu Mare
Maramureș
Bistrița-Năsăud
Bistrița
Sălaj
Oradea
Bihor
Cluj
Arad
Timișoara
Timiș
Botoșani
Suceava
Iași
Neamț
Bacău
Vaslui
Bârlad
Mureș
Harghita
Sighișoara
Mediaș
Romania
Alba
Deva
Hunedoara
Sibiu
Covasna
Brașov
Vrancea
Galați
Brăila
Tulcea
Buzău
Prahova
Ploiești
Caraș Severin
Vâlcea
Argeș
Gorj
Dâmbovița
Pitești
Urziceni
Ialomița
Drobeta-Turnu Severin
Mehedinți
București
Craiova
Olt
Dolj
Teleorman
Giurgiu
Călărași
Constanța
Суботица
Војводина
Зрењанин
Нови Сад
Панчево
Београд
Шабац
Смедерево
Serbia
Ваљево
Крагујевац
Чачак
Централна Србија
Republika Srpska
Крушевац
Ниш
Нови Пазар
Montenegro
Mitrovicë
Лесковац
Prishtinë
Видин
Монтана
Враца
Плевен
Ловеч
Велико Търново
Разград
Шумен
Добрич
Варна
Bulgaria
Габрово
Сливен
София
18 46.271 Degrees
POWERED BY esri

