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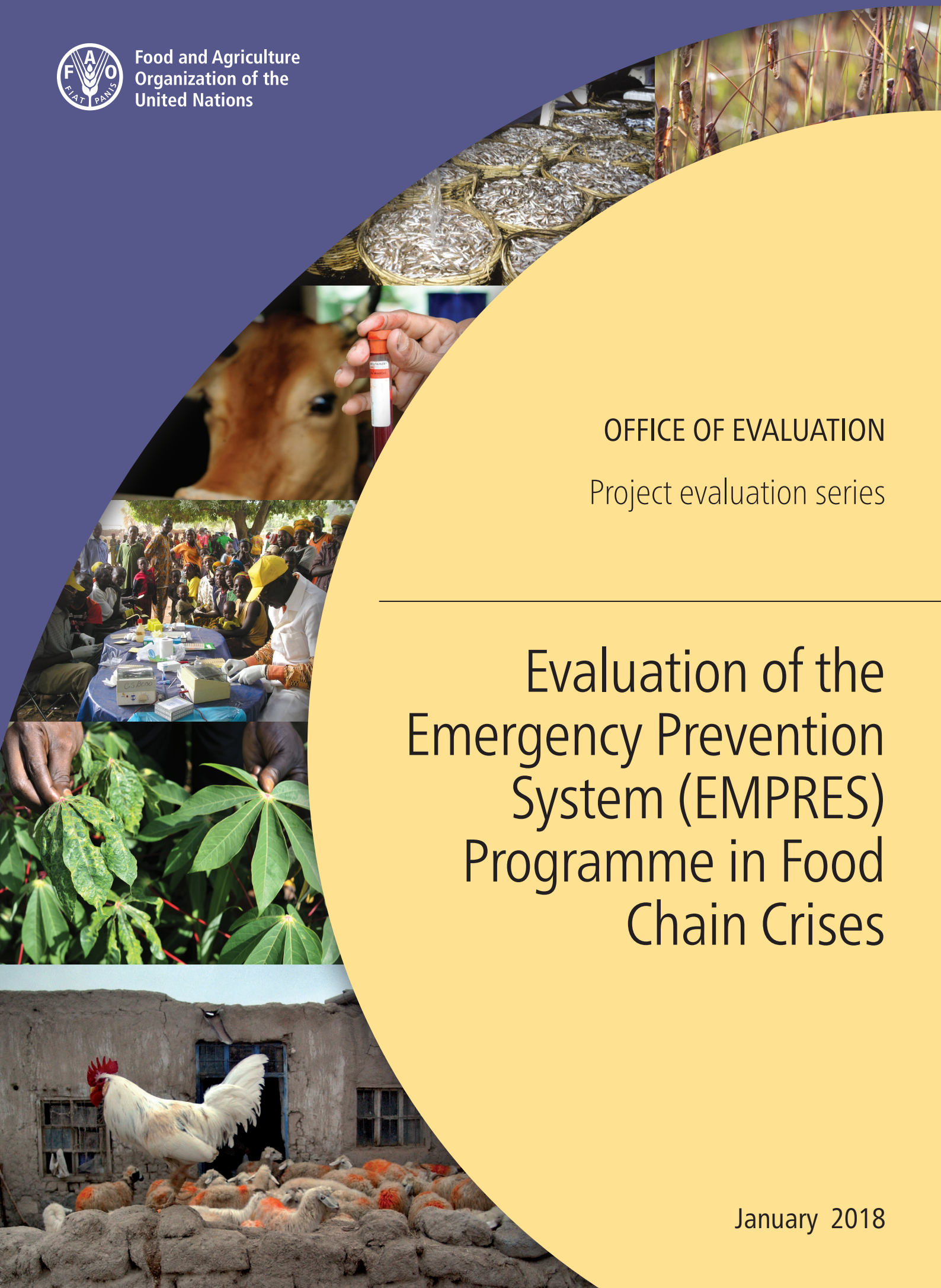

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Evaluation of the Emergency Prevention System (EMPRES) Programme in Food Chain Crises

January 2018

PROJECT EVALUATION SERIES

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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Office of Evaluation (OED)

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Acronyms and abbreviations

AHPND	Acute Hepatopancreatic Necrosis Disease
ASEAN	Association of Southeast Asian Nations
CFE	Contingency Fund for Emergencies
CMC	Crisis Management Centre
DLIS	Desert Locusts Information System
ECTAD	Emergency Centre for Transboundary Animal Diseases
EMPRES	Emergency Prevention System
FAO	Food and Agriculture Organization of the United Nations
FCC	Food Chain Crises
FST	Food Safety Threat
GLEWS	Global Early Warning System
GREP	Global Rinderpest Eradication Programme
INFOSAN	International Food Safety Authorities Network
IPPC	International Plant Protection Convention
OIE	World Organisation for Animal Health
SFERA	Special Fund for Emergency Rehabilitation Activities
TAD	Transboundary Animal Disease
TCP	Technical Cooperation Programme
TPP&D	Transboundary Plant Pests and Diseases
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WHO	World Health Organization

Executive Summary

Introduction

1 The Emergency Prevention System (EMPRES) for transboundary animal and plant pests and diseases and food safety threats (also collectively defined as food chain crises) programme is a significant and unique area of the Food and Agriculture Organization of the United Nations' (FAO's) work which has never undergone a full evaluation. While components and specific programmes in desert locust and animal health management were evaluated in the past, the entirety of FAO's work in this area (inclusive of plants, fish, forests and food safety) was never analysed or reviewed as a continuum.

2 The 106th FAO Council in 1994 approved EMPRES for transboundary animal and plant pests and diseases as one of two FAO priority programmes (the other being the special programme for food security) with the goal of ***"enhancing world food security and fighting transboundary animal and plant pests and diseases"***. The initial focus of the programme was the eradication of rinderpest and control of desert locust under the respective animal and plant protection components. In 2009, a new EMPRES component was established to address food safety issues along the food chain, including food-borne pathogens, residues, radioactive and nuclear and other contaminants. Aquatic animal health and forest healthcare, earlier addressed within EMPRES animal health and EMPRES plant protection were recognized as separate activities in 2010. All the components were brought together in the Food Chain Crises (FCC) Management Framework created in 2008.

3 Anchored mainly to Strategic Objective (SO) 5 (Increase the resilience of livelihoods to threats and crises), EMPRES also contributes to, and draws upon Strategic Objective 2 (Make agriculture, forestry and fisheries more productive and sustainable), and Strategic Objective 4 (Enable inclusive and efficient agricultural and food system) programmes.

4 This evaluation builds on the Strategic Objective 5 evaluation by presenting an in-depth analysis of the specific strengths, challenges and way forward of FAO's work in the management of transboundary pests and diseases (TPDs) and food safety threats. The evaluation also considers FAO's work (technical, operational, policy and capacity development, research and community) in the areas of early warning, prevention and response to high-impact transboundary, pests and diseases and food safety threats (FSTs).

5 The overarching programme oversight and coordination of the technical components is provided by the FCC-Intelligence and Coordination Unit and the programme is one of the four Outcome pillars of Strategic Programme (SP) 5. Over the years, a number of regional and country projects have been tagged to EMPRES, with sizeable portfolios mainly in locusts and animal health and smaller portfolios for the other components.

6 The evaluation aims to provide FAO, the SO 5 Programme team, the Agriculture, Forestry and Fisheries Departments, the Special Office for Food Safety and the Food Chain Crises unit of EMPRES and their internal and external partners with lessons and evidence which could be used to inform future strategic focus to support delivery of the EMPRES mandate,[1] as well as to support contributions to the delivery of FAO's SO 5 and the requests of regional offices and member countries.[2] The evaluation also covers the strategies, activities and partnerships – whether formally or not part of the EMPRES programme – that were identified as critical in enabling FAO to implement and move forward on the EMPRES mandate. It is important to note that the scope of the evaluation was expanded to cover all of FAO's work on transboundary pests and diseases and food safety threats - beyond what

1 As described in numerous documents and fora: World Food Summit Plan of Action commitment 3 and 5, Animal Production and Health Division (AGA) mission and work plan; IFA-EMPRES and Medium Term Plan 2010-2013; One Health Action Plan 2011-2015; GF-TADs global and regional five-year action plans; member country needs expressed by regional conferences and the Committee on Agriculture; Country CPFs; International resolutions, FAO's conference resolutions, Governments (Head of States and Ministers); the Emergency Centre for Transboundary animal disease (ECTAD) Director General's bulletin; ECTAD decentralization concept note; Interdepartmental Working Group One Health.

2 Evaluation of the EMPRES Programme: Terms of Reference; FAO Office of Evaluation (OED) 2016.

can be formally considered as part of the EMPRES programme.[3] This was done because the evaluation focuses on the relevance and the results delivered by FAO as a whole to its member countries in TPDs and FST as a critical area of work.

7 The evaluation assessed FAO's EMPRES and TPDs and FST work since EMPRES inception in 1994. Data was collected using essentially qualitative methods. The "historical" phase (1994-2012) was assessed with the dual purpose of identifying milestones, gaps and results, as well as reconstructing benchmarks against which to assess the changes generated following the revised FAO Strategic Framework (2013-2016). For the latter, sources of evidence included a document review, 228 interviews with key stakeholders, two technical workshops and various country missions conducted by the evaluation team.

8 The evaluation aimed to collect and assess evidence in the following areas:

- The **relevance** of transboundary animal and plant pests and diseases and food safety threats and how this has evolved over time; and how FAO is positioned from a strategic perspective within this area of work.
- What **results** have been achieved in this area of work over the years under review, and to what extent has FAO contributed to these?
- What were the **enabling and limiting factors** that determined FAO's delivery capacity in this area of work?

Findings

9 This section highlights the evaluation findings based on the three areas listed above.

Relevance of EMPRES

10 The prevention and management of transboundary animal and plant pests and diseases and food safety threats has been, remains and will continue to be highly relevant to the livelihoods and food security of farmers and traders everywhere. Furthermore, the prevention, detection and control of food safety threats are highly relevant, and increasingly so, not only to food producers and traders, but to the society as a whole, in particular the consumers. There is considerable evidence that through the EMPRES approach FAO has played and must continue to play a key role at multiple levels in addressing TPDs and FSTs. The Organization has not been effective in advocating for the relevance of this area of work, which could include an economic analysis of damages and losses for the entire sector of TPDs and FSTs. However, some effective advocacy work was conducted for specific subcomponents, such as zoonoses like highly pathogenic avian influenza and locusts.

11 EMPRES has been FAO's flagship response to TPDs since 1994. The original EMPRES pillars of Early Warning, Early Reaction, Enabling Research and Coordination remain relevant. The pillars, though refined over the years, are now encompassed in the four outcome areas of SO5, and are designed to build resilience to food chain crises caused by TPDs and FSTs. The four outcome areas, described in detail in Chapter 4 of the main report, and FAO's overall Resilience Agenda, are aligned with the priorities of the Hyogo Framework for Action 2005-2015 and the subsequent Disaster Risk Reduction platform, the Sendai Framework 2015-2030.

12 The evaluation found that from a strategic and conceptual point of view, SO5 is a good home for EMPRES as long as it works in close collaboration with SO4 on the policy, legislation and quarantine systems shaping the food safety environment, as well as with the specific risk implications on value chains; with SO3 when it comes to addressing at the community level poverty-associated diseases; and with SO2 when contributing to sustainable production

3 The expansion of the scope is reflected in the evaluation Terms of Reference as, during the initial scoping phase, it became clear that an evaluation of the EMPRES Programme defined on the basis of its current budget and capacity would limit the evaluation scope to headquarters activities and coordination - with no field and regional perspective. The Terms of Reference thus enlarged the scope of the evaluation to include regional and country coordination and field programmes and projects in the area of prevention of and response to TPDs and FST.

and specific risk implications for value chains and addressing the risk factors of TPDs linked to climate change.

13 The relevance of the "One Health" approach at regional and national level appears high. Building on demand from the Regional Commission for Asia and the Pacific, the FAO Regional Office for Asia and the Pacific (RAP) has committed to the use of "One Health" approaches as a driver for its regional and national work.

14 Despite being highly relevant in terms of need and approach, the evaluation found that EMPRES' capacity to meet growing demand is precariously low and programmatic fragmentation is undermining FAO's relevance and its recognized comparative advantage in addressing TPDs and FSTs.

15 Considered separately, the EMPRES components present convincing rationales, technical acumen and business models (for the more active components). However, the evaluation found that FAO has not adequately explained the EMPRES approach nor FAO's role and work in food chain crises. FAO has been unable to provide a sufficiently clear explanation of why EMPRES is the best approach to TPDs and FSTs across all components, which have had implications at the level of results. In the main report, the evaluation team suggest an initial version of a Theory of Change for the TPD and FST sector to be further developed by FAO.

Effectiveness of EMPRES

16 The results have been delivered at different levels: i) policy and regulations; ii) early warning; iii) prevention and preparedness; and iv) response. The evaluation found that the EMPRES components with the longest duration and highest levels of financial support (desert locust and animal health) had more concrete and measurable results. The newer and relatively poorly funded and under-staffed components (forest health and aquatic animal health) tended to focus on preparedness and response activities. The analysis of results encompasses the whole range of projects and activities in TPDs and FSTs and more results show to have been achieved in animal health, plant protection and food safety, whereas results in forestry and fisheries were more limited and circumscribed.

17 By including activities and results that utilize an EMPRES approach, the evaluation found nearly all components improved policy, regulations and strategies related to the management of TPDs and FSTs. Results were found at all levels and are described from global to regional to national level. The evaluation notes that many of the results identified (in food safety and support to standard setting and regulatory frameworks) fall under the remit of Strategic Objective 4.

18 The evaluation of SO5 (FAO 2016) noted good progress in the development of information and early warning systems, their adoption at country level, and their increasing linkages with SP5's new Early Warning/Early Action system. The latter is designed to consolidate forecasting information while providing comprehensive risk analyses. Concurrently, the SO5 evaluation highlighted the need for stronger integration of FAO's early warning tools, both internally and with the ones operated by external partners. This evaluation confirmed the need for improved integration.

19 The evaluation found that FAO lacked a consistent or explicit approach to presenting, designing or implementing interventions for improving prevention and reducing vulnerability across EMPRES areas. So far, it has made no clear business case for investing in prevention as opposed to response, and has not articulated the cost-benefit of prevention at the global, national and local levels.

20 Since its inception in 1994, EMPRES and FAO more generally have demonstrated effective results related to strengthening preparedness and emergency response in TPDs and FST. Considering the current capacity limitations, however, continued vigilance is needed to ensure that optimal capacity and appropriate systems are maintained within FAO. The evaluation acknowledges that these types of crises have a high and very diverse degree of specificities, requiring significant technical knowledge and a case-by-case response. At the

same time, coordination and operational capacity at all levels (from global to community) are also key elements, and FAO needs to support member countries to respond to these types of crises. While the locust and animal health components have the experience of past responses, this is not the case for other components. The current Fall Army Worm response could be used as a way of testing the flexibility and responsiveness of FAO systems at all levels.

21 The evaluation found sound examples of capacity development activities at the institutional and individual levels, as well as support to the enabling environment. The main gap in terms of sustainability was identified as the limited partnerships with and capacity development of private sector stakeholders.

22 Although gender mainstreaming was observed in some EMPRES initiatives, there was no consistent strategy to ensure context analysis, gender or accountability to affected populations monitoring. The rapid onset of emergency response initiatives was less sensitive to gender dimensions, which probably reflects the pressing need to focus on the rapid onset of disease outbreaks or threats during an emergency.

Turning EMPRES into action

23 This section highlights two of the enabling and limiting factors that determined FAO's delivery capacity in this area of work

24 This evaluation's findings agree with those of the 2007 Independent External Evaluation of FAO: FAO's strength in plant pest and animal disease management is linked to its capacity to provide "a joined-up global response, linking global monitoring, international legislative instruments and fora for discussion, resource mobilization and coordination with disease and pest management". This evaluation would add that FAO's science-based approach to assessing risks and developing solutions provides an additional comparative advantage, particularly when coupled with FAO's field presence and capacity to respond rapidly to emergency situations. Another comparative advantage is FAO's independence and transparency, which allows it to act as an honest broker between development partners and member states in situations of crisis.

25 FAO's regular programme budget cuts have resulted in the abolition of 235 posts over two biennia (FAO 2015 CL). These cuts have resulted in reduced in-house expertise in many priority areas for EMPRES approaches. There is now a disproportionate reliance on voluntary monetary contributions from member countries to finance core capacity for work on EMPRES. This reliance has coincided with a reduction in the breadth and depth of donor funding. The evaluation therefore considers that EMPRES is in a precarious position with reduced core budget funding and few examples of long-term voluntary contributions.

26 The evaluation found that the current institutional arrangements are not optimal to support FAO in the delivery of its EMPRES mandate. While the broad architecture is fine, the following areas need to be improved: the advocacy role of the Oversight Committee, especially in sustaining the minority components of EMPRES; the expansion and empowerment of the Coordination and Intelligence Unit, including the resources needed to fulfil its mandate; the rationalization of tasks, responsibilities and teamwork to facilitate the flow of EMPRES' work in animal health with headquarters and regional offices; and the strengthening of the crop protection, fisheries and forestry components.

27 The capacity to deliver EMPRES components continues to be reduced and is insufficient to meet demand. This is coupled with the suboptimal use of existing capacity.

28 The evaluation found that all EMPRES components had relevant partnerships for building resilience to food chain crises. These ranged from global to regional to local. Several partner representatives at regional level had not heard of EMPRES but knew of FAO's work with TPDs and FSTs. This was particularly the case for the newer EMPRES components and for EMPRES initiatives that had a strong presence, such as FAO's Emergency Centre for Transboundary Animal Diseases (ECTAD).

29 The evaluation found limited evidence of systematic advocacy across EMPRES, including the Food Chain Crisis Intelligence and Coordination Unit, which has a specific advocacy function.

30 The evaluation found limited attention to lesson learning within or among the EMPRES components. Lesson learning has been largely confined to expert consultations and coordination platforms, component evaluations and longer term initiatives such as the desert locust Information System platform and the Emergency Centre for Transboundary Animal Diseases.

31 FAO's normative work provides a crucial link between global, regional and country level initiatives, especially for the cross-border and inter-disciplinary work that typifies EMPRES (IEE 2007). The quality of normative products and publications from EMPRES components was found to be consistently high. Outputs are used by academic, private and public sectors for all components. The evaluation's questionnaire survey[4] showed nearly 70 percent of the respondents knew some FAO products and appreciated them for their technical guidance, the strengthening of programmes and the awareness raising. The most cited were the "Good Emergency Management Practice", the EMPRES and the Desert Locust Bulletin, the Guidelines on the Desert Locust, the Early Warning Handbook (2016), the Guide to Implementation of Phytosanitary Standards in forest health and a long list of technical documents on aquaculture.

Conclusions and recommendations

Conclusions

Conclusion 1. The management of transboundary pests and diseases and food safety threats remain highly relevant at all levels. FAO continues to have a significant comparative advantage in supporting member states, regional bodies and partners in their efforts to control TPDs and reduce FSTs.

Conclusion 2. The evaluation has analysed the range of EMPRES-like programmes and results and concludes that this approach has proven its effectiveness for the management and control of TPDs and FSTs over many years. However, the results were variable between EMPRES components; many of the results found at regional and country levels had no formal or indirect link with the EMPRES programme. This fragmentation results in a loss of effectiveness in internal programming, coherence and optimization of services as well as in external advocacy, outreach and visibility. The results of EMPRES could have been more effective by applying an explicit and systematic strategy for the gender dimension and accountability to affected populations.

Conclusion 3. EMPRES' capacity and competencies are not always sufficient to remain relevant and effective in supporting member countries to manage TPDs and FSTs. It has forged many effective partnerships with other international organizations, regional economic commissions, research centres and networks of experts but it is not always able to make optimal use of these networks to provide support and services to member countries. Lessons, publications and normative products are of good quality but their utilization, outreach and influence is not always effective or visible. Strategies for the over-arching EMPRES approach and for single components exist but need to be better articulated and be more fungible to be used to support advocacy and resource mobilization.

Conclusion 4. Clear service agreements that support delivery at regional and country levels are essential for effective management of TPDs and FSTs. However, institutional arrangements within the EMPRES Programme have become indistinct over time and this has reduced clarity, visibility and effectiveness. There is a gap between the activities that clearly belong to the EMPRES Programme and the significant volume of other work on TPDs and FSTs that take place at the regional, subregional and country levels. The many

4 The survey targeted internal FAO staff, external partners (mainly national governmental partners in the relevant technical areas as well as NGOs, research centres and other specialized agencies) in the technical sectors covered by EMPRES domains (livestock, locusts, plants, fisheries, forestry, food safety).

projects and activities led by the decentralized offices don't always inform and support the global coordination role that EMPRES should have. The Food Chain Crisis Intelligence and Coordination Unit and its governing bodies have a vital support and advocacy role that has not yet been fully realized. The various initiatives under animal health are also poorly linked and structured within EMPRES-Animal Health component. While EMPRES fits strategically within SP5 and most of its current activities are overseen by the Agriculture and Consumer Protection Department, the evaluation evidences the need to collaborate with SPs 2, 3 and 4 and with the Fisheries and Forestry Departments.

Recommendations

Recommendation 1. FAO should increase the coherence of its work on TPDs and FSTs. The evaluation recommends the following:

- **Increased coordination on the branding, co-marketing and advocacy for the work on TPDs and FSTs. The aim should be to raise the visibility and position FAO as a lead coordination and technical agency in this area of work, offering a coherent 'support and coordination' package of services on TPDs and FSTs to member countries.**
- **Increased operational integration where there are clear benefits. This includes: the integration of information and early warning systems; the coverage and role of the Crisis Management Centre (CMC); the coherence and communicability of information, monitoring and data collection systems across technical components (including the interagency platforms).**
- **A more coordinated programming among technical components where synergies are expected. A good example would be the African Solidarity Trust Fund Programme on sanitary and phytosanitary measures in Southern Africa. Coordinated programming could also be sought on certain regulatory work and the work at the community level involving socioeconomic aspects.**

32 FAO would benefit from having all of the work on TPDs and FSTs presented in a more coherent package. This could be presented as the expanded EMPRES Programme, or under a new brand, but it needs to be broader than the current EMPRES Programme. This 'expanded EMPRES' should have a broad overall strategy, supported by more detailed strategies or action plans at the regional and technical component levels. The importance of focusing on prevention work in the long-term should be clearly addressed.

33 The evaluation suggests that FAO would benefit in developing one or more strategic pieces, described below. Strategies, whether branded under EMPRES or under a broader area of work on TPDs and FSTs, could include:

- An overarching strategy
- Component strategies and action plans
- Regional strategies and action plans
- The Strategic Action Plan for One Health
- Gender and accountability to affected populations
- FAO should develop an evidence-based case study for TPDs and FSTs, along the lines of 'Damage and Loss' publication on disaster risk reduction and natural hazards

Recommendation 2. Once FAO has developed a study on damage, loss and prevention it should derive a strong business case from it, highlighting the importance of prevention and investments in TPDs and FSTs work. The business case can support member countries in strengthening their advocacy, outreach and financing for the sector. This can be done by a combination of financing tools and instruments, ranging from prioritization within national budgets, private sector investments (from big partners to consumers) including impact investments.[5] FAO's role should focus on the support to building the capacities of regional and national systems and ensuring ownership at the local level. While focusing on raising financing levels for the sector, FAO can also seek to cover some of its internal resource requirements for maintaining an authoritative technical and coordination leadership role in this area of work.

5 http://www.socialimpactinvestment.org/

Recommendation 3. FAO should use its comparative advantages and proven expertise in the field of TPDs and FSTs, to deliver more integrated and well-articulated support to member countries in order to strengthen national capacities to assess and manage the range of activities needed to ensure the control and containment of transboundary pests, diseases and threats.

Recommendation 4. The Food Chain Crisis Intelligence and Coordination Unit as the global coordination function should be strengthened and given a higher profile within FAO in order to ensure a continuum for more effective interactions between the technical divisions and the Strategic Programmes to deliver clearly defined EMPRES products and support at global, regional, subregional and country levels.

1. Introduction

1.1 Purpose of the evaluation

1 The Emergency Prevention System (EMPRES) for transboundary animal and plant pests and diseases and food safety threats (also collectively defined as food chain crises) programme was set up by the Food and Agriculture Organization of the United Nations (FAO) and approved by the 106th FAO Council in 1994. Despite being a significant and unique area of FAO's work, EMPRES has never undergone a full evaluation. In 2007, the FAO Independent External Evaluation described FAO's work in this area as follows:

The IEE thus found that FAO's strength in plant pest and animal disease management has been that it can provide a joined-up global response, linking global monitoring, international legislative instruments and fora for discussion, resource mobilization and coordination with disease and pest management. There is room for improvement, particularly in bringing in economic management and attention to livelihoods, but FAO has an absolute comparative advantage. This comparative advantage could, nevertheless, be endangered by the continuing erosion of technical capacity.[6]

2 While components and specific programmes in desert locust and animal health management were evaluated in the past, the entirety of FAO's work in this area, inclusive of plants, fish, forests and food safety threats was never analysed or reviewed as a continuum or, to quote the Independent External Evaluation, "a joined-up global response".

3 The proposal to evaluate the EMPRES approach, system and work, was triggered by requests from the Food Chain Crises (FCC) Coordinator and the Lead of the Strategic Programme (SP) 5 and has been under discussion for a number of years. An evaluation was finally initiated at the request of the Programme Committee to undertake evaluations of FAO's Strategic Objectives (SOs) and supporting Strategic Programmes. EMPRES, while drawing from several Strategic Programmes for areas of technical expertise, is currently located in Strategic Programme 5: Resilience to Threats and Crises. This programme is mandated to work on the short- and long-term strategies and responses to three different types of threats and crises, including those linked to the food chain. During the scoping discussions for the Strategic Objective 5 evaluation, it became clear that FAO's work on transboundary animal and plant pests and diseases and food safety threats was important and strategic for the organization. Thus, a dedicated evaluation was warranted, which would benefit from a longer time frame and a dedicated pool of sectoral experts. The SO5 evaluation, which was completed six months in advance of the current exercise, analysed the contributions and strategic importance of the work carried out in early warning, prevention and response in the technical areas covered by EMPRES. The current evaluation presents a more in-depth analysis of the specific strengths, challenges and way forward of FAO's work in the management of transboundary pests and diseases (TPDs) and food safety threats.

1.2 Scope and objective of the evaluation

4 The scope of the evaluation represented a set of challenges that were identified and addressed in the evaluation Terms of Reference. The original request to evaluate the EMPRES programme was identified as being too narrow when the initial scoping and portfolio analysis were carried out. From a funding and organizational perspective, the EMPRES programme consists of a few positions based in FAO headquarters (some of them at 50 percent),[7] which provide overarching programme coordination and coordination of the technical components. Over the years, a number of regional and country projects have been tagged to EMPRES, with some sizeable portfolios in locust and animal health in which EMPRES coordinators provide lead technical support.

6 FAO Independent External Evaluation (2007) p. 105, para. 304.

7 These comprise the FCC–Intelligence and Coordination Unit coordinator's post, two posts in the Agriculture and Consumer Protection Department (AGP), two in the Animal Health Service and two in AGFF plus two 50 percent positions funded from SP5 respectively in Fisheries and Aquaculture Policy and Resources Division (FIA) and Forestry Policy and Resources Division (FOA).

5 For the main evaluation period (2013-16), the portfolio of transboundary pests and diseases-related projects in the three main areas (animal health, locust and crop protection) that are not formally linked to the EMPRES programme are each larger than the portfolio of those that are.[8] In preliminary discussions with the evaluation stakeholders, it became clear that the interest of the Organization lay in identifying the strategic way forward for FAO's area of work in the prevention and response to transboundary animal and plant pests and diseases and food safety threats, rather than in a narrower assessment of just the formal EMPRES programme. Following the example of the Independent External Evaluation, it was agreed that the objective of the evaluation was to "provide FAO, the SO5 Programme team, the Agriculture and Consumer Protection Department (AG), Forestry Department (FO) and Fisheries and Aquaculture Department (FI), the Special Office for Food Safety and the FCC/EMPRES and their internal and external partners with lessons and evidence which can be used to assess the current and future strategic focus to support delivery of the EMPRES mandate,[9] as well as to support contributions to the delivery of FAO's Strategic Objective 5 and the requests of regional offices and member countries".[10] As a result, the scope of this evaluation focuses on the strategies, activities and partnerships – whether formally or not part of the EMPRES programme – that were identified as critical in enabling FAO to implement and move forward on the EMPRES mandate.

6 Another factor adding complexity to the evaluation was the time frame that needed to be covered. As explained above, only certain segments of EMPRES-related work had been evaluated in the past, but no full evaluation had been carried out.[11] This meant that the evaluation had to cover a period of 24 years of work and its evolution over time, as well as its expansion within technical areas to cover new diseases and threats, and the evolving global, regional and national institutional capacities. EMPRES also expanded to cover formally technical areas such as food safety, fisheries and forestry, which had not been included in the original framework. It was decided to cover the period from 1994 to 2012 with a 'light' approach, identifying the key milestones and results from documents and interviews with key informants active in EMPRES over that period of time. The period from 2013 to 2016 was covered in more detail.

7 To conclude on scope, the evaluation considers all of FAO's work (technical, operational, policy and capacity development, research and community at the global, regional, national and local levels) in the areas of early warning, prevention and response to high-impact transboundary plant pests and animal diseases (TPP&Ds) and food safety threats. As mentioned earlier, most of this area of work is currently anchored, from a strategic perspective, in the four Outcomes of Strategic Objective 5, especially under Outcomes 2 (watch to safeguard) and 4 (prepare and respond). Nevertheless, SO5 Outcomes 1 and 3 are also important: the first for its risk governance dimension and the third for its community and local prevention focus.

8 Another key Strategic Objectives is SO4 (Enable inclusive and efficient agricultural and food systems) for its work on the regulatory and policy dimensions of food safety measures along the food value chain, as well as the technical and expert dimension providing support to the early detection and advice of the range of epidemiological and contamination threats. This area of work is anchored to the SO4 Outcomes 401 (supporting the development of new and revised international standards for food safety and quality and for plant health) and 404 (Supporting public sector institutions to provide national public services related to plant and animal health, food safety and quality). EMPRES' technical capacity, intelligence work and use of research and regulatory frameworks and tools rely heavily on the work supported through SO4. Likewise, risk monitoring along the value chains for specific products and commodities (from fish to dairy to staple and other horticultural products) heavily relies on the work of SO4.

8 Details of the portfolio analysis can be found in Chapter 2.

9 As described in numerous documents and fora: World Food Summit Plan of Action commitment 3 and 5, Animal Production and Health Division (AGA) mission and work plan; IFA-EMPRES and Medium Term Plan 2010-2013; One Health Action Plan 2011-2015; Global Framework-TADs global and regional five-year action plans; member country needs expressed by regional conferences and the Committee on Agriculture; Country CPFs; International resolutions, FAO's conference resolutions, Governments (Head of States and Ministers); the Emergency Centre for Transboundary animal disease (ECTAD) Director General's bulletin; ECTAD decentralization concept note; Interdepartmental Working Group One Health.

10 Evaluation of the EMPRES Programme: Terms of Reference; FAO Office of Evaluation (OED) 2016.

11 See bibliography for full list of past evaluations and reviews.

9 SO2 (Make agriculture, forestry and fisheries more productive and sustainable) is also significant in terms of its work on promoting sustainable practices, environmental services and climate change mitigation, which all bear a strong reciprocal influence on the trends, risks and activities in EMPRES-like areas of work. The promotion of sustainable governance, instruments and local management practices in agriculture – such as farmer field school, livestock field school, pastoralist field school - are all closely related with the prevention and control of pests and diseases across the agricultural sectors, and to the interface between local and low impact pests and diseases and those that pose major threats in terms of impact and spread.

1.3 Methodology

10 The methodology derived from a set of evaluation questions[12] that aimed to collect and assess evidence for the following areas:

- The relevance of transboundary animal and plant, pests and diseases and food safety threats and how this has evolved over time; and how FAO is positioned from a strategic perspective within this area of work. This question is analysed in Chapter 3.
- What results have been achieved in this area of work over the years under review, and to what extent has FAO contributed to these? This question is analysed in Chapter 4.
- What have been the enabling and limiting factors that have determined FAO's delivery capacity in this area of work? This question is analysed in Chapter 5.

11 The methods and tools used in this evaluation were selected to address the following challenges:

- *The 24-year period under review*. The evaluation was divided into a historical period, ranging from EMPRES' formal foundation in 1994 to 2012, and a main period, covering the adoption of the new Strategic Framework in 2013 to the present (with a cut-off in data gathering and analysis in December 2016). A tailored selection of tools and methods was used for each of the two evaluation segments.
- *The diverse, numerous and specialized range of technical areas covered by EMPRES*. This issue required a balance between evaluation and technical expertise, an in-depth analysis of the EMPRES components and an overarching assessment of the entire programme.
- *Collaboration*. A large number of bodies, commissions and teams at the core of EMPRES' work are co-owned and/or co-managed with other agencies and/or national governments; these organizations, therefore, had to be brought on board for the evaluation.

