Food and Agriculture Organization of the United Nations

WORLD ORGANISATION FOR ANIMAL HEALTH

Global control and eradication of *peste des petits ruminants*

Investing in veterinary systems, food security and poverty alleviation

Credit for the photos:
First of the cover: ©FAO
Title page: ©FAO/Marco Longari. Photo from West Bank and Gaza Strip
Page 6: ©FAO/Vasily Maximov. Photo from Tajikistan
Page10: ©FAO Somalia
Page22: ©FAO/Ami Vitale. Photo from Kenya
Back of the cover: ©FAO

Global control and eradication of *peste des petits ruminants*

Investing in veterinary systems, food security and poverty alleviation

Foreword

***Peste des petits ruminants* (PPR),** a highly contagious viral disease affecting sheep and goats, causes a staggering USD 1.45 billion to USD 2.1 billion in losses each year. Since it was first identified in Côte d'Ivoire in 1942, PPR has spread to around 70 countries in Africa, the Middle East and Asia – regions that are home to over 80 percent of the world's sheep and goats and to more than 330 million of the world's poorest people who depend on them for their livelihoods.

Economic losses caused by PPR strike at the heart of vulnerable livelihoods as well as national and regional livestock production. Countries have experienced cumulative yearly losses ranging from tens to hundreds of millions of US dollars. Eradicating PPR will help improve food security, nutrition, incomes and livelihood resilience of millions of poor farmers around the world.

In response to calls from member countries, the Food and Agriculture Organization of the United Nations (FAO) and the World Organisation for Animal Health (OIE) have taken the lead in developing a Global Strategy for the control and eradication of PPR.

PPR has spread at an alarming rate over the last 15 years, reaching regions previously not infected. If unchecked, it could spread even further, causing more devastating socio-economic losses and hardship for the millions of poor farmers, most of them women, who rely on sheep and goats for their livelihoods.

The global demand for meat and dairy products is expected to more than double by 2030. That means production of livestock and livestock products will have to increase substantially to keep pace with markets and nutritional requirements – something that will be difficult to achieve if livestock-producing countries continue to struggle with diseases like PPR, which directly affect production efficiency and sustainability.

But just as the international community united to eradicate rinderpest, we believe it can do the same for PPR. With an overall investment of USD 7.1 billion, we believe PPR can be eradicated within 15 years. That's half the time it took to rid the world of rinderpest.

Furthermore, the support provided to public and private veterinary services will have positive benefits for animal health in all targeted countries, and promote better nutrition and health, while encouraging economic growth.

Eradication makes economic sense as it will permanently eliminate the negative socio-economic impacts of the disease. The entire investment in this initiative is expected to be recovered within the first five years of PPR eradication.

Efforts to control PPR are already paying off. In Somalia, for example, no new outbreaks of the disease have been reported since 2012, following a mass vaccination campaign carried out by the Government, professional organisations and non-governmental organisations with FAO's support.

PPR eradication is within our reach, but it requires the political will and financial support of countries, regional organisations and international resource partners. It requires strategic partnerships with both the public and private sector. And it requires sustained commitment.

Dr Bernard Vallat
Director General
World Organisation
for Animal Health (OIE)

Dr José Graziano da Silva
Director-General
Food and Agriculture
Organization of the
United Nations

Why invest in the control and eradication of *peste des petits ruminants*

Livestock plays a major role in world agriculture and contributes a global average of 40 percent to the national agriculture gross domestic product (GDP). Over 75 percent of the world's 1 billion people living on less than USD 2 a day rely on crop and livestock farming for their survival. Livestock, a rich source of protein and micronutrients, is often the only insurance against crop failure. Small ruminants, such as sheep and goats, represent a significant part of the global livestock industry, particularly in developing countries. They contribute to food security and nutrition, livelihoods, national economic development and the overall well-being of people.