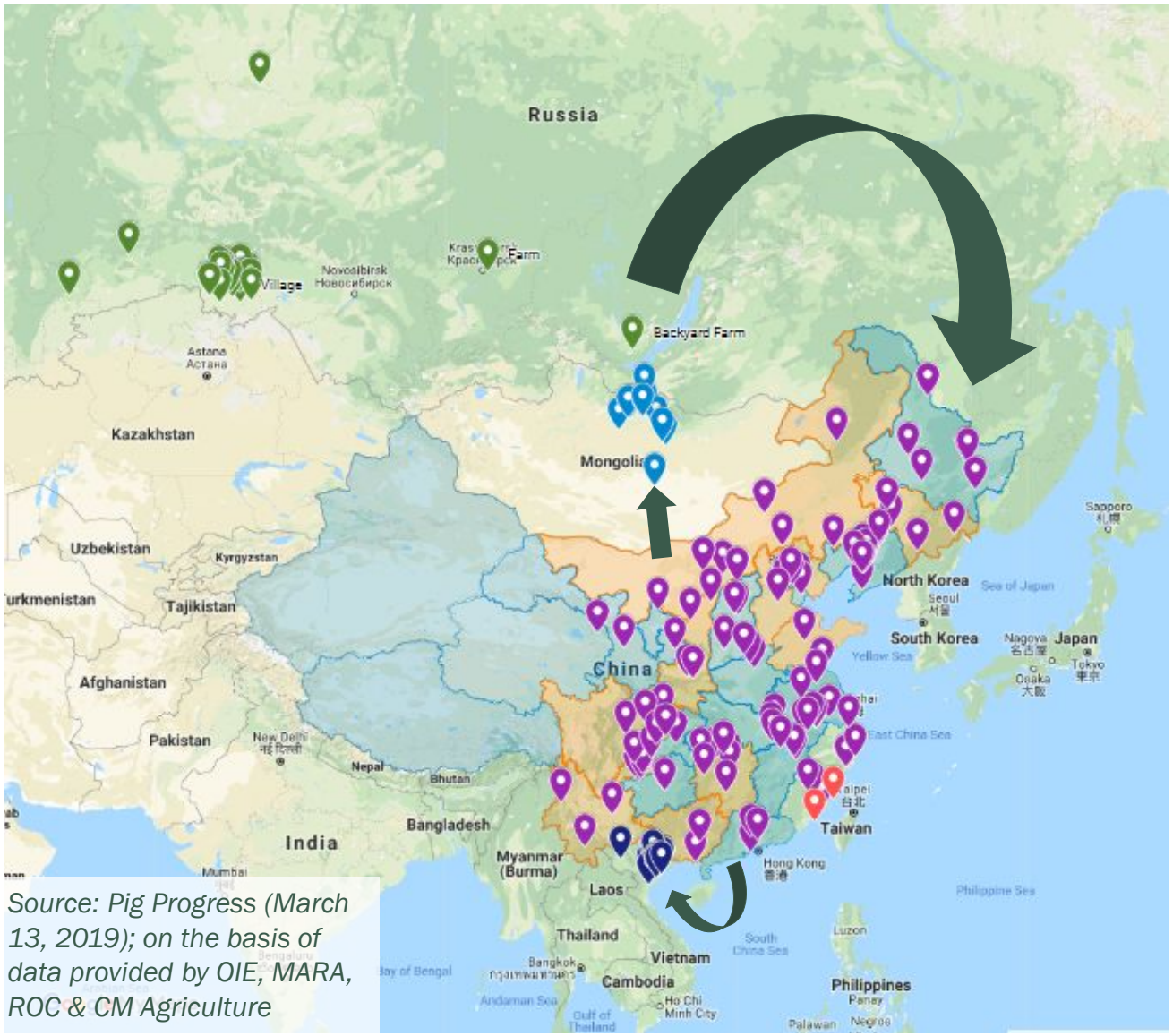
Romania

- **Low/no biosecurity**; backyard farming
- Even **sows** sent into forest to mate with wild boar
- Many (backyard) **farms** as well infected
- Almost **700,000** pigs had to be culled
- Degree of **corruption**
- **Neighbours** Bulgaria, Hungary, Moldova infected
- Pig industry in crisis; **long-term situation**
- **€350 million** (THB 12.5 billion) loss in the 1st year (2017/2018)
- Pork import levels from 50% of consumption to **65%**
- The **human factor** makes the difference

Situation in Europe – summary

- In general: **fear** for ASF
- **16 countries** infected since 2007 (of which 9 in the EU)
- 4 out of 9 infected EU countries reported ASF in **wild boar** only
- 5 out of 9 EU countries reported infections in **domestic pigs** as well
- Bad management = spread to **neighbours**
- Human role is crucial in both **spread & control** of the virus