12 The methodology used was essentially qualitative. The historical phase was covered with the dual purpose of conducting a light assessment of milestones, gaps and results, as well as reconstructing benchmarks against which to assess the main period. For the historical period, three sources of evidence were used:

- A review of available documentation including strategic documents, evaluations, reports on project activities, missions and other relevant sources.
- Key informant interviews of former and current FAO staff members, senior managers and external partners who were active and instrumental in EMPRES' set-up and management. Key actors were identified in the course of interviews with colleagues who had worked at FAO since 1994. Former technical officers for locusts, crop protection, fisheries and forestry were interviewed, as well as a chief veterinary officer and senior managers (Divisional Directors and Chiefs) who had been instrumental in the setting-up of EMPRES.
- A two-day workshop[13] was held with a selection of key informants from the group above to reconstruct and validate the key milestones, gaps and achievements of EMPRES' evolution between 1994 and 2012. The main outcomes of this workshop can be found in Appendix 2 to this report.

12 A complete list can be found in the Evaluation Matrix in Annex 1.

13 See Annex 2 for the Historical Workshop agenda and list of participants.

13 For the main period (2013-2016) the following sources of evidence were used:

- Surveys were conducted on EMPRES' usefulness and results, reflecting the questions from the evaluation matrix. The surveys had similar sets of questions but were modified and conducted as separate exercises in order to target the following stakeholder groups: internal FAO staff, external partners (mainly national governmental partners in the relevant technical areas as well as non-governmental organization (NGOs), research centres and other specialized agencies) in the technical sectors covered by EMPRES domains (livestock, locusts, plants, fisheries, forestry, food safety). An analysis of survey results can be found in Annex 3.
- A review of available documentation from strategic documents, reports, communication and information material produced by EMPRES, mid-term reviews and evaluations. A full bibliography can be found in the Appendix 4.
- 247 interviews with internal and external key informants and stakeholders (full list in Appendix 3).
- Participation of two of the technical experts in EMPRES-related workshops: a technical regional workshop on locusts in Caucasus and Central Asia in Astana, Kazakhstan and a technical workshop on cassava mosaic diseases in Phnom Penh, Cambodia.
- Use of country case studies from other recently completed and ongoing evaluations (SO5, Myanmar CPE, Bangladesh CPE, West Bank and Gaza Strip programme evaluation; project evaluations).
- An independent external impact assessment of the regional cassava initiative in central and eastern Africa, and an independent multi-partner mid-term review of the Africa Solidarity Trust Fund project in Southern Africa.
- Country and regional missions were undertaken, both as part of the SO5 evaluation (Cambodia, Pakistan, Uganda, Lebanon) and dedicated missions to the Regional Offices in Cairo, Accra and Bangkok, as well as country missions to Viet Nam (fisheries and livestock), Kenya and Ethiopia (livestock, food safety, crops).

14 The evaluation team analysed the evidence collected in a five-day workshop in January 2017 and presented the preliminary findings and conclusions in a stakeholder workshop in Rome. The initial recommendations were discussed and partially modified in the course of the workshop, using stakeholders' feedback on feasibility and implementability.

1.4 Limitations

15 As is often the case with evaluations, there is a gap between the ideal evaluative pathway and the actual process. The most significant limitations of this evaluation were the following:

- No missions could be organized to cover Latin America and Europe. While the surveys were distributed in these regions and a number of distance interviews were held, the evaluation team felt that the coverage of these two regions and the ensuing analysis of their specificities (in terms of the transboundary pests and disease issues and work) was limited and superficial. Although these two regions have much to offer in terms of lessons, results and FAO engagement, they are the ones that are most often excluded from direct coverage due to limitations in funding.
- The limited number of survey responses for some of the sectors (see Annex 5).
- The limited coverage of the forestry work (this area had no dedicated technical expert in the evaluation team but was covered by the plant pathologist) and of fisheries, in terms of the number of stakeholders interviewed.

1.5 Structure of the report

16 Following this introductory Chapter, Chapter 1 presents the main issues regarding the evaluation genesis and conduct. Chapter 2 is a narrative and descriptive chapter on EMPRES' evolution and current architecture, inclusive of a financial and portfolio analysis of EMPRES and the broader portfolio of work, covering all EMPRES-like programmes and activities. Chapters 3 to 5 present the analytical evidence, organized around the main

evaluation questions as detailed in the evaluation Terms of Reference and Evaluation Matrix. In a progressive sequence, the chapters analyse the relevance, strategic positioning, results and enabling factors (such as partnerships, advocacy and resource mobilization) that EMPRES has achieved as well as the areas where it could change or improve. Chapter 6 draws the main conclusions from the previous three chapters and provides recommendations for the way forward.

2. Context of the EMPRES Programme

2.1 Background of the EMPRES Programme

17 The 106th FAO Council in 1994 approved EMPRES[14] for transboundary animal and plant pests and diseases[15] as one of two FAO priority programmes (the other being the special programme for food security) with the goal of *"enhancing world food security and fighting transboundary animal and plant pests and diseases"*. The initial thrust of the programme was the eradication of rinderpest and control of desert locusts under the respective animal and plant protection components. In 2009, EMPRES was expanded to address food safety issues along the food chain, including food-borne pathogens, residues and other contaminants, and subsequently expanded to include aquatic animal health and forest health in 2010. Appendix 2 highlights the main findings of the historical workshop and captures the main events and evolution of the EMPRES Programme by the components.

2.2 Objectives of the EMPRES components

18 FAO created the Food Chain Crisis Management Framework in 2008 with the intention to effectively integrate prevention, preparedness, and response to emergencies affecting the food chain.[16] EMPRES makes up the core of FCC. The FFC-Intelligence and Coordination Unit provides coordination, long-term risk analysis, risk communication and advocacy within the FCC. A Coordinator under the direct supervision of the Assistant Director General – Agriculture manages the FFC-Intelligence and Coordination Unit. Work on the EMPRES is carried out by the various EMPRES components (animal health, plant protection, aquatic animal health, food safety and forest health). The guiding principles of EMPRES focus on prevention, early warning and early reaction across the entire food chain. Emergency Response serves as the operational arm of the FCC. This includes the Crisis Management Centre (CMC)-Animal Health for the animal health component, and also included Emergency Centre for Transboundary Animal Diseases (ECTAD) until 2009 (still active – more information is provided in section 2.2.1) and the Emergency Centre for Locust Operations (inactive).

19 Box 1 defines the use of EMPRES, EMPRES-Like and EMPRES approach by the evaluation.

Box 1: Definition of adopted terminology for the evaluation

In this evaluation, **"EMPRES approach"** refers to all of FAO's work *(technical, operational, policy and capacity development, research and community at the global, regional, national and local levels)* in the areas of early warning, prevention and response to high-impact transboundary plant, pests and diseases and food safety threats. Under the EMPRES approach, the identified TPD and food safety threat (FST) projects have been grouped into two types: *EMPRES projects and EMPRES-like projects.*

- ***EMPRES projects*** refers to projects formally linked to the EMPRES Programme. These projects have explicit and specific link to the EMPRES Programme.
- ***EMPRES-like projects*** refers to TPD and FST-related projects that are not formally linked to the EMPRES Programme.

14 The devastating losses over the world from major outbreaks of transboundary diseases, mainly rinderpest and desert locust, were the main stimulus for the establishment of the EMPRES Programme in 1994.

15 Transboundary diseases as defined by FAO are "those diseases of significant economic, trade and/or food security importance for a considerable number of countries; which can easily spread to other countries and reach epidemic proportions; and where control/management, including exclusion, requires cooperation between several countries".

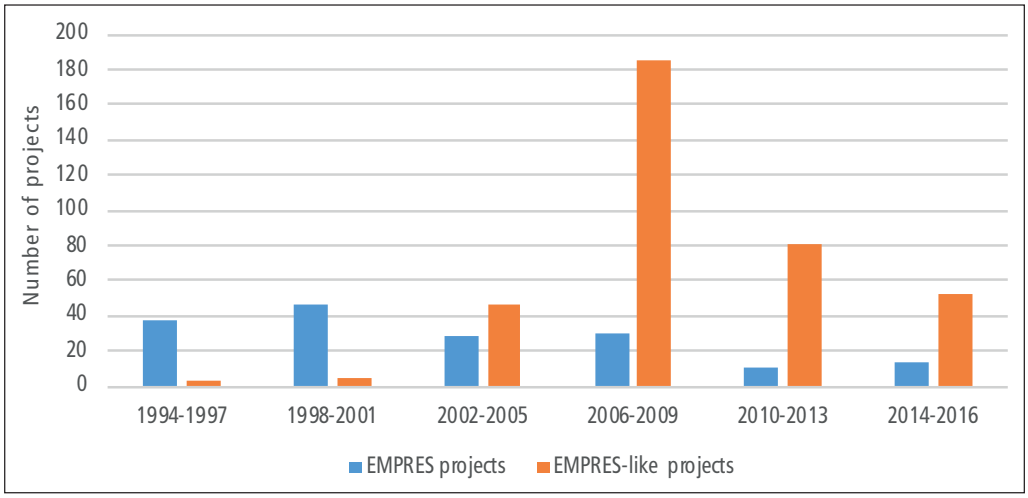
16 Radiological and chemical aspects were included under FCC purview after the tsunami/Fukushima disaster in Japan.

2.2.1 Animal health

20 The EMPRES livestock component was created in 1994 and designed to "promote the effective containment and control of the most serious epidemic livestock diseases as well as emerging diseases, by progressive elimination on a regional and global basis, through international cooperation involving early warning, rapid reaction, enabling research and coordination". The principal thrust at EMPRES-livestock inception was to promote the global eradication of rinderpest, a goal that was officially declared attained in 2011. The component focuses on some 12 to 14 diseases of a transboundary nature (foot and mouth disease, rinderpest, contagious bovine pleuropneumonia, sheep and goat pox, peste des petits ruminants, highly pathogenic avian influenza, Rift Valley fever, Newcastle disease, African and classical swine fever, equine encephalitis, and under certain circumstances rabies and brucellosis).[17] [18] In 2005, the EMPRES-livestock component was changed to EMPRES-animal health to reflect more than livestock, but also wildlife, captive wildlife and delve into fisheries/aquaculture needs. The EMPRES-Animal Health component is functioning under the Animal Health Service at FAO headquarters.

21 Out of the 540 identified transboundary animal diseases (TADs) projects[19] for the period between 1994 and 2016, there were 167 EMPRES projects with a total budget of USD 72 million, and 373 EMPRES-like projects[20] and a total budget of USD 623 million. The main resource partners for the TADs for the period from 1994 to 2016 include the United States of America, the European Union, Japan, Australia and Sweden. Figures 1 and 2 show the identified TADs project distributions (by number and budget) for the period between 1994 and 2016, where 243 are emergency (Office for Special Relief Operations) projects and 227 are Technical Cooperation Programmes (TCPs) projects (Table 1). About 71 percent (382 projects) of the identified TADs projects have budgets below USD 500 000.

Figure 1: Overview of TADs portfolio (number of projects 1994-2016)



17 In 1996, the first EMPRES-livestock expert consultation recommended the grouping of EMPRES target diseases into three categories: as those of strategic importance (Rinderpest, foot and mouth disease and Contagious bovine pleuropneumonia), those requiring tactical attention - rift valley fever, peste des petits ruminants, lumpy skin disease, African swine fever, and those evolving or emerging diseases classical swine fever and Newcastle disease in village chickens.

18 Since 1996 other diseases have emerged and been a focus of EMPRES work including severe acute respiratory syndrome, Middle East respiratory syndrome coronavirus H7N9 influenza and Ebola virus.

19 The animal health portfolio analysis is based on data downloaded in October 2016 from the Field Programme Management Information System for projects where the Animal Health Service is the lead technical unit. To better understand the scope and nature of FAO's work on transboundary animal diseases (TADs), the portfolio analysis includes all identified TADs project. It is important to highlight that in the Field Programme Management Information System there are no systematic qualifiers to tag EMPRES projects. Thus the following were used to identify the TADs projects: EMPRES-Animal Health target diseases and the main keywords of the EMPRES programme - control, prevention, early detection, early warning, capacity, surveillance and coordination.

20 Examples of EMPRES-like programmes/projects under the animal health include the Global Framework for Transboundary Animal Diseases (GF-TADs), Global Early Warning System (GLEWS), Peste Des Petits Ruminants Control Programme and the European Commission for Foot and Mouth Diseases (EU-FMD; 1954). *Refer to Appendix 1 for a brief of these programmes/platforms. There are also numerous initiatives at regional and national level that address TPDs and FSTs but are not strictly part of EMPRES.

Figure 2: Overview of TADs portfolio-budget (1994-2016)

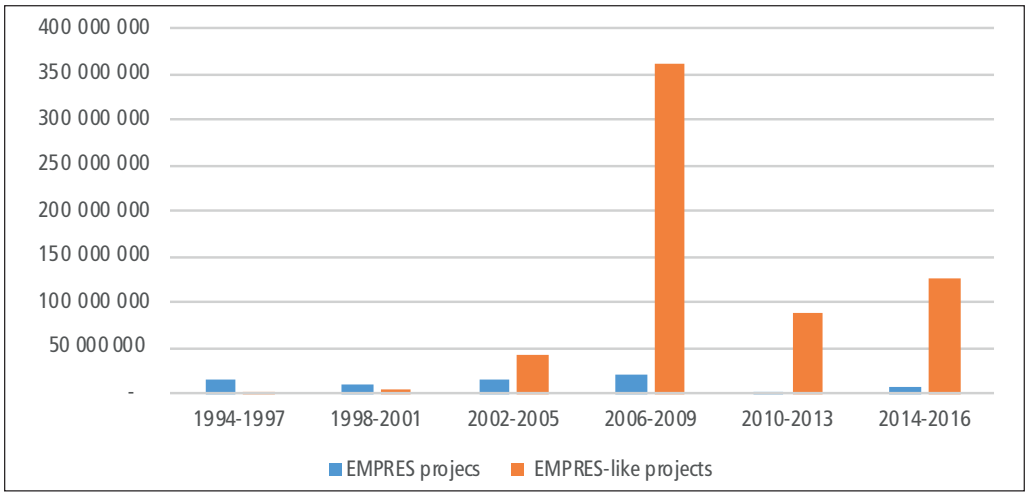


Table 1: TADs Projects by funding group[21] (1994-2016)

Fund group	No. of projects	% share of actual expenditure
Emergency/rehabilitation (OSRO)	243	75%
Government Cooperation Programme (GCP)	47	12%
Technical Cooperation Programmes (TCP)[22]	227	9%
Trust fund F(generic)	13	2%
Unilateral Trust Fund (UTF)	10	1%
Total	**540**	**100%**

Source: FPMIS data (downloaded October 2016)

22 Based on the identified TADs projects for the periods between 1994 and 2016, the largest share of resources were allocated to Animal and Human Influenza (67 percent) (Table 2). Foot and mouth disease had the second largest share (9 percent) of the TADs actual expenditures, followed by Rinderpest (2 percent), Rift Valley Fever (1 percent) and peste des petits ruminants (1 percent). The remaining projects included generic TADs projects (15 percent) and other diseases (e.g. CBPP, Ebola, Newcastle and Brucellosis), which had individual shares below 1 percent.

Table 2: TADs projects expenditure by major diseases (1994-2016)

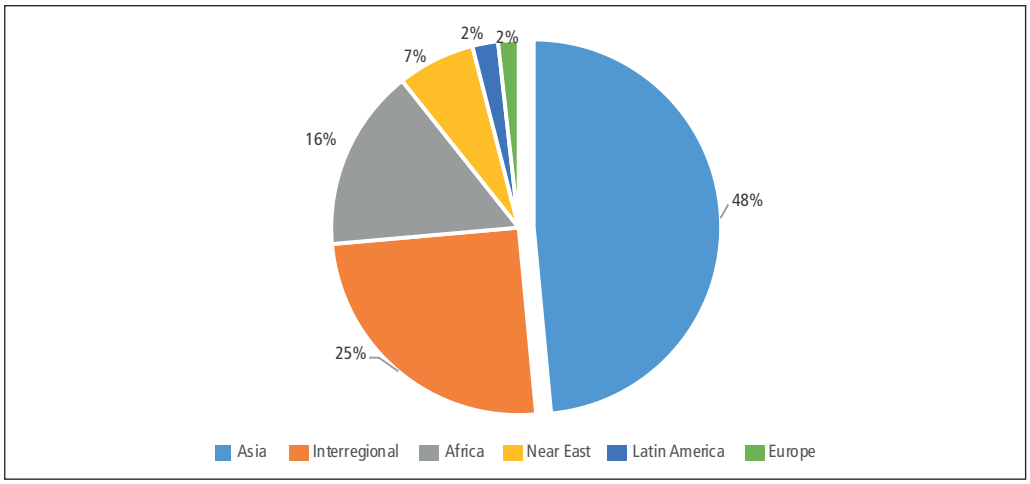
Major diseases	No. of projects	% share of actual expenditure
Influenza	212	67%
FMD	62	9%
Rinderpest	27	2%
Rift Valley Fever	19	1%
PPR	19	1%
Others	201	20%
Total	**540**	**100%**

21 FAO funding groups: great diversity in funding modalities and FAO's Trust Funds' projects fall under the following: Government Cooperation Programme (GCP), Unilateral Trust Funds, Emergency/Rehabilitation projects (Operations and Rehabilitation Division), while some projects are categorized as generic trust fund projects.

22 Technical Cooperation Programmes are drawn from FAO's own regular programme resources and created to allow FAO make its know-how and technical expertise available to member countries and respond to its constitutional function by furnishing technical assistance as governments may request. TCP aims to provide FAO's technical expertise to its Members through targeted, short-term, catalytic and sustainable projects (TCP Manual 2015). Available at http://intranet.fao.org/fileadmin/templates/faomanual/OHR/Docs/150304_-_TCP_Manual_2015.pdf

23 The majority of resources for the TADs portfolio for the period between 1994 and 2016 was spent in Asia (48 percent), followed by interregional projects (25 percent), Africa (16 percent), Near East (7 percent), Latin America (2 percent) and Europe (2 percent) (Figure 3).

Figure 3: TADs projects expenditure by region (1994-2016)



2.2.2 Plant protection

24 The EMPRES-Plant Protection component was created in 1994. The main objective originally was to strengthen the preventive desert locust management capacity of 18 locust-affected countries in Africa and the Near East in order to minimize the risk of desert locust plagues. Due to recent outbreaks of other locust species (such as migratory locust, Moroccan locust, Italian locust and red locust) in Central Asia, Southeast Asia and Eastern and South eastern Africa, EMPRES-plant protection now addresses other locust species as well as invasive plant pests, adopting the successful desert locust management model to mitigate these other transboundary threats.

25 Non-locust threats include armyworm in Eastern and Southern Africa (affecting agro-pastoral resources and livelihoods); fruit flies in more than 30 African countries (impacting the horticultural industry); wheat rust diseases affecting Africa, Near East and Asia, and coffee leaf rust affecting coffee plantations in Central America as well as banana, cassava, maize and potato diseases[23] in Africa and Asia.

26 The EMPRES-plant protection component is functioning under the Plant Protection and Production Division at FAO headquarters. There are two subcomponents under the plant protection component: locust and non-locust (transboundary plant pests and disease).

27 Based on the identified projects[24] for the plant protection component for the period between 1994 and 2016, the locust portfolio constitutes 86 percent of the entire plant protection portfolio. The locust portfolio includes 216 projects with budget totalling approximately USD 205 million. EMPRES-locust projects constitute 68 percent of the locust total projects budget for the period between 1994 and 2016. The EMPRES-like projects mainly include Caucasus and Central Asia and Madagascar Locust programmes. Figures 4 and 5 show an overview of the locust portfolio by the number and budget of projects.

23 Banana diseases are Bunchy Top Disease; Bacterial Wilt Disease, Fusarium Wilt Disease. Cassava diseases include Mosaic Virus and Brown Streak Virus. The key diseases of maize and potatoes are Maize Lethal Necrosis and Potato Cyst Nematode.

24 The plant protection portfolio analysis is based on data downloaded in October 2016 from the Field Programme Management Information System for projects where the Animal Production and Health Division (AGP) was the lead technical unit. To better understand the scope and nature of FAO's work on transboundary plant pests and diseases, the portfolio analysis includes all identified EMPRES and EMPRES-like projects. It is important to highlight the variance in tagging TPD projects in the Field Programme Management Information System; the locust projects have specific qualifiers indicating whether they are EMPRES or not. However, for the non-locust projects, there are no systematic qualifiers to tag EMPRES projects. Thus, the classification of projects as EMPRES for the non-locust portfolio is based on the projects provided by EMPRES team. For the EMPRES-like projects, the following were used to identify the projects: target diseases and the main keywords of the EMPRES programme - control, prevention, early detection, early warning, capacity, surveillance and coordination.

Figure 4: Overview of Locust portfolio by number of projects (1994-2016)

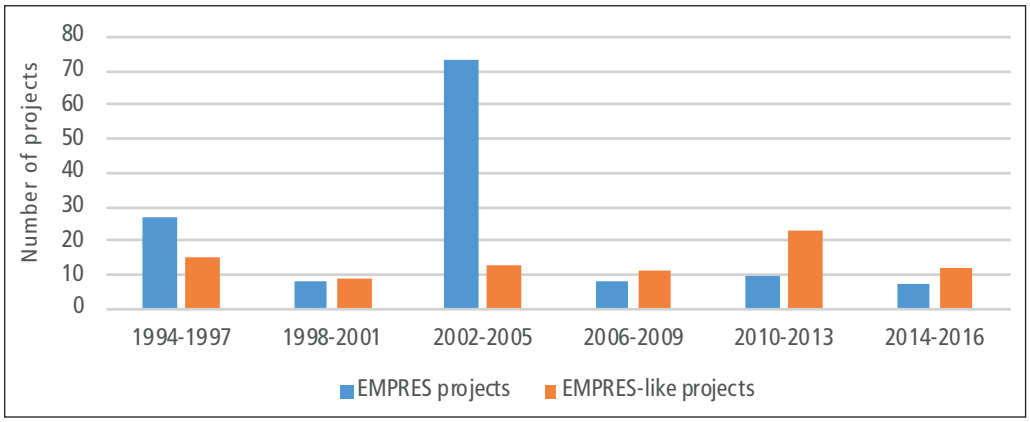


Figure 5: Overview of locust portfolio by projects budget (1994-2016)

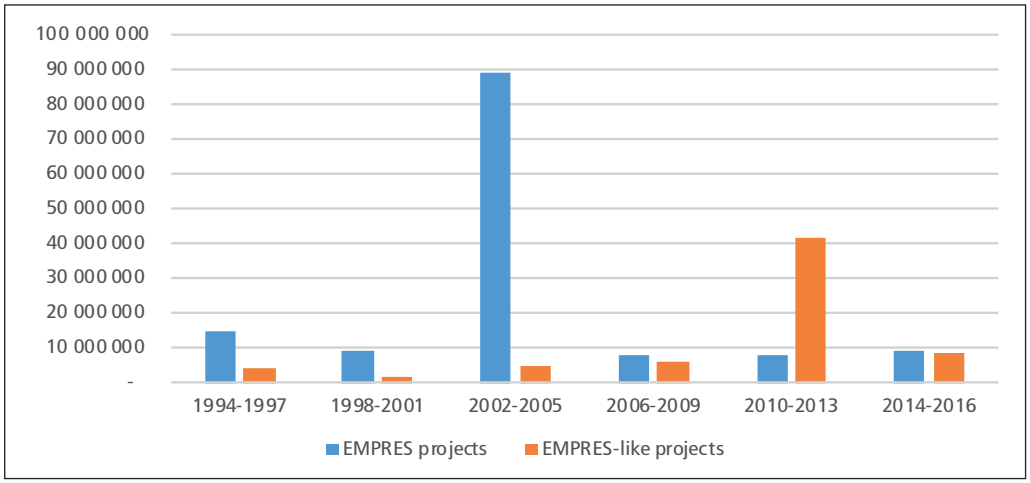
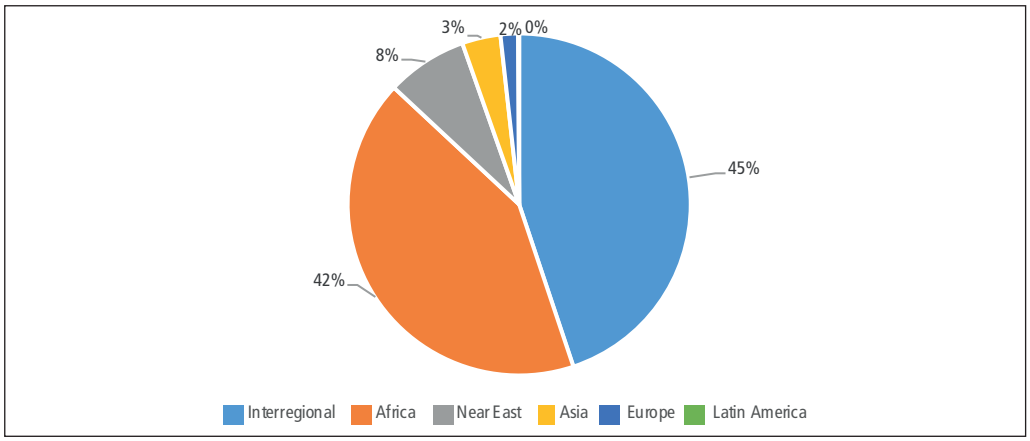


Table 3: Locust portfolio by funding group (1994-2016)

Fund group	Number of projects	% share of actual expenditure
Emergency/rehabilitation (OSRO)	101	61%
Government Cooperation Programme (GCP)	33	21%
Technical Cooperation Programmes (TCP)	70	10%
Unilateral Trust Fund (UTF)	5	7.5%
Trust Fund (generic)	7	0.4%
Total	**216**	**100%**

28 The majority of the resources spent for the locust portfolio for the period between 1994 and 2016 were for interregional projects (45 percent, mainly for Near-East and Africa), followed by Africa (42 percent), Near-East (8 percent), Asia (3 percent), Europe (2 percent) and Latin America (0.1 percent) (Figure 6). The main resource partners for the locust portfolio during this period include the European Union, the United States of America, the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), Netherlands, Madagascar, France, Japan and the African Development Bank.

Figure 6: Locust portfolio's expenditure by region (1994-2016)



29 There are 47 TPD (non-locust) projects with a total budget of approximately USD 33 million representing 14 percent of the total budget for the plant protection component. The evaluation identified ten EMPRES projects and 37 EMPRES-like projects for the period between 1994 and 2016. For the non-locust projects, 27 out of the 47 are TCP projects (Table 4).

Figure 7: Overview of TPP&D (non-locust) portfolio by number of projects (1994-2016)

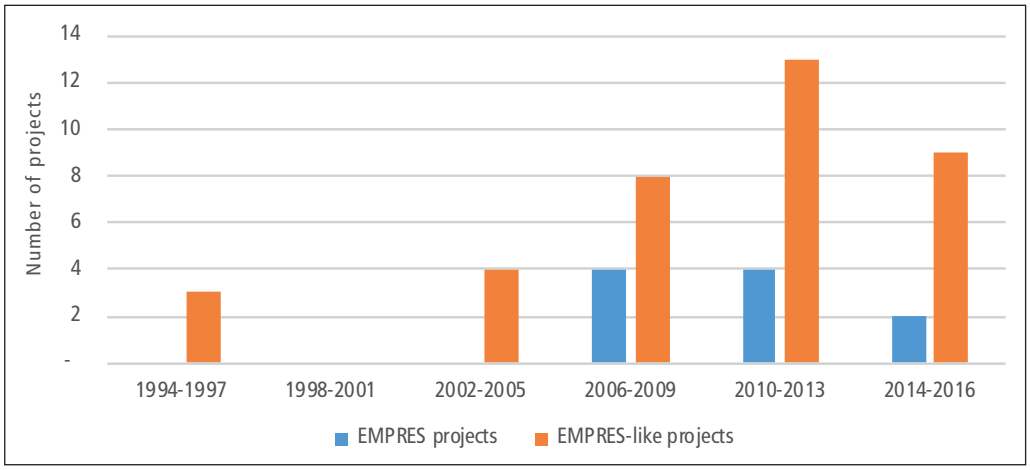


Figure 8: Overview of TPP&D (non-locust) portfolio by projects budget (1994-2016)

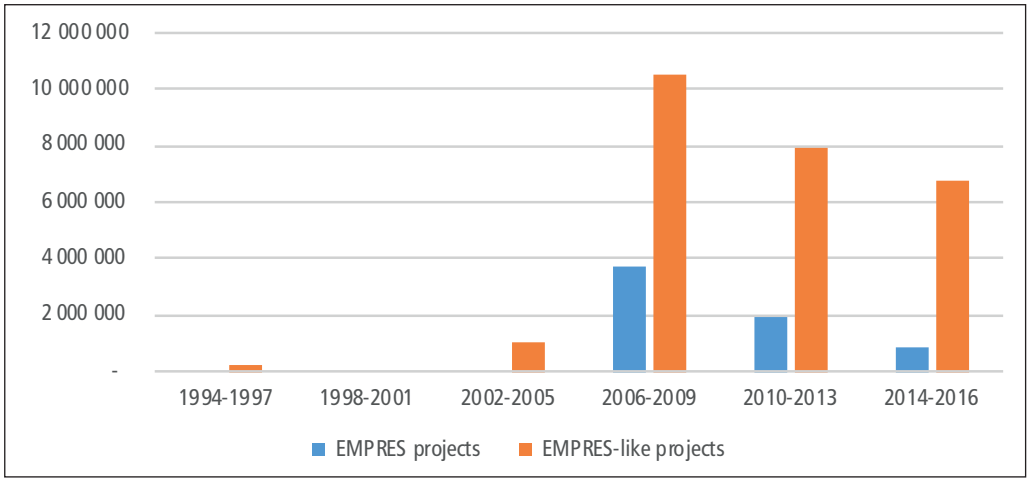
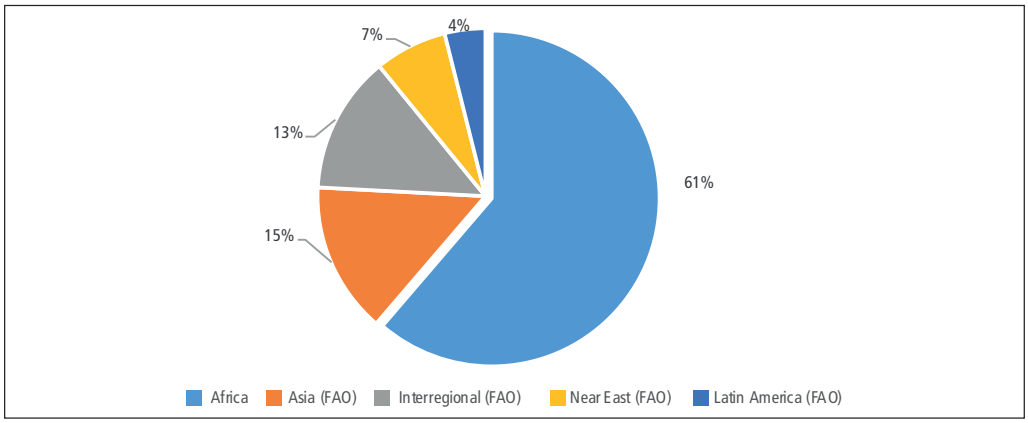


Table 4: TPP&D (non-locust) portfolio by funding group (1994-2016)

Fund group	No. of projects	% share of actual expenditure
Emergency/rehabilitation (OSRO)	14	58%
Technical Cooperation Programmes (TCP)	27	23%
Government Cooperation Programme (GCP)	5	18%
Trust Fund (generic)	1	1%
Total	**47**	**100%**

30 The majority of resources for the TPD portfolio for the period between 1994 and 2016 was spent in Africa (61 percent), followed by Asia (15 percent), interregional projects (13 percent), Near East (7 percent), Latin America (2 percent) and Europe (4 percent) (Figure 9). The main resource partners for the non-locust portfolio for the period between 1994 and 2016 include the European Union, Africa Solidarity Trust Fund, the United States of America and Belgium.

Figure 9: TPP&D (non-locust) portfolio expenditure by region (1994-2016)



31 Based on the identified plant protection projects for the period between 1994 and 2016, locust projects have the highest share (86 percent) of the total spent resources on transboundary plants pests and diseases (Table 5). The locust portfolios are categorised into two: the desert locust constitute 42 percent of the total spent resources and other locusts (such as migratory locust, Morocco locust, red locust among others) has a 44 percent share. The non-locust projects only constitute 14 percent of the total share of spent resources for the plant protection component. The non-locust projects share of spent resources include projects on cassava diseases (5 percent), wheat rust (2 percent), armyworm (1 percent), banana diseases (1 percent), fruit flies (1 percent) and others (1 percent). Others include both generic TPD projects and other diseases, such as tomato borer, maize and potato diseases with an individual share below 1 percent.

Table 5: TPP&D expenditure by major pests and diseases (1994-2016)

Plant protection	Major diseases	No. of projects	% share of actual expenditure
Locust	Desert locust	109	42%
	Other locust	107	44%
Locust total		**216**	**86%**
Non-locust	Cassava diseases	7	5%
	Wheat rust	8	2%
	Armyworm	5	1%
	Banana disease	5	1%
	Fruit fly	8	1%
	Others	14	4%
Non-locust total		**47**	**14%**
Grand total		**263**	**100%**

2.2.3 Food safety

32 EMPRES food safety was established in 2009, following a request from FAO members to develop conceptual approaches and strategies to address international food safety emergency events. Food safety contributes to the efforts to reduce the adverse impact of food safety emergencies on global food security and public health. Leveraging FAO's position as the premier inter-governmental organization on food, EMPRES Food Safety works with the World Health Organization (WHO) and other numerous partners and stakeholders, in particular national authorities involved in food safety. EMPRES Food Safety, being integrated in the Food Safety and Quality Unit and its work, complements and enhances FAO's other work in food safety, as well as other EMPRES work. The food safety work in FAO overall focuses on capacity development and provision of scientific advice, and all these activities support the EMPRES Food Safety work, in particular those related to prevention, which is a foundation for all the food safety work, including the EMPRES Food Safety work.