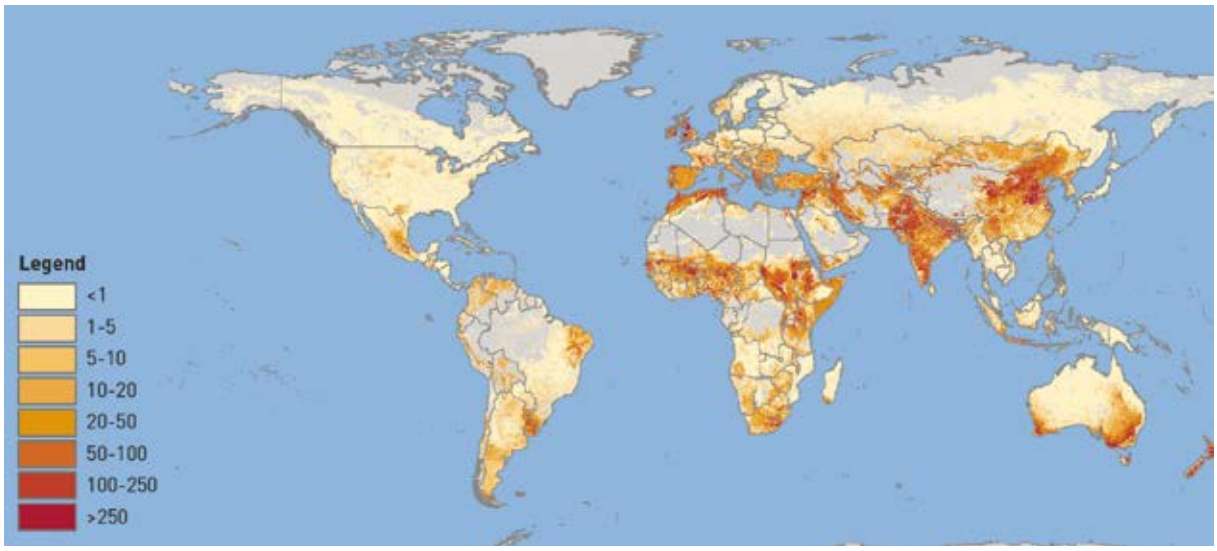
Over 75 percent of the world's 1 billion people living on less than USD 2 a day rely on crop and livestock farming for their survival

Over 330 million poor farmers in Africa and Asia directly rely on sheep and goats for their livelihoods

More than 1.7 billion sheep and goats – over 80 percent of the global small ruminants population – are in Africa and Asia

Small ruminants not only provide households with meat and milk, they can easily be sold for cash, allowing families to buy staple foods and cover other expenses such as school fees and are a safety net for emergencies. Owning small ruminants is often a key step for poor farmers to escape poverty.

Small ruminant density distribution



Around 11 million tonnes of meat and 22 million tonnes of milk from small ruminants – more than 78 percent of the total annual global production – come from Africa and Asia.

Demand for livestock and livestock products is expected to more than double by 2030, driven by population growth and rapidly growing economies in many in-transition countries in Africa, the Middle East and Asia.

From 2000 to 2030 demand for meat and milk from small ruminants in Africa and Asia will rise between 137 percent and 177 percent[1]

Second only to poultry, the fast growing demand for meat and milk from small ruminants represents an important growth area. However, in order to take advantage of this opportunity, farmers will have to make significant improvements in livestock production and ensure that livestock products are safe and healthy for human consumption.

1 (FAOstat, 2014)