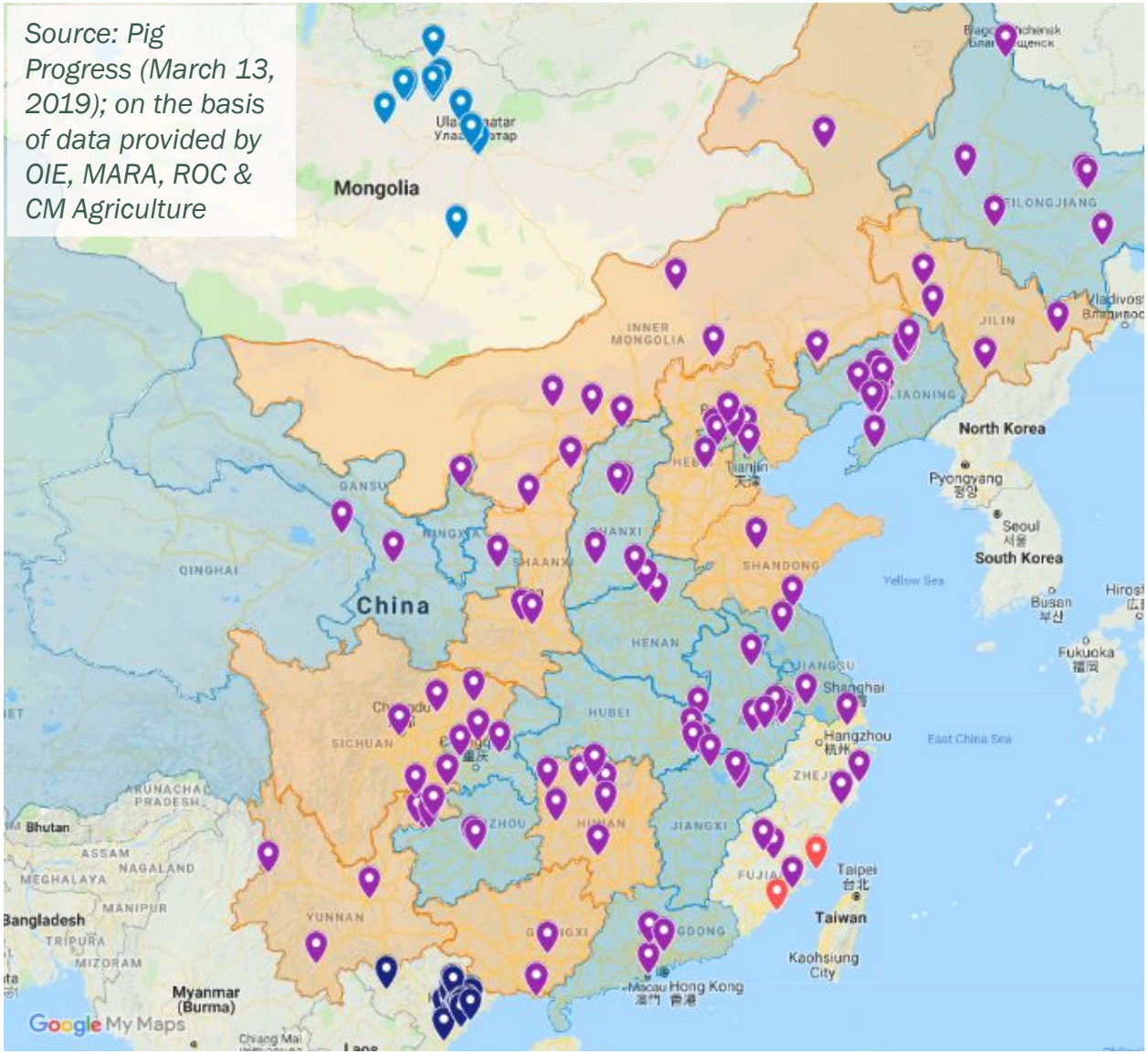
Situation in Asia



Source: Pig Progress (March 13, 2019); on the basis of data provided by OIE, MARA, ROC & CM Agriculture