33 Specific EMPRES Food Safety objectives are:

a. provide early warning of food safety threats. This involves utilizing the FAO/WHO Food Safety Authorities Network – INFOSAN;[25] [26]

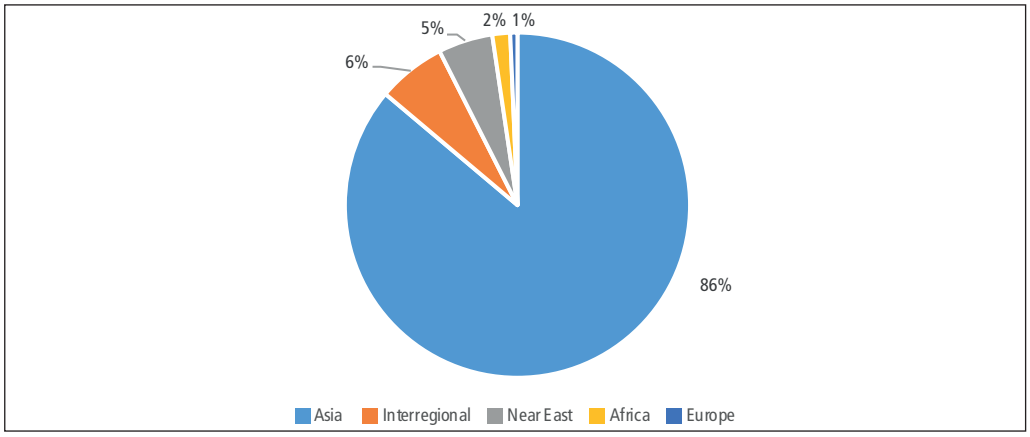
b. provide rapid response to identified food safety emergencies. This also involves utilizing INFOSAN, technical expertise in the Food safety unit as well as other units of FAO, as well as partners,

c. provide foresight on emerging risk and critical issues by integrating information from multiple sources.

34 It is emphasised that all objectives and the work of the EMPRES Food Safety have strong synergies to other food safety activities carried out, including capacity development and provision of scientific advice to Codex Alimentarius.

35 The evaluation identified 11 EMPRES Food Safety projects[27] and seven EMPRES-like projects for the period between 2008 and 2016[28]. Of these, 13 are Government Cooperation Programme (GCP) projects, two are emergency/rehabilitation (Office for Special Relief Operations) projects and the remaining three are TCP projects. In addition, nine out of the 18 projects have individual project budgets below USD 500 000. It is not possible to give an exact figure for the EMPRES Food Safety portfolio, as EMPRES Food Safety work has been integrated in the overall Food Safety unit and its work[29]. The EMPRES projects constituted 89 percent of the total budget for the identified food safety portfolio.

Figure 10: Food safety projects' expenditure by region



25 Appendix 1 includes a brief of the INFOSAN.

26 FCC EMPRES Early Warning Bulleting No. 24, http://www.fao.org/3/a-i7283e.pdf, page 12

27 Based on the brief provided by AGF on the highlight of EMPRES Food Safety activities.

28 The food safety portfolio analysis is based on data downloaded from the Field Programme Management Information System, where AGF is the lead technical unit. The 11 EMPRES food safety projects are based on the project list provided by the AGF, the remaining seven are identified with an EMPRES approach based on the four EMPRES pillars.

29 The quoted figures therefore only give an overview of identified projects.

Table 6: Food safety portfolio- EMPRES and EMPRES-like projects by funding group

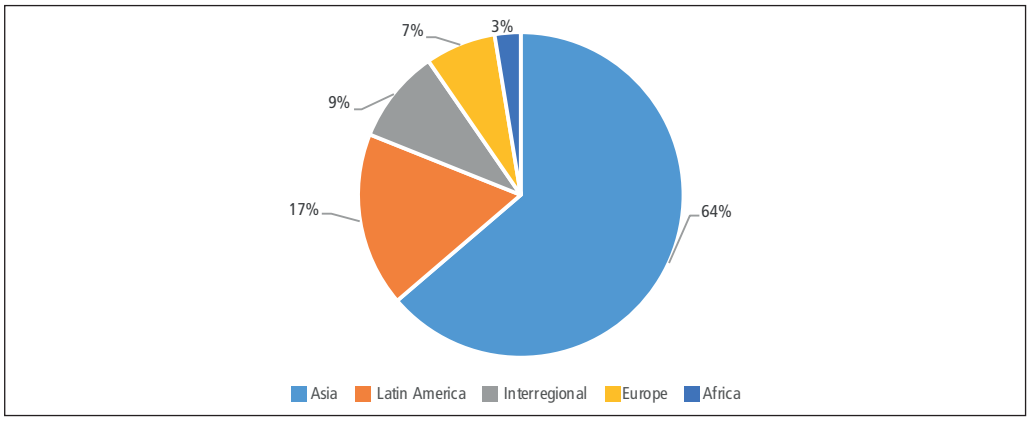
Fund group	No. of projects	% share of actual expenditure
GCP	13	89%
OSRO	2	9%
TCP	3	1%
Total	**18**	**100%**

2.2.4 Aquatic animal health

36 In 2005, the EMPRES-livestock component was changed to EMPRES animal health to reflect more than livestock but also fisheries/aquatic needs. Aquatic animal needs were therefore addressed under the animal health component from 2005 to 2010. Through the FCC, aquatic animal health component was included in the EMPRES programme in 2010; although there is no formal EMPRES aquatic animal health unit.[30]

37 The portfolio review[31] showed significant work on prevention and surveillance for the period from 1992 to 2009 and these have been captured in the overview of the aquatic animal health projects. All 20 identified projects are EMPRES-like projects, funded by FAO through TCPs, with budgets below USD 500 000. This portfolio includes 11 country-dedicated projects, six regional projects, two interregional projects and one subregional project. The total budget for the identified projects is about USD 5.6 million. Figure 11 shows the geographical distribution of the aquatic animal health projects for periods between 1992 and 2016. This split reflects the fact that by far the most aquaculture production is in Asia.

Figure 11: Aquatic animal health portfolio's expenditure by region



2.2.5 Forest health

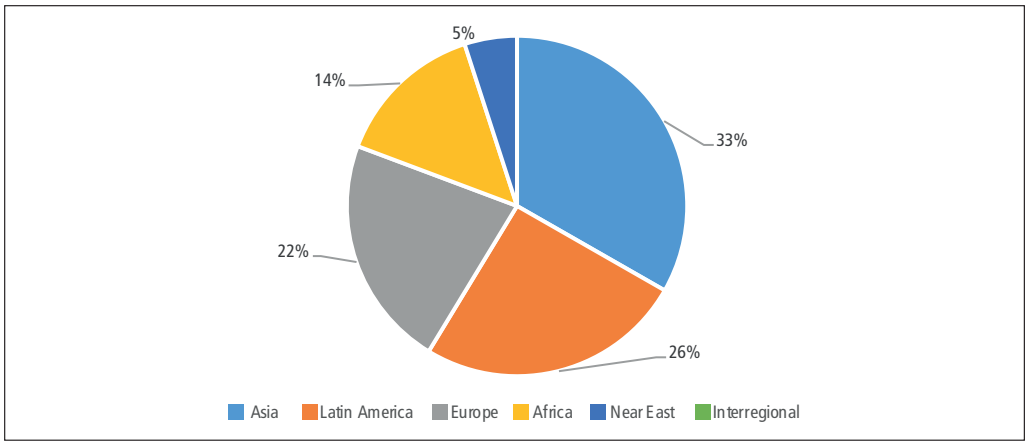
38 Under the FCC, forest health was included in EMPRES programme in 2010. There is no formal EMPRES Forest Health unit, unlike in Plants and Animal Health. The four pillars of EMPRES are used to guide projects implemented through emergency and regular TCP projects on forest health, in collaboration with regional forest invasive species networks. The identified forest health projects[32] for the period from 1994 to 2016 include 30 EMPRES-like projects; 28 of these projects were funded through TCPs and the remaining two are GCP projects funded by the Global Environment Facility (GEF). The total budget for the identified projects is about USD 9.6 million.

30 The work on aquatic animal health carried out by Fisheries and Aquaculture Department (FI) covers a wide range of topics including emergency aquatic disease investigation, introductory courses on risk analysis for aquatic animal movement, self-assessment on aquatic animal health and biosecurity capacity and performance as basis for developing aquatic animal health strategies at national and regional levels.

31 The portfolio analysis is based on the list of projects provided by the focal point for the EMPRES aquatic animal health during the EMPRES Evaluation workshop.

32 The portfolio analysis is based on the list of projects provided by the focal point for the EMPRES forest health.

Figure 12: Forest health portfolio's expenditure by region (1994-2016)



2.3 Structure

2.3.1 EMPRES at FAO headquarters

39 Based on the allocated funding and staffing profile of EMPRES, and because all EMPRES-dedicated staff are located in Rome,[33] the programme's activities are limited to FAO headquarters under the coordination of the FCC-Intelligence and Coordination Unit, which is based in the office of the Assistant Director General – Agriculture. All staff and funding is distributed among the technical divisions: Animal Production and Health Division for the EMPRES-Animal Health component; Plant Production and Protection Division for the EMPRES-PC component; Office of Food Safety for the food safety component; Forestry Policy and Resources Division for the EMPRES-Forest Health component; and Fisheries and Aquaculture Policy and Resources Division for the aquatic animal health component.

40 It is important to note some specificities of the EMPRES set-up within the technical divisions in which they are located, as some of these aspects influence the way that work is carried out:

- Animal health has changed its structure and reporting lines several times in the last few years. One of the characteristics of the components of animal health is that several programmes are co-owned with other organizations: the Global Early Warning System (GLEWS) is a joint platform with WHO and World Organisation for Animal Health (OIE), and OFFLU and CMC-Animal Health are joint platforms with OIE. Originally, EMPRES was in charge of GLEWS and the CMC was under the Chief Veterinary Officer. In 2010, GLEWS was moved under the Chief Veterinary Officer and the CMC was put under EMPRES.[34] ECTAD, which was set up in 2004, is usually described as the operational arm of EMPRES. While in the early stages EMPRES was providing the strategic direction and technical guidance to ECTAD, the latter soon outgrew the former in terms of programme size and capacity. The Emerging Pandemic Threats 2 programme, which is very significant in terms of funding, is under ECTAD. The joint OIE-FAO PPR initiative reports directly to the Director of the Livestock Division, above the Chief Veterinary Officer. The European Union-Foot and Mouth Disease programme is also managed separately. The result is that a significant amount of work on transboundary, high impact animal diseases – at the core of the EMPRES mandate - are managed in parallel by other teams. The implications will be discussed further in the analytical chapters.

33 With the exception of the plant protection component (locust), because the Commission for controlling the Desert Locust in the Western Region and the Commission for the Central Region Secretaries (and their Secretariat) responsible for EMPRES activities are located in decentralized offices (Algiers and Cairo respectively).

34 Refer to Appendix 2 for more information on the evolution of the animal health component.

- Plant protection consist of two teams (locusts and non-locust pests and diseases) under the management of the EMPRES senior officer. Because of the history of this component, more positions are dedicated to the locust work, with one officer working on other pests and diseases. The locust team hosts the Desert Locusts Information System (DLIS) platform. The division also hosts the Executive Secretariat of one of the locust commissions, while the department hosts the International Plant Protection Convention (IPPC).
- The Office for Food Safety originally had two positions earmarked as EMPRES in the 2010-11 Plan of Work and Budget. More recently, in order to respond more effectively to a wide range of food safety threats, it was decided that the positions would not be dedicated specifically to EMPRES but EMPRES would be one of the cross-cutting areas of work for all the staff. The work on EMPRES would be prioritized and assigned to different staff according to need and requirements.

41 Fifty percent of full time officers in fisheries and forestry departments is dedicated to EMPRES approach activities. The officers have specific technical profiles in forest heath and fish diseases, and their work is directly relevant to or linked with EMPRES.

2.3.2 EMPRES at regional and subregional levels

42 At the regional and subregional level, except for desert locust work, there are no staff specifically allotted to EMPRES-work. Depending on capacity and mandate, regional and subregional officers[35] collaborate with EMPRES team at headquarters to promote the implementation of the EMPRES work. This collaboration is not always conducted in a systematic way as EMPRES may not be an explicit part of their job description.

43 For the locust work at the regional and subregional level, FAO supported the establishment of three commissions for the Central, Western and Eastern regions. The Commission for controlling the Desert Locust in the Western Region was officially established in 2002 and has ten member countries. FAO supports the Secretariat, which is based in Algiers. The Commission for the Central Region established in 1967 has 16 member countries. The Executive Secretary is based in Cairo. The Commission for South-West Asia, established in 1964, has four member countries and the Executive Secretariat function is carried out by the locust group at FAO. The Secretaries for the desert locust commissions are in charge of the implementation and coordination of EMPRES activities, in consultation with FAO headquarters and in collaboration with the liaison officers of the participating countries.

2.3.3 EMPRES at country levels

44 In the member countries, FAO representations facilitate the implementation of the activities in support of the EMPRES approach by providing the necessary financial and material resources with guidance from the identified lead technical units at headquarters or regional level. Based on the portfolio analysis of data assessed on Field Programme Management Information System (FPMIS), the evaluation team identified countries (Table 7) with projects covering three or more of the EMPRES components (for projects approved between 2013 and 2016). In addition, the evaluation team identified a multi-country programme in southern Africa covering all five EMPRES components.[36]

35 Regional and subregional officers for the respective sectors - animal health, plant protection and food safety, forest health and fisheries.

36 See Box 6 for project brief.

Table 7: Identified countries with projects covering three or more of the EMPRES components

Region	Country	EMPRES components
Africa	**ASTF multi-country project** in Angola, Botswana, Madagascar, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe.	Integrated project covering food safety, plant protection, animal health, forest health and aquatic animal health
	Senegal	Integrated project covering food safety, animal and aquatic animal health
Near East	West Bank and Gaza Strip	Integrated project covering food safety, plant protection and animal health
Asia	Bangladesh	Separate projects on food safety, plant protection and animal health
	Cambodia	Separate projects on food safety, plant protection and animal health
	Indonesia	Separate projects on food safety, aquatic animal health and animal health
	Lao	Separate projects on food safety, plant protection and animal health
	Myanmar	Separate projects on food safety, plant protection and animal health
	Thailand	Separate projects on food safety, plant protection and animal health
	Viet Nam	Separate projects on food safety, plant protection and animal health

2.3.4 EMPRES-like programmes

45 The following initiatives, major projects and programmes fell within the technical EMPRES domains, but are not managed by EMPRES: FAO's work on antimicrobial resistance; efforts to develop an eradication strategy for peste des petits ruminants; the work of the European Commission for the Control of Foot-and-Mouth Disease; most of the TPD initiatives with a focus on forest health and aquatic animal health. There are also a number of TPD initiatives and many projects that take place at national or regional level that had (or have) minimal inputs from EMPRES at headquarters. The main examples are: the ECTAD units and work in the regional and country offices of FAO; the Emerging Pandemic Threats 1 and 2, managed by ECTAD; the Regional Cassava Mosaic Initiative in Eastern and Central Africa; the African Solidarity Trust Fund Project in Southern Africa on Sanitary and Phytosanitary measures.[37] Each of the examples listed above was used as a source of evidence in the current report and will be referred to in more detail in the analytical chapters.

37 Due to the integrated management of EMPRES within AGFF. AGFF was directly involved in the food safety component of the Africa Solidarity project from the start of project formulation.

2.4 Main institutional partnerships

46 The main partners for the EMPRES components are listed in Table 8 below.

Table 8: Main partners by EMPRES component

Component	Partners
Animal health (livestock)	***Global level:*** Tripartite partnership of FAO, WHO and OIE
	Regional and national level: United States Agency for International Development (USAID), United States Department of Agriculture, Animal and Plant Health Inspection Service (APHIS), Centers for Disease Control and Prevention (CDC), Agricultural Research for Development (CIRAD), Australian Agency for International Development, World Bank, European Union, African Union-Inter-African Bureau for Animal Resources, African Development Bank, Intergovernmental Authority on Development Centre for Pastoral Areas and Livestock Development, c (OIRSA) Pirbright, Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe) Padova, Institute (WRL for FMD, rinderpest), Australian Animal Health Laboratory, Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe), Joint FAO/International Atomic Energy Agency Division, International Livestock Research Institute, Australian Centre for International Agricultural Research, ***Research Institutes/Universities, and National Veterinary departments***
Plant protection (locust)	***Regional and national level:*** 3 DL Commissions (CLCPRO, CRC and SWAC), National Plant Protection Department (PPDs), National Locust Control (NLCs), Desert Locust Control Organization for Eastern Africa (DLCO-EA), International Red Locust Control Organisation for Central and Southern Africa (IRLCO-CSA), Regional Centre of Agro-Hydro-Meteorology (AGRHYMET) ***and Research Institutes/Universities***
Plant protection (TPD)	***Global level***: International Plant Protection Convention (IPPC), Consultative Group for International Agricultural Research (CGIAR), Agricultural Research for Development (CIRAD), Centre for Agriculture and Bioscience International (CABI), International Maize and Wheat Improvement Center (CIMMYT)
	Regional and national level: Alliance for a Green Revolution in Africa (AGRA), International Institute of Tropical Agriculture (IITA), International Center of Insect Physiology and Ecology (ICIPE) and National Plant Protection Department (PPDs), Common Market for Eastern and Southern Africa (COMESA), Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA), ICARDA, Bioversity International
Food safety	***Global level:*** Tripartite partnership of FAO, WHO and OIE, FAO/WHO INFOSAN, FAO/ IAEA Division of Nuclear Techniques in Food and Agriculture, Centers for Disease Control and Prevention (CDC), United Nations Industrial Development Organization (UNIDO), World Trade Organization (WTO)
	Regional and national level: European Food safety Authority, International Life Sciences Institute (ILSI), United States Food and Drug Administration, African Union - IBAR ***and Research Institutes/Universities***
Aquatic animal health	***Global level:*** OIE
	Regional and national level: Network of Aquaculture Centres in Asia-Pacific (NACA), Asia-Pacific Economic Cooperation (APEC), Association of Southeast Asian Nations (ASEAN), OIE Regional Representation for Asia-Pacific, Southeast Asian Fisheries Development Center (SEAFDEC), Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA), Southern African Development Community (SADC) , Secretariat of the Pacific Community (SPC),Centro de Investigación en Alimentación y Desarrollo (CIAD) ***and Research Institutes/Universities*** ***Private Sector:*** DHI Group and Farmer groups/representatives in different countries
Forest health	***Global level:*** International Plant Protection Convention (IPPC)
	Regional and national level: World Agroforestry Centre, Asia-Pacific Forest Invasive Species Network (APFISN), Forest Invasive Species Network for Africa (FISNA), GEF, Asian Development Bank, United States Department of Agriculture (USDA) forest service ***and Research Institutes/Universities***

3. EMPRES relevance and conceptual framework

3.1 Relevance of EMPRES

47 **Finding 1:** The prevention and management of transboundary pests and diseases has been, remains and will continue to be highly relevant to the livelihoods and food security of farmers and traders everywhere. Furthermore, the prevention, detection and control of food safety threats (FSTs) are highly relevant, and increasingly so, not only to food producers and traders, but to the society as a whole, in particular the consumers. There is considerable evidence that through the EMPRES approach FAO has played and must continue to play a key role at multiple levels in addressing TPDs and FSTs. The Organization has not been effective in advocating for the relevance of this area of work, which could include an economic analysis of damages and losses (including potential losses) for the entire sector of TPDs and FSTs. However, some effective advocacy work was conducted for specific subcomponents, such as zoonoses like highly pathogenic avian influenza and locusts.

48 Transboundary pests and diseases are notoriously difficult for individual countries to manage alone and frequently require coordinated regional and occasionally global responses. Independent External Evaluation concluded that FAO's most valued activity was its work on TPD emergencies. This was decided based on the feedback received when Member Countries were asked what they valued about FAO's regional initiatives. There is significant variation between regions in the range of TPDs and FST challenges and priorities. This evaluation is oriented towards assisting FAO to establish the systems, strategies, resourcing and structures needed to meet these variations, as well as the growing demands associated with TPDs and FSTs.

49 Most TPDs of high impact are highly transmissible and require surveillance and early response capacity in-country and between trading partners and neighbours. Outbreaks are particularly complex when a novel TPD is involved, as the impact on production and health has generally yet to be determined and a precautionary approach is required. Numerous studies cite the importance of preventing and controlling TPDs (World Bank 2010, Anderson et al 2004, Foresight 2006, Flood 2010). The Independent External Evaluation (2007) noted that countries expressed appreciation and support for Codex and Food Standards, the International Plant Protection Convention, and the Control and Management of Epidemic Pests and Diseases.

50 There is consensus that the frequency of TPDs and FSTs will increase in coming years. The drivers are complex and numerous and include: changes in land use; cultural practices and movement of people, particularly urbanization and migration due to conflict or natural calamities; shifting trade relationships; competition for resources; and intensification of contact between pathogens, crop and forest species and wildlife and livestock due to urban expansion or environmental encroachment. Climate change and lack of access to goods and services in areas stricken by poverty and hunger are significant compounding factors to these changes (FAO 2015, Toulmin and Godfray 2012, Foresight 2011).

51 **Finding 2:** EMPRES has been FAO's flagship response to TPDs since 1994. The original EMPRES pillars of Early Warning, Early Reaction, Enabling Research and Coordination remain relevant. The pillars, though rephrased and refined over the years, are now encompassed in the four outcome areas of FAO's Strategic Objective 5 and designed to build resilience to Food Chain Crises caused by TPDs and FSTs. The four outcome areas, described in more detail in Chapter 4 and FAO's overall Resilience Agenda (SO5), are aligned with the priorities of the Hyogo Framework for Action 2005-2015 and the subsequent Disaster Risk Reduction platform, the Sendai Framework 2015-2030. The evaluation found that from a strategic and conceptual point of view, SO5 is a good home for EMPRES, as long as it works in close collaboration with SO4 on the policy, legislation and quarantine systems shaping the food safety environment, with SO3 when it comes to addressing at the community level poverty associated diseases as well as with SO2 when contributing to sustainable production and specific risk implications for value chains and addressing the risk factors of TPDs linked to climate change.

52 **Finding 3:** Building resilience to TPDs and FST crises through SP5 and EMPRES is guided by a One Health Strategic Action Plan (FAO 2011 OH).[38] This is relevant to needs and could be further strengthened. One Health originated as a concept where animal, human and wildlife sectors carried out joint activities in relation to zoonotic diseases. Signing of the FAO-WHO-OIE Tripartite One-Health Concept Note in 2010 was a significant step in developing FAO's One Health Strategic Action Plan. Reflecting this background, the evaluation notes that the One Health Strategic Action Plan appears primarily focused on animal health and food safety issues. In recent years One Health has expanded to cover a wider range of disciplines and a multi-disciplinary approach that could be applied to each of the components of EMPRES. For example, FAO recently published an Action Plan on Antimicrobial Resistance 2016-2020 (FAO 2016 AMR) and similar plans could be developed for other EMPRES components.

53 The relevance of One Health at regional and national level appears high. Building on demand from the Regional Commission for Asia and the Pacific, the FAO Regional Office for Asia and the Pacific (RAP) has committed to the use of One Health approaches as a driver for its regional and national work.

54 The evaluation questionnaire survey showed that an overwhelming majority (91 percent) of FAO staff see an added value in FAO taking on board the One Health approach, while 69 percent witnessed the adoption of this approach in their region or country. Partners from the animal health (91.5 percent) and the aquatic animal health (80 percent) sectors were the most familiar and convinced with the One Health approach. In contrast, one-third of the 'plant protection' and 'forest health' sectors were not familiar with it, although the latter possibly refer to a similar concept by differing terminologies such as agro-ecosystem health. The International Centre of Insect Physiology and Ecology (ICIPE), for example, uses the terminology "4H Paradigm" to provide a multi-disciplinary approach to environmental, human, plant and animal health issues.

55 Many international donors have been supporting One Health approaches in their project work. For example, the United States Agency for International Development (USAID) has a project entitled 'One Health Workforce' that involves facilitating One Health training in universities in several countries of Southeast Asia (SEOHUN - Southeast Asia One Health University Network). FAO ECTAD has also been engaged to complement the work of One Health Workforce and to continue to promote One Health approaches in its participating countries.

56 **Finding 4:** Despite being highly relevant in terms of need and approach, the evaluation found that EMPRES' capacity to meet growing demand is precariously low and programmatic fragmentation is undermining FAO's relevance and its recognized comparative advantage in addressing TPDs and FSTs.

57 The application of EMPRES-like approaches are frequently not associated with EMPRES. An overarching strategy to explain the breadth of EMPRES was not available. Despite the fact that EMPRES was created in 1994, nearly one-third of the respondents to the evaluation survey were still not familiar with it. In FAO, especially outside headquarters, the evaluation found relatively low recognition and limited understanding of EMPRES as well as low levels of direct engagement. The majority of country projects and activities analysed for this evaluation had no formal or substantive link to EMPRES, despite being in the same domain of work.

58 The evaluation found recent and historical examples of EMPRES' relevance to TPD and FST control for all components. The evaluation noted that the various components had different levels and typology of risk profiles, which were reflected in the perceptions of stakeholders and partners. The definitions and thresholds of what constitutes a high-impact transboundary event varies and is sector specific. The zoonotic animal diseases – which pose threats of contagion to human populations, can spread relatively quickly and have the potential to significantly impact livelihoods, trade and consumption – lend

38 One Health is an approach that involves using interdisciplinary and multi-sectoral approaches to addressing complex problems that relate to the health of animals (including fish and aquaculture), wildlife, plants, humans and ecosystems.

themselves to having more visibility in the news. They capture the public's attention, as well as that of Governments and policy- and decision-makers.

59 The evaluation notes a direct link between this type of risk profile and the higher levels of funding for avian influenza, Ebola (in FAO) or Zika. Considering the extent of damage that locusts can cause if not contained, they have a similar risk profile to zoonoses in terms of impact on the general public and on institutions. Animal diseases that are not zoonotic have a weaker risk profile; thus, activating partners and national stakeholders around surveillance and prevention requires stronger advocacy. This is especially the case for crops, fish and forest diseases. Fish diseases are getting more attention lately, especially in Asia, because of the increasing importance of aquaculture as an economic sector and the potential negative economic impact of the spread of diseases. For crops and forest pests and diseases, the advocacy around prevention becomes even harder. One of the findings from the Regional Cassava Initiative in East and Central Africa was that it was very hard to convince farmers to adopt certain precautionary measures in terms of clean planting material and changing crops ***before*** any disease outbreak was reported and damages were ascertained – even if the disease was present in neighbouring regions and therefore likely to reach other locations. The prevention argument was ineffective among farmers unless they had suffered some previous losses due to disease.

60 The evaluation team analysed the historical and current relevance of the EMPRES components and the main characteristics and milestones are presented below:

a. Desert locusts

61 The relevance and operational advantages of EMPRES' preventive management approach became obvious during the desert locust upsurge from 2003 to 2005. In the Central Region, an initial outbreak in Sudan (October 2003) was not contained, and swarms that later arrived from the Western Region into the Central Region in November 2004 bred successfully. However, building on the strategic partnership with FAO and national alliances forged under EMPRES, the situation was brought under control by June 2005 with less than 400 000 ha treated. The cost of the early response campaigns was limited to USD 7 million, while an estimate of the cost of a late response could have been as high as USD 38 million per annum (Thomson and Miers, 2002). Steady improvements through investment in early warning systems, human capacity development and in rapid intervention capacities and coordination proved particularly beneficial to prevent an emergency in the Central Region (FAO, 2005a; Pantenius & Munir, 2012).

62 By contrast and in the absence of a strong prevention system, the total cost of the campaign 2003-2005 in Western Region was estimated at over USD 400 million, of which nearly USD 100 million was spent in food aid alone. More than 13 million hectares were sprayed with chemical pesticides in order to bring an end to the upsurge and the livelihoods of eight million people were affected (Brader and Al., 2006). The recurrent costs of implementing the desert locust preventive strategy in Western Region would have been approximately USD 3.3 million per year, so the cost to bring the 2003-2005 plague under control is equivalent to 170 years of prevention (FAO, 2012a; FAO-CA, 2014; Cressman, 2012).

63 More recently, the October 2016 desert locust outbreak in Mauritania was brought under control with only 18 000 ha treated in three months. The intervention demonstrated the effectiveness of improved national coordination and capacity building in the Western Region. In 2013-2014, four outbreaks developed along both sides of the Red Sea in Sudan, Eritrea, Saudi Arabia and Yemen. The affected countries with the support of donors and FAO contained the outbreaks and prevented swarms from invading other countries and the development of an upsurge (FAO-CRC, 2014) (FAO-FCC, 2016).

b. Animal health

64 Building on work that commenced in 1945, FAO's Global Rinderpest Eradication Programme (GREP) was established with EMPRES in 1994. EMPRES housed the GREP global secretariat and programme coordination, building laboratory and epidemiological

capacity and supporting national and regional control activities. GREP worked closely with numerous partners including OIE which was responsible for overseeing standards for the OIE pathway to achievement of free zone status. Global eradication was declared in June 2011 – this was a global eradication of an animal disease. The success of GREP has now led FAO, OIE and other partners through the Global Framework for the Progressive Control of Transboundary Animal Diseases to embark on the FAO/OIE Global Strategy for the Control and Eradication of peste des petits ruminants and to strengthen the existing FAO/OIE Global strategy for the control of foot-and-mouth disease.

65 FAO has been working with member countries, international partners and donors to understand and manage the threats of high impact influenza viruses since the rapid expansion of H5N1 highly pathogenic avian Influenza in 2004. Since this time, high impact zoonotic influenza viruses have continued to evolve in places where there is overlap between large populations of poultry, people and wildfowl, biosecurity is poor and the conditions are optimal for mixing and genetic reassortment of viruses.

66 Since H5N1 highly pathogenic avian influenza was first detected in East Asia, several clades of H5 have spread through Southeast Asian counties and been spread by migratory waterfowl through Eurasia, South Asia, Middle East, Europe and Africa. H5 influenzas have caused human deaths in many countries, but so far there has been limited person to person transmission and concerns about its pandemic potential have not eventuated. FAO ECTAD has assisted countries to prevent, detect and respond to highly pathogenic avian influenza and in most cases has been making good progress in building capacity and disease control and reducing the impacts for humans and poultry. However, the continuing evolution of viruses and the overlap of poultry production systems with wetlands and migratory waterfowl provide a continuing threat.

67 Low pathogenic avian influenza A (H7N9) emerged in the eastern provinces of China in March 2013 and caused disease and deaths in humans. Despite the absence of disease in poultry, there was severe disruption to the poultry industry and its marketing system. It was estimated that there were losses of USD 16.5 billion in China in the first year (CIDRAP, 2014). FAO ECTAD has assisted China with advice on surveillance and disease control from international experts, joint conduct of epidemiological and market chain studies, training and capacity building, improvement of biosecurity in live bird markets and strengthening surveillance and preparedness in neighbouring countries. There have now been four seasonal waves of H7N9 and there have been a total of 1 564 human cases and more than 600 deaths in humans.[39] Moreover, emergence of highly pathogenic avian influenza A (H7N9) was confirmed in early 2017. The virus in poultry is still restricted to China and its territories but continues to show significant pandemic potential.

68 In 2015, a range of related H5Nx viruses (H5N2, H5N3 and H5N6) were first reported in China and since then have spread in the region (the Republic of Korea, Taiwan Province of China, Japan and Mongolia) and then by migratory waterfowl to North America, Central Asia, South Asia, Africa and Europe where they have had very large impacts on commercial poultry and wildlife in these places. Despite their potential for global spread, so far these viruses have not caused disease in humans.

69 Since H5N6 influenza virus was detected in a human in Hunan Province in April 2014, there have been 17 human infections in China with at least six deaths. The virus has caused at least 12 outbreaks widespread detection in poultry. In 2015, H5N6 was also found in Viet Nam and Lao People's Democratic Republic; separately there were also many H5N6 outbreaks or wild bird cases detected in Japan and in the Republic of Korea in 2016 and 2017. H5N6 is of concern because of its zoonotic potential.

70 The zoonotic diseases still command a higher degree of attention and funding. The evaluation team noted that FAO is moving towards a better balance between the need to have dedicated strategies and campaigns for certain diseases, with the work focusing on the strengthening of national systems and institutions and cross-country surveillance and risk communication that will enable member countries to deal and respond with a range of diseases. In this respect, the directives to the animal health technical staff hired at

39 H7N9 Event of Interest, FAO Animal Health Service/EMPRES, 13 February 2017.

country level under the aegis of ECTAD and Emerging Pandemic Threats 2, as determined by the FCC Oversight Committee in 2016, to provide technical support to the animal health government counterparts and FAO Representatives on all diseases, is a highly positive step and further enhances the relevance of FAO's country support work. Likewise, the investment and support to coordination mechanisms such as the Global Framework for the Progressive Control of Transboundary Animal Diseases – jointly with OIE - is potentially key to fill in the coordination needs across diseases, countries, regions and organizations.

c. Plant protection

71 The first major effort by EMPRES Plant Protection, other than desert locust work, was against new races of wheat rust, a transboundary fungal disease that could threaten the food security on a global scale given the dependence of many countries on wheat products. A new race of rust was found in Uganda in 1999 (UG99) which spread quickly within East Africa and then in the mid-2000s to the Middle East and Asia, where wheat is a major crop and significant to the national economies. EMPRES Plant Protection coordinated international surveillance and monitoring efforts as part of the Borlaug Global Rust Initiative – an international coalition working to mitigate the threat of cereal rust diseases.