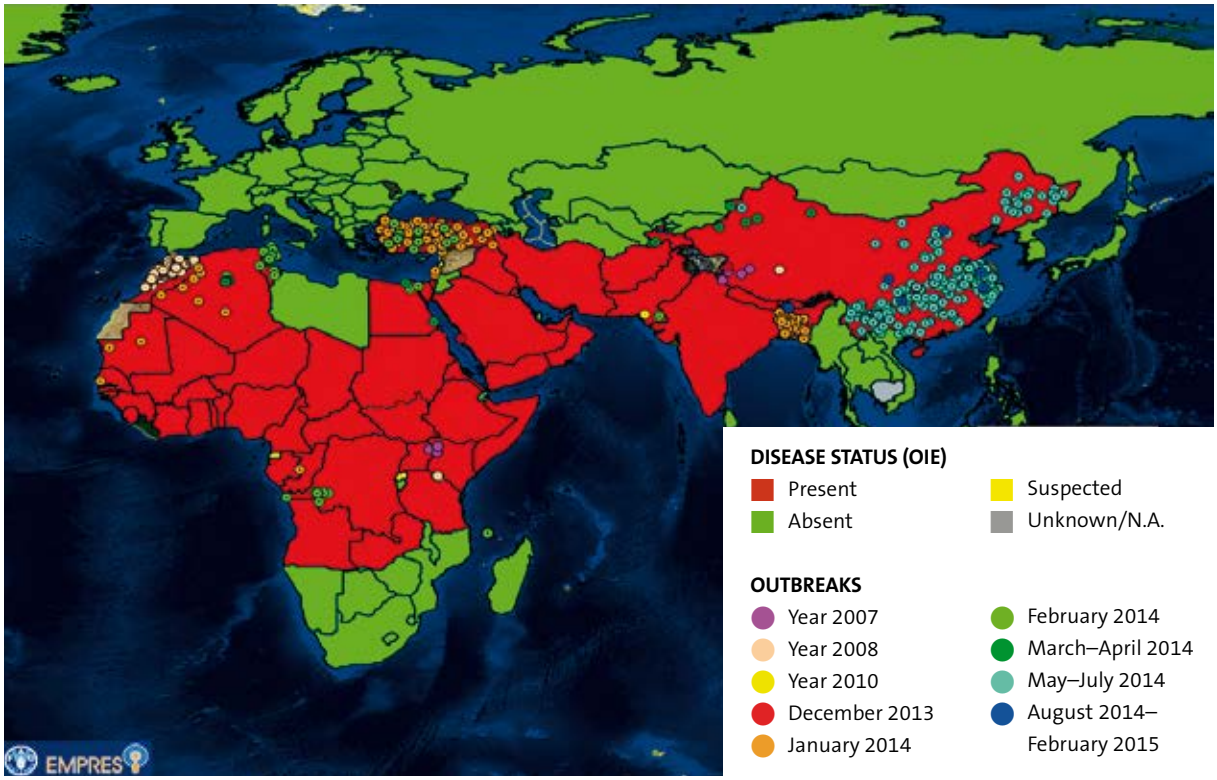
Peste des petits ruminants a high impact transboundary animal disease

One of the major factors restricting efficient livestock production is the presence of high impact infectious animal diseases. This is a particularly serious problem in the developing world, where capacity to cope with the cost and logistics of controlling such diseases is often limited.

Diseases such as foot and mouth disease, highly pathogenic avian influenza and ***peste des petits ruminants* (PPR)** are endemic in some of the world's important and high livestockproducing countries in Africa and Asia. They collectively impede safe trade and deprive poor farmers of access to lucrative global markets in livestock and livestock products.

PPR, also known as **sheep and goat plague,** is a highly contagious viral animal disease affecting small ruminants. Once introduced, the virus can infect up to 90 percent of a flock and the disease can kill anywhere from 30 to 70 percent of infected animals.

Current global PPR situation and occurrence of outbreaks between 2007 and 2014



Source: OIE WAHIS and FAO EMPRES-i

PPR has dramatically expanded in the last 15 years reaching previously non-infected regions

Since it was first identified in the early 1940s in Côte d'Ivoire, the disease has spread throughout Africa, South Asia and China. In the last 15 years, it has expanded into previously non-infected regions. As a result, PPR is now endemic in large parts of the Middle East, Central Asia, South Asia and East Asia and is expected to spread into Southern Africa and Southeast Asia. Populations of the northern Mediterranean region are also at high risk. If left uncontrolled, and with the increasing global flow of livestock products to meet consumer demands, PPR will likely make inroads in Mongolia as well as to other countries in the Caucasus and Europe that have historically been free of the disease.