3,800 km

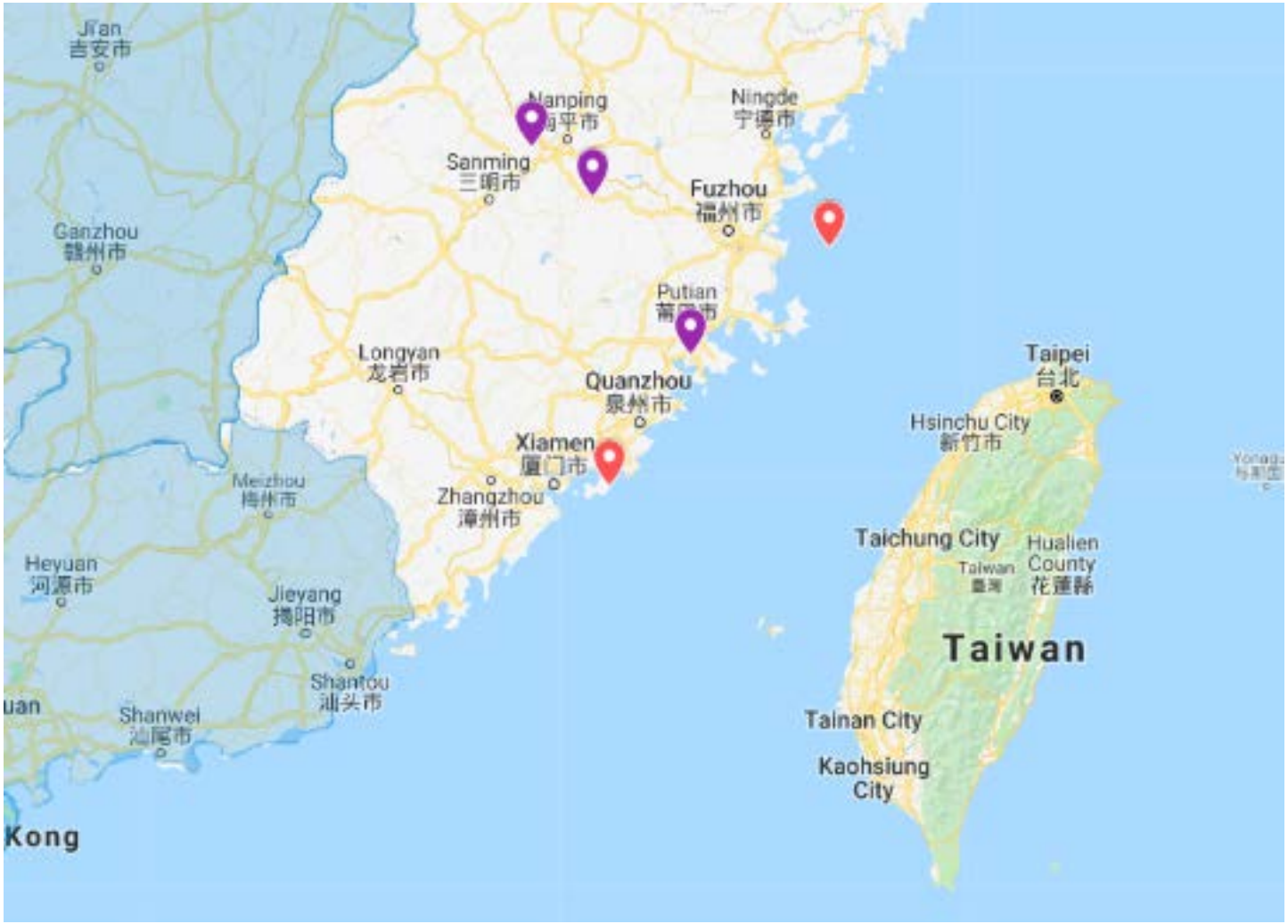
China



OFFICIAL
2018-2019 Aug-March
116 outbreaks reported to OIE
480,000 pigs infected/culled
950,000 culled to halt further spread (FAO)
441,000,000 pigs in China
0.22% was culled

China (& Taiwan)

China (& Taiwan)