72 In 2006, FAO initiated a multi-country response to the spread of different strands of cassava mosaic and brown streak diseases in East and Central Africa. Two different activities, initiated by the Tanzania Country Office and the subregional emergency hub in Nairobi were merged into a larger continent-wide programme that was articulated in three consecutive phases and funded by ECHO (first two phases) and Devco. This became known as the Regional Cassava Initiative. The programme had a strong emphasis on coordination, with the involvement of national technical departments and extension services, research centres, NGOs and regional bodies such as Association for Strengthening Agricultural Research in Eastern and Central Africa. The programme focused on the fact that the main vector for the spread of mosaic disease was not primarily the white fly (which only moves 30 km a day so could not be solely responsible for the faster spread) but people moving vegetative material.

73 The most recently EMPRES Plant Protection has responded to an outbreak of cassava mosaic virus in Cambodia that threatens the second most important food crop after rice. At the request of the Cambodian government, FAO's Regional Office in Bangkok established surveillance systems with the ultimate goal of developing intervention and containment tactics and mitigation procedures, using the Technical Cooperation Programmes. The experience of FAO in Africa with this disease suggests the impact on cassava production in Southeast Asia could be seriously affecting the livelihoods of a large segment of cassava farmers and cassava-related industries. Examples of other recent responses are mentioned in paragraph 125.

74 Other emerging and highly relevant areas of work focus on the potential spread and threat of both the Fall Armyworm (***Spodoptera Frugiperda***) and the Red Palm Weevil. The former has been imported from Latin America to Africa. While there is another species of armyworm in Africa that has its predators and is contained, this new species has the potential to spread and create serious damage to the over 80 varieties of crops it can attack. The latter threatens date and coconut production and has spread through the Middle East and North Africa, affecting almost every country in the region. In total it has now been detected in more than 60 countries including France, Greece, Italy, Spain and parts of the Caribbean and Central America. FAO is fulfilling its role of inter-governmental coordination, raising awareness amongst countries, adapting good practices across regions and ecosystems and developing control strategies[40] with a good number of countries who are reaching out to FAO for support, guidance and coordination.[41] [42]

40 In March 2017 a new action plan to stop the spread of the Red Palm Weevil was agreed. Endorsement came after scientists, pest control experts, farmer and government representatives convened by FAO took part in a Scientific Consultation and High-Level Meeting on Red Palm Weevil in Rome.

41 Interview with H.E. Senzeni Zokwana , Agriculture Minister, Republic of South Africa, FAO Website, 6 July 2017 (http://www.fao.org/director-general/newsroom/news/detail/en/c/903680/).

42 Member countries have tasked FAO to take the lead in developing a sustainable management framework response to Fall Armyworm that includes the establishment of a monitoring and early warning system for Africa based on the lessons learned by EMPRES Locust.

The capacity of FAO to respond to these requests from both a technical perspective as well as taking the lead in terms of the facilitation and coordination of the multi-country efforts, will be a test of the Organization's capacity to position itself as one of the lead agencies in this area of work. It will need to combine operational capacity with technical expertise at all levels, with the FAO country, subregional, regional offices and technical and operational divisions working as one to meet the needs of member countries and the requirements of resource partners.

d. Forest health

75 The Cypress Aphid that attacks Mexican Cypress was first found in Kenya in the early 1990s and spread to nine countries within three years. At the time, 45 percent of government forest plantations consisted of Mexican Cypress. A FAO TCP project helped develop a five-year proposal funded by the Canadian International Development Agency and managed by the Kenya Forest Research Institute that successfully developed a biological control for the Cypress Aphid.

76 The Forest Invasive Species Network for Africa was created in 2004 as a result of a meeting convened by FAO with the Forest Research Institute of Malawi in Malawi. The Forest Invasive Species Network for Africa aims to coordinate the collation and dissemination of information relating to forest invasive species in sub-Saharan Africa for sustainable forest management and conservation of biodiversity. For example, eucalypt production suffers from the spread of TPDs such as Blue Gum Calcid, a Eucalyptus Wasp and Eucalypt Bronze Bug introduced to Kenya in 2009 and Red Gum Psyllid introduced in 2014. FAO has been directly involved in Zimbabwe from 2012-2015 through a project designed to find and introduce a biological control agent for Blue Gum Calcid.

77 More recently a TCP facility for the control of gall wasp (*Dryocosmus kuriphilus*) using biological control in Turkey's Chestnut forests (2015-2016) has been implemented. The Forestry Department utilized the Special Fund for Emergency and Rehabilitation Activities (SFERA) for assessing and developing responses for Oak and Buxus Dieback in Zagros and Caspian Forests in Iran in 2013. The work was further developed into a TCP project (TCP/IRA/3502). Similarly SFERA funds were utilized to assess and prepare a programme of work to prevent the damage following introduction of the high risk Pine Processionary Moth in Albania in 2015.

e. Aquatic animal health

78 The relevance of EMPRES' work and support in the fisheries-aquaculture sector has become increasingly important with the growth of the economic significance of aquaculture, especially in Asia. FAO focuses on alerts and provides support to governments, despite being overstretched in terms of capacity in this area of work. Most activities are conducted through TCPs, which, despite their limited size and volume of activities, manage to raise awareness, provide capacity development support and (as analysed in Chapter 4) support policy and legislation development. The evaluation would like to highlight here that there is a mismatch between the rising importance of TPDs and FST in this sector and the capacity for support that can be provided by FAO. Aquaculture is the fastest growing food production sector and has been challenged with a number of significant diseases during the last three decades. Below are some examples of FAO interventions in this area.

79 FAO provided emergency assistance to Botswana on Epizootic Ulcerative Syndrome, which led to a regional TCP project (TCP/RAF/3111) and emergency assistance to combat the Epizootic Ulcerative Syndrome in seven countries along the Chobe-Zambezi River. The regional TCP project trained fisheries officials of participating countries on the Epizootic Ulcerative Syndrome identification, field sampling, basic aquatic animal health and risk analysis. It implemented a targeted surveillance for the Epizootic Ulcerative Syndrome and helped build laboratory capacity. These countries now have a system for collecting field samples which can then be sent to a regional reference laboratory at the University of Zambia. Awareness on biosecurity risks has consequently been raised at all levels.

80 Following the only non-terrestrial animal health CMC response mission, EMPRES has been building on a 2012 TCP project with Viet Nam to control the spread of, at the time, an unknown disease affecting shrimp. The disease was subsequently diagnosed as Acute Hepatopancreatic Necrosis Disease. FAO's Fisheries and Aquaculture Department convened a special technical seminar in Bangkok from 23 to25 June 2016 to consider strategies for combatting Acute Hepatopancreatic Necrosis Disease in shrimp.

81 On 26 May 2017, FAO launched an alert on Tilapia Lake Virus, a highly contagious virus which FAO estimates could have high potential impact on food security, nutrition and trade – even though it poses no direct threats to human health. In 2015, FAO reported that world tilapia production, from both aquaculture and capture, amounted to 6.4 million tonnes, worth an estimated value of USD 9.8 million, and worldwide trade was valued at USD 1.8 billion.[43] FAO is trying to sensitize countries and to set-up surveillance and detection mechanisms as well as indicating what should be done in terms of further research to increase knowledge on this disease. FAO also did work on Koi herpesvirus through a national TCP project for Indonesia which investigated the disease, assisted in building human and laboratory capacity.

f. Food safety

82 Food safety is an essential component of any sustainable and secure food system. FSTs have an impact on human health whilst disrupting trade, supply and livelihoods. The World Health Organization estimates that one in ten people fall ill every year from eating contaminated food and 420 000 die as a result. Such food-borne disease are interlinked with food safety threats that have been found to be most severe in low- and middle-income countries (Havelaar AH, Kirk MD, Torgerson PR, et al..2015). The reasons for this include a complex mix of factors ranging from poor water quality and hygiene to lower levels of education and insufficient food safety legislation or implementation of such legislation.

83 A strategic plan for EMPRES food safety was developed in 2010. Significant recent activities included involvement in the Fukushima incident (2011) where the team contributed emergency advice and developed guidance. Similar support was provided for other emergencies, including Hepatitis A (multi-country, 2010), Salmonellosis in Japan (2011), E. coli contamination of vegetables (multi-country, 2011). Outputs included the development of a framework for national food safety emergency plans (2010) and the use of risk analysis during food safety emergencies (2011) as well as a guide on national food recall systems (2012).

84 EMPRES Food Safety has prioritized and actively implemented activities related to emergency prevention, preparedness and foresight. For example, EMPRES Food Safety has supported the strengthening of INFOSAN (described in Appendix 1), provided capacity building and produced guidance documents in the area of Early warning and food safety risk communication. Documents produced by EMPRES Food Safety and/or INFOSAN have been used in various contexts, such as being referred to in some texts of the Codex Alimentarius Commission (developed by the Codex Committee on Food Import and Export Inspection and Certification Systems).

3.1.2 Developing Theories of Change for EMPRES components

85 **Finding 5:** Considered separately, the EMPRES components present convincing rationales, technical acumen and business models (for the more active components). However, the evaluation found that FAO has not adequately explained the EMPRES approach or FAO's role and work in food chain crises. FAO would be unable to provide a sufficiently clear explanation of why EMPRES is the best approach to TPDs and FSTs across all components.

43 FAO Statistics and Information Branch, Fisheries and Aquaculture Department/FAO 2017, Fishery and Aquaculture Statistics. Global production by production source 1950-2015 (FishstatJ). In: FAO Fisheries and Aquaculture Department (online), Rome. Updated 2017, www.fao.org/fishery/statistics/software/fishstatj/en.

86 Following an extensive document review, the evaluation could not identify a logical model (logical framework, Theory of Change or other supporting narrative) that clearly explained the relevance and importance of food chain crises – providing a clear and effective rationale for why it is important to intervene in this domain, through a multi-sector strategy and approach. The general description and briefs underpinning SO5, as well as the material found in the FCC website, are generic and do not provide a sufficiently well-structured supporting narrative. The evaluation also found that the single components have developed strong justifications and analysis to support FAO's activities in the single components. Likewise, in the course of interviews with FCC leads, senior managers and active staff, strong supportive arguments and narratives were put forward. Hence, the next step would be to turn this implicit knowledge into an explicit argument to support FAO's intervention and describe its comparative advantage. As a first step, the evaluation team decided to develop a draft Theory of Change for the whole of the transboundary pests and diseases and food safety threats domain[44] (Figure 13). This served as a piece to support evaluative analysis – underpinning it with the missing logical model. It was decided to include this in the current report, with the proviso that it should be considered as work in progress, to be further reviewed and modified by the FAO FCC team. Once a generic Theory of Change for the sector (covering all components) is developed, this can be used as a basis to 'hang' or 'nest' FAO's interventions and areas of comparative advantage – as well as a basis to discuss collaborative efforts with other partners and Member Countries. The evaluation team decided not to carry out this second level of EMPRES specific Theory of Change development as: first, there needs to be full agreement on the first generic sectoral level; and second, it would be a useful exercise to develop this with the contributions of all components (including staff in the regions) and SP5 and SP4 teams under the coordination of the FCC-Intelligence and Coordination Unit.

87 The current ***Transboundary Pests and Diseases Theory of Change***, shown in Figure 13 serves as a discussion tool for checking that the EMPRES approach includes the key outcome areas identified in other documents. It is important to note that the visual representation developed is not the EMPRES-Theory of Change, but is an overarching TPDs-Theory of Change. It does not represent one EMPRES component. It is generic, derived from high-level analysis of several transboundary component-specific Theories of Change, including FSTs, drafted by the evaluation team. Further refinement of the Theory of Change would be required in future.

88 The TPDs-Theory of Change shown in Figure 13 maps the preconditions (expressed as outcome statements in each box) that lead successively (from bottom-up) to the higher-level outcome (goal). The arrows represent the cause and effect relationship of outcomes, namely the "if-then" logic. Some loops and indirect precondition relationships may be present but have not been mapped out for the sake of clarity. In addition, the 'cross-cutting pillar' has been inserted on the side in order to reflect statements (e.g. research, innovation and knowledge exchange and involvement of the private sector) which could be associated with several outcomes laid out along the different pathways. These have been put to one side again for the sake of clarity.

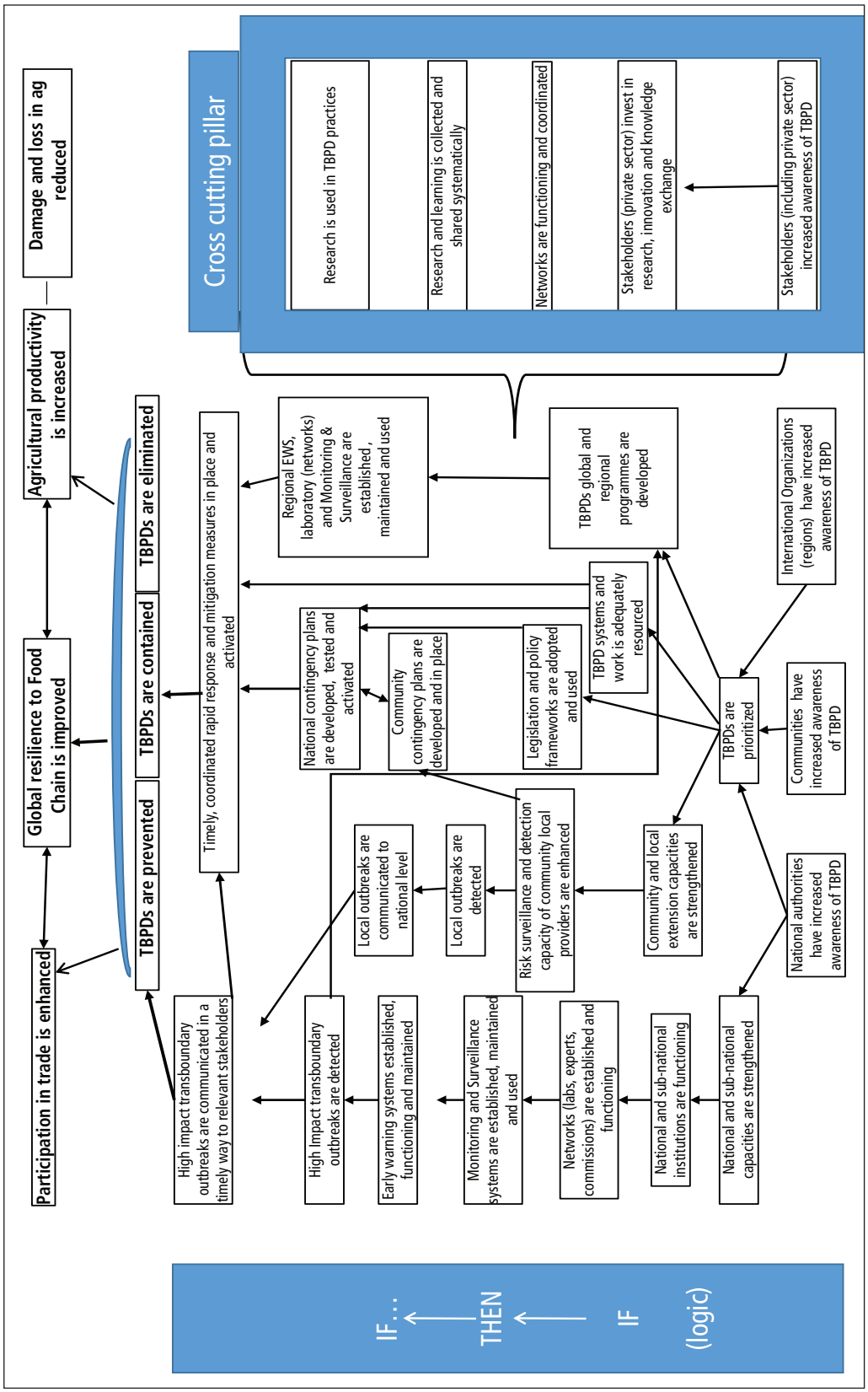
89 The TPDs-Theory of Change presented here does not presume to have explored the deeper questions in between each outcome. The evaluation team would encourage the EMPRES reference group to further refine the Theory of Change and apply critical thinking on assumptions for the Theory of Change. The assumptions made when developing the TPD-Theory of Change include:

- **Relevance of TPDs**. All stakeholders (national authorities at all levels, communities, farmers, livestock keepers, fisher-folk, forest dwellers) and international bodies (including regional entities) agree that the awareness of TPD would increase based on the interest shown by the respective stakeholder and hence would be prioritized.

44 A theory of Change is a logic tool that provides a simplified visual representation of what in reality are dynamic inter-actions that unfold within a complex system. The Theory of Change could be defined as "the description of a sequence of events that is expected to lead to a particular desired outcome". Theory of Change is both a process where evidence and lessons are reviewed. It is a product that continues to evolve in an ongoing process of discussion-based analysis and learning. The Theory of Change is particularly useful at various stages of a project cycle including strategy or programme design, the implementation and the evaluation. It can have dozens of purposes such as linking activities to changes at different levels: community, subnational, national, international; results-management, evaluation and impact assessment; linking multiple projects to a higher-level Theory of Change or mapping collaborative relationships and influencing strategies.

- **Prioritization of TPDs**. Stakeholders agree that prioritization would entail sound support to proper governance mechanisms and adequate financial resources to move the outcome statements from lower- to upper-level. From 'the national authorities have increased awareness of TPD' to 'capacities are strengthened', 'institutions are functioning' to 'networks established and functioning', each of these high-level outcomes statements would require adequate political interest and will as well as proper human resources and funding.

Figure 13: TPDs Theory of Change



4. Effectiveness of EMPRES

4.1 Delivering on results

90 **Finding 6:** The evaluation found that the EMPRES components with the longest duration and highest levels of financial support (desert locusts and animal health) had more concrete and measurable results. The newer and relatively poorly funded and staffed components tended to focus on preparedness and response activities. Integration of EMPRES Food Safety within the Food Safety and Quality Unit allowed this component to build on existing capacity development and prevention work including technical publications and Codex texts relevant to management of food safety emergencies.[45] When the analysis of results encompasses the broader EMPRES approach, more results could be identified for a broad range of activities in animal health, plant protection and food safety, as well as for more specific but limited results in forestry and fisheries.

91 This section will analyse the results that were found for both EMPRES-specific and EMPRES-like approaches.

92 Since its inception in 1994, EMPRES has contributed to a number of major achievements. Appendix 2 shows detailed timelines and key achievements, including the global eradication of rinderpest; the control of highly pathogenic avian influenza; the control and prevention of regular desert locust swarms across three continents; and raising capacity at national level to manage a wide range of TPDs and FSTs, including wheat rust threats, aquatic diseases, food contamination threats, invasive forest pests, cassava and banana diseases. The list of major TPD and FST achievements expanded significantly when the evaluation included initiatives that took an 'EMPRES approach' but were not formerly linked to or managed by EMPRES.

93 In 2013, EMPRES was incorporated into FAO's SO5 to "Increase the resilience of livelihoods to threats and crises". EMPRES focuses on building resilience to food chain crises caused by TPDs and FSTs. Strategic Objective 5, relying on the activities of the Strategic Programme 5 – which was set-up to implement the Strategic Objective – is an essential effort to strengthen the development orientation of FAO's work in the preparation and response to crises. Furthermore, the concept of resilience challenges development interventions to incorporate risk reduction measures and promote preparedness, recovery, resilient livelihoods and peaceful societies, while at the same time generating growth.

94 Following the continuum from the SO5 evaluation, the evaluation team decided to categorize EMPRES results against SO5's four outcome areas, as the SO outcome architecture provides the current overarching structure that FAO uses to report its results to Member Countries. Although the Strategic Framework in its current form was introduced in 2013, the results discussed below also encompass many of the EMPRES results achieved prior to 2013. The first three outcomes are development-oriented, and the fourth outcome that deals with preparedness and response to crises is phrased as supportive of national authorities. The four outcome areas are:

- adopt and implement improved governance (policy) and regulatory frameworks to address risk and food chain crises;
- monitoring and early warning against potential, known and emerging food chain threats;
- prevention strategies and reduce vulnerability at multiple levels;
- emergency preparedness for and response to food chain crises.

95 The following sections provide examples of the results from initiatives aligned to the 'EMPRES Approach' for each SO5 outcome area.

45 Codex Alimentarius (2013) Principles and guidelines for the exchange of information in food safety emergency situations, cac/gl 19-1995 (Amended 2013). Available at http://www.fao.org/fao-who-codexalimentarius/shproxy/fr/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCAC%2BGL%2B19-1995%252FCXG_019e.pdf

4.1.1 Policy and regulatory frameworks

96 **Finding 7:** By including activities and results that utilize an EMPRES approach, the evaluation found nearly all EMPRES components improved policy, regulations and strategies related to the management of TPDs and FSTs. Results were found at all levels and are described from global to regional to national level. The evaluation notes that many of the results identified (in food safety and support to standard setting and regulatory frameworks) fall under the remit of Strategic Objective 4.

97 The scale and depth of the work linked to this outcome area reflected the maturity, funding and staff resources of the EMPRES component, with desert locust and animal health providing significant results.

- Desert locust preparedness and prevention efforts across North Africa and the Middle East are now managed through the Central and Western Region Commissions for Controlling the desert locust (see timeline in Appendix 2). While both commissions have proven effective in the face of potential outbreaks, their internal dynamics are strongly influenced by the political, social and economic circumstances of the member states. The Commission for Controlling the Desert Locust in the Central Region has found agreement across diverse member states and therefore harmonization of procedures and national capacities and roles challenging. The Commission for Controlling the Desert Locust in the Western Region has made significant progress in establishing semi-autonomous locust control units and building the capacity of those units. The Western Region has now institutionalized regular meetings for the ministers in charge of locust control. These identify and approve strategic orientations, such as annual contributions from member states. The Ministerial meetings have shown high levels of political ownership, including the establishment of a new financial instrument, the Regional Fund for Locust Risk Management, which is a regional emergency fund for the preventive control of major outbreaks in participating countries.[46]
- In 2004, the FAO/OIE Global Framework for the Progressive Control of Transboundary Animal Diseases and its regional steering committees were formed as an international coordination mechanism for regional disease prioritization and the oversight of planning and implementation for current and future global disease control programmes including highly pathogenic avian influenza, peste des petits ruminants, foot and mouth diseases and rabies. The Global Framework-TADs brings together OIE's work on standards for veterinary services and trade in livestock products with FAO's capacity to build national and regional capacity.

98 At the regional level, FAO has been working actively with its FAO Regional Commissions, and other regional organizations – such as the Association of Southeast Asian Nations (ASEAN), South Asian Association for Regional Cooperation, Economic Community of West African States, African Union Inter-African Bureau for Animal Resources and African Union-Inter-African Phytosanitary Council and Southern African Development Community (SADC) to develop regional approaches to policy, regulation and strategy related to TPDs and FSTs. For example, FAO ECTAD has supported ASEAN's recent agreement on establishment of an ASEAN Coordinating Centre for Animal Health and Zoonoses. Driven by concerns around food safety threats and disease outbreaks such as middle east respiratory syndrome coronavirus, among others, the 2016 FAO Regional Conference for the Near East has proposed forming an Animal Production and Health Commission for the Near East and North Africa region within the framework of the FAO Charter Article VI.[47] The regional commission would "provide a framework for exchange of information and knowledge, policy debate and coordinated efforts to addressing existing and emerging transboundary issues" (FAO 2016 RNE). FAO Forestry established the Forest Invasive Species Network for Africa in 2004 and through the Asia-Pacific Forestry Commission, an Article VI body, established the Asia-Pacific Forest Invasive Species Network to detect, prevent, monitor, eradicate and/or control forest invasive species in the Asia-Pacific region.

46 Approved by the second meeting of the ministers in charge of the locust control, held in Algiers, Algeria on 25 October 2016, the "Algiers Declaration".

47 Commissions established under Article VI advise on the formulation and implementation of policy and coordinate policy implementation. Articles VI expenses are covered by the FAO regular working budget and their secretariats are provided by FAO.

99 There are numerous examples of strategic and legislative change at national level. For example, the Regional Cassava Initiative in East and Central Africa supported the development of national cassava strategies in a number of countries, with an aim to strengthen the phytosanitary measures to contain the spread of diseases. With help from FAO's Legislation Department in Rome and international consultants, FAO ECTAD Cambodia assisted the Department of Animal Health and Production of the Ministry of Agriculture, Forestry and Fisheries of Cambodia with preparing draft legislation to enable the appropriate legal authority to effectively prevent, control, detect and rapidly respond to animal health emergencies. The legislation was the first animal health and production law in Cambodia and was passed by the National Assembly in December 2015.

100 As a consequence of only joining EMPRES recently and with fewer staff and resources, forest health and aquatic animal health components had few achievements against this outcome and most have been implemented outside of EMPRES *stricto sensu*. By integrating EMPRES Food Safety within its overall portfolio, the Food Safety and Quality Unit has claimed a broader range of results and activities in this area. Examples include:

- Food Safety legislative changes at national level (e.g. West Bank and Gaza Strip[48] and Bangladesh - see Box 2) were supported by broader capacity development efforts for enhancing food safety early warning capabilities. The latter included development of a training handbook. This area of work is anchored in Strategic Objective 4, strengthening the capacities of countries in the areas of food safety controls along the value chain. The evaluation notes that this area of work is an essential piece for the successful implementation of EMPRES, and it is important that SO5 and SO4 maintain an explicit and substantive collaboration. In the technical divisions in headquarters, the collaboration happens by default as the same teams are contributing to the two strategic objectives. Nevertheless, it would be useful to make this collaboration explicit, as part of the strategy development (see Recommendations).

Box 2: Case study - improving food safety and its institutionalization in Bangladesh[49]

Two projects on food safety control systems were implemented in Bangladesh and recently subject to a mid-term evaluation. Although not formally conducted under EMPRES' leadership, these projects relate to EMPRES-like activities, specifically INFOSAN. The strength of the two projects is their complementary design, which addresses governance, prevention and early warning functions. The project covers several sectors (fish, horticulture and poultry) and the entire value chain of each, and reaches from government to community level, including consumers. The project illustrates that complex programme designs are feasible and can be successfully implemented and upscaled, and that funders can be motivated to invest in food safety. It achieved notable levels of innovation, for example, the "ten key controls" for assuring safety in a value chain. The project also illustrates the added value of integrating all EMPRES components in a comprehensive programme. It offers an opportunity for positive lesson learning and for sharing best practices among countries, regions and headquarters.

- Little governance work was identified for EMPRES in relation to forest health. The evaluation noted recent work to assist North Korea (2012-2014) to prepare forest management plans that included innovative forest pest management techniques and previous work in Lebanon (2001-13) for improving pest management practices.
- The 2012 Office of Evaluation (OED) report "Strategic evaluation of FAO's role and work in forestry" noted that FAO had a strong niche in the past in the areas of forest legislation and forest education, but is now largely absent and no other organization has filled the gap. The evaluation's finding was similar to this evaluation in that FAO does not play enough of a proactive role in global and regional policy processes, and is mostly absent at the national policy and legislation level with regard to TPDs.
- In aquatic animal health, FAO has developed guidelines with a regional focus, e.g. the Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals with Network of Aquaculture Centres in Asia-Pacific.

48 The sanitary and phytosanitary project in West Bank and Gaza Strip is identified as an example of FAO's SP4/SP5 joint initiative around the EMPRES approach for animal health, plant health and food safety regulatory framework. The programme focuses on capacity building in support of the Palestinian National Authority – sanitary and phytosanitary (SPS) measures. The project has two main targeted results: the formulation and implementation of a national phytosanitary action plan and a national food safety strategy.

49 The case study based on findings from the Evaluation of the Bangladesh Food Security Cluster Evaluation –draft report, FAO Office of Evaluation (OED) June 2017.

- As part of the project on capacity-building for South African professionals funded by the Department of Agriculture, Forestry and Fisheries, the Rhodes University in collaboration with FAO and OIE organized an Aquatic Animal Health Training Course for Southern African Development Community veterinarians in 2014.
- The Regional Aquatic Biosecurity Strategy for the Southern African Development Community, developed under FAO guidance during a regional workshop held in November 2014 in Durban, South Africa, funded by the Department of Agriculture, Forestry and Fisheries and endorsed by the Southern African Development Community Technical Committee contains a framework for a broad yet comprehensive strategy to build and enhance capacity for the management of regional aquatic biosecurity and aquatic animal health. The framework contains the regional action plans at the short-, medium- and long-term using phased implementation based on regional needs and priorities, and also outlines the programmes and activities that will comprise a regional approach to overall management of aquatic animal health in the Southern African Development Community.[50] [51]
- Following the incursion into Mozambique and Madagascar of the white spot syndrome virus in 2012 (the most serious pathogen of cultured shrimp) FAO, with support from the World Bank, assisted affected countries to improve aquatic biosecurity governance (FAO 2015a).
- EMPRES Plant Protection has convened meetings of officials from the ministries of agriculture in charge of plant protection on a regional basis (for example, East Africa, Asia Pacific, the Caribbean and South America) to address new and emerging pests and diseases of crops and forest trees. Preparatory or subsequent contributions from the ministries mainly consisted of scientists and staff time from their respective research institutes and organizations, as well as logistic support for surveys and surveillance programmes. An impact assessment of the Regional Cassava Initiative programme, funded by Devco, highlighted a number of achievements in terms of policy and institutional changes. In particular, the report highlights the following:
  - Clearer strategies for cassava disease management were developed that can serve as models for others to adopt or adapt. Evidence for this came from Tanzania and Uganda[52] for the following:
    - ◊ a clean seed system is under development;
    - ◊ the scope for commercialization of cassava planting material was investigated;
    - ◊ refinement of certification standards are being worked;
    - ◊ a control mechanism for moving cuttings was introduced.
  - Cassava diseases were found to have been placed on agendas of governments. Examples include:
    - ◊ the Development Strategy and Implementation Plan for cassava in Uganda was put into operation in 2014;
    - ◊ the Democratic Republic of the Congo provided funding for a joint FAO/International Institute of Tropical Agriculture research and development project.

4.1.2 Monitoring and early warning

101 **Finding 8:** The evaluation of SO5 (FAO 2016) noted good progress in the development of information and early warning systems (IEWS), their adoption at country level and their increasing linkages with SP5's new early warning/early action system. The latter is designed to consolidate forecasting information while providing comprehensive risk analyses. Concurrently, the SO5 evaluation highlighted the need for stronger integration of FAO's early warning tools, both internally and with the ones operated by external partners. This evaluation confirmed this need.

102 Early warning has been a pillar of EMPRES since its inception. The warning and prevention work on desert locusts predates EMPRES by at least four decades as it is one of the core

50 Final Evaluation on Capacity Building for South African Professionals in the fields of Agriculture and Food Security – draft November 2016- p. 29.

51 The Southern African Development Community Aquatic Animal Health Strategy (2016-2026) have been approved and also been launched at the Southern African Development Community Council of Ministers on 14 August 2017.

52 The National Crops Resources Research Institute, Namulonge, Uganda was established as a centre of excellence and is serving neighbouring countries.

mandates of the Organization since its inception in the 1950s (see Appendix 2). The Desert Locust Information System, described in Box 3, provides this service, was deemed highly effective by national level stakeholders and there is evidence that it has played a significant role in surveillance and early warning, which were key for timely containment measures. As the current evaluation was taking place, the surveillance systems had detected early stages of swarm formation in Mauritania and northern Mali, spreading to southern Morocco and Western Sahara, and had triggered early response measures. Surveillance is also well developed at regional and national levels. Caucasus and Central Asia has produced monthly bulletins during the locust season since 2010. These are considered as key by the ten Member Countries. Ten ten-day and monthly bulletins were produced by the locust watch unit established in Madagascar from 2013 (and up to 2016) in the framework of the response to the Madagascar locust plague.

Box 3: Desert locust early warning

The Desert Locust Information Service (DLIS) maintains a global perspective and is responsible for monitoring habitat conditions and locust infestations on a 24/7 basis from West Africa to India. Since 1975, DLIS has been keeping countries informed by issuing monthly bulletins that summarize the current situation and forecast developments six weeks in advance.

Each Member Country has a locust information officer within their respective National Desert Locust Units (NLCU) to manage "eLocust" data. eLocust data is transmitted from handheld devices in field locations, via Inmarsat to the NLCU. The locust information officer is responsible for managing and analysing the field data, preparing maps of the locust situation and issuing monthly bulletins. They also export the data from the custom geographic information system to FAO DLIS.

Considerable learning, training and development has been invested in the data management systems and technology. For example, the eLocust handheld devices are now on their third upgrade, as a number of shortcomings became apparent over time (e.g. hardware and software obsolescence, inadequate cables, no battery or GPS, non-expandable memory, a lack of Arabic, mapping, photographic and upgrading capabilities, and limited ability to record all the required data collected during survey and control operations in the field). The new generation of devices will address these shortcomings and will continue to be improved if funds allow.

103 The EMPRES information and early warning system for major animal and zoonotic diseases, the Global Early Warning System, was launched in 2006 and is a joint FAO, OIE and WHO initiative. It includes epidemiological analysis and sharing of information on animal disease outbreaks. It complements OIE's World Animal Health Information System. FAO has also developed a web-based Global Animal Disease Information System (EMPRES-i) to collate, analyse and present national, regional and global disease information. Users informed the evaluation that they appreciate the features of EMPRES-I; however, its application at remote locations is difficult due to dated technology.

104 Similar to the eLocust hand held system mentioned in Box 3, FAO is working to integrate real time field-based disease data collection into EMPRES-i using the Android-based "Event Mobile Application (EMA-i)". This application can be customized to suit country needs, and national Chief Veterinary Officers receive reports by text and/or email. EMA-i is being trialled in Uganda, Tanzania, Mali and Ghana. Development is still at an early stage and requires training, appointment of validators and IT backstopping. Both the GLEWS and EMPRES-i systems require significant funding to integrate new approaches to data collection and to improve their inter-operability.