The incursion of the virus into an at-risk country such as Mongolia, with its over 40 million small ruminants, can have devastating consequences, considering that livestock contributes over 80 percent to the agricultural share of national GDP.

Socio-economic impacts of PPR

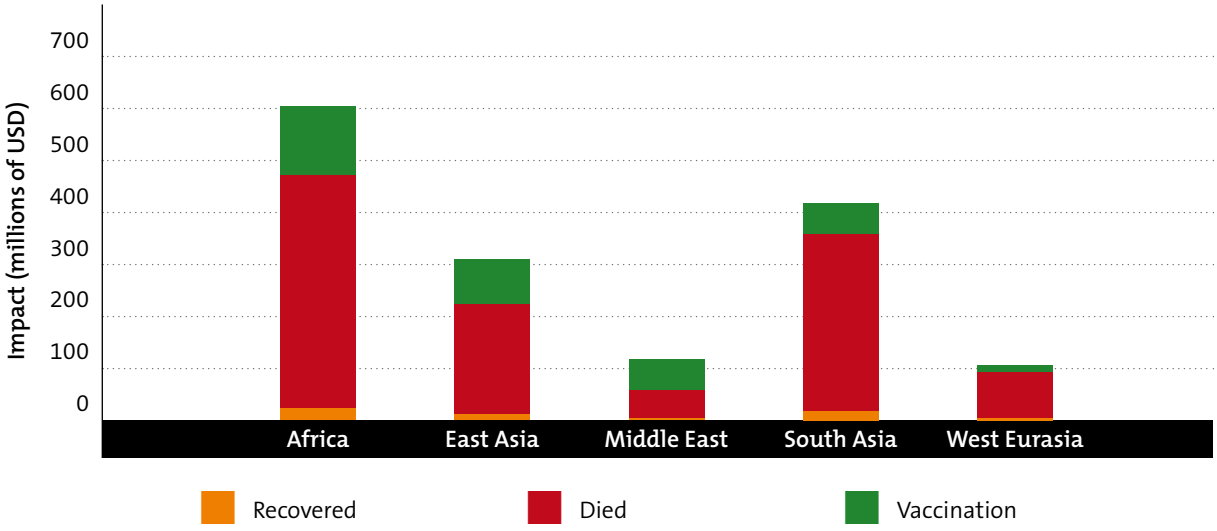
PPR is present in around 70 countries in Africa, the Middle East and Asia, threatening more than 1.7 billion of the total global population of 2.1 billion sheep and goats, as well as the livelihoods, food security and nutrition of more than 330 million people in these regions – mainly poor farming communities that rely solely on small ruminant production for their survival. Another 50 countries are at risk of incursions of the disease from neighbouring areas, threatening an additional 167 million sheep and goats.

PPR causes an estimated USD 1.45 billion to USD 2.1 billion in economic losses each year

PPR not only affects the families who raise sheep and goats, but also the well-defined and complex value chains that these production systems supply. In the worst case scenario, PPR outbreaks can decimate over 90 percent of healthy flocks of sheep and goats. In endemic areas, the disease is insidious, affecting the development of young animals and the ability of adults to fight bacterial diseases, limiting the development of healthy and thriving herds and flocks of goats and sheep.

Economic losses caused by PPR strike at the heart of vulnerable livelihoods as well as national and regional livestock production. Countries have experienced yearly losses ranging from tens to hundreds of millions of dollars.

Yearly Economic impacts of PPR by region



PPR causes an estimated USD 1.45 billion to USD 2.1 billion in economic losses each year, due to reduced production, animal deaths and the cost of caring for sick animals, including vaccination. Almost half of these losses are in Africa, with a further quarter in South Asia.

SOMALIA: PPR CONTROL IS FEASIBLE EVEN IN PROTRACTED CRISES

Since 2011, FAO has been supporting the Somali Government in implementing a PPR control strategy through mass vaccination.