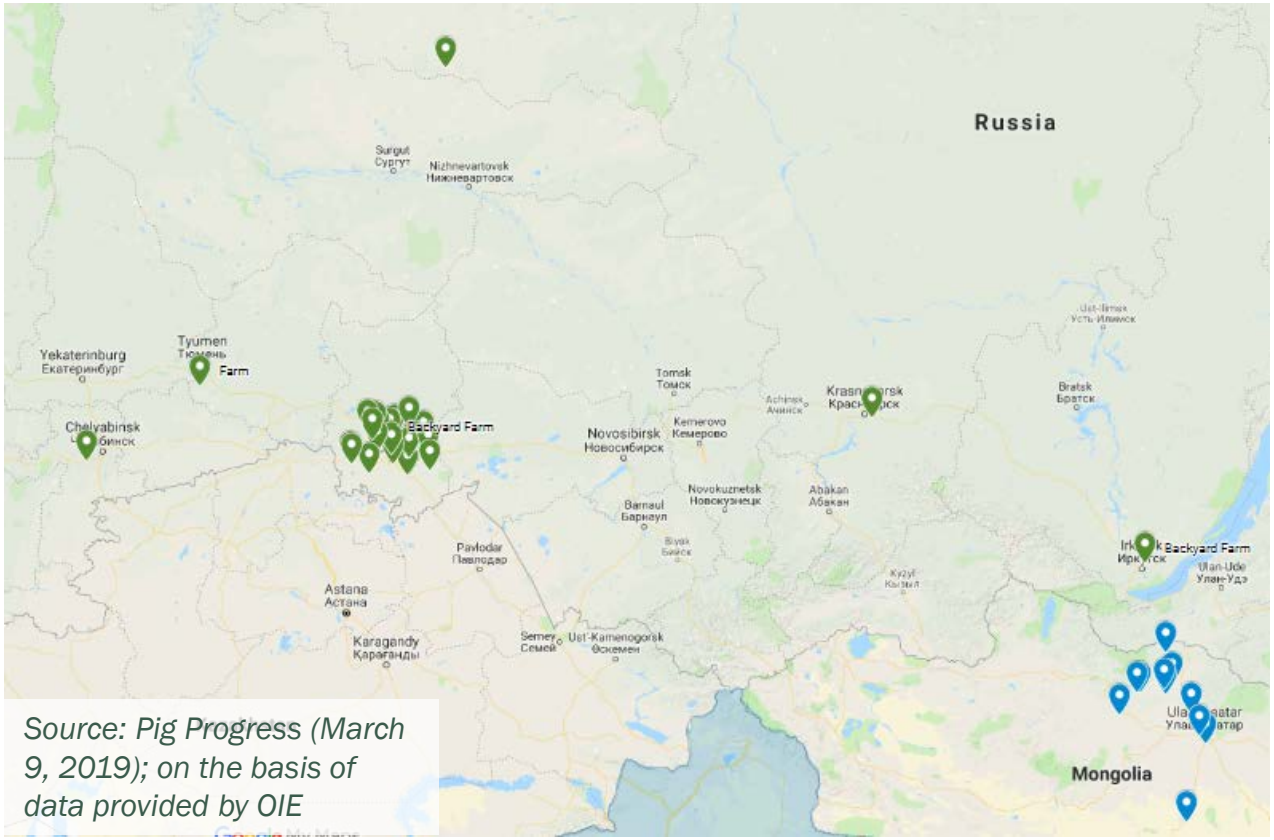


Bad management → virus slips across the border

China

- **Improper disposal** of carcasses
- Situation is (much) **worse** than suggested at OIE
  - Underreporting due to insufficient compensation funds
  - Insufficient education, information & responsibility
- **Conflicting signals** from the Chinese market
  - “It’s not dangerous, you can still eat pork”
  - Relatively strong price fluctuations between provinces
  - Dropped global demand for soybeans in February
  - Stock prices of pork companies surge
  - Expectations: pork prices to rise in 2nd half 2019
- Logically thinking: higher demand for pork imports, offering **chances**
- Developments likely to drive **consolidation**

Russia (West of Ural)