105 Community involvement has been a positive feature of both the DLIS eLocust and GLEWS IEWS. Results have been encouraging, with field data continuing to be submitted despite conflict and hardship. Field monitors have continued to submit locust data from civil conflict-affected areas of West Africa and Yemen. This constitutes a significant improvement from the situation identified by the Multilateral Evaluation of the 2003-2005 Desert Locust Campaign (carried out in 2006) which covered the Commission for controlling the Desert Locust in the Western Region countries and highlighted the lack of coverage, especially in front line (and conflict-prone) countries in the region. The Community-based Animal Health Outreach programme developed by ECTAD in collaboration with the Egyptian General Organization for Veterinary Services continued to function despite the difficult socio-political situation in the country since 2011-2012. When the overall surveillance

system was slowed down, Community-based Animal Health Outreach has continued to provide a significant number of reports on highly pathogenic avian influenza outbreaks. Similarly in Bangladesh, the Short Messaging System Gateway system developed in 2010 by ECTAD has dramatically changed the time it takes for the government to receive and respond to reports of highly pathogenic avian influenza outbreaks.

106 The information and early warning system for aquatic animal health, forest health, plant TPDs and FSTs are less developed. However there is evidence of capacity development and utilization of technical networks to improve early warning. For example, the Forest Invasive Species Network and the Asia-Pacific Forest Invasive Species Network provide platforms for the early exchange of TPD information. This is complemented by FAO publications such as 'Guidelines on National Forest Monitoring' and the 'Global Guidelines for Invasive Plant Species' that raise awareness about early detection, early warning, contingency planning and response to crises. Other recent developments include a partnership with a German start-up that has developed a mobile application called Plantix which allows farmers and extension workers to identify and monitor crop diseases. The FAO Subregional Office in Tunis has been collaborating with Plantix and the German Organisation for Technical Cooperation (GTZ) to collect data and provide inputs on cereals and oasis crops (palm dates, figs and pomegranates). The key for the way forward is to collect sufficient data and pictures to cover the variations of diseases for a range of crops, adapted to the regional and country specificities.

107 Jointly launched in 2004 by FAO and WHO, the objectives of the International Food Safety Authorities Network (INFOSAN, described in Appendix 1, include sharing of information before and during food safety emergencies to stop the spread of contaminated food from one country to another. INFOSAN could be broadened in scope to provide a closed community where early information on possible outbreaks can be shared confidentially due to trade sensitivity of the information. Combining INFOSAN networking with FAO publications – such as the training handbook on enhancing food safety early warning capabilities at national level[53] – has resulted in a more integrated package of IEWS activities. In aquatic animal health, FAO, OIE and Aquaculture Centres in Asia-Pacific have supported countries to publish the Quarterly Aquatic Animal Disease Report for the Asia-Pacific since 1998. This report is similar to the World Animal Health Information System in that it regularly updates the situation with respect to a list of notifiable diseases.

108 In addition to early warning data systems the Food Safety Unit has reviewed methodological approaches to horizon scanning and found that while foresight initiatives are technically complex, they do appear applicable to all EMPRES pillars and as such have been recognized by the plant and fishery components. The ability to anticipate new threats from TPD and FSTs (using horizon scanning) is a key element in enhancing the way industry and official bodies are able to prevent incidents or react quickly to them if they occur. This approach is already recognized by regional partners such as the European Food Safety Authority.

109 The FCC-Intelligence and Coordination Unit Quarterly Early Warning Bulletin targets mainly Governments. It was developed in 2010 with the participation of all five EMPRES components and the FAO Global Information and Early Warning System. It has evolved into a multidisciplinary integrated approach to forecast threats to the food chain. In 2015 a tool to produce comparable forecasts for the three months ahead was developed.[54] The tool allows standardized and comparable forecasts on threats across regions, subregions and countries. The tool is available to all technical officers at headquarters, regional and subregional offices. A web-based system of this tool has been developed and is under a test phase. Also an interactive map has been developed and goes live with each bulletin. The evaluation found that 45 percent of respondents to the evaluation questionnaire survey stated they use these products frequently or very frequently and that use was confined to early warning rather than resource mobilization or other functions. Key informant

53 The handbook includes chapters on foresight and intelligence, surveillance and early warning. The handbook is part of a comprehensive training package complemented by face-to-face training activities. The manual was pre-tested at two regional training workshops in Eastern Africa (Nairobi, Kenya, 27–31 October 2014) and Europe and Central Asia (Budapest, Hungary, 1–4 June 2015). Translation of the handbook and the related material into other languages, e.g. Spanish, would substantially enhance its impact.

54 Due to the difficulties in forecasting food safety events EMPRES Food Safety does not provide early warning for the months ahead but does raise awareness on specific issues.

interviews confirmed that although the bulletins are useful to raise generic awareness at national and regional level, they have yet to be utilized further for advocacy, resource mobilization or to inform coordination and/or prevention and response measures.

110 In 2017 the FAO Subregional Office for Southern Africa has issued the first quarterly Bulletin on transboundary threats to food and nutrition security in Southern Africa. While it is too early to investigate what the utilization and uptake of this publication will be, the evaluation considers this to be a product with significant potential as it provides brief updates on all TPDs and FSTs by countries (including hectares, numbers of livestock and livelihoods groups affected) as well as summaries of technical meetings and other initiatives (such as specialized trainings) that have taken place or are upcoming. It also provides signposts for more detailed information, response options and technical advisory support (FAO, 2017).

4.1.3 Prevention and vulnerability reduction at multiple levels

111 **Finding 9:** The evaluation found that FAO lacked an overall consistent or explicit approach to presenting, designing or implementing interventions for improving prevention and reducing vulnerability across EMPRES areas. So far, it has made no clear business case for investing in prevention as opposed to response, and has not articulated the cost-benefit of prevention at the global, national and local levels.

112 Some advocacy work has been carried out with partners and there were good examples of specific components, such as the Emerging Pandemic Threats 2 project in animal health, global programmes on wheat rusts and banana Fusarium wilt and funding to the Desert Locusts Commissions for their work on prevention. The structural links between vulnerability and resilience, and the role played by prevention at the local level, were not sufficiently documented, analysed and adopted.

113 FAO's work on prevention and vulnerability reduction against TPDs and FSTs occurs at multiple levels and crosses several of FAO's Strategic Objectives. It involves building resilient production, environmental and social systems, in addition to prevention, preparedness and response to TPDs and FSTs. FAO's ability to provide this work depends on availability of expertise and funding, which varies considerably across countries, regions and topics.

114 Resource mobilization for prevention initiatives is generally considered to be difficult. Donor support is more likely to be provided for direct response to the emergencies. The evaluation paid particular attention to projects that had succeeded in gaining long-term prevention funding and addressed vulnerability.

115 The Regional Cassava Initiative in East and Central Africa programme tested cassava varieties to determine which were more disease tolerant across different agro-ecological zones, and then promoted their adoption among farmers in areas that were affected. This was done through extension services and farmer field schools wherever they were present, and was an alternative to shifting to other crops altogether. The programme was successful in reducing and containing the spread of the disease in affected areas, even though it was less successful in convincing farmers to switch varieties in areas where the disease had not yet spread. Anticipation and prevention could have benefited from a stronger emphasis on awareness, sensitization and risk communication at the community level. Another major result of this programme was the enhanced coordination across a very different set of partners and stakeholders, each contributing according to their mandate (e.g. research, institutional, outbreak detection and communication, working with local communities). The country coverage was extensive. One area that needs to be strengthened is data collection, storage and analysis. The platform selected was not appropriate and the programme was inadequate in terms of ensuring proper information and data management. This was partly mitigated by the successful formation of networks focusing on sharing research and findings on the performance of different cassava varieties.

116 FAO ECTAD provided a recent example of longer term (2015-2019) funding secured under USAID Emerging Pandemic Threats 2 project for integrated regional and national prevention work. ECTAD successfully demonstrated the importance of shifting the emphasis from dealing only with the current emergency response to using the emergency

as an opportunity to also build capacity and systems for prevention and preparedness for future emerging threats. The donor recognized that this approach results in reducing the risks from a range of threats and could be extended more widely. Unfortunately, the overall impact is limited as most FAO Member Countries receive limited direct benefit from ECTAD in Latin America, Eastern Europe and Central Asia. For these countries, FAO's work on prevention and risk reduction for animal diseases is quite variable and involves sporadic donor projects for less developed countries and limited numbers of national or regional TCPs. In several of the cases studied, a CMC-Animal Health mission had been followed by an emergency TCP project that enabled implementation of recommendations, with development of national strategies and plans that strengthened prevention work by government. In this way, some TCPs and other donor projects have been effectively used to build capacity during or after outbreaks.

117 FAO DLIS also reported that most of its prevention initiatives have been developed through emergency funding. Efforts to raise prevention funding from development partners did not succeed. Day-to-day running costs of Eastern and Western Desert Locust Commissions are provided through member contributions. The Western Member Countries have raised their contribution to the commission trust funds. Since January 2011 expected annual contributions total USD 639 000 (some three times more than the previous level). In 2014, the Eastern Central Region Member Countries decided also to double their contribution to the Commission for the Central Region fund. Commissions created in accordance with Article XIV of the FAO Constitution appear to provide a potentially sustainable model for funding prevention work.

118 Much of EMPRES' work to reduce vulnerability has utilized community involvement in surveillance. The Desert Locust Commissions have shown effective engagement with herders and nomads to report Desert Locust swarms. ECTAD has also utilized community animal health workers in several Asian and African counties, and cassava disease programmes have worked with farmer field schools and ***caisses de résilience*** groups whenever they were available.

119 The evaluation noted that One Health approaches were an important element of preventative work. Currently, a declared One Health approach at headquarters is explicitly adopted mainly in animal health and driven by the animal health experience. The One Health approach has also recently been included in the FAO Action Plan on antimicrobial resistance. Nevertheless, the One Health strategy being developed in Asia is a good example of the effort to apply and extend the One Health approach to other areas of work, especially to food safety and fisheries. The evaluation of FAO's Regional and Subregional Offices for Asia and the Pacific (January 2014) noted the effectiveness of ECTAD's One Health approach to rabies control. By integrating Community Health Centres and District Surveillance Officers into Participatory Disease Surveillance and Response teams, the initiative improved the sensitivity of the rabies surveillance system. This surveillance effort was subsequently scaled-up. Specific One Health Strategic Action Plans for other components could support resource mobilization for prevention work.

4.1.4 Emergency preparedness and response

120 **Finding 10:** Since its inception in 1994, EMPRES and FAO more generally have demonstrated effective results related to strengthening preparedness and emergency response in TPDs and FST. Considering the current capacity limitations, however, continued vigilance is needed to ensure that optimal capacity and appropriate systems are maintained within FAO. The evaluation acknowledges that these type of crises have a high and very diverse degree of specificities, requiring significant technical knowledge and a case-by-case response. At the same time, coordination and operational capacity at all levels (from global to community) are also key elements, and FAO needs to support Member Countries to respond to these type of crises.

121 While the locust and animal health components have the experience of past responses, this is not the case for all components. Newer components are developing capacity such as the FAO coordination of Fall Army Worm focusing on prevention and knowledge management. FAO has been selected as lead for the Fall Army Worm response, it has prepared an inclusive management framework and an FAO short- medium- and long-term

Fall Army Worm programme involving all FAO levels, emphasizing prevention and low use of pesticides. EMPRES Food Safety is involved in emergency preparedness activities and is increasing its involvement in emergency response activities through the strengthening of INFOSAN emergency response component.

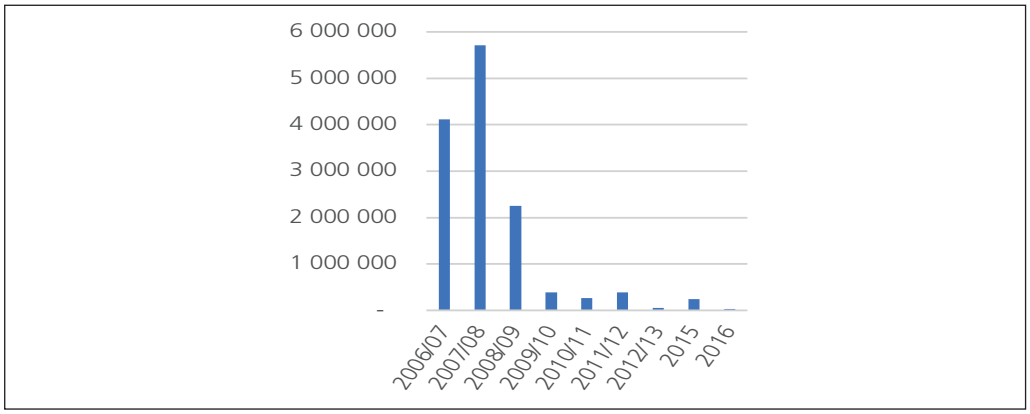
122 FAO and other specialized agencies must maintain a high level of technical expertise in order to respond to crises. Criticism of international organizations for the delay and quality of their response to the serious Ebola virus outbreak in West Africa (Moon et al 2015, Carafano et al 2015) is a reminder that mandated organizations need to ensure the preparedness of their partners and retain robust emergency response capacities. This is elaborated further in section 5.4.

123 Building upon the significant work of the Global Rinderpest Eradication Programme and the global FAO response to highly pathogenic avian influenza (H5N1), the largest rapid response mechanism within EMPRES has been the Crisis Management Centre–Animal Health. The CMC-Animal Health was established in 2006 with technical and financial support from the United States Department of Agriculture (USDA). Other contributors included Canada, France, Germany, Italy, the Netherlands, the United Kingdom, Asian Development Bank and SFERA. CMC is guided by an FAO/OIE Steering Committee. The Head of CMC-Animal Health reports directly to the Chief of the Animal Health Service/Chief Veterinary Officer and the initiative engages animal disease experts and FAO and OIE staff or consultants for missions as necessary.[55] Main functions include planning, preparedness coordination and the conduct of emergency missions. A significant achievement was the updating of the Good Emergency Management Practice manual and conducting a number of trainings on emergency management.

124 There are varying views on the impact of CMC-Animal Health missions and concerns about its focus on short-term rapid response. Questions were raised about sustainability and in some cases its use by countries to fast track access to resources and TCP projects. However, the evaluation found that there was strong country level support for the work of the CMC-Animal Health, particularly among countries without ECTAD Offices. Although there has been no formal evaluation of the impact of the 85 (as of November 2016) CMC missions, there were examples where these provided a report with recommendations to government and were followed by a FAO Emergency TCP or other donor projects. Examples were found where this process ensured that recommendations were included in national plans and strategies (Mongolia, Viet Nam, Democratic People's Republic of Korea and Mali).

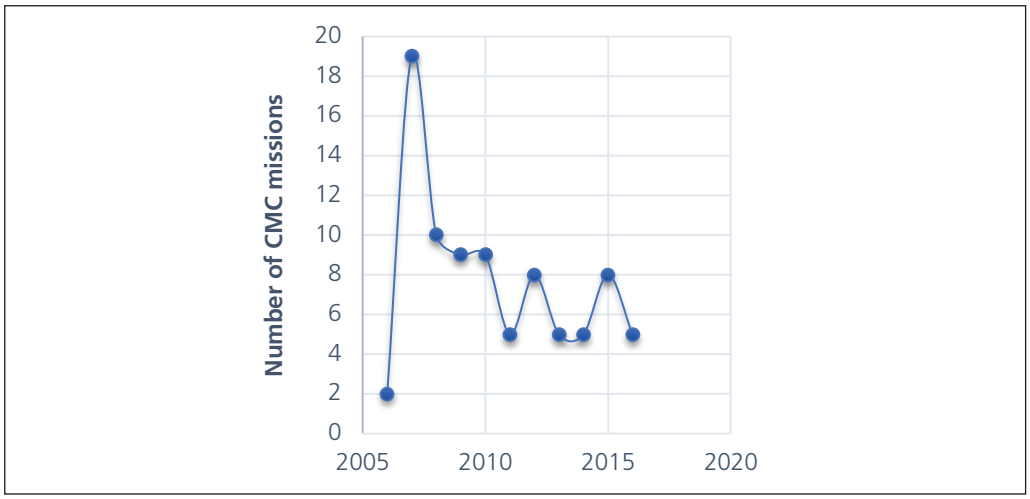
125 The CMC-Animal Health has been strategically important and delivery of services and results were good when resources have been available. Figure 14 shows that after a peak in 2008 there was a prolonged and severe reduction in financial support for the CMC-Animal Health. A reduction in personnel followed and CMC-Animal Health now struggles to perform its functions. Moreover, its future has been debated by the steering committee.

Figure 14: CMC-Animal Health funding trend in USD (funds received from August 2006 to September 2016)



55 WHO is involved in CMC missions for major zoonotic diseases.

Figure 15: CMC-Animal Health missions from October 2006 to November 2016



Source: CMC-AH third Steering Committee Meeting, 2009

126 Desert Locust efforts to build preparedness have focused on national contingency planning. The three Desert Locust Commissions and the programme to improve national and regional locust management in Central Asia (Caucasus and Central Asia) region have completed workshops building upon FAO-developed tools, such as the Desert Locust Contingency Planning Assistant Portal for managing locust-related risks and ***e***LERT (an interactive online database to help regions and countries respond more timely and effectively to needs in a fast evolving crisis situations). Results reflect regional circumstances and national priorities. Since June 2016 the Western Region Commission moved ahead to establish a USD 6 million Regional Desert Locust Emergency Fund. Members of the Western Region have contributed USD 1 million to the fund as well as an annual commitment of USD 100 000. This positive evolution is due to the understanding, at the political level, of the cost-benefit value of prevention (as opposed to response) and learning from the previous outbreak response experiences. Compared to the Western Region, the Central Region Commission appears to have less political support; although some contingency plans are in place, they do not always result in a rapid response. Similarly, the Southwest Asia Commission and the Caucasus and Central Asia regional programme still have work to do to in terms of capacity building and harmonization of institutional arrangements at national level. EMPRES' support to the regional commissions and programmes remains crucial, as they continue to be under-resourced (see paragraph 112).

127 Despite low staff capacity to respond to outbreaks, significant work has been carried out (primarily through TCPs) in plant protection, forest health and aquatic animal health components.

- The Plant Protection component has responded to varied TPD outbreaks from outbreaks of yellow rust epidemic in Ethiopia in 2010, of Coffee Leaf Rust disease in Central America in 2013, of Maize Lethal Necrosis disease in Kenya in 2013-2014, of Cassava Brown Streak disease in Rwanda in 2015, Fusarium Wilt disease in Mozambique in 2015-2016 and Cassava Mosaic disease in Cambodia in 2016-2017. The Impact Assessment of the Regional Cassava Initiative found that the introduction of clean planting material had made a real difference to farmers' livelihoods and food security. Disease management measures – including the removal and destruction of diseased plants to minimize spread, early harvest to avoid tuber damage and avoidance of using cuttings from diseased plants – were understood by many farmers, particularly those engaged in multiplication. Associated agronomic practices for effective multiplication had significant adoption rates, including row planting, plant spacing, isolation to avoid infection, regular disease and insect pest scouting, and removal of diseased plants.
- In 2007, the Fisheries Department response in Botswana to Epizootic Ulcerative Syndrome led to a regional TCP[56] to control the disease. The only CMC mission to respond to an aquatic disease took place in 2011. The mission investigated an unknown

56 (TCP/RAF/3111 Emergency assistance to combat Epizootic Ulcerative Syndrome in the Chobe-Zambezi River participated by seven countries bordering the river system).

disease affecting shrimp production. The mission resulted in an emergency TCP project that diagnosed the disease (Acute Hepatopancreatic Necrosis Disease (AHPND)) and its epidemiology. The TCP project provided significant support for the development of aquatic animal emergency preparedness guidelines and a health management strategy for Viet Nam. A national programme for surveillance for AHPND commenced in 2014. According to ministry officials (thanks to the TCP) they have been able to help shrimp farmers cope with AHPND which had reduced production by 50 percent in 2014. In 2016 FAO convened an international seminar on AHPND attended by close to 100 delegates from 16 countries, along with specialists and producers from the shrimp farming sector. AHPND is now driving the shrimp industry to consider new production models, including closed culture systems.

- Forest health responses using an EMPRES approach have taken place in partnership with relevant ministries and partners, including successful efforts to control regional outbreaks of Cypress Aphid in Africa in the late 1990s, the southern pine beetle in Central America and Asian Longhorned Beetle in northern China in the early 2000s.

128 EMPRES food safety has helped the Japanese Government respond to the Fukushima incident (2011) where the team contributed emergency advice and developed broader guidance.[57] Similar support was provided for other emergencies, including hepatitis A in multiple-countries (2010), salmonellosis in Japan (2011) salmonella contamination in tuna in the United States of America (2012) and milk poisoning in Turkish schools (2012) plus E. coli in multiple-countries (2011). EMPRES Food Safety has also contributed to the development of a number of publications for the early detection and management of food safety outbreaks. The material is generic and therefore applicable to a range of food safety hazards. These documents were informed by the practical experience gained during emergencies. The documents summarize and disseminate lessons learned to support capacity development in the countries. An additional document was published on risk communication. Although the latter is not specifically focused on emergency situations, it provides essential guidance to countries to enhance their preparedness for effective management of outbreak situations.[58 59 60 61]

4.2 Sustainability

129 **Finding 11:** The evaluation found sound examples of capacity development activities at the institutional and individual levels, as well as support to the enabling environment. The main gap in terms of sustainability was identified as the limited partnerships with and capacity development of private sector stakeholders.

130 Capacity development is one of the five United Nations Common Country Programming Principles to ensure the sustainability of results, and it was found to be at the core of EMPRES' efforts to build sustainability. Capacity development is defined as "the process whereby individuals, organizations and society as a whole unleash, strengthen, create, adapt and maintain capacity over time".[62]

131 FAO training materials on capacity development[63] cite an EMPRES partner, the Kenya Plant Health Inspectorate Service, as an example of a good practice (FAO 2015 CD). This example shows that in addition to strengthening technical competencies in plant production, capacity development should engage the overall capacity of the Organization to build ties, gain political legitimacy and be recognized as an important national and regional actor.

57 FAO had established a Nuclear Emergencies Crisis Network of Technical Experts, with members drawn from 11 units across the Organization, representing technical divisions and information specialists. FAO takes part in international exercises simulating nuclear incidents to help improve preparedness. Its involvement is expected to increase over time.

58 FAO/WHO framework for developing national food safety emergency response plans, 2010.

59 FAO/WHO guide for the application of risk analysis principles and procedures during food safety emergencies, 2011

60 FAO/WHO, 2016. Risk communication applied to food safety. Handbook, 99 pp.

61 FAO/WHO, 2017. Providing food safety advice during emergencies. In press.

62 The Challenge of Capacity Development: Working towards good practice, OECD 2006. The same definition was adopted by several other international development agencies.

63 FAO Capacity Development Learning Modules http://www.fao.org/capacity-development/resources/fao-learning-material/learning-modules/en/

132 Strong institutional capacity development was found in all EMPRES components. Notable examples include:

- The desert locust component has effectively supported organizations established under the auspices of Article XIV of the FAO Constitution.[64] The three Desert Locust Commissions each receive membership contributions, and FAO funds their Secretariats and operating costs. In addition, EMPRES provides training and technical support to members. Although the establishment of two of the commissions predate EMPRES, the evaluation noted the essential elements of continuity, security of funding and consistent technical innovation that the Article XIV status provided. Similarly the European Commission for the Control of Foot and Mouth Disease (EUFMD), responsible to the European Commission for the Control of Foot-and-Mouth Disease Executive Board Committee but working in collaboration with the FAO Chief Veterinary Officer and FAO Representatives, was considered to have been extremely successful in its EMPRES approach. The European Commission for the Control of Foot-and-Mouth Disease has an annual budget of approximately USD 3.5 million paid by the European Union, with additional funding raised from training services. The 27th FAO Regional Conference for Europe stressed that the European Commission Foot-and-Mouth Disease was a successful example of coordination, cooperation and transparency.
- ECTAD provides a good model for developing capacity at regional and national levels in selected countries in Southeast Asia and Africa. It established networks and projects for strengthening capacity in veterinary laboratories, epidemiology and a four way linking framework.[65] These have been a good vehicle for the implementation of laboratory and epidemiology mapping tools that aid capacity development. ECTAD coordinated a regional field epidemiology training programme that is still functional after ten years. ECTAD's training programme in China has demonstrated sustainability through a strong national commitment to the programme, competition for places among trainees, training of a cohort of Chinese trainers and the active involvement of its network in national emergency disease responses.
- FAO Fisheries has assisted Member States to develop risk analysis capacity for safe and responsible movement of live aquatic animals, particularly focusing on pathogen risk analysis. In a previously cited capacity development project in South Africa, FAO provided training to state veterinarians from 11 Southern African Development Community countries to build their capacity in a range of EMPRES-related surveillance, regulatory and other skills.
- As mentioned in section 4.1.2, the food safety component has invested in training to enhance food safety early warning capabilities at national level.

133 The evaluation noted that in Member Countries where FAO has a small programme and there are no ongoing, coordinated and funded projects (such as ECTAD), capacity development is less likely to occur. CMC type missions, relevant TCPs and donor projects may assist in the short-term. However, without ongoing commitment and access to capacity and resources, sustainability will be compromised. There is consensus in FAO that, because the Technical Cooperation Programme is by its very nature a short-term modality, it is not best placed to address the long-term nature of capacity development. TCPs may still be effective in capacity development-oriented interventions, but they need to be undertaken in a more integrated way with large programmes.

134 FAO recognizes that the private sector is a key stakeholder in efforts to build resilience to food chain crises, and acknowledges the sustainable benefits that better coordination

64 Commissions established under Article VI and Article XIV of the FAO Constitution differ. Commissions established under Article VI advise on the formulation and implementation of policy and coordinate policy implementation. Articles VI expenses are covered by the FAO regular working budget and their secretariats are provided by FAO. The functions of Article XIV Commissions are to recommend policy, to take measures, to advise Members on policy formulation and implementation, to facilitate exchange of information and to recommend lines of inquiry and research. Conventions and agreements established within the framework of Article XIV of the FAO Constitution are intended to create contractual obligations for those who become parties to them. From this principle, any agreement concluded under Article XIV of the Constitution among Member Nations of the Organization should entail financial or other obligations going beyond those already assumed under the Constitution of the Organization. Article XIV bodies are expected to obtain part or all of their operational costs from the participating member countries.

65 WHO, FAO and OIE developed a 'four-way linking' framework to enhance the cross-sectoral sharing of epidemiological and virological information for responding to zoonotic disease outbreaks.

and collaboration between the public and private sectors can offer.[66] Developed countries commonly use public-private partnerships to tap into private investment and incentives to better ensure biosecurity controls related to TPDs and FSTs. However, the evaluation found little systematic engagement with the private sector though public-private partnerships by EMPRES components. Many CMC reports had highlighted the need to strengthen public-private partnerships but the evaluation identified little evidence in this area. ECTAD has, for example, engaged with value chains and market traders. An initiative in Guangzhou, China demonstrated the potential for public-private partnership to improve biosecurity practices in a large live bird market. The Mid-term Review of "Strengthening controls of food safety threats, plant and animal pests and diseases for agricultural productivity and trade in Southern Africa", funded by the Africa Solidarity Trust Fund, noted plans to work with and train private sector operators through an Agro-marketing Trade Agency. Outside of EMPRES *per se*, FAO has experience working with private veterinary services and community-based animal health workers to improve response capacity and service delivery. For example, the evaluation of FAO's activities in Tajikistan (2004-2009) highlighted the support provided to set-up private veterinary field services directly and through enabling legislation.

4.3 Gender mainstreaming and accountability to affected populations

135 FAO is committed to integrating gender into its resilience building work, including food chain crises. FAO produced the Gender in Emergencies Survey in 2011, the FAO Gender Policy in 2013 and in 2015 a Stocktaking Good Practices in building resilience through addressing gender inequalities.

136 **Finding 12:** Although gender mainstreaming was observed in some EMPRES initiatives, there was no consistent strategy to ensure context analysis, gender or accountability to affected populations monitoring. The rapid onset of emergency response initiatives was less sensitive to gender dimensions, which probably reflects the pressing need to focus on the rapid onset of disease outbreaks or threats during an emergency.

137 The type of disease made a difference to gender engagement. For example, as the primary managers of backyard poultry, women and children face greater health and economic risks from avian influenzas and need to be included in influenza surveillance and management activities. The role of women in the preparation of food was recognized as a key role in relation to the safe handling and preparation of food. Variation was also observed between regions, with greater involvement and support for women being noted in Southeast Asia. Similarly, the importance of certain crops varied by gender (e.g. cassava is especially important for women farmers, especially those growing it on marginal lands). The farmer field school approach was used in some programmes (e.g. the Regional Cassava Initiative) to facilitate the targeting of female farmers and women's associations in the selection of stakeholders. Despite the important role of women – and the different socio-economic and gender roles that influence food safety in all aspects of agricultural production and food preparation – little evidence was found in EMPRES project terminal reports, assessments and evaluations that gender had been properly addressed. Gender was mentioned in project objectives, but little further analysis was carried out or specific activities and/or progress reported. The evaluation questionnaire surveys supported the above analysis, with up to half of the respondents not being able to answer the question related to gender mainstreaming; a narrow majority (52 percent) stated that the project contributed "in some limited way to gender equality".

138 Examples of gender focused analysis were found in CMC missions, particularly during market or value chain and household surveys. However, these initiatives tended to reflect the background of the CMC experts on the mission rather than any required guidance for CMC experts on how to approach gender and accountability to affected populations issues in food chain crises. It is noted that promotion of accountability to affected populations within FAO did not commence until 2011/2012. Some ECTAD activities (e.g. those focusing on avian influenza) had some dedicated gender analysis.

66 FAO Strategy for Partnerships with the Private Sector, 2013. Available at http://www.fao.org/docrep/018/i3444e/i3444e.pdf

139 Limited examples of gender engagement, particularly where community participation was a key component to surveillance and prevention, were found in:

- The Community-based Animal Health Outreach programme (developed by ECTAD in Egypt) demonstrated a strong consideration of gender issues.
- The Regional Cassava Initiative to improve control of cassava mosaic disease and cassava brown streak disease in East and Central Africa worked through farmer field schools and other participatory approaches to raise gender awareness. The project was credited with increasing access to information and training by women, thereby i) enhancing women's access to decision-making at community level; and ii) strengthening their technical skills to ensure a large majority of women in the community were actively involved in production, transformation, transport and commercialization of cassava production.
- ECTAD used participative communication, social networking and medical anthropological approaches to investigate issues around gender and diversity, as well as their role in effective communication on TPD in local communities. An example of the impact of this work was in identifying deficiencies in risk communication by international organizations in locations such as Cambodia.
- In Gambia, the productivity of small ruminants and poultry was limited by disease outbreaks and women's lack of access to extension. An FAO project trained 50 female livestock assistants to deliver extension advice, and upgraded animal disease diagnostic laboratories. The project helped to reduce small livestock mortality from disease by 45 percent.

140 Gender mainstreaming was not addressed in the conceptualization of the EMPRES desert locust, aquatic animal health, forest health or food safety work. However, some desert locust communications products, designed to warn communities about the dangers of pesticide toxicity, did target women.

141 Using the Inter-Agency Standing Committee (United Nations) gender marker tool, EMPRES projects and programme would generally rank 1 (Potential to contribute in some limited way to gender equality); however, in the view of the evaluation team, these can reasonably be expected to reach at least 2a (Potential to contribute significantly to gender equality, where gender and age analysis are included in the project's needs assessment and reflected in one or more of the project's activities and one or more of the project outcomes).

5. Turning EMPRES into action

5.1 FAO/FCC/EMPRES comparative advantages in building resilience and responding to food chain crises

142 **Finding 13:** This evaluation's findings agree with those of the 2007 Independent External Evaluation of FAO: FAO's strength in plant pest and animal disease[67] management is linked to its capacity to provide "a joined-up global response, linking global monitoring, international legislative instruments and fora for discussion, resource mobilization and coordination with disease and pest management". This evaluation would add that FAO's science-based approach to assessing risks and developing solutions provides an additional comparative advantage, particularly when coupled with FAO's field presence and capacity to respond rapidly to emergency situations. Another comparative advantage is FAO's independence and transparency, which allows it to act as an honest broker between development partners and member states in situations of crises.

143 Box 4 illustrates examples of FAO's comparative advantages in managing TPDs and FSTs. Some notable examples of EMPRES' achievements and comparative advantages include:

- *FAO's unique technical knowledge and position to facilitate cooperation, coordination and timely information exchange regionally and globally with respect to desert locust control.* The 2007 Independent External Evaluation stated that "no other organization than FAO could take on this role". In addition EMPRES has enabled further capacity building and establishment of active national units and their rapid access to relevant information to prevent locust swarms.
- *FAO's Global Rinderpest Eradication Programme (GREP) established within EMPRES in 1994 as a coordination platform for rinderpest eradication and verification of freedom from infection.* While the world was officially declared free of rinderpest in 2011 (only the second global disease to be eradicated after smallpox), FAO continues to work with OIE in advocating and offering assistance for the destruction of remaining rinderpest virus stocks. FAO's experiences with rinderpest are now being adapted to the global eradication strategy for peste des petits ruminant.
- *FAO's unique role within the Committee on Fisheries (COFI), a subsidiary body of the FAO Council established in 1965.* This committee is the only global inter-governmental forum where major international fisheries and aquaculture problems and issues are examined and recommendations addressed to governments, regional fishery bodies, NGOs, fish workers, FAO and the international community.