The mass vaccination seems to have stopped transmission as no new outbreaks have been reported since 2012.

Prior to this country-wide intervention, PPR outbreaks were frequent.

The first vaccination round in 2012 covered 19.7 million (out of 36 million) small ruminants. A post-vaccination sero-survey conducted after the first round revealed a 76 percent country-wide coverage, above the globally accepted threshold of 75 percent.

The absence of similar efforts in neighbouring countries threatens these gains in Somalia. Considering the risk from neighbouring countries, current efforts to vaccinate at least 12 million animals every year focus on young, unvaccinated flocks and animals located near key border points with high movement. Consistency and collaboration in all neighbouring countries will help reduce the impact and possibly eradicate PPR from the Horn of Africa. Somalia is one example of several FAO interventions that demonstrate that if there can be such a positive impact through concerted efforts between partners – governments, communities, farmers and pastoralists, and the international agencies –, success is guaranteed across the globe.

AN OIE PILOT PROJECT IN WESTERN AFRICA: ADDRESSING CHALLENGES AND PILOTING SOLUTIONS TO SUCCESSFULLY VACCINATE AGAINST PPR

With the financial support of the Bill & Melinda Gates Foundation for the project 'Vaccine Standards and Pilot Approach to PPR Control in Africa' (2013-2014), the OIE addressed the major challenges relating to the implementation of vaccination campaigns by:

a) examining the quality of PPR vaccines produced in Africa in strong collaboration with the African Union Panafrican Veterinary Vaccine Centre (AU-PANVAC) and African PPR vaccine producing laboratories

b) establishing an OIE Regional PPR Vaccine Bank (14 million doses)

c) conducting extensive and comprehensive field operations in two priority countries, Burkina Faso and Ghana in close partnership with national veterinary services and other relevant actors.

The main results demonstrate that:

1. Availability of high quality and OIE-compliant PPR vaccine is of paramount importance and Regional Vaccine Banks can play a key role in the delivery of such quality vaccines;
2. Flexibility and capacity to adapt vaccination delivery systems and vaccination periods to different farming systems are critical, as is effective collaboration with all relevant actors, particularly with producers at farm level and private veterinarians; and
3. Monitoring and evaluating the vaccination campaign are key and should use a range of diverse yet complementary methods.

The lessons learned and data produced by this project have contributed to the definition of the PPR Global Control and Eradication Strategy.

Global strategy for the control and eradication of *peste des petits ruminants*

A goal achievable in 15 years

The Global Strategy envisions that global control and eradication of PPR will be achieved within 15 years – provided it is adequately resourced and well-coordinated at all levels, with the political commitment and participation of key partners. This is less than half the time it took to eradicate rinderpest.

PPR can be eradicated by 2030 less than half the time it took to eradicate rinderpest

In addition, other high impact infectious diseases of small ruminants could be controlled, at a relatively small incremental cost, if linked to PPR control and eradication. These may include sheep and goat pox, brucellosis and contagious caprine pleuropneumonia.

Considerable momentum gained in controlling *peste des petits ruminants*

A number of countries and regions have already embarked on the control of PPR, often with assistance and/or advice from FAO and OIE. However, many of these national programmes are inadequately resourced and poorly coordinated and could benefit significantly from a concerted, well-funded effort to make any impact.

Since 2011, FAO and OIE have supported the formulation of PPR control and eradication strategies for regions covered by the South Asian Association for Regional Cooperation (SAARC), Southern African Development Community (SADC), Intergovernmental Authority on Development (IGAD) and the African Union's Inter-African Bureau for Animal Resources (AU-IBAR).

OIE has adopted a set of new articles of the *Terrestrial Code* allowing countries to be recognised as being free from PPR and to have their control plans officially endorsed by the OIE.

As of May 2014, 48 countries were recognised as PPR free[2].

2 All of these are in historically free areas in the Americas or Europe according to the provisional procedures. OIE has set up a permanent international recognition process (as with rinderpest) for others to follow.