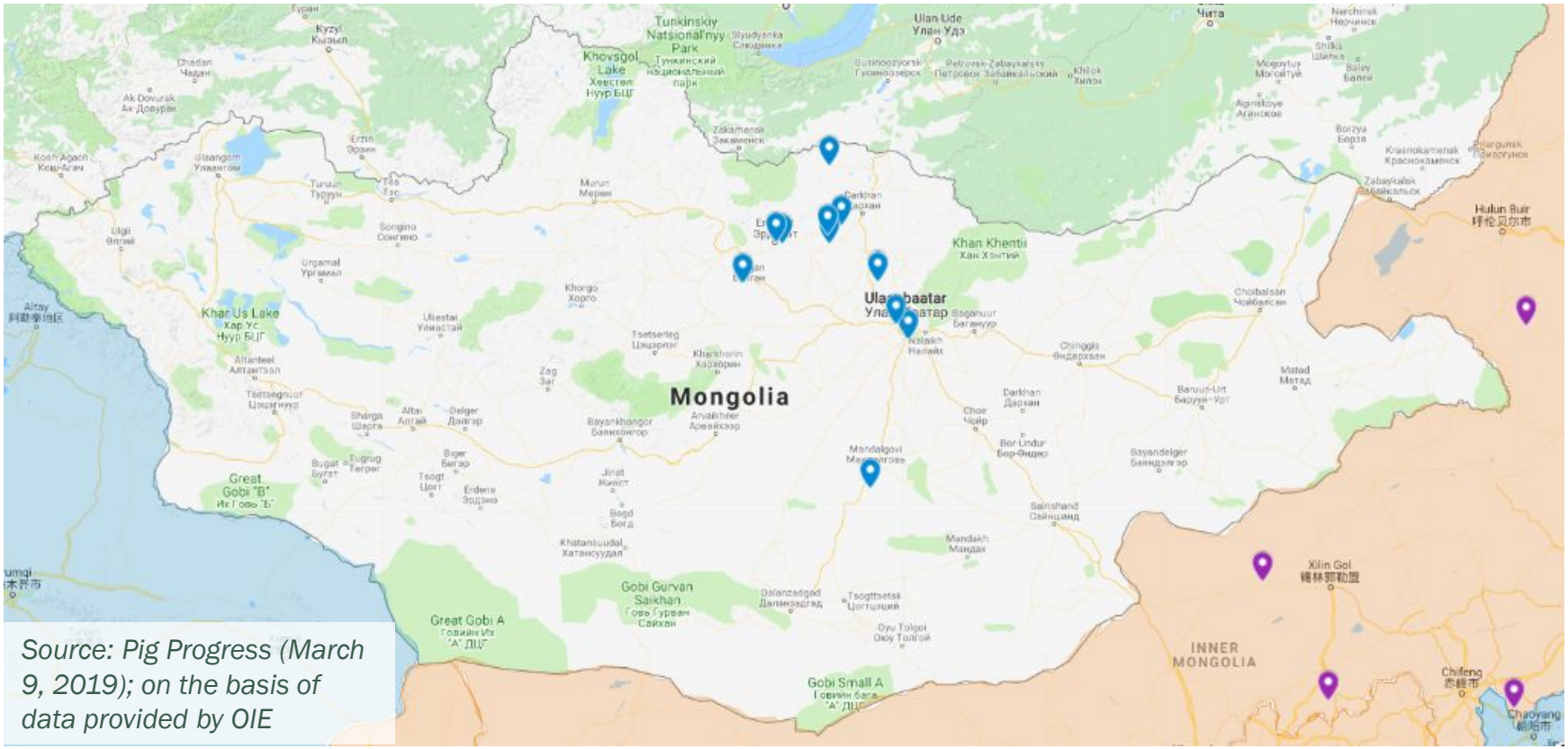


Source: Pig Progress (March 9, 2019); on the basis of data provided by OIE

2017 March-Nov
34 outbreaks
6 regions
20,000 pigs infected/culled, most around Omsk

Map by Pig Progress with data from OIE (March 13, 2019)

Mongolia



Source: Pig Progress (March 9, 2019); on the basis of data provided by OIE

2019 Jan & Feb; **11** outbreaks reported on backyard farms; **6** regions; **~2,500** pigs infected/culled; **32,000** pigs in total (FAO)

Map by Pig Progress with data from OIE (March 9, 2019)