144 A key feature of FAO's comparative advantage regarding EMPRES' work is the technical competency at headquarters, regional and subregional offices and national level, as well as the perceived high quality of its work. The evaluation, like the 2007 Independent External Evaluation, found that "this comparative advantage could, nevertheless, be endangered by the continuing erosion of technical capacity". EMPRES is currently over-reliant upon extra-budgetary funding for its technical capacity. Regular technical staff reported being overwhelmed by project cycle management and quality assurance tasks related to large numbers of small projects. Decentralization and staff reorganization linked to the introduction of the new strategic framework has transferred key technical staff to regional offices where they are confined to regional issues or to new roles within Strategic Programme management. Despite being strengthened in some areas, the capacity at regional and subregional level is below demand. A strategy for maintaining the technical linkages from headquarters to regions and countries and between Strategic Programmes (which is essential to EMPRES' effectiveness and to maintain its comparative advantages) appears to be lacking. Evidence from interviews and the evaluation team's field visits revealed that a significant amount of the networking appeared to be individually orientated and based on personal relationships.

67 Including Food Safety Threats.

Box 4: FAO's comparative advantages in TPDs and FSTs

The following is a list of factors that contribute to FAO's comparative advantages for building resilience to food chain crises (adapted from the FAO 2012 144th Council Session, Outline of the Reviewed Strategic Framework, FAO's Attributes, Core Functions and Comparative Advantages in relation to the Global Challenges).

i. Broad mandate covering all the disciplines of food and agriculture, with a globally unique pool of experts.

ii. Ability to take a global view of problems and take a leadership role in global agenda setting (e.g. GREP, peste des petits ruminants, desert locusts, banana fusarium wilt and wheat rust).

iii. Global networking capacity with convening power to facilitate policy and strategy dialogue, negotiation of agreements and decision-making among Members and between regional economic communities, governments and other stakeholders (e.g. Committee on Fisheries, Committee on Agriculture and Council of Federated Organizations).

iv. Strong expertise in the collection, generation and management of data and statistics (e.g. DLIS, GLEWS, FCC Quarterly Early Warning Bulletins).

v. Expertise and capacity to act as a neutral source for evidence-based analyses and studies, and for producing major thematic publications on matters related to TPD and Food Safety (e.g. foresight analysis on food safety, INFOSAN with WHO, numerous EMPRES Bulletin and Watch publications).

vi. Established mechanisms and partnerships that facilitate negotiations among member countries and other stakeholders for building effective frameworks (e.g. Global Framework-TADs, INFOSAN, Committee on Fisheries, Committee on Agriculture, Council of Federated Organizations, regional conferences, One Health antimicrobial resistance strategy).

vii. Hosting the secretariats of various international treaties, conventions, commissions, committees and partnerships (e.g. the International Plant Protection Convention (IPPC) and Codex Alimentarius (jointly with WHO)).

viii. In-country and regional presence with technical and operational capacities to support emergency preparedness and timely response (e.g. Emerging Pandemic Threats 2 and highly pathogenic avian influenza).

ix. Capacity to address the key drivers of risk through solid partnerships with the Ministries of Agriculture (fisheries, forestry and natural resources) to support the integration of risk reduction and management and long-term resilience building in sectoral policies and programmes (e.g. the Unilateral Trust Fund from the Government of Punjab for foot and mouth disease and peste des petits ruminants TPD support).

x. Extensive expertise and experience in the following key areas:
- developing guidelines, norms and standards for crisis prevention and risk management in food and agriculture and disseminating them through global networks (e.g. EMPRES Bulletins);
- early warning systems, primarily through the Global Information and Early Warning System (GIEWS), GLEWS and DLIS;
- identification and scaling-up the use of good agricultural practices for risk reduction and management (e.g. highly pathogenic avian influenza management);
- generating impartial, accurate needs and impact analyses during and after a crisis (e.g. CMC missions);
- capacity development of partners, with in-depth understanding of policy and institutional needs in relation to TPD and Food Safety.

xi. Readiness and operational ability to provide direct support to affected countries and communities during and after crises in a coordinated and technically sound manner (e.g. the link between the Animal Health Service and Emergency Operations and Rehabilitation Division (TCE) for management of ECTAD).

xii. Comprehensive sectoral databases and food security information systems with continuity in data collection, generation, monitoring and assessment and provision of information (e.g. FAO is a recognized custodian for food insecurity indicators related to Sustainable Development Goal 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture).

xiii. Capacity to champion the role of rural populations, and particularly of women, in food chain crises and to spearhead efforts aimed at improving their conditions and opportunities.

5.2 Resource mobilization

145 **Finding 14***:* FAO's regular programme budget cuts have resulted in the abolition of 235 posts over two biennia (FAO 2015 CL). These cuts have resulted in reduced in-house expertise in many priority areas for EMPRES approaches. There is now a disproportionate reliance on voluntary monetary contributions[68] from member countries to finance core capacity for work on EMPRES. This reliance has coincided with a reduction in the breadth and depth of donor funding. The evaluation therefore considers that EMPRES is in a precarious position with reduced core budget funding and few examples of long-term voluntary contributions.

146 The lack of predictable resources for EMPRES activities means undersized projects that are sometimes difficult to align strategically. As a consequence, most technical personnel are working on extremely short consultancy contracts. As noted in previous evaluations, this creates an unnecessary administrative burden, affects staff morale, staff retention and efficiency and disrupts longer term strategy development[69] (see Evaluation of Strategic Objective 5). Between 2005 and 2015, ECTAD funding came from USAID projects on highly pathogenic avian influenza H5N1, H7N9 and emerging pandemic threats, plus additional funding from a range of international donors. Overall, linkages with the Emergency Operations and Rehabilitation Division (TCE) have contributed to operational success and mobilizing resources for ECTAD and its major disease control activities. FAO ECTAD is also seen as a successful model for implementation of EMPRES approaches at regional and country levels, particularly in Asia. ECTAD fundraising outside of Asia has been more challenging (Box 5). From 2015 to 2019 the major source of ECTAD funding was the USAID Emerging Pandemic Threats 2 project. This has allowed ECTAD to be expanded to a wider range of countries in Africa. While USAID has been an excellent development partner, its restricted mandate limits the scope of FAO ECTAD to selected countries and to zoonotic diseases rather than including those that severely impact livestock production and are detrimental to livestock keepers' livelihoods. EMPRES animal health and ECTAD still need to look for additional funding to cover a wider range of animal health priorities and geographic areas.

Box 5: ECTAD offices and Regional Animal Health Centre in the regions

FAO established eight ECTAD regional/subregional offices in response to the highly pathogenic avian influenza pandemic in 2004: in Bangkok (Regional Office for Asia and the Pacific (RAP)) for Southeast Asia, Kathmandu for East Asia, Beirut for the Middle East, Tunis (Subregional Office for North Africa (SNE)) for North Africa, Bamako for Western Africa, Nairobi for Eastern Africa, Gaborone for Southern Africa, and in a later stage Panama for Meso-America.[70] These offices were supported by ECTAD country teams in countries where the disease was endemic, requiring substantial technical and operational support. Egypt is one of these countries where ECTAD is still active and running with a team leader supported by one operations officer and national technical staff, and funded through USAID's highly pathogenic avian influenza programme. All regional and country ECTAD offices are funded from extra budgetary resources, mostly USAID. Since 2013 all regional and country ECTAD offices have suffered from dwindling funding except for the ECTAD Unit in the Regional Office for Asia and the Pacific (RAP), which is managing a large avian influenza programme with USAID funding. In 2011, the Regional Office in Beirut closed down due to lack of funding, followed in 2012 by the closing of the Regional Office in Gaborone and the Office in Panama. The Government of Lebanon wrote officially to FAO requesting to maintain the activities of ECTAD in Beirut and expressed its willingness to share running costs. All attempts by FAO to keep the office open were unsuccessful and the centre was closed in 2011. At this point, FAO Donor Liaison and Resource Mobilization Team (TCSR) started a fundraising campaign in the Middle East among Gulf countries, without identifying a geographic location for the centre. At the same time, the opportunity was taken to expand the centre to address both animal health and food safety threats in an integrated manner, through the establishment of a Regional Centre for Animal Health and Food Safety. Subsequently, the Animal Health Service focused on animal health and food safety at the Regional Centre for the Near East. The Middle East respiratory syndrome coronavirus threat in 2014 reinforced the need for such a centre in the region.

Source: Minutes-Food Chain Crisis Management Framework Oversight Committee, 16 July 2014

68 Made up on primarily Extra-Budgetary Funding but also other resources such as Trust Funds – Government Cooperative Programmes, Unilateral Trust Funds and human resource secondments.

69 See page 50 of the Evaluation of FAO Strategic Objective 5 "Increase the resilience of livelihoods to threats and crises".

70 The Panama office was established not because of highly pathogenic avian influenza but because of H1N1 in 2009.

147 No other EMPRES component has managed to raise significant long-term non-emergency funding to this scale. Some mid-size non-emergency projects have been funded by Devco (Regional Cassava Initiative) and the African Solidarity Trust Fund (Strengthening controls of food safety threats, plant and animal pests and diseases for agricultural productivity and trade in Southern Africa). It took nearly eight years to collect the required amount to establish the new Western Region Commission. Phase 2 of the Western Region Commission's work was planned to begin in 2011, but could only start in 2014 through the support of France, the French Agency for Development (AFD), the United States of America, Commission for controlling the Desert Locust in the Western Region and FAO for a total amount of USD 4.5 million. A funding gap of USD 3 million remains. The Caucasus and Central Asia programme has had mixed success with fund raising. USD 8.3 million was raised for the period 2011-2016 but was unequally shared between the ten countries and does not cover all programme activities.[71] Fundraising for the current period remains a concern. The desert locust component is currently heavily reliant upon member contributions to the Locust Commissions.

148 Emergency funding is easier to source. For example, FAO headquarters and Madagascar managed and implemented a three-year Emergency Programme in response to the migratory locust plague of 2013-2016 with a total budget of USD 37 million. FAO has become adept at using emergency funding to contribute to improving prevention; for example the Madagascar initiative also strengthened national capacities for the monitoring and analysis of the locust situation. The 2009-2011 TCP for USD 322 000 (TCP/INT/3202) designed to assess the locust situation in ten Caucasus and Central Asia countries resulted in a locust programme and further funding.

149 Most EMPRES funding remains reliant upon TCPs, which are relatively small, of short duration, complex and time-consuming to manage, resulting in substantial overhead. TCPs have proven to be a useful mechanism to leverage additional funding, particularly when they relate to emergency response. However apart from notable exceptions cited in section 4.2 and above, the evaluation found limited evidence of them being used in this way.

150 Emergency Operations and Rehabilitation Division (TCE) has pooled donor resources into trust funds such as the Special Fund for Emergency and Rehabilitation Activities. SFERA funds have been used to support EMPRES' approach to emergency responses in forest health and locust emergency response. Other United Nations agencies relying on voluntary contributions have created similar financial mechanisms to provide predictability and continuity to emergency initiatives. WHO, for example, has created a Contingency Fund for Emergencies (CFE) that fills a critical funding gap from the beginning of an emergency until resources from other financing mechanisms begin to flow. The CFE can be used for emergencies that are not considered humanitarian disasters. The latter are traditionally supported through the United Nations' Central Emergency Response Fund (CERF). CFE supports initiatives similar to the CMC-Animal Health mechanism, enabling WHO to deploy experts and begin operations immediately. The CFE is financed through flexible voluntary contributions and is replenishable, through retroactive agreements with other emergency finance sources. The fund had raised USD 32.65 million from ten donors as of February 2017 and aims to have USD 100 million as a revolving fund.

151 Funding longer term prevention and preparedness activities through voluntary contributions is challenging but achievable. ECTAD has provided a good example. Another is the antimicrobial resistance funding that FAO has raised via its tripartite relationship with OIE and WHO, thus demonstrating the potential of One Health for fundraising a broad range of developmental activities including prevention through awareness raising, education, surveillance, value chains and market analysis, governance,

71 Contributions included a regional project funded by USAID (GCP/INT/134/USA), for USD 1 6 million, to the benefit of the ten Caucasus and Central Asia countries (2011-2017); TCPs (as seed funds) for Kyrgyzstan and Tajikistan, of USD 357 000 each (2012/13 & 2013/14); a regional project approved under the FAO-Turkey Partnership Programme (GCP/SEC/004/TUR – 2014-2019) for USD 600 000, to the benefit of Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan; the FAO Regular Programme funds, i.e. USD 300 000 (2012-2016); and recently, a project approved by Japan/JICA (GCP/INT/238/JPN), of USD 5 million, to the benefit of Afghanistan, Kyrgyzstan and Tajikistan (2015-2018).

regulation and good agricultural practices. Instances of longer term support were also found outside EMPRES. For example, in the food safety sphere, Sweden recently funded the United Nations Industrial Development Organization (UNIDO) to support 22 countries in the Near East and North Africa region to enhance agricultural trade by including efforts to establish a regional Rapid Alert System for Food and Feed, and to conduct risk and country need assessments. Strong linkages with FAO (especially Food Safety and Quality Unit, Codex and International Plant Protection Convention) were identified as part of the project. Building upon its comparative advantages, FAO appears to have the key elements needed for an effective resource mobilization strategy. The evaluation noted that these include a proven, visible, convincing and agile approach, robust evidence of cost-benefit, strong partnerships and donor confidence. However, currently there appears to be no process for regularly assembling all of these elements into a robust resource mobilization strategy for EMPRES. The evaluation notes that the EMPRES Programme was one of the 11 Corporate Areas for Resource Mobilization identified in the Strategic Framework. While these seem to have become dormant, the package would still serve for an outreach campaign.

152 Countries that are critical to the control of emerging infectious diseases are now moving to middle income status, and as a consequence finding it more difficult to attract donor funding. FAO Country Offices in Latin America and Eastern Europe have little access to voluntary contributions. For these countries, other funding mechanisms are needed, such as Unilateral Trust Funds. The evaluation found just some examples of this mechanism in use but no increased frequency of use. For example, the Livestock and Dairy Development Department of the Government of Punjab, which contracted FAO's support for foot and mouth disease and peste des petits ruminants disease control in 2016. This included strengthening diagnostic, surveillance and rapid response capacity, preventive vaccination and building the capacity of veterinary field staff and farmers. The Government of Madagascar contracted FAO for locust control in 2013.[72] Other examples include avian influenza Unilateral Trust Funds in Tajikistan and Tunisia utilizing World Bank funding.

153 South-South-Cooperation programmes are another innovative mechanism to provide assistance to less developed countries in Asia, Africa and the Caribbean. An FAO South-South-Cooperation programme is now under development involving China working with neighbouring countries to control TADs in Southeast Asia. The South-South Cooperation programme has also facilitated transfer of technical knowledge on the Fall Armyworm from Latin America to Africa and may lead to a formal agreement between regions. The African Solidarity Trust Fund has supported a pioneering, multi-sectoral initiative to strengthen control of food safety threats, plant and animal pests and diseases for agricultural productivity, and trade across seven countries in Southern Africa, in collaboration with the Southern African Development Community. The project illustrates how networks can be built both between sectors within a country as well as between countries within a region to foster shared learning (see Box 6).

154 The evaluation recognized that fundraising capacity at national levels is crucial, and one of the most productive times for this to happen is in association with responses to emergencies. However, an impediment to this is the lack of technical expertise in most countries. Therefore, it is important that EMPRES provides well-formulated strategies for each component and remains adaptable to regional needs. Such strategies should be developed in close contact with regional and country representatives, and with effective support for governments in their requests to resource partners for EMPRES-type work.

72 UTF/MAG/082/MAG Emergency Support to the Locust Campaign 2013/14 in response to the locust plague in Madagascar.

Box 6: Case study - the application of an integrated approach to develop regional capacity and networking for transboundary hazard prevention and control

Strengthening controls for food safety threats and plant and animal pests and diseases for agricultural productivity and trade in Southern Africa

The project was funded through the Africa Solidarity Trust Fund with a budget of USD 4 million, covering a period of three years (2014-2017). It was implemented in eight countries, namely Angola, Botswana, Madagascar, Mozambique, Namibia, South Africa, Zambia and Zimbabwe. The project also has a regional component to ensure effective coordination and technical support in partnership with the Southern African Development Community. The project covers all EMPRES components (animal health, plant protection, food safety, aquatic animal health and forest health). It aims to address food safety, animal diseases and plant pests and diseases in the region by implementing effective prevention and control mechanisms in order to improve food and nutrition security and enhance regional trade of food and agro-products. The FAO Subregional Office for Southern Africa manages the project with the participation of FAO country offices, the FAO Regional Office for Africa (RAF), and in collaboration with the relevant technical units at FAO headquarters and other partners including the Southern African Development Community and the Centre for Agriculture and Biosciences International.

The four main outputs of the projects are:

- enhance regional sanitary and phytosanitary coordination and technical capacities, with increased dialogue with other regional economic communities, and set-up the basis for a regional mechanism for detection, early warning/rapid alert, reporting and response, and harmonization of sanitary and phytosanitary measures, based on national surveillance data;
- assessment of these capacities and the elaboration of progressive improvement strategies;
- enhance capacities of national authorities to implement risk-based control measures and international standards;
- enhance capacities of the value chain operators for strategic commodities to comply with regulatory requirements and best practices, and to apply appropriate measures.

As highlighted in the project document, the project benefits from (and replicates some of the institutional and implementation processes) in the areas of:

- **plant health** (e.g. Technical Cooperation Programmes on Coconut Leaf Yellow Disease Project, fruit-fly management in Mozambique, FAO emergency assistance for Community Based Armyworm Forecasting and Strengthening the Phytosanitary Regulatory Framework in Lesotho;
- **forest health** (e.g. capacity building for forest pest management and implementation of phytosanitary standards in Zimbabwe);
- **animal health** (e.g. TCP project on peste des petits ruminants covering three countries: Malawi, Mozambique and Zambia in Southern Africa; ongoing project on strengthening of livestock services in Angola); (OSRO/ANG/101/ANG), the regional programme on highly pathogenic avian influenza H5N1;
- **food safety** (e.g. support to Zambia in assessing its national capacities for food control; support to Codex and the national food control system in Angola, Botswana and Madagascar).

5.3 Institutional arrangements

155 **Finding 15:** The evaluation found that the current institutional arrangements are not optimal to support FAO in the delivery of its EMPRES mandate. While the broad architecture is fine, the following areas need to be improved: the advocacy role of the Oversight Committee, especially in sustaining the minority components of EMPRES; the expansion and empowerment of the Coordination and Intelligence Unit, so it is provided with the resources needed to fully cover its many and demanding tasks (as set out in the Director General's Bulletin); the rationalization of tasks, responsibilities and teamwork to facilitate the flow of EMPRES' work in animal health in headquarters and with the regional offices; and the strengthening of the crop protection, fisheries and forestry components.

156 The Director General's Bulletin (2010/24 dated 15/07/2010) entitled "Food Chain Crises Management Framework (FCC)" describes FAO headquarters' institutional arrangements in terms of functions, structure and coordination mechanisms for FCC/EMPRES. The

2010 Bulletin gives sufficient detail to allow the evaluation team to use the structure as a benchmark against which to review the current institutional arrangements. The same bulletin also provides the Terms of Reference for the FCC Policy Advisory Committee and the FCC Technical Oversight Committee.

157 The evaluation found that the Technical Oversight Committee had played a useful support and coordination role across the EMPRES components. The committee provided a high-level venue for technical discussion of key issues, such as the response by FAO and the Food Safety Unit to contaminated food linked to the Fukushima Power Station, the Plant Production and Protection Division (AGP) response to locust upsurges in Madagascar and Sudan, or the Animal Health Service's response to Middle East respiratory syndrome, Corona Virus and Ebola outbreaks. The Oversight Committee appeared to reinforce the partnership between the Technical Cooperation Department (TC) and Agriculture and Consumer Protection Department (AG) and advocated for emergency TCPs where appropriate. Furthermore, the Committee has brought in FAO Representatives and Regional Office representation at the Assistant Director General level when required, and made recommendations for Policy Advisory Committee meetings, though the latter have rarely been convened. The Oversight Committee demonstrated some limited advocacy role, for example in supporting preparations for a FAO Council side event on FAO's role in the Global Health Security Agenda in 2014, which helped to influence USAID's support for Emerging Pandemic Threats 2. While the oversight meetings also covered other issues (such as Middle East respiratory syndrome, ECTAD funding and the Fukushima disaster), the more mature components of EMPRES (animal health and locusts) dominated the agenda. Support to the development and guidance of the other components was very limited.

158 The primary activity of the FCC Intelligence and Coordination Unit is information sharing. FCC-Intelligence and Coordination Unit produces regular information sheets on EMPRES' work. The FCC Quarterly Early Warning Bulletin forecasts information on TPD threats globally. The evaluation noted the significant and important secretariat function the FCC-Intelligence and Coordination Unit played for the FCC-OC and FCC-PAC but found little evidence of FCC-Intelligence and Coordination Unit currently carrying out long-term risk analysis, advocacy or resource mobilization functions. A majority of the internal respondents in the evaluation's questionnaire survey advised that the Intelligence and Coordination Unit should be strengthened in the following areas: coordination between EMPRES teams (55 percent), risk analysis (51 percent), advocacy beyond FAO (57.5 percent) and resource mobilization (62.5 percent). The FCC-Intelligence and Coordination Unit is located in the Office of Plant Production and Protection Division (ADG) Agriculture, with the advantage of being at the apex of the technical department containing four (out of six) of the EMPRES components and contributing Divisions (except for fisheries and forestry). In 2010 the Agriculture and Consumer Protection Department (AG) established two posts each in the EMPRES components in the Agriculture and Consumer Protection Department (AG).[73]

159 Institutional arrangements within the EMPRES components varied. The structure of EMPRES-Animal Health has been a topic of consideration for some time and was the subject of a strategic planning review in 2013. The subsequent Draft Strategic Plan, which included a suggestion to include the full scope of EMPRES activities under EMPRES-Animal Health, was not implemented. While there may be good reasons for some of the decisions to separate the management of units implementing EMPRES approaches in the past, it has resulted in uncertainty and concerns among staff. The EMPRES-Animal Health section now has a small number of staff and limited responsibility for Global Framework-TADs, CMC-Animal Health (since 2016), and support for other EMPRES animal health activities at country level. Most EMPRES-Animal Health staff are now paid by projects such as Emerging Pandemic Threats 2 and have multiple commitments and reporting lines.

160 EMPRES food safety is structured so that EMPRES tasks are shared across a team of technical experts and the staff supporting INFOSAN also coordinate specific EMPRES issues with the INFOSAN Secretariat. The fish, forest health and plant protection components allocate roles to particular technical officers and are severely understaffed at all levels.

73 In total six posts in plant protection, animal health and food safety.

161 Despite a good record of achievement in the overall scope of activities covering the EMPRES approaches, institutional linkages are weak. The evaluation found that many staff and stakeholders at country and regional levels have a low level of awareness and poor understanding of the role of EMPRES. Within FAO, EMPRES was seen as a headquarters activity with few links to regional or national level. For example, the Commission for Controlling the Desert Locust in the Central Region recently planned to drop reference to EMPRES from its website because it could not clearly see its value addition. Confusion about what constituted EMPRES was reported; for example, for most of its existence the CMC-Animal Health was separate to EMPRES-Animal Health but has recently been made part of it. Similarly, ECTAD while officially an operational arm of EMPRES, has been managed separately from EMPRES-Animal Health.

162 Attempts to link regional technical staff to EMPRES components at headquarters have been challenging. In most cases regional officers focus on regional issues and support country offices particularly where there is no technical presence at national level. The exception to this has been ECTAD. Although the current Emerging Pandemic Threats 2 project is managed from headquarters, ECTAD officers at national level are expected to advise the FAO Representatives on matters related to animal health; in-country and regional ECTAD officers collaborate with their regional counterparts such as OIE. The effective delivery of FAO EMPRES approaches requires a fully integrated approach involving headquarters, regions subregions and countries. For most components, there is a clear need for clarification of responsibilities, expectations, strategic priorities, lines of command, as well as for strengthened regional capacity to assist delivery of an EMPRES approach at country level.

163 Most EMPRES staff interviewed were comfortable with EMPRES' placement within SP5 from a strategic and programmatic perspective, as long as they retained technical authority over EMPRES activities and were free to work across SOs 2, 3 and 4. The reasons for keeping EMPRES under SO5 include:

- Recognition of SP5's positive contribution (both within FAO and by external partners and stakeholders) to the new tools and ways of working, which have recently been credited with changing the conversation between headquarters and country offices towards a more demand-oriented one, and with strengthening the systemic link between the FAO technical units in resilience[74] (Evaluation of Strategic Objective 5 – 2016).
- The SP5 team and Emergency Operations and Rehabilitation Division (TCE) has long-standing experience in mobilizing significant human and financial resources behind SP5's implementation, and country support has been positive for the EMPRES components.
- The four SO5 outcomes complement EMPRES' pillars and push them towards more preventative and developmental results. Food Chain Crises are one the three main shocks adopted across the SP5 results chain.
- The collaboration between the Emergency Operations and Rehabilitation Division (TCE) and the Animal Health Service for the implementation of ECTAD is seen as highly effective and scalable to other components. The combination of operational and technical capacity has also worked well for locusts and in crop protection. This capacity is currently being tested in the ongoing response to Fall Armyworm in Africa.
- SP5's systematic collection of data and information on damage and losses from disasters within the agriculture sector, and the linkages between this data and the establishment of an early warning/early action analysis and information system, appear very relevant to EMPRES IEWS (Box 7). Furthermore, such a collaboration could also assist with resource mobilization.

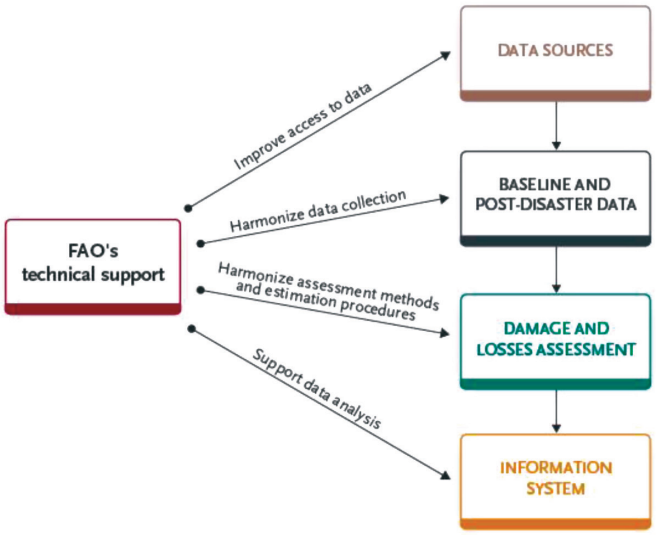
74 See page paragraph 214 on page 62 of the evaluation of FAO Strategic Objective 5.

Box 7: Sector-specific damage and loss information systems

THE WAY AHEAD

FAO is working with Member Nations, experts and relevant stakeholders to establish an information system on damage and losses in crops, livestock, fisheries, aquaculture and forestry. This includes strengthening capacities of countries to systematically collect, archive and report damage and losses in agricultural sectors.

Systematic information on disaster impact would provide policy-makers and stakeholders the standardized data needed for evidence-based decision-making and targeted investments in disaster risk reduction and adaptation for the sector, ultimately contributing to achieving zero hunger and the 2030 Sustainable Development Agenda.



5.4 Capacity management

164 **Finding 16:** The capacity to deliver the EMPRES components continues to be reduced and is insufficient to meet demand. This is coupled with suboptimal use of existing capacity.

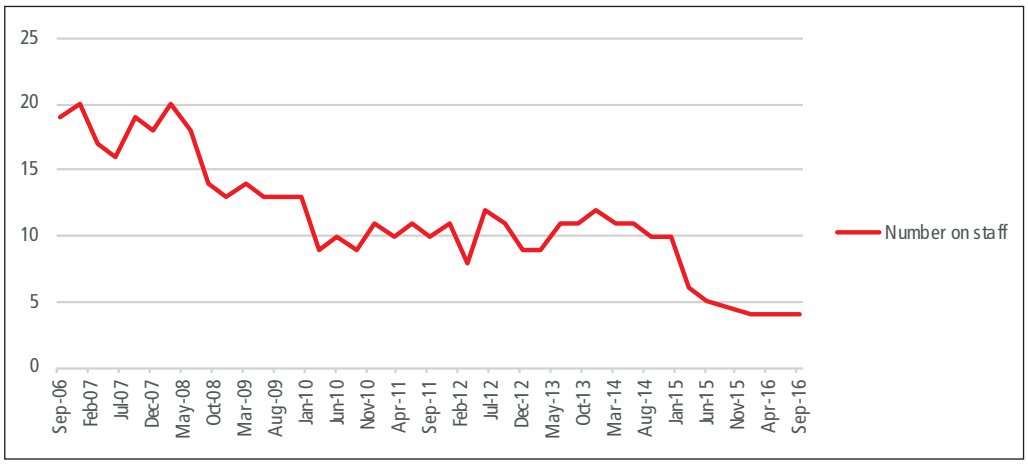
165 Section 5.1 notes how FAO's comparative advantage in delivering an EMPRES approach is intricately linked to its technical capacity. The Independent External Evaluation identified continued erosion of technical capacity as an issue in 2007. This evaluation reinforces that finding, noting that the issue as a whole has not been resolved.

166 Capacity at headquarters level continues to be reduced and is insufficient to meet demand. Forest health and aquatic animal health components have one technical officer addressing TPD. The EMPRES Plant Protection component, managed by the Locusts and Transboundary Plant Pests and Diseases team, has one officer with training in plant protection and the team position of locust expert (P4) is vacant and frozen since October 2011 and no entomologist position exists despite growing demand, as recently highlighted by recent Fall Armyworm work in Africa. EMPRES food safety positions, while recently filled and covered by other Food Safety team members, remained vacant for an extended period. After the retirement of the last CMC-Animal Health manager in April 2015, there is no official head of the CMC-Animal Health, and the position of CMC-Animal Health team leader remains vacant and has recently been downgraded from P5 to P4 level. Significant numbers of EMPRES-Animal Health staff are now working for and paid by Emerging Pandemic Threats 2 because of lack of resources within EMPRES-Animal Health. The peste des petits ruminants secretariat is being funded from the regular programme budget for the FAO-Animal Health Service due to lack of peste des petits ruminants-specific funding.

167 Capacity at regional level has in some cases been strengthened through mobility and the increase in project staff but with significant gaps in some areas such as food safety and plant protection. Decentralization of staff from headquarters has increased staff numbers and, in some cases, improved programme coherence. However, most capacity is within the animal health component for selected countries, due to the continued success of ECTAD in raising extra-budgetary funding. Significant gaps remain at regional level both in terms of animal health regional officers and within the other components. Furthermore, regional core technical staff in all components appeared to be handicapped in their ability to support EMPRES approaches, due to inefficient project cycle management and project quality assurance responsibilities, as well as no specific mandate in their job description. Concerns were expressed that even if time were available to support national EMPRES initiatives, staff are limited by travel restrictions.

168 As noted, much of FAO's EMPRES expertise is now funded from voluntary contributions and through short-term contracts. Reliance upon extra-budgetary funding from projects has led to peaks or troughs, depending on EMPRES' capacity to maintain extra-budgetary funding. For example, staffing with the CMC-Animal Health reflects the trend of the resources mobilized during the same period (see Figure 16). While the staffing was very high during the first years, it failed to stabilize during the recent years and is now considered to be below the critical mass that would allow a smooth running of the CMC.

Figure 16: CMC-AH staffing by month (September 2006-September 2016)



Source: CMC-Animal Health database, 2016

169 Optimizing existing capacity is another route to strengthening capacity. The evaluation noted insufficient investment in staff development or innovative use of staff resources. For example, EMPRES team members can hardly justify attendance of technical conferences, although this is perceived as critical for their technical knowledge as well as for networking. There appears to be insufficient planning for continuity and for capturing institutional memory. For example, the Senior Locust Forecasting Officer in the DLIS at headquarters is the only person who can operate the forecasting system. It was estimated that two to four years of practice are required before a successor could master the analysis of biological, ecological and meteorological data required to develop reliable forecasts. This concern about continuity was raised by the 40th session of FAO Desert Locust Control Committee held in 2012 but remains unresolved. Further limitations are determined by restrictions such as the limit on the maximum number of days for travel and number of staff that can attend the same event. This limitation is particularly significant in the context of events organized for coordination or technical reviews during emergency response and disease or pests outbreaks.

170 Some positive practices were observed. Cognizant that voluntary contributions will not last forever, ECTAD is actively strengthening local capacity through a transition to national or regional consultants for its technical and leadership roles, and this approach has been accompanied by skills development. Similarly, Animal Health has convened webinars on risk assessment for staff and partners, building on the innovative training programme housed within the European Union-Foot and Mouth Disease. The desert locust component has routinely invested in training of trainers to ensure optimal use of staff and that capacity is maintained nationally. EMPRES has proven amenable to the secondment of staff, for instance for the Animal Health (CMC) and Plan Health (locust) components from USDA, Centers for Disease Control and Prevention (CDC), French Government and others.

5.5 Partnerships

171 **Finding 17:** The evaluation found that all EMPRES components had relevant partnerships for building resilience to food chain crises. These ranged from global to regional to local. Several partner representatives at regional level had not heard of EMPRES but knew of FAO's work with TPDs and FSTs. This was particularly the case for the newer EMPRES components or where a particular EMPRES initiative had a strong presence, such as ECTAD.