Factors that made Rinderpest eradication possible are relevant for *peste des petits ruminants*

- Availability of highly efficacious, single shot, safe and affordable (USD 0.1 per dose) vaccines that confer several years of immunity against all strains of PPR virus.
- Possibility of producing vaccines that can better withstand hotter climates ensuring ease of delivery to remote farming and pastoral communities.
- Existence of numerous producers of quality vaccines in Africa, the Middle East and Asia that can be scaled up at moderate cost for large-scale vaccination campaigns.
- Absence of a carrier state of any known reservoir of the virus outside the domestic small ruminant population.
- Availability of appropriate diagnostic tests and protocols for surveillance and monitoring of small- and large-scale control and eradication programmes.
- Presence of laboratory and epidemiological networks in several regions.
- High-level commitment and compliance for PPR vaccination expected from farmers and extension workers.
- Growing political will from international/regional institutions and countries as evidenced by the launch of many PPR control projects in the past five years.
- Existence of ongoing formal and informal partnerships with key ministries in governments through FAO and OIE member countries, the regional economic organisations (e.g. Association of Southeast Asian Nations, AU-IBAR, SAARC, SADC), various private sectors, Non-governmental Organisations (NGOs) and a number of bilateral and multilateral developent partners.

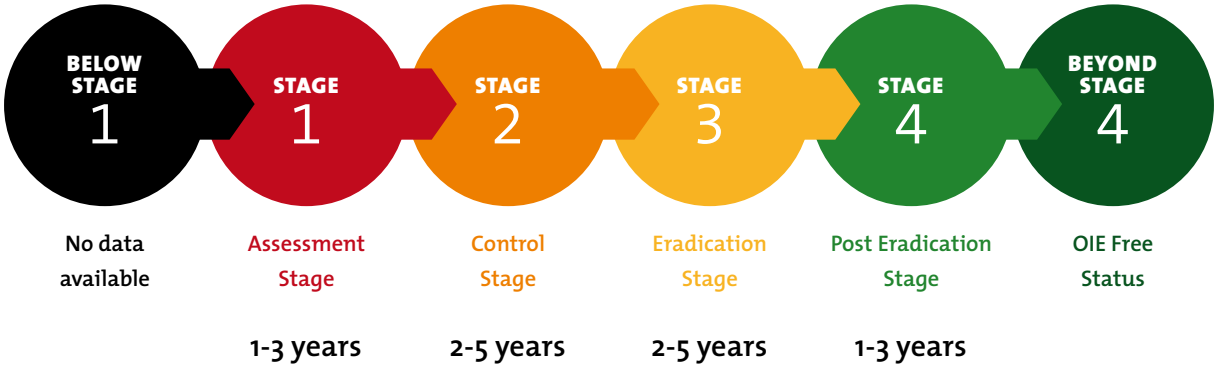
Based on knowledge and experience gained from the rinderpest eradication, as well as from other large-scale PPR control programmes such as in Somalia, the control and eradication of PPR is an achievable goal

Overview of the FAO/OIE Global Strategy for the control and eradication of *peste des petits ruminants*

OVERVIEW – GLOBAL STRATEGY FOR THE CONTROL AND ERADICATION OF PPR	
Objectives	› progressively reduce the incidence and spread of PPR and ultimately eradicate PPR › ensure that previously non-infected countries remain free from the disease
Key outputs	› PPR eradicated globally › improved control of other important diseases of small ruminants (e.g. goat and sheep pox, brucellosis and foot and mouth disease) › enhanced capacity of Veterinary Services to control PPR and other livestock diseases › improved efficiency in productivity of small ruminants in Africa, the Middle East and Asia
Societal impacts and outcomes	› improved contribution of the small ruminant sector to food security and nutrition, food safety, public health and national economic development › significant reduction in poverty through enhanced livelihoods of over 330 million poor livestock farmers in Africa, the Middle East and Asia
Main tools deployed	› large-scale, vaccination in endemic countries with existing, live, attenuated, efficacious vaccines and establishment of regional vaccine banks › surveillance and post-vaccination evaluation and monitoring using available diagnostic tests ensuring that vaccination results in increased flock immunity, reduced disease incidence and eventually reduced virus circulation and elimination › Evaluation of Veterinary Services capabilities and investment needs through the use of the Performance of Veterinary Services (PVS) Pathway tools, on a voluntary basis