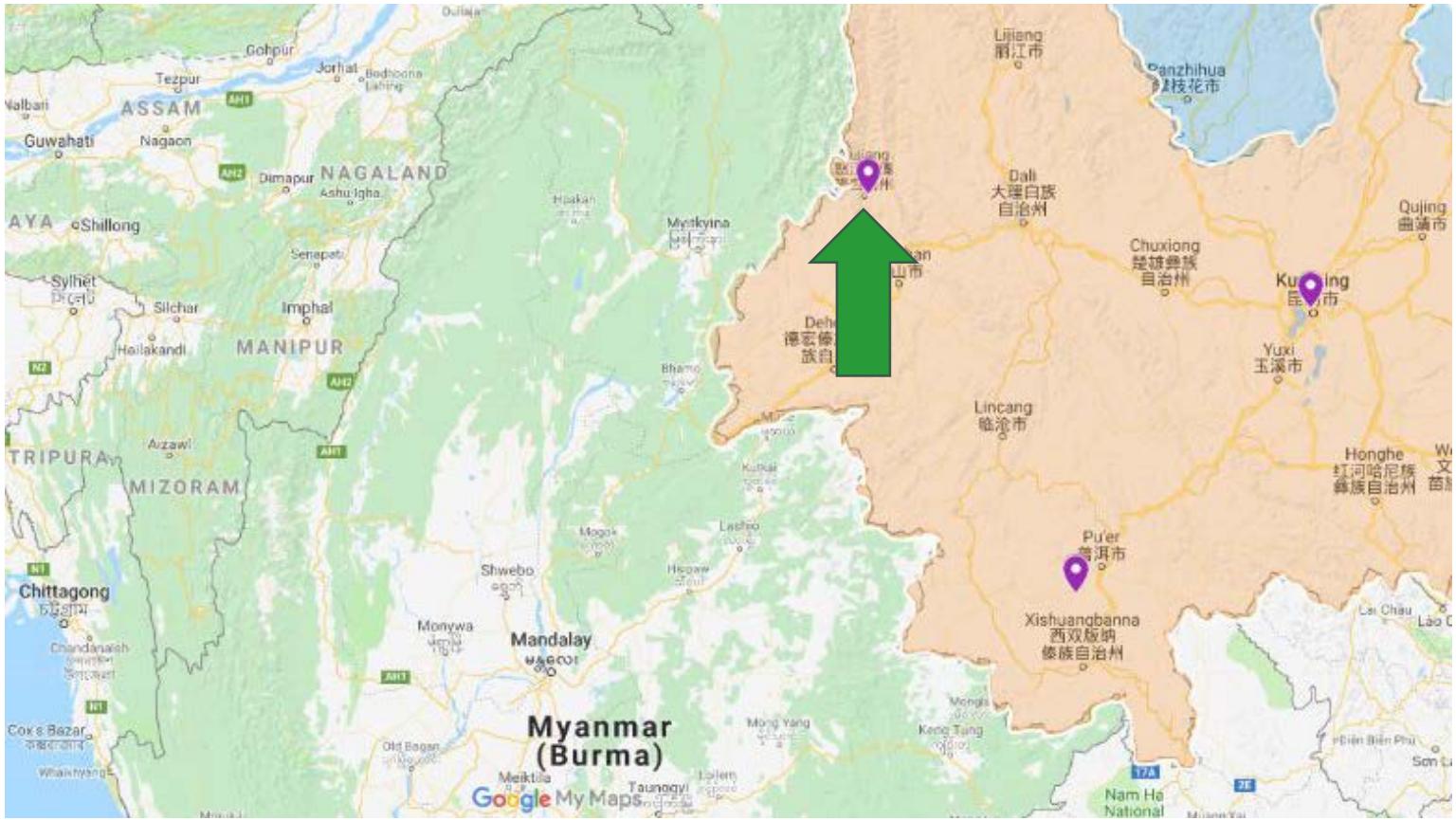
Vietnam

Source: Pig Progress (March 13, 2019); on the basis of data provided by OIE

2019 Feb & March; **79** villages in **10** provinces infected; **6,770** pigs infected or culled; **27 million** pigs in total