172 At global level, strong and improving relations were noted with the World Organisation for Animal Health and the World Health Organization. In the tripartite collaboration, the three organizations recognize joint responsibility to address the health risks at the human–animal–ecosystems interfaces (Concept Note 2010). A conference was held in Senegal in 2016 to create a forum for One Health in West Africa. This was a positive development and should facilitate additional synergies with WHO, OIE, regional economic communities and the African Union. The FAO-OIE Global Framework for the Progressive Control of Transboundary Animal Diseases has been a useful coordination forum for several priority diseases and assisted the global bodies to work with a range of regional organizations. INFOSAN is jointly managed by FAO and WHO and currently 188 countries are members.

173 Relations with the Centre for Agriculture and Bioscience International on plant protection initiatives were positive and substantive, though less well defined. Key informants noted that clear EMPRES strategies at the component and regional levels would help clarify respective roles and avoid duplication of activities.

174 Innovative relations with the World Food Programme (WFP) were agreed in 2003 for pesticide triangulation, whereby national pesticide stocks are transported by WFP between countries of the Western Region according to need. This facility was utilized on numerous occasions between 2012 and 2016.

175 The relationship with the International Plant Protection Convention and Codex Alimentarius, both established before EMPRES, was difficult to define. Whilst there is regular contact between the parties the relationship continues to evolve. For example, the 2007 IPPC evaluation recommended the secretariat of the IPPC be a clearly defined (separate) entity, while the Commission on Phytosanitary Measures is currently discussing its Strategic Framework for 2020-2030. This includes deliberation on TPD outbreaks of significant impact. The Commission has stated that changes to IPPC's mandate, policy and structure may include, if appropriate, the integration of EMPRES plant protection activities into the overall plant health mandate of IPPC (IPPC 2017). Similarly, in 2015 the Codex Alimentarius Commission planned to review and update its principles and guidelines for the exchange of information in food safety emergency situations to include reference to EMPRES and INFOSAN (Codex Alimentarius Commission 2015). In 2016 Codex published a revision of its "Principles and guidelines for the exchange of information in food safety emergency situations". The evaluation saw both Codex and IPPC as key components of FAO's comparative advantage, which could potentially be built upon in terms of strategy development and resource mobilization.

176 Partnerships with a range of regional economic communities were found to be growing stronger. Notable examples included collaborations with the Association of Southeast Asian Nations and its proposed Coordinating Centre for Animal Health and Zoonoses; the Regional Support Unit for South Asian Association for Regional Cooperation; efforts to improved animal health, One Health and food safety with the Economic Community of West African States and its technical agency the West African Health Organization; the Africa Solidarity Trust Fund project implemented in collaboration with the Southern African Development Community; efforts to support the Inter-African Bureau for Animal Resources and the Intergovernmental Authority on Development (IGAD), and its Intergovernmental Authority on Development Centre for the Pastoral Areas and Livestock Development, via the Eastern Africa Regional Animal Health Networks and the Network of Aquaculture Centres in Asia-Pacific.

177 The introduction of new partnership tools, such as the Operational Partners Implementation Modality, as a way of making partnerships more equal and meaningful have been viewed as a positive development.[75] The evaluation noted that FAO already has an Operational Partners Implementation Modality signed with the Intergovernmental Authority on Development for mutual work on building resilience in the Horn of Africa.

178 Collaboration with relevant national ministries and departments was found to be consistently strong where FAO had technical presence in a country. For example, in Ethiopia FAO provides the secretariat to a national crisis preparedness committee, the Disaster Risk Management Agricultural Task Force, which brings together all administrative levels and deals with threats across sectors. The task force is highly regarded by the Government.

75 Evaluation of FAO Strategic Objective 5 (FAO 2016), see finding 12 on page 37.

179 All components partnered with a range of academic and research organizations. This was seen as an innovative and cost effective way of tapping into specialist knowledge, facilities, cost-sharing, fundraising and networking. Examples included:

- The Global Aquaculture Advancement Partnership was signed in 2014 between FAO Fisheries and Mississippi State University to build emergency preparedness and response capacities of developing countries.
- A range of European, American and African Universities and research organizations supported desert locust surveillance and prediction work.
- EMPRES-Animal Health utilized 18 specialist reference centres[76] for specific diseases and thematic areas.
- Building on the 2014 partnership agreement between FAO and French agricultural research and international cooperation organization (Agricultural Centre for Development (CIRAD)), EMPRES Plant Protection is developing specialist technical links with the Agricultural Centre for Development (CIRAD).
- Other Plant Protection partnerships include the International Maize and Wheat Improvement Center (CIMMYT), International Center for Agricultural Research in the Dry Areas (ICARDA) and Aarhus University in management of wheat rusts, and with International Institute of Tropical Agriculture and Bioversity International in management of cassava and banana diseases.

180 Because of the heavy reliance on extra-budgetary funding, partnerships with donors are particularly important for EMPRES. The positive relationship between USAID and ECTAD has already been noted in section 5.2. Similarly, this level of support and the number of donors needs to be expanded in the future, including private foundations. The evaluation noted that significant efforts to raise funds through the private foundation avenue for peste des petits ruminants eradication have yet to succeed; the problem included a lack of confidence in the strategy and partnerships presented. Why other donors have yet to buy into the peste des petits ruminants eradication initiative warrants further investigation.

181 EMPRES engagement with the private sector remains relatively weak. This finding was reinforced by the questionnaire survey that showed the majority of FAO staff were not aware of any private sector involvement in preparedness and response activities. This can partly be explained by the emergency nature of some projects, and the observation that it is primarily the role of relevant ministries to work with the private sector. However, as advisers to Government, and relying on FAO's strong comparative advantage in this area, it can be argued that EMPRES needs to have a good understanding of the potential and modalities for public-private partnership. Some evidence of innovation was noted; for example, a side event on the role of Public-Private Partnership in Aquatic Biosecurity was held during the eight Session of the Committee on Fisheries Subcommittee on Aquaculture, on 7 October 2015 in Brazil. In 2013, the Global Platform for African Swine Fever included private sector stakeholders in a discussion on coordination, prevention and control. FAO Plant Protection engagement with the World Banana Forum, dominated by private sector members, but also with public institutions and NGOs has recently resulted in development of a global programme on management of banana Fusarium wilt disease that will require funding. The best example was the role played by FAO in Viet Nam, in coordinating with private sector shrimp farmers to reduce and control the spread of AHPND.

5.6 Advocacy

182 **Finding 18:** The evaluation found limited evidence of systematic advocacy across EMPRES, including the FCC-Intelligence and Coordination Unit which has a specific advocacy function.

183 This finding was not confined to EMPRES. Advocacy has frequently been highlighted as an area of weakness for FAO. Recently, the Office of the Inspector General's country

76 Organizations designated by the Director General to provide specific, independent technical and scientific advice on issues related to FAO's mandate to cover thematic areas and specific diseases.

programming and operation reviews[77] found that the area of advocacy and communications showed a marked downturn compared to the previous audit cycle. The evaluation noted close linkages between effective advocacy and resource mobilization. The components of effective advocacy include a joined-up strategy for identification of the issue and its solutions, the formulation of messages, the definition of the target audiences for these messages, the elaboration of a communication strategy and a means of communication to bring about the desired change (IEE 2007). The evaluation noted that significant advocacy for resource mobilization for peste des petits ruminants eradication has recently taken place but not yet succeeded. The reasons for this warrant further investigation.

184 The main challenge for advocacy is to shift the attention of government and donors away from response to crisis and to encourage longer term support to preventive approaches. The more mature desert locust and animal health components appeared to have a more strategic approach to advocacy. There was evidence of a virtuous cycle of experience, lesson learning, IEWS, strategy adjustment and communications over time.

185 Advocacy is vital because political and donor attention quickly declines when disasters are averted. One example is when FAO AGPMM and the Desert Locust Commissions succeed and locust upsurges don't occur due to their early warning and early response work. There is a need to attract interest in funding the work of further building resilience and consolidating successful preventative approaches. Recent experience in Mauritania showed that advocacy in the form of field visits for donors and the distribution of video recordings proved to be effective for raising both awareness and funds. ECTAD demonstrated effective advocacy following the highly pathogenic avian influenza emergency, with the Animal Health Service/Emergency and Rehabilitation Division(TCE) and regional offices working closely with a major donor to promote a program to build prevention, detection and response capacity to emerging zoonotic disease threats.

186 Limited advocacy activities are conducted in other EMPRES components. Plant Protection has convened policy makers, industry players and experts to raise awareness of particular TPDs; for example, of banana wilt fusarium at 2016 and 2017 World Banana Forum events. Although advocacy by FAO in collaboration with WHO through INFOSAN was reported, little advocacy for EMPRES approaches was observed in the forest health and aquatic animal health components.

187 Supporting member states to advocate for EMPRES approaches was considered to be a key activity by this evaluation. Some success in this area was observed (for example the CLCPRO Locust Commission Member States), but it is contingent upon having a clear strategy that countries and regions may draw upon and adequate technical support at regional and national levels.

5.7 Systematic lesson learning

188 **Finding 19:** The evaluation found limited attention to lesson learning within or between the EMPRES components. Lesson learning has been largely confined to the following mechanisms:

- Expert consultations and coordination platforms: FAO has strong convening power and can relatively easily draw upon significant experience and up-to-date research results to help build strategy. Several technical conferences and their results have already been mentioned in the report. The Desert Locust Commissions also convene annual steering committees to gather lessons and revise strategy. The Western Region's ministerial level engagement is proving to be particularly useful for translating lessons into action. The locust Caucasus and Central Asia Programme also holds similar annual meetings. EMPRES-Animal Health has utilized global and regional platforms, in conjunction with a range of partners, that encourage sharing of experience and lessons learned. At a global level this includes FAO/WHO/OIE GLEWS, FAO/OIE Global Framework-TADs and joint global programmes for peste des petits ruminants, foot and mouth diseases and rabies. At a regional level, FAO (particularly through ECTAD) has been responsible for

77 AUD 0416 - Capping Report on Programme and Operations Issues in Country Office Audits - 2014 and 2015, Office of Inspector General March 2016.

building platforms and networks for laboratories, epidemiology, priority diseases and four way linking. These efforts have assisted in harmonizing approaches and transferring knowledge from FAO's work more widely.

- Component evaluations included EMPRES-Animal Health in 2001 and desert locusts in 2002, as well as specific evaluations of the highly pathogenic avian influenza response (2007 and 2010), the Central Region desert locust work (2005) and the Western Region desert locust work (2009). These evaluations require management response and are publically available.
- Longer term initiatives: DLIS and ECTAD have built upon continuity and country level links to improve training curricula and systems. Desert locust data collection and storage software have been regularly updated, as funds allow. ECTAD laboratory and epidemiology mapping tools are good examples of how lessons learned from previous work can be applied to provide better services in the future. The revision of the Good Emergency Management Practice guidelines and training by CMC-Animal Health is based upon feedback and lesson learning.

189 Little learning across components was observed. The FCC-Intelligence and Coordination Unit provides a useful function in communicating component initiatives within FAO and to partners through its FCC-EMPRES Information Sheets. However, the only substantive examples of cross-component learning were the establishment of an Agriculture and Food Systems Working Group in the Regional Office for Asia and the Pacific (RAP) to support One Health strategy development; the Regional Cassava Initiative in Eastern Africa that involved sharing experience, research information and lessons across countries; and the Africa Solidarity Trust Fund funded project (GCP/SFS/001/MUL) in Southern Africa, which provided an opportunity for cross-component and cross-national learning.

190 No systematic learning was noted among regions or with headquarters. For example, mission reports were not systematically filed and shared within headquarters and there is no platform to discuss lessons learned between regional teams. In Ethiopia, staff noted that there is no regular exchange between FAO offices even if they are in neighbouring countries and open borders allow for livestock and herders to move freely between territories. It was proposed that regular technical exchange would be valuable, for example, in terms of project design and exchanges of best practices. This could be organized as regional workshops or even as online conferences. There was a strong desire for continuing professional development and technical discussions, as most officers do not have peers in their field within small country or regional offices. Particularly in the latter, technical staff are very limited and have to work across thematic fields. This suggests high potential benefit from peer exchanges.

191 EMPRES components have rarely carried out impact assessments for lesson learning, advocacy or prioritization of resource use. The Regional Cassava Initiative in Africa carried out an Impact Assessment in 2013. The CMC carried out After Action Reviews, but they focused on the internal processes and mission member perceptions. This does not mean CMC has not had impact. Despite the lack of formal impact assessment of the 85 CMC missions completed, the evaluation found examples where a CMC mission had had positive outcomes through adoption of recommendations in national plans and strategies – either directly or after follow-up by FAO Emergency TCPs or other donor projects. A more complete evaluation to demonstrate these benefits would be worthwhile if CMC-Animal Health were to be broadened to other EMPRES components.

5.7.1 Use of publications and normative products

192 **Finding 20:** FAO's normative work provides a crucial link between global, regional and country level initiatives especially for the cross-border and inter-disciplinary work that typifies EMPRES (IEE 2007). The quality of normative products and publications from EMPRES components was found to be consistently high. Outputs are consistently used by academic, private and public sectors for all components.

193 Informative publications and information sheets were frequently published in several official languages of FAO and distributed both in print and electronic form. These were peer-reviewed, professionally produced and generally easy to understand. A list of key products is provided in Annex 4.

194 The evaluation's questionnaire survey showed nearly 70 percent of the respondents knew some of FAO's products and appreciated the technical guidance, strengthening of programmes and awareness raising. The most cited were the Good Emergency Management Practice, EMPRES and the Desert Locust Bulletin, Guidelines on the Desert Locust, Early Warning Handbook (2016), Guide to Implementation of Phytosanitary Standards in Forest Health, and a long list of technical documents on aquaculture. FAO staff working with EMPRES noted that communication products generated impact. The evaluation notes that some products would benefit from having a clearer plan around audience and dissemination strategies in order to increase access and utilization.

195 The evaluation noted the lack of EMPRES branding for products, particularly in the food safety, plant protection and aquaculture components. For example, the recently published handbook, risk communication applied to food safety,[78] is relevant to emergency situations as well as to prevention and mitigation of food safety threats. In general the EMPRES brand is not used or consistently promoted.

196 Some partners noted delays in publications and experienced difficulty in coordinating press releases associated with publications.

78 Risk communication applied to food safety, FAO, 2016 (available online, visited 06/02/2017).

6. Conclusions and recommendations

6.1 Conclusions

Conclusion 1. The management of transboundary pests and diseases and food safety threats remain highly relevant at all levels. FAO continues to have a significant comparative advantage in supporting member states, regional bodies and partners in their efforts to control TPDs and reduce FSTs.

197 Highly transmissible TPDs and FSTs continue to reduce productivity and trade across the globe. They frequently threaten human health and livelihoods, and are notoriously difficult for individual countries to manage. Novel TPDs and FSTs continue to emerge and require urgent investigation and response. Many low and middle-income countries have stated they do not have the policies, institutions, services or infrastructure to manage TPDs and FSTs effectively. This situation is compounded by climate change, changing demographics, the intensification of agricultural production and global trade in food and agriculture products. TPDs and FSTs are predicted to get worse without effective coordination of global responses and support to national level systems and institutions. This will have negative implications for all FAO Member Countries in terms of pandemic threats, production risks and disruption to trade of agricultural products.

198 FAO's comparative advantage in this area includes its science-based approach to assessing risks and developing solutions; field presence and capacity to respond rapidly as part of a joined-up global or regional response; oversight position in linking appropriate levels of monitoring; international legislative instruments and fora for discussion; and capacities for resource mobilization and coordination. Furthermore, FAO's independence and transparency allows it to act as an honest broker between development partners and member states during difficult situations and crises.

199 FAO's partnership with relevant ministries at national level, regional, technical and economic bodies, and global technical and statutory bodies are in place and in many cases growing stronger and improving (e.g. the World Organisation for Animal Health and the World Health Organization.

200 From a conceptual and strategic point of view, the evaluation found that EMPRES programme as well as other activities analysed in the current report under the umbrella of EMPRES-like, fit well into the strategic direction that FAO pursues under its work on increasing the resilience of livelihoods to threats and crises. EMPRES can utilize the resilience framework including the One Health approach. EMPRES is the main thrust for Food Chain Crises, one of the three types of shocks/crises addressed in the resilience programme. It is also important to maintain the continuity between TPDs and FSTs information and early warning systems and those of other FAO areas of work (food security, markets, climate change etc.). Complementarities between the resilience agenda, advocacy and resource mobilization are strong and the recent development of damage and loss information systems could effectively use EMPRES Information and Early Warning Systems if developed further. The links between EMPRES and SP2, 3 and 4 are also significant and it is important to develop the collaboration between SP5 and these SPs to support the broad EMPRES-like work within FAO, especially at the national level.

201 The evaluation concludes that the interest and needs of countries are better served if FAO manages to offer them a cohesive package that covers the range of technical components as well as offering support from the upstream regulatory and standard setting activities to the downstream early warning and response ones. Member countries, according to context and needs, can then selectively request support on specific priority areas. At the global level, advocacy and outreach for the range of TPDs and FSTs will be more effective if presented within a single narrative, focusing on the benefits of investing in prevention.

Conclusion 2. The evaluation has analysed the range of EMPRES-like programmes and results and concludes that this approach has proven its effectiveness for the management

and control of TPDs and FSTs over many years. However, the results were variable between EMPRES components; many of the results found at regional and country levels had no formal or indirect link with the EMPRES programme. This fragmentation results in a loss of effectiveness in internal programming, coherence and optimization of services as well as in external advocacy, outreach and visibility. The results of EMPRES could have been more effective by applying an explicit and systematic strategy for the gender dimension and accountability to affected populations.

202 Since the formation of EMPRES in 1994 there have been regular and significant achievements: to desert locust outbreaks preventing their development into upsurges; the control of highly pathogenic avian influenza and strengthened preparedness for future influenza outbreaks; and the global eradication of rinderpest. The evaluation noted that such achievements are a credit to FAO and its partners and pay tribute to the exceptional dedication and commitment of the staff who made them happen.

203 As assessed through the four SO5 outcome areas, EMPRES' results were significantly stronger in the desert locust and animal health components. The desert locust work precedes the formation of EMPRES by at least four decades and has benefited from continuity and good links between headquarters and countries via effective utilization of Article XIV Desert Locust Commissions; the systematic development of training, surveillance technology and predictive tools; as well as strong support to regional and national locust control capacities. The animal health component has had continuity and donor support through the Global Rinderpest Eradication Campaign and numerous influenza control-linked initiatives. There has also been positive support and innovation through the Article XIV European Union-Foot and Mouth Disease Commission. Policy and strategy, early warning and prevention outcomes for these components, while noticeably stronger than other components, continue to require improved coordination and long-term broad-based support.

204 For work not related to desert locusts, the Plant Protection component has attained good results with relatively few staff, it has a high reliance upon short-term funding. This appears to have undermined continuity and country engagement. The forest health, aquatic animal health and food safety components are still relatively new players in EMPRES. Indeed the field of aquatic animal health remains a relatively new science that has to manage numerous environmental and production factors within TPD control strategies. Staffing levels for these components remain too low to meet the demands of member countries. Linkages from headquarters to regional and country levels, while strengthened via decentralization, need strategic support. Each of these components was found to be relevant to the countries' needs and worthy of significant investment to ensure better and broader results.

205 Significant variability was found between the Information and Early Warning Systems of the EMPRES components. The IEWS of the desert locust component has continually improved since the inception of EMPRES. It has proven its value many times and receives valuable support from countries. The IEWS of the animal health component is likewise valued but requires significant investment if it is to complement corresponding disease alert systems managed by OIE, regional bodies and countries. The IEWS of other components need to evolve beyond platforms of countries sharing information on threats. The goal of an IEWS linked to an early action system, which would potentially consolidate forecasting information while providing comprehensive risk analyses, will require significant investment and an agreed integration strategy for all components.

206 Response and preparedness work has dominated EMPRES activities, as funding for emergencies is relatively easy to secure. Short-term emergency TCP funding has frequently been relied upon for response and preparedness activities. Strong response capacity, supported by a long-standing relationship with Emergency Operations and Rehabilitation Division (TCE), was noted in ECTAD (through its regional and country network) and desert locust work (through regional commissions). The Crisis Management Centre within the animal health component is one of the few projects that secured significant response funds, but these are now in serious decline. CMC concurrently invested in preparedness through Good Emergency Management Practice training. CMC work was highly appreciated by those countries that received missions and could (with funding) be built upon, broadened and refined for other components. While some CMC missions resulted in follow-on TCPs

and donor-funded projects, and in several cases changes to national policy, the impact of CMC missions has not been assessed. CMC reliance upon countries to make requests for missions possibly skews attention away from those less developed countries which are less aware of the benefit derived from these missions.

207 According to FAO's analysis, women constitute 43 percent of the rural workforce and contribute to food production for household consumption and sale.79 If women had the same access to and control over productive resources as men, it is estimated that they would increase yields on their farms by 20 to 30 percent. This would potentially raise total agricultural output in Africa by 2.5 to 4 percent.80 Farmers potentially play a critical role in early detection of diseases, surveillance as well as in ensuring safe food production. Recognizing the difference women can make in the field of TPDs and FSTs is important, as they are more frequently involved in traditional farming practices, looking after short-cycle livestock (i.e. sheep, goats and poultry) as well as newborns and food preparation, so they can generally observe problems at an early stage. Some longer term development initiatives (described in section 4.3) paid more attention to gender dimensions and showed that project outcomes improved when investments were made in the capacity development and training of women at the community level (as participating farmers, animal health workers and market vendors and small traders). Despite evidence from the projects level, no explicit or consistent strategy to ensure context analysis, gender or accountability to affected populations monitoring was found across the EMPRES components.

Conclusion 3. EMPRES' capacity and competencies are not always sufficient to remain relevant and effective in supporting member countries to manage TPDs and FSTs. It has forged many effective partnerships with other international organizations, regional economic commissions, research centres and networks of experts but it is not always able to make optimal use of these networks to provide support and services to member countries. Lessons, publications and normative products are of good quality but their utilization, outreach and influence is not always effective or visible. Strategies for the over-arching EMPRES approach and for single components exist but need to be better articulated and be more fungible to be used to support advocacy and resource mobilization.

208 Despite the variability across EMPRES components mentioned above, EMPRES has consistently shown innovation in achieving results in several key areas. These include the following:

- **Partnerships.** All components have relevant partnerships. The level of partnership with regional bodies and at national level generally reflects the maturity of the component. However the linkages between EMPRES, Codex Alimentarius and the International Plant Protection Convention require further refining and clarification. The process of defining relations and documenting them is constructive. For example, the FAO-OIE-WHO tripartite agreement has led to a clearer definition of roles between the agencies, as well as interagency collaborations such as the recent One Health Strategy workshop for West Africa. EMPRES components have also effectively utilized a range of academic and research organizations as a cost effective way of accessing resources and networks, and maintaining its strong science-based platform. Partnerships with global and regional organizations and research and training centres presents a promising avenue to build sustainable prevention and control capacities (e.g. with the Commission for controlling the Desert Locust in the Western Region, in the Central Region and in South-West Asia, Intergovernmental Authority on Development, African Union Inter-African Bureau for Animal Resources, Southern African Development Community, ASEAN, South Asian Association for Regional Cooperation, Aquaculture Centres in Asia-Pacific, Centre for Agriculture and Biosciences International, International Institute of Tropical Agriculture, INFOSAN) in a cost-effective and sustainable manner, and could be pursued more systematically. The area where partnerships for EMPRES remains weakest was with the private sector and securing long-term financing for preventative initiatives with member countries.

- **Systematic lesson learning.** Expert consultations and coordination platforms, evaluations and staff continuity have supported activities across all the EMPRES components. Significant lessons on the management of TPDs and FSTs have been learned since the

79 FAO 2010-11 State of Food and Agriculture Report (2011)http://www.fao.org/docrep/013/i2050e/i2050e.pdf

80 FAO The State of Food and Agriculture Report 2010-2011. WOMEN IN AGRICULTURE Closing the gender gap for development. http://www.fao.org/docrep/013/i2050e/i2050e.pdf

inception of EMPRES, particularly in the fields of desert locusts, plant protection and animal health, and have been extended to other components albeit not necessarily on a predetermined basis. There is potential for further lesson learning across the components and with partners. Greater use of impact assessments would assist lesson learning, and their incorporation into EMPRES strategies should better support both continuity and partnerships.

- **Capacity development.** All components built sustainability through institutional capacity development. Whilst regional capacity development has proven to be a useful mechanism for supporting member states, FAO technical presence in country remains highly valued and facilitates capacity development. For example the support to Cambodian veterinary authorities by ECTAD; the Field Epidemiology Training Program for Veterinarians – a success story from Asia which is being rolled out in Africa; the Participatory Disease Surveillance and Response system involving animal health workers and communities – successfully used specifically for avian influenza and rabies control in Indonesia and Bangladesh; the Community-based Animal Health Outreach programme developed by ECTAD in collaboration with the Egyptian General Organization for Veterinary Services. Because ensuring direct and permanent technical support in all countries is not feasible, EMPRES-like work has also been promoted by a few senior managers at subregional and country levels, availing themselves of external experts and/or with the support of technical divisions and officers in other locations. This is an approach that relies on senior managers having a sufficient understanding of TADs and FSTs-related issues to make it a priority area.

209 **Publications and normative products.** These are valued and provide a useful function in raising awareness, while also integrating lessons for headquarters, regional and country level activities. However inadequate labelling, translation and timely clearance for publication of time sensitive information all undermine EMPRES' effectiveness and visibility. The evaluation found other areas where important improvements are needed if EMPRES components are to meet demand and deliver significant results in the future. These included:

- **Capacity Management.** EMPRES' comparative advantage is intricately linked to the technical support it offers and how that is used and can be improved. Although examples demonstrating innovative use of regional bodies and staff were found, these were not systematic and did not compare different examples. None of the EMPRES components have been able to provide sufficient technical support to meet the demands of member countries on a direct basis but some have been able to mobilize networks and partners. The desert locust and animal health components are stronger and have effectively utilized available resources, including Article XIV organizations and networks. ECTAD had difficulties to meet demand, beyond a limited number of countries and regions where it has a direct presence.
- **Staff capacity and competency.** Regional and subregional offices have gained regular programme staff through decentralization, but these offices remain understaffed in many key areas. Headquarters has lost staff capacity through decentralization, freezing of positions and transfers to strategic programmes. Country offices rely on project funds for technical consultants and in most cases remain highly reliant upon support from regional offices. Core staff have very high administrative burdens and travel restrictions undermine the level of strategic technical support they can provide. Underinvestment in staff training and continuity has weakened EMPRES' capacity to respond effectively. Individuals are required to cover very wide areas of competencies which may affect, in the long run, the quality of technical support the organization identifies itself with.
- **EMPRES strategy.** The EMPRES approach, though sound, was largely unknown outside of EMPRES and headquarters. Each of the EMPRES components had a strategy, but they were generally poorly developed and poorly articulated. Clear direction from an overarching strategy for all components is essential for advocacy and to support financing for the sector.
- **Advocacy.** Advocacy is vital if EMPRES is to shift the emphasis away from response and encourage longer term support for work on building resilience and preventive approaches in partnership with member countries. These efforts should be based upon clear strategies, with commitment by staff to all components and support from top management. Political and donor attention quickly fades when all is going well; thus, without strong advocacy for preventative and capacity building initiatives, the global usefulness of EMPRES is diminished. The most powerful advocates for an EMPRES approach are the countries and regional bodies with a keen interest in TPDs and FSTs.

- **Resource management.** In addition to FAO's managed programmes, member countries and their regional bodies want and need nationally-based, regionally-coordinated, sustainable and scalable systems of prevention and control. FAO can play a key supporting role for these systems.
  - The SO5 evaluation concluded that SP5 lacked a proactive resource mobilization strategy, and that donor confidence remained low. The analysis from the EMPRES evaluation noted these findings and observed significant potential for resource mobilization building some good practices. The main limiting factors were: i) the weakness of EMPRES branding; ii) FCC's low involvement and effectiveness in resource mobilization; iii) lack of a comprehensive financing strategy and high dependency on a narrow donor base (e.g. USAID for ECTAD); and iv) difficulties in funding prevention activities, although there are good successes in a few cases that leveraged both the strength of technical units and Emergency Operations and Rehabilitation Division's (TCE's) connection with donors. On the positive side, there are promising avenues in working with regional groups to develop and fund sustainable regional and national prevention and control capacities (e.g. Commission for controlling the Desert Locust in the Western Region and in the Central Region, Southern African Development Community, Economic Community of West African States). These regional collaborations need advice and support if they are to take ownership and invest. Regional funds such as the African Solidarity Trust Fund are ready to support this area of work, and national governments have seen the benefits of EMPRES interventions and understand the need to support it further through unilateral funds (e.g. Pakistan's support to peste des petits ruminants and foot and mouth disease from regional governments in Punjab and Sindh).
  - Reliance upon TCP funding will keep EMPRES focused on short-term emergency responses. Agility in managing donor preferences and the ability to support countries and regional bodies to allocate domestic resources and secure funding are important for resource mobilization. ECTAD with is collaboration between Emergency Operations and Rehabilitation Division (TCE) and the Animal Health Service has proven to be a good model for fundraising. South-South Cooperation and Unilateral Trust Funds are also useful mechanisms.

- **Sustainability**. Public-private partnerships that result in improved production and trade for private companies and control of TPDs and FSTs for governments have tremendous potential. However, few examples of such partnership were found. FAO overall and EMPRES need to raise their capacity and agility to engage with the private sector and facilitate public-private partnerships with government partners.

Conclusion 4. Clear service agreements that support delivery at regional and country levels are essential for effective management of TPDs and FSTs. However, institutional arrangements within the EMPRES Programme have become indistinct over time and this has reduced clarity, visibility and effectiveness. There is a gap between the activities that clearly belong to the EMPRES Programme and the significant volume of other work on TPDs and FSTs that take place at the regional, subregional and country levels. The many projects and activities led by the decentralized offices don't always inform and support the global coordination role that EMPRES should have. The Food Chain Crisis Intelligence and Coordination Unit and its governing bodies have a vital support and advocacy role that has not yet been fully realized. The various initiatives under animal health are also poorly linked and structured within EMPRES-Animal Health component. While EMPRES fits strategically within SP5 and most of its current activities are overseen by the Agriculture and Consumer Protection Department, the evaluation evidences the need to collaborate with SPs 2, 3 and 4 and with the Fisheries and Forestry Departments.

210 The 2009 Director General's Bulletin on the FCC provides a clear description of EMPRES and the management of FCC. FCC and its oversight committee have provided a useful coordinating role, with the oversight committee primarily focusing on decision-making but neither have been able to invest sufficient capacity and management support into areas such as strategy development, policy, advocacy and resource mobilization, which are vital if EMPRES capacity and effectiveness is to meet growing demand and which are clearly stated in the terms of reference for FCC and the oversight committee.

211 The roles, responsibilities and areas for collaboration within each EMPRES component and among headquarters, regional offices and countries varies across components and across regions, resulting in lack of institutional clarity. There seems to be no clear point of contact

within each component and unclear systems for delegation of activities, according to competency and availability.

212 The major limiting factors identified by the evaluation include: i) the fragmented set-up of the Animal Health Division, where activities and areas of work essential to EMPRES cut across a number of teams. The evaluation felt that this is not a negative ***per se*** but noted reports of confusion on roles, responsibilities, inadequate collaboration and exchange of information; ii) insufficient inclusion of the aquaculture, fisheries and forestry components with EMPRES; and iii) insufficient explicit, focused and strategic collaboration between SP5 and other SPs on complementary areas supporting TPD and FST work above and beyond EMPRES.

213 There was consensus amongst the majority of stakeholders that EMPRES needs to shift from a headquarters-based approach to an integrated system that involves streamlined processes, networking and a focus on strengthening capacity and expertise at all levels, particularly regional and country level.

6.2 Recommendations

Recommendation 1. FAO should increase the coherence of its work on TPDs and FSTs. The evaluation recommends the following:

- **Increased coordination on the branding, co-marketing and advocacy for the work on TPDs and FSTs. The aim should be to raise the visibility and position FAO as a lead coordination and technical agency in this area of work, offering a coherent 'support and coordination' package of services on TPDs and FSTs to member countries.**
- **Increased operational integration where there are clear benefits. This includes: the integration of information and early warning systems; the coverage and role of the CMC; the coherence and communicability of information, monitoring and data collection systems across technical components (including the interagency platforms).**
- **A more coordinated programming among technical components where synergies are expected. A good example would be the African Solidarity Trust Fund Programme on sanitary and phytosanitary measures in Southern Africa. Coordinated programming could also be sought on certain regulatory work and the work at the community level involving socioeconomic aspects.**

214 FAO would benefit from having all of the work on TPDs and FSTs presented in a more coherent package. This could be presented as the expanded EMPRES Programme, or under a new brand, but it needs to be broader than the current EMPRES Programme. This 'expanded EMPRES' should have a broad overall strategy, supported by more detailed strategies or action plans at the regional and technical component levels. The importance of focusing on prevention work in the long-term should be clearly addressed.