Progressive control and eradication of *peste des petits ruminants*

Building on the experience of rinderpest eradication, FAO and OIE have developed a **STAGE-WISE** and progressive approach to control and eradicate PPR.



Each stage has a defined set of outcomes to be achieved by each participating country to move progressively from Stage 1 to Stage 4 along the control and eradication pathway, leading to obtaining an official OIE freedom status.

Stage 1 – assessment: provides understanding of the PPR situation in a country and identifies the animal populations to be vaccinated

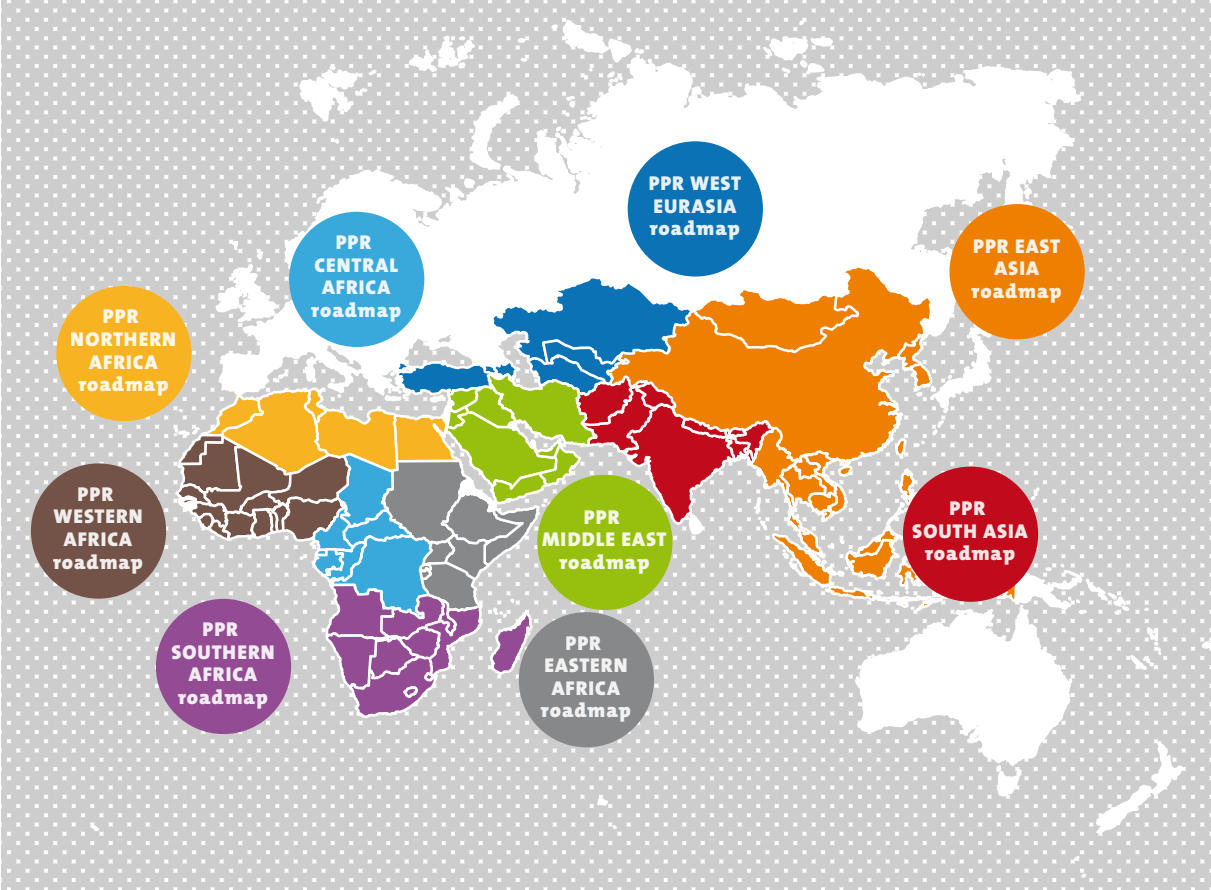
Stages 2 and 3 – control and eradication: focuses on targeted, followed by much wider, vaccination to achieve levels that will stop further clinical disease and circulation of the virus