Vietnam

China & Myanmar



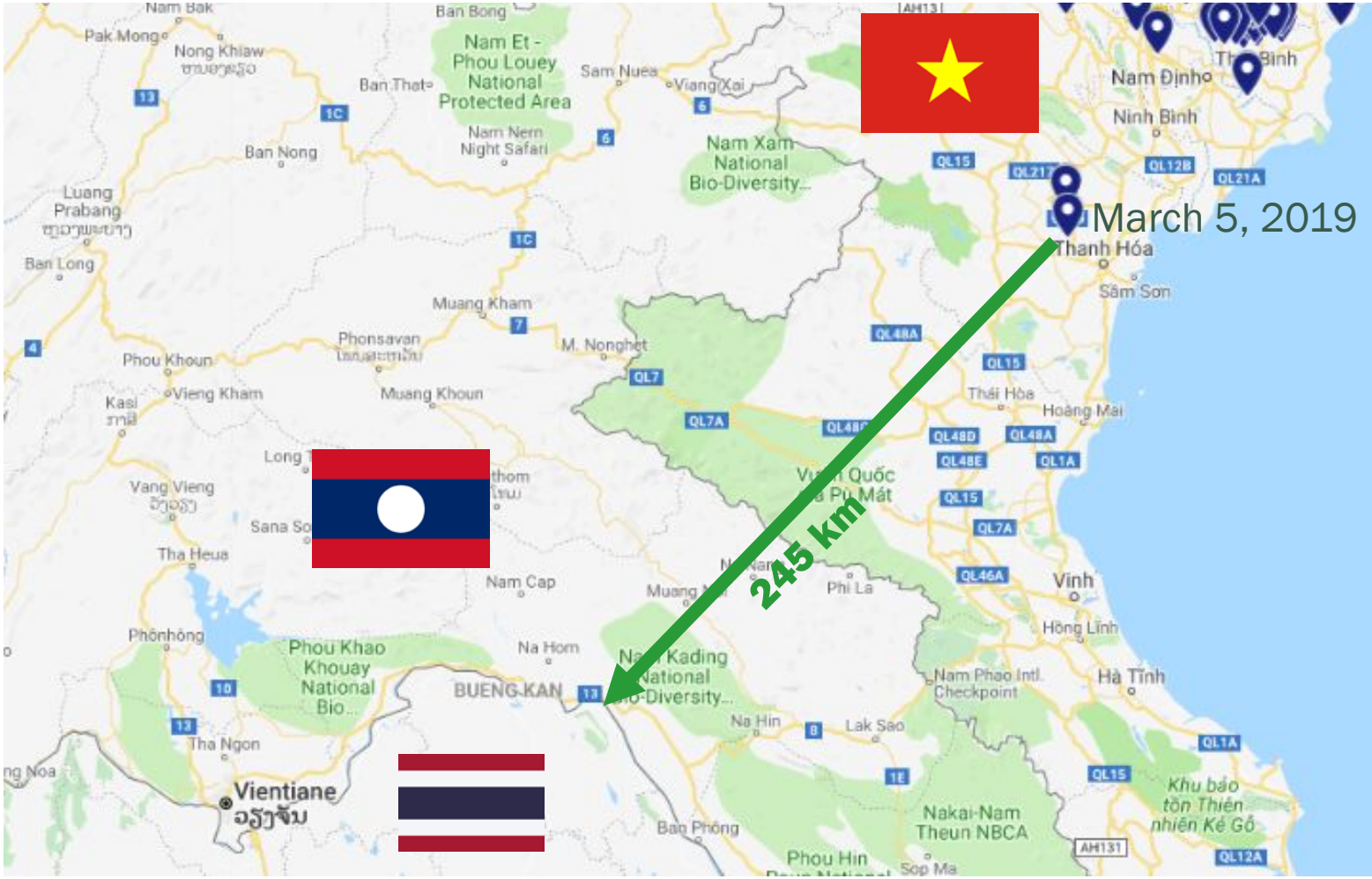
Date: February 17

Location: Nujiang, Yunnan province

Distance to Myanmar: 19 km

China, Vietnam & Laos

Vietnam & Thailand



Situation in Asia – summary

- In general: **fear** for ASF
- Infections in **backyard** pigs & farmed pigs
- Since 2018 **3** Asian countries reported ASF in live pigs
- There is a lot of **underreporting** going on
- Lack of **knowledge**
- Bad management = **spread** to neighbours
- ASF is **out of control** in China – and most likely Vietnam too
- Situation in **wild boar** is often unknown → endemic disease?
- Absence of good management leads to further spread → the **human factor**

Question...

Will African Swine Fever come to Thailand?

- [x] Yes
- [ ] No
- [ ] I have no idea

Take home messages

- African Swine Fever will be **endemic** in large parts of Asia
- ASF is a very **patient** virus
- **Human attitude** plays essential role in terms of control and in terms of spread
- **Key words:** Transparency, honesty, communication, alertness and cooperation
- Be very well **prepared**
- Situation will have **winners** and **losers**

Questions?

vincent.ter.beek@misset.com

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Last but not least...

- Special thanks to:
  - Adrian Balaban, veterinarian, Romania
  - Anne-Marie van der Linde-Teunishen, *Boerderij*, the Netherlands

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