Stage 4 – post-eradication: demonstrates that eradication has been achieved through absence of disease or virus without vaccination for a 24-month period.
At this stage, the country can apply for OIE official status of freedom from PPR according to the relevant articles of the OIE *Terrestrial Animal Health Code*.

Regional roadmaps

The **Global Strategy** has developed nine regional roadmaps, which provide countries with a common long-term vision and create incentives for them to develop and embark on national risk reduction strategies with similar progress objectives, milestones and timelines that support the regional effort.

PPR control and eradiction regional roadmaps



Key benefits and beneficiaries

- The livelihoods of over 330 million poor farmers in large parts of Africa, the Middle East and Asia will be significantly enhanced through increased productivity and profitability by accessing global markets for small ruminant products needed to fulfil increasing global demand.

- Some 5.6 billion rural and urban consumers will benefit from access to high quality food products such as milk, cheese and meat, and wool and hair.

- Improved production and supply systems will result in reasonable and stable prices, increased incomes of producers and traders, and enhanced economic development.

- More stable sheep and goat production systems and value chains will improve the resilience of poor farmers.

- Women, particularly from poor farming communities, will have better control over small ruminant production making it an important resource for them to invest in improved nutrition and their children's education.

- Improved animal health systems particularly through the strengthening of Veterinary Services and capacity at subnational, national and regional levels will enhance the control of other livestock diseases.

Costing

The costing of implementing the specific component of the Global Strategy on PPR control and eradication (Component 1) was guided by previous experience of rinderpest eradication, current knowledge of the PPR situation in the world, and the available expert opinion.

The estimated **maximum** undiscounted cost for the 15-year global PPR eradication period is between USD 7.6 and 9.1 billion, with the first five years costing between USD 2.5 and USD 3.1 billion. The lower range would be expected as a consequence of a rapid decrease in PPR as countries employ an effective vaccination strategy.

It is important to note that the costs of Component 2 (strengthening veterinary services) and Component 3 (combining with other diseases) are not included in this estimate. Support to Veterinary Services is the objective of specific investments after countries have evaluated their needs, particularly through the use of the PVS Gap Analysis tool, on a voluntary basis. The cost of combating other diseases in combination with PPR control and eradication activities is difficult to estimate as the priority diseases to be addressed would be defined by countries and the regions themselves and will vary between regions and continents.

An investment of USD 7.1 billion over 15 years will eliminate the negative socio-economic impact of PPR permanently, and will result in financial savings of USD 1.8 billion per year.

This investment over 15 years will result in the eradication of PPR from the face of the earth, and eliminate all the negative socio-economic impacts of PPR permanently. Financial savings are expected to be about USD 1.8 billion a year and the cost of the investment would be recovered within the first five years of eradicating the disease. Thus, successful eradication of PPR makes economic sense, benefiting the livelihoods of millions of poor farmers around the world.

The investment will be recovered within the first five years after eradicating the disease

Partnerships

Partnerships with and between public veterinary services and other public and private sectors are crucial for the successful control and eradication of PPR

'The eradication of *peste des petits ruminants* is within our reach, but it requires the political will and financial support of countries, regional organisations and international resource partners. It requires strategic partnerships with both the public and private sector. And it requires sustained commitment.'

Bernard Vallat, Director General, OIE and José Graziano da Silva, Director-General, FAO