215 The evaluation suggests that FAO would benefit in developing one or more strategic pieces, described below. Strategies, whether branded under EMPRES or under a broader area of work on TPDs and FSTs, could include:

i **An overarching strategy** that encompasses the EMPRES-like approach for all components, including EMPRES Food Safety. Based on an agreed Theory of Change, such a strategy should not refer to the operational details and should effectively describe and explain the impact of TPDs and FSTs from a beneficiary/stakeholder point of view at global, regional and country levels. This would primarily be used to raise awareness with partners and staff on what EMPRES-like work is and why it is important. The overarching strategy would help to address the poor visibility EMPRES has in FAO's regional and country offices, and with existing and new partners. The strategy should promote a more consolidated policy approach for TPDs and FSTs activities and networking in less developed countries where FAO is actively present but should also consider focus on upper and middle-income countries. Streamlining the strategy provides an opportunity to enhance collaboration and clarify interfaces among EMPRES and related work in other Strategic Programmes. EMPRES' work is not confined to less developed countries; it cuts across middle-income and developed countries as well. Strategic thinking is needed

to clarify how EMPRES interacts with SP5 and the other SPs (e.g. with SP2 on climate change adaptation, SP3 on migration and SP4 on value chains), since TPDs and FSTs both influence and are affected by these issues. This would allow to articulate the importance of TPDs and FSTs not just in crises response but also in terms of access to markets and international trade, consumer protection and food safety, inter-causalities with climate change impacting on key aspects of agriculture, food production and livelihoods.

ii **Component strategies and action plans** for each of the EMPRES components. Each component has subtle and important differences that should be reflected in the strategy. For example, the epidemiological and control tools for crop, forest, animal and fish diseases differ and require divergent approaches and time frames. Component strategies can elucidate the variation and build on lessons learned, including from other components' previous work. The component strategies should also place TPDs and FSTs in the context of the broader challenges being addressed by the respective technical divisions and regional offices. The evaluation would encourage each component to utilize a Theory of Change to support strategy development. An outcome-based Theory of Change would assist the formulation of an action plan for any strategy.

iii **Regional strategies and action plans** that link to component strategies and action plans should reflect regional priorities, including regional initiatives, to provide guidance to country offices, regional and national partners. The evaluation found differing capacity, priorities and partnerships across FAO's regional offices that require tailored solutions. These solutions should be further refined through specific agenda items on TPDs and FSTs at Regional Conferences. Regional strategies would be living documents owned by regional offices and support Country Programme Frameworks (CPFs). CPFs have recently been found to fill a real need at country level. They help clarify the mutually agreed areas of work between government and FAO, attract the attention of donors and identify possible areas of collaboration (FAO 2016 SO5 evaluation). They should inform and be informed by the corresponding EMPRES regional strategy and action plans, which can assist in formulating integrated multi-country projects to address TPDs and FSTs, similar to the African Solidarity Trust fund project in Southern Africa. A good example of a regional strategy is the One Health Strategy being developed for the Asia Pacific by the Regional Office for Asia and the Pacific (RAP). These can ensure that specific projects are tagged to EMPRES and SP5 in a standardized manner. Regional strategies should also identify countries' individual needs for EMPRES support from regional offices and headquarters. This could be based on needs assessments across the technical components.

iv **The Strategic Action Plan for One Health** to complement an overarching EMPRES strategy should encompass all EMPRES components utilize terminology relevant to those components, such as environmental, agricultural and forest ecosystem health. A revised plan should support the goal and outcomes of Strategic Programme 5, link to other strategic programmes and include topical One Health initiatives such as antimicrobial resistance.

v **Gender and accountability to affected populations** required considerations in the management of TPDs and FSTs response, particularly emergency responses. Bearing in mind the priority FAO places on these issues, specific EMPRES strategies for these areas should be formulated and referred to in the overarching, regional and component strategies.

vi **FAO should develop an evidence-based case study for TPDs and FSTs, along the lines of 'Damage and Loss' publication on disaster risk reduction and natural hazards.** The study should analyse the costs and losses of crises occurrence and the benefits of investing in prevention in the domain of Food Chain Crises linked to TPDs and FSTs. The study should collect evidence on the benefits in investing in prevention and the costs and risks of inactivity or late response. This would complement and mirror the November 2015 study[81] that assessed the impact of medium- to large-scale natural hazards and disasters in the agriculture sector and subsectors in developing countries between 2003 and 2013. The study, prepared by SP5 focused on direct physical damage and indirect economic losses. The findings of the study support national and international efforts to reduce damage and losses caused by natural disasters, and to strengthen the resilience of the agriculture sector, in line with resilience targets set under the Sendai Framework for Disaster Risk Reduction, the Sustainable Development Goals, and the Universal Climate Change Agreement. A twin study for TPDs and FSTs would serve as an effective basis for advocacy, engagement with member countries and partners, outreach and resource mobilization for the sector as a whole.

81 http://www.fao.org/3/a-i5128e.pdf

Recommendation 2. Once FAO has developed a study on damage, loss and prevention it should derive a strong business case from it, highlighting the importance of prevention and investments in TPDs and FSTs work. The business case can support member countries in strengthening their advocacy, outreach and financing for the sector. This can be done by a combination of financing tools and instruments, ranging from prioritization within national budgets, private sector investments (from big partners to consumers) including impact investments.82 FAO's role should focus on the support to building the capacities of regional and national systems and ensuring ownership at the local level. While focusing on raising financing levels for the sector, FAO can also seek to cover some of its internal resource requirements for maintaining an authoritative technical and coordination leadership role in this area of work.

216 FAO should analyse the resource requirements for national capacities, as well as the fiscal space for prevention work in developing countries. FAO should assist member countries to raise awareness and advocate for national and regional interests in this area of work, highlighting Member States' national interest and their responsibility to control transboundary pests and diseases affecting their country. The case of the Commission for controlling the Desert Locust in the Western Region and of Pakistan could be used as examples. In addition, FAO should seek to engage other partners to get them interested in this area of financing. This can range from traditional resource partners to philanthropic foundations, agricultural business sector and other partners. In an effort to attract funding to address prevention activities, significant consideration should be given to the option of doing nothing, including the costs and risks of inactivity. Implications and risks for security of trade, value chains and food supplies should be analysed. The justification for EMPRES and its component parts is derived from this information.

217 As part of the broader financing strategy for TPDs and FSTs, FAO should also spell out its comparative advantages and the reasons for continuing and expanding EMPRES (or EMPRES-like) components, within the overarching framework of building resilience to food chain crises.

218 The internal resource mobilization plan should relate directly to the component and regional strategy documents, their action plans and the business case for TPDs and FSTs. It should be linked to high level outcomes, Regional Priority Areas for Action, Regional Results and, where appropriate, Country Programme Frameworks. The strategy should promote an integrated financial model, combining assessed and voluntary contributions to provide planned resources for TPDs and FSTs' work at all levels. It should consider all the funding options available to FAO, including Unilateral Trust Funds, South-South Cooperation Agreements, utilization of SFERA, TCPs and the formulation of special trust funds for emergency response as per the example of WHO's Contingency Fund for Emergencies.

Recommendation 3. FAO should use its comparative advantages and proven expertise in the field of TPDs and FSTs, to deliver more integrated and well-articulated support to member countries in order to strengthen national capacities to assess and manage the range of activities needed to ensure the control and containment of transboundary pests, diseases and threats.

219 Investment in national and regional technical capacity can supplement FAO's core capacity. FAO's efforts need to encompass the institutional capacity development of partners to ensure they are less reliant upon FAO's technical expertise. FAO should also promote instruments such as South-South Cooperation in this area.

220 Another critical endeavour would be to raise the quality of the FAO work across the different components through emulation and mutual learning. This in turn could ensure more consistent and coherent support provided to partners and member countries across the different technical areas of work.

221 In order for FAO to retain its comparative advantage in building resilience to food chain crises, its technical capacity also needs to be preserved, strengthened and used to

82 http://www.socialimpactinvestment.org/

optimal effect. Assessment of the required competencies should be part of the strategy development and action planning process. It takes time to gather and support the necessary mix of skills to ensure systematic lesson learning and construction of resilient systems. Long-term commitment is a prerequisite of such support. FAO needs to devise a model trough which it can ensure the stability and credibility of its technical expertise in the key areas of TPDs and FSTs – with a cadre of experts who should be the main points of technical reference for member countries and partner organizations.

222 At regional level, the regional programme leader should take a more active role in supporting and coordinating the development of the EMPRES overarching and regional strategies, making FAO's positioning and work in TPDs and FSTs a strategic centrepiece for the regions.

223 Adequate succession planning and handover for key technical positions needs to be devised and planned for as well as securing some key missing expertise (such as an entomologist). FAO loses its advantage and credibility when positions are held vacant for significant periods of time. Organizational rules, such as travel restrictions and maximum number of participants, that may limit FAO's capacity for EMPRES coordination and response should be reviewed. EMPRES functions should be added to the job descriptions of staff in regional, subregional and country offices as appropriate.

224 Collaboration of technical staff, investment in the continuing professional development of staff, smarter use of technical partnerships and networking are further mechanisms for strengthening technical capacity. Technical staff working at regional and national level can collaborate better to provide broader but specific support. Secondment of qualified technical staff from countries and partner intuitions should be one option to pursue particularly to increase capacity in decentralized offices. More could be made of inter-country offices' knowledge exchange and the exchange of good practices and lessons learned. Many FAO country offices are staffed with a stable cadre of national technical staff who can provide assistance to country offices other than their own. The use of Technical Reference Centres should also be reviewed and expanded as necessary.

Recommendation 4. The Food Chain Crisis Intelligence and Coordination Unit as the global coordination function should be strengthened and given a higher profile within FAO in order to ensure a continuum for more effective interactions between the technical divisions and the Strategic Programmes to deliver clearly defined EMPRES products and support at global, regional, subregional and country levels.

225 The functions, structure, competencies and coordination mechanisms of the FCC Management Framework as described in the Director General's Bulletin 2010 should be strengthened and given more authority. Whichever is the preferred organizational solution, it must allow greater inclusivity for EMPRES components housed in the three Departments (Agriculture and Consumer Protection, Fisheries and Aquaculture, and Forestry). It must also develop a stronger focus on and provide support to delivery at the subregional and country levels, where FAO has a clear-cut comparative advantage in providing services to member countries and communities of member countries on TADs and FSTs. It must also give more weight to the advocacy, outreach, engagement and financing efforts needed to increase the visibility and prioritization of TPDs and FSTs.

226 The functions and governance of the Food Chain Crisis Intelligence and Coordination Unit can remain largely as described in the Director General's Bulletin 2010, as long as governance mechanisms become more proactive in leading strategic and policy issues as well as pushing FAO staff in all locations and across technical areas to deliver results at national and regional levels through a coordinated and cohesive approach.

227 The coordination function would require more capacity (or regular collaboration with specific support functions) to increase its coverage of diverse areas of work. The small and under-staffed existing FCC-Intelligence and Coordination Unit has been unable to cover and fulfil all its roles and strengthening the unit will ensure stronger leadership and management support to TPDs and FSTs. The evaluation recommends considering how to provide the following functions/tasks:

- financing strategies and resource mobilization in conjunction with relevant FAO departments, divisions, and regional and country offices;
- devising a multi-disciplinary approach at technical and operational levels;
- advocacy and outreach to partners;
- communication of strategy, including review of TPDs and FSTs visibility and enhancement of the FAO EMPRES brand;
- lesson learning, risk assessment and forecasting;
- coordination, including Service Level Agreements with Strategic Programmes;
- coordination of performance monitoring and reporting across sectors and regions;
- overhauling the Crisis Management Centre, in collaboration with the CMC Steering Committee, to establish a Centre for Preparedness and Response, which would work with all components and regional offices to develop clear criteria for CMC-type responses, processes, standards, evaluation and training. The FCC-Intelligence and Coordination Unit should be actively involved in resource mobilization to establish a revolving fund for the Centre's operations. This would include establishing regional networks and capacity to support rapid field response and follow-up for Food Chain Crisis threats and emergencies. Regional expertise should be empowered to manage these missions, in collaboration with a roster of in-house and external experts. The Centre should include senior leadership with capacity to cross components;
- collation of component information and early warning systems as part of an overall strategy to converge it into a more homogenous and strategic framework, while maintaining the technical and institutional specificities of the areas of action. Stronger linkages with the SP5 early warning, early action mechanism should result from this process. The existing FCC Quarterly Early Warning Bulletin, which integrates forecasts on threats to the food chain and food security, should continue to support the early warning, early action mechanism. The global level should support the production of regional and subregional bulletins such as the one on transboundary threats to food and nutrition security in southern Africa.

7. Appendices

Appendix 1. Brief - other TPD and FST Programmes/Partners

Animal Health

- **Emergency Centre for Transboundary Animal Diseases and operations (ECTAD):** In December 2005, in the context of FAO's commitments in the fight against H5N1 highly pathogenic avian influenza, the Director General of the Food and Agriculture Organization of the United Nations (FAO) established ECTAD, to be jointly implemented by the Animal Production and Health Division (AGA) and the Emergency Operations and Rehabilitation Division (TCE). ECTAD has active regional representations; ECTAD Asia Office was the first to be established in 2005 in response to avian influenza outbreak. Subsequently when H5N1 highly pathogenic avian influenza spread to Africa, the Middle East, Central Asia and Europe early in 2006, regional ECTAD units in those regions were established with extra-budgetary resources. ECTAD regional managers are responsible for regional programmes and backstopping to country units.
- **European Commission for the Control of Foot-and-Mouth Disease,** one of FAO's oldest Commissions, came into being on 12 June 1954, with the pledge of the sixth founding member state to the principles of a coordinated and common action against foot-and-mouth disease at a time when the disease was ravaging the continent.
- **Global Framework-transboundary animal diseases (TADs)** is a joint initiative implemented by FAO and OIE. The Global Framework-TADs is a governance mechanism, which combines the strengths of both organizations to achieve coordinated prevention and control of transboundary animal diseases worldwide and in particular to address their regional dimensions.
- **Global Early Warning System (GLEWS)** was established in 2007, as consolidated effort by WHO, OIE and FAO for major animal diseases including zoonosis. The system is mainly used for monitoring data from existing event-based surveillance systems and to track and verify rumours on relevant animal and zoonotic events. Up to September 2013, GLEWS was part of EMPRES. GLEWS is now a separate unit, with its coordinator reporting directly to FAO's Chief Veterinary Officer.
- **CMC-Animal Health** is a joint FAO/OIE rapid response mechanism to animal disease emergencies. It was launched in 2006 with a mixture of regular programme and extra-budgetary funding. The CMC-Animal Health set-up was envisioned in Global Framework-TADs and ECTAD as a facility for immediate intervention (i.e., 72 hours after official request) in case of disease outbreaks where FAO intervention was deemed necessary and for rapid assessment missions. As part of ECTAD, the Centre also associates both FAO's technical (through the Animal Production and Health Division) and operational (through the Emergency Operations and Rehabilitation Division) expertise

Plant Protection

- **Commission for Controlling the Desert Locust in the Central Region (CRC)** headquarters is based in Cairo and has 16 member countries: Bahrain, Djibouti, Egypt, Eritrea, Ethiopia, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, Syria, United Arab Emirates and Yemen. The first EMPRES DL component programme was implemented in the central region, with three successive phases. It was concluded in 2006, when activities were handed over to the CRC in order to ensure their sustainability.
- **Commission for Controlling the Desert Locust in the Western Region (CLCPRO)** headquarters is based in Algiers and has ten member countries from West and North-West Africa: Algeria, Burkina Faso, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal and Tunisia.
- **Commission for Controlling the Desert Locust in South-West Asia (SWAC)** has four member countries: Afghanistan, India, Iran and Pakistan. Its secretariat is ensured by the Senior Locust Forecasting Officer based in Rome, FAO headquarters. The EMPRES Programme was never initiated in the Region.

- **Desert Locust Control Organization for Eastern Africa (DLCO-EA)** headquarters is located in Addis Ababa. Member countries are Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, Tanzania and Uganda.
- **Borlaug Global Rust Initiative (BGRI)** was initiated by the Indian Council of Agricultural Research, International Center for Agricultural Research in the Dry Areas, International Maize and Wheat Improvement Center (CIMMYT), FAO and Cornell University in 2008. It is coordinated by the Cornell University and has an international consortium of over 1 000 scientists from hundreds of institutions working together with the overarching objective of systematically reducing the world's vulnerability to stem, yellow and leaf rusts of wheat.

Food Safety Partnership

- **The International Food Safety Authorities Network (INFOSAN)**, established in 2004, is a global voluntary network of officially designated government authorities, responsible for, or involved in, the prevention, preparedness and/or response to food safety events/emergencies. INFOSAN is technically and strategically managed by FAO and the World Health Organization (WHO) through a joint secretariat, with its main activities in the WHO Department of Food Safety and Zoonoses. The INFOSAN Secretariat's arm at FAO is located in the FAO Food Safety and Quality Unit. INFOSAN monitors food safety events, promotes and coordinates information exchange, advises countries on potential food safety threats and strengthens their capacity to manage food safety emergencies.
- **CODEX Alimentarius** is a collection of standards, guidelines and codes of practice adopted by the Codex Alimentarius Commission. The Commission, also known as CAC, is the central part of the Joint FAO/WHO Food Standards Programme and was established by FAO and WHO to protect consumer health and promote fair practices in food trade in 1963.

Aquatic Animal Health Partnership

- **Network of Aquaculture Centres in Asia-Pacific (NACA)** is an intergovernmental organization that promotes rural development through sustainable aquaculture.

Appendix 2. EMPRES evolution summary (timeline of main events)

Animal Health Component	
Period	**Main Events**
1994-1998	• EMPRES livestock was established in 1994. • FAO Member Countries considered animal health to be third priority out of 32 options (July 1994). • Development of the prime elements of EMPRES livestock programme, including categorization of diseases (strategic, tactical or emergency), building capacity, normative functions, cross-cutting and development of manuals and materials (1994-1998). • FAO's Global Rinderpest Eradication Programme (GREP) was launched, in close association with the World Organisation for Animal Health (OIE), the International Atomic Emergency Agency (IAEA), regional organizations and other partners as a mechanism to coordinate the global eradication and verification of freedom from Rinderpest by 2010 (1994). • The first meeting organized by EMPRES-Livestock was the Iran, Iraq and Turkey cross-border meeting in latter 1994 in Rome to discuss post conflict rinderpest control (PKK cease fire was 1993). • The vision and prime elements of GREP are defined and GREP is identified as the main thrust of the EMPRES-Livestock Programme (1996). • TADinfo, a veterinary data management system designed to provide national veterinary authorities with a mechanism for recording animal health data and to assist with epidemiological analysis and decision-making, was released (1998). • FAO Expert Consultation, Technical Consultation were organized several times during this period and were used to review activities and take right direction recommended by the consultations. • Start of community-based surveillance, community animal health workers and participatory approaches (1994-1998).
1999-2003	• The publication on Livestock to 2020 – The Next Food Revolution (Delgado et al 1999) in 1999, was an important step in recognizing the future rapid growth of livestock and the challenges and opportunities that this would produce. This includes increasing threats from emerging infectious diseases and transboundary animal diseases. • The foot-and-mouth disease (FMD) epidemic in the United Kingdom spread to other European countries, which put a global focus on FMD and resulted in significant changes to disease control and greater resource mobilization in 2000. • A review of EMPRES Animal Health provided support and recommendations for a more strategic approach in 2001. • The emergence and spread of the severe acute respiratory syndrome in humans in Asia demonstrated the risk and impact of zoonotic diseases in 2002. • 2003 – The establishment of the Global Foot and Mouth Disease Research Alliance (GFRA) brought together animal research organizations to expand FMD research collaborations and maximize the use of expertise and resources in their goal to use their scientific knowledge to develop the tools to successfully prevent, control and eradicate FMD (2003). • Increase in number and quality of EMPRES publications and guidelines including EMPRES Bulletins, EMPRES Watch, AIDNews[83] (highly pathogenic avian influenza) and disease control guidelines (1999-2003). • The Global Plan for FMD (drafted by FAO in 2002) which was later made broader to capture priority TADs and incite OIE, was the trigger for the Global Framework-TADs.
2004-2008	• The Global Framework on Transboundary Animal Diseases Regional Steering Committees were formed and regional consultation on disease prioritization was done (2004). • The EMPRES-i Global Animal Disease Information System was launched. EMPRES-i is a web-based animal disease information system to support country level veterinary services by facilitating regional and global disease information (2004). • EMPRES livestock was changed to EMPRES animal health to reflect more than livestock, but also wildlife, captive wildlife, and delve into fisheries/aquaculture needs (2005). • The establishment of FAO ECTAD as a joint operation by the Animal Production and Health Division (AGA)/Emergency Operations and Rehabilitation Division (TCE) with a priority on the management of the response to highly pathogenic avian influenza (2005). • Establishment of the title of FAO Chief Veterinary Officer to be held by the Chief of the Animal Health Service (2005). • FAO envisioned a Global Information and Early warning system in early 2002 and in 2004, EMPRES included this in the 2004 Global Framework-TADs as a tripartite mechanism (FAO/OIE/WHO). • The Global Early Warning and Response System (GLEWS) for major animal diseases including zoonoses as tripartite mechanism (FAO, OIE, WHO) was launched (2006).

83 AIDEnews was started in 2004 first Quarter, and continued until 2014.

	• The CMC-Animal Health was established with technical and financial support from the (United States Department of Agriculture (USDA). Other contributors included France, Germany, Italy, the Netherlands and the United Kingdom (2006). • The first Progressive Control Pathway was developed for FMD by staff of FAO EMPRES-Animal Health and European Commission for the Control of Food-and-Mouth Disease (2008). It was a fine and joint effort with three staff from EMPRES and one from the European Commission for the Control of Food-and-Mouth Disease – with profound consequences for the Animal Health Service and FAO as a whole. • The One Health Approach-Agreement between FAO, OIE and WHO (rabies, influenzas and antimicrobial resistance) (2004). • Engagement with regional economic communities (such as African Union Inter-African Bureau for Animal Resources,, ASEAN, East African Community, Economic Community of West African States, South Asian Association for Regional Cooperation, Southern African Development Community, West African Economic and Monetary Union (UEMOA)) was critical for rinderpest management and eradication, for the FMD PHEFA and other regional efforts, or the Plan Continental against the Committee on World Food Security (CSF) in the Regional Office for Latin America and the Caribbean (RLC) region.) • Highly pathogenic avian influenza resulted in significant interest by donors from the United States of America, the European Union, Australia, Canada, New Zealand, Japan individual European countries (2004-2008).
2009-2012	• FAO ECTAD was expanded following agreement between the United States Agency for International Development (USAID), Emergency Operations and Rehabilitation Division (TCE) and Animal Production and Health Division (AGA) on a USD 400 million project to manage its work on the prevention and response to evolving highly pathogenic avian influenza situation. FAO support was through Animal Production and Health Division (AGA)/Emergency Operations and Rehabilitation Division (TCE)/Regional Offices/Country Offices. ECTAD was led by Chief Animal Health Service and managed as a separate entity to EMPRES Animal Health and this contributed to the apparent fragmentation of EMPRES (2009). • A proposal to expand the scope of the CMC-Animal Health to include other EMPRES Components (beyond animal health) was rejected (2009). • FAO-WHO-OIE Tripartite Concept Note on One Health was agreed and this was an integral point in the global commitment to One Health approaches (2010). • FAO and OIE reach an agreement for the establishment of the Joint FAO/OIE Committee for the global Rinderpest Eradication (2009). • A One Health Action Plan for 2011-2015 was developed in 2011. • Declaration of Global Freedom from Rinderpest, 37th FAO Conference, FAO headquarters, Rome on 28 June 2011. • The FAO/EuFMD/OIE Progressive Control Pathway approach to the control of FMD as a key element of the proposed Global Strategy for Control of FMD (2011). • WoLi on Environment and TADs published by EMPRES staff and other Animal Production and Health Division (AGA) colleagues, which shows a need for One Health approach. • Separation of FAO-GLEWS from FAO EMPRES Animal Health. GLEWS was to cover more than TADs, and the Tripartite (FAO/OIE/WHO) Executive accepted to include food safety, wildlife diseases, joint risk assessment (while upholding that this would benefit EMPRES-Animal Health and not EMPRES-Livestock).

Plant Protection Component	
Period	**Main Events**
1994-1998	• EMPRES-Plant protection was established, with a major focus given to the Desert Locust. • The first EMPRES-Plant was implemented in the Central region (red sea region); given the importance of the central Region as the origin of most Desert Locust outbreaks, it was proposed that the programme would begin in this region and expanding later into other regions. • The EMPRES-Central Region Programme Document was originally prepared in October 1995 and a full donor-assisted programme started at the beginning of 1997. • The EMPRES-Locust Programme in Central Region was initiated in 1994 (four successive periods) and concluded in 2006.
1999-2003	• The overall EMPRES-CR Programme goal was re-defined in 2000: "to strengthen the capabilities and capacities of the national, regional, and international components of the Desert Locust management system to implement effective and efficient preventive control strategies based on early warning and timely, environmentally sound, early control interventions''. • The EMPRES-CR activities have focused on five main areas: early detection, early reaction, campaign planning and contingency arrangements and capacity building. • EMPRES-CR: Introduction of the geographic information system-based data locust management system RAMSES in most of the member countries and the introduction of eLocust for wireless field data transmission.

2004-2008	• The major upsurge in the Western Region (WR) in 2003-2005 led to the extension of the EMPRES-Locust Programme to the western region. Thus, the EMPRES-WR programme initiated in 2006. • The CLCPRO Secretariat based in Algiers, Algeria provides coordination of the EMPRES-WR Programme. • The EMPRES-WR Programme aimed to develop an effective system of preventive control of the Desert Locust based on: - strong and autonomous National Locust Control Units; - effective regional coordination; - the gradual establishment, in each country and at regional level, of appropriate mechanisms to ensure the long-term sustainability of the preventive control strategy. • The EMPRES-WR Programme developed and implemented a communication plan at regional and country level, to promote preventive and curative control actions in the WR and their impact (2006-2009). • The Caucasus and Central Asia countries - Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Uzbekistan - request for FAO assistance in locust management in 2007/2008. • EMPRES-Plant protection component was expanded to include non-locust plant pests and diseases (plant pathology and entomology) in 2004. **While the position of a plant pathologist was created, no position was established for an entomologist.** • Plant pathology in 2004 in response to the emergence of new races of wheat rust in Africa. • EMPRES plant pathology programmes/projects are designed/coordination from the global level mainly addressed through TCPs. • Non-locust programmes/projects to address threats covers plant pests and diseases such as: armyworm in eastern and southern Africa (affecting agro-pastoral resources and livelihoods); fruit flies (impacting the horticultural industry in more than 30 African countries); wheat rust diseases (affecting Africa, Near East and Asia and coffee leaf rust affecting coffee plantations in Central America) as well as banana diseases-Bunchy Top Disease/Bacterial Wilt Disease/Fusarium Wilt Disease, cassava-Mosaic Virus/Brown Streak Virus, and Maize Lethal Necrosis diseases in Africa and Asia. • There is no permanent regional or international institution or centre to facilitate work implementation; activities are therefore designed and carried out by headquarters in collaboration with FAO decentralized offices as well as external partners.
2009-2012	• The Global Programme for the management of Wheat Rust launched in 2008. • Regional Cassava Initiative Central and Eastern Africa was implemented from 2009 to 2012. • In response to official requests for assistance received by FAO in 2008 from Caucasus and Central Asia countries, FAO/Locus and Transboundary Plant pests and Diseases team carried out a process for assessing the needs for sustainable improvement of locust management, which includes institutional study, preparation of the Analytical Report on locust situations and management in ten Caucasus and Central Asia countries (2009) and reflection on the regional body in 2010. • Caucasus and Central Asia-Locust Programme launched in 2011 for a period of five years (2011-2016) and inspired by the key concepts of EMPRES-DL.

Food Safety Component	
Period	**Main Events**
1994-1998	• Generic "EMPRES Approach" work between 1994 and 1998 resulted in the adoption of the risk analysis framework which was established to be the reference method for all sanitary and phytosanitary issues and therefore applicable to food safety.
1999-2003	• One-Health Approach (FAO/WHO/OIE): Increased collaboration across international organizations on selected animal health pathogens with public health and food safety relevance - rabies, avian influenza, antimicrobial resistance
2004-2008	• Collaboration with WHO in the operation of INFOSAN in 2004.
2009-2012	• EMPRES expand to include Food Safety component in 2009. • EMPRES-Food Safety Strategic Plan developed in 2010. • ECTAD activities increasingly included food safety aspects. • One Health Approach (FAO/WHO/OIE): Increased collaboration across international organizations on selected animal health pathogens with public health and food safety relevance - rabies, avian influenza, antimicrobial resistance (in 2010). • FAO/WHO prepared a framework for developing national food safety emergency plans 2010. • Significant activities include the involvement in the Fukushima incident (2011) where the team contributed emergency advice and developed guidance. • Developed a framework for the use of risk analysis during food safety emergencies (2011) • A multi-country incident of E. coli contamination in vegetables was managed in 2011. • FAO/WHO developed a Guide for application of Risk Analysis principles and procedure during food safety emergency 2011. • FAO/ WHO prepared a Guide for developing and improving national food recall system 2012

Aquatic Animal Health Component	
Period	**Main Events**
1994-1998	• Intensification of shrimp aquaculture in 1990s. • Beginning of shrimp disease outbreaks in almost all shrimp producing countries - Asia (1994-1998). • Expert consultation and launch of TCP project "Assistance for the responsible movement of live aquatic animals by NACA", with participation of 21 countries in Asia.
1999-2003	• Advisory group on aquatic animal health, where FAO and OIE reports are monitored, taken-up/ institutionalized by NACA. • Technical Guidelines on responsible movement of live aquatic animals adopted by participating member countries, ASEAN. • FAO provided emergency assistance to Indonesia on koi herpes virus which led to a national TCP project (for the health management in freshwater aquaculture in Indonesia). The TCP project resulted in the development of the Guideline "Preparedness and response to aquatic animal health emergencies in Asia". • CMC-Animal Health mission to Viet Nam to investigate an 'unknown' shrimp disease. This led to an emergency TCP[84] "Emergency assistance to control the spread of an unknown disease-affecting shrimp in Viet Nam".
2004-2008	• Regional Workshop on preparedness and response to Aquatic Animal Health emergencies in Asia 2004. • Animal health Service Senior Officer, Infectious Diseases (EMPRES) invited by the Fisheries and Aquaculture • Policy and Resources Division's (FIA's) Senior Officer to participate at a regional fisheries/ aquaculture workshop to present FAO structures in responding to terrestrial animal disease outbreaks (including FAO tools, Global Framework-TADs (September 2004). • FAO Expert Workshop in Sri Lanka for the Preparation of Code of Conduct for Responsible Fisheries Technical Guidelines on Health Management for Responsible Movement of Live Aquatic Organisms to Reduce the Risk of Spread of Infectious Aquatic Animal Diseases (2005). • FAO publish the Code of Conduct for Responsible Fisheries Technical Guideline on "Health Management for Responsible Movement of Live Aquatic Organisms to Reduce the Risk of Spread of Infectious Aquatic Animal Diseases". • FAO workshop on the development of an aquatic biosecurity framework for Southern Africa (2008). • FAO provided emergency assistance to Botswana on Epizootic Ulcerative Syndrome, which led to a regional TCP project to combat Epizootic Ulcerative Syndrome in the Chobe-Zambezi River; participated by seven countries bordering the river system (2007). • Training of Fisheries officials of the seven participating countries of the Epizootic Ulcerative Syndrome Regional TCP project in Epizootic Ulcerative Syndrome identification, field sampling, basic aquatic animal Health and risk analysis. It implemented a targeted surveillance for Epizootic Ulcerative Syndrome and helped build the capacity of a reference laboratory in the region (2007). Countries now have a system for collecting field samples, which can then be sent to a regional reference laboratory.
2009-2012	• EMPRES expanded to include forest health, although no extra staff post or funds given for this work. • FAO published a manual "An Introductory Training Course: Risk Analysis for Movements of Live Aquatic Animals" and conducted introductory courses for several countries, e.g. Micronesia, Suriname and Tonga; Botswana, Ghana, Kenya, Malawi, Mozambique, Namibia, South Africa, Uganda, Zambia, Zimbabwe, Bosnia, Herzegovina, Croatia, Macedonia, Montenegro and Serbia. • Support countries develop national strategies on aquatic animal health

84 The most significant contribution of this TCP project is the identification and confirmation of the causative agent of this disease causing damage to shrimp aquaculture not only in Viet Nam but also other shrimp producing countries, e.g. China, Malaysia, Thailand, Mexico. The finding that this unknown disease is caused by a strain of Vibrio parahaemolyticus, public health significance and other information generated from the TCP project had significantly added to the current understanding of the disease. The disease is now called Acute Hepatopancreatic Necrosis Disease.

Forest Health Component	
Period	**Main Events**
1994-1998	• Outbreak of Cypress Aphid in Mediterranean countries and 14 African countries.
1999-2003	
2004-2008	• The Asia-Pacific Forest Invasive Species Network[85] established in 2004, to manage the threats posed by forest invasive species in the Asia-Pacific region. • The Forest Invasive Species Network for Africa established in 2004 to coordinate the collation and dissemination of information relating to forest invasive species in sub-Saharan Africa for sustainable forest management and conservation of biodiversity.
2009-2012	• EMPRES expanded to include forest health, although no extra staff post or funds given to Forestry Department. • Global Review of Forests conducted in 2009. • FAO has developed free e-learning courses to refresh your knowledge of forest health practices and phytosanitary standards. • Forest invasive networks used to disseminate phytosanitary standards and e-learning courses. • Guide to the implementation of phytosanitary standards in Forestry developed in 2011.

85 The network is a cooperative alliance of 32 member countries in the region and operates under the umbrella of Asia-Pacific Forestry Commission, which is a statutory body of FAO. (APFISN Genesis, objectives and achievements http://www.fao.org/forestry/12371-0ef1e8a2cd8c55c2dc22ca5b5bd5e6e63.pdf).

Appendix 3. List of people interviewed

No.	Name	Role	Organization
Italy meetings - FAO headquarters			
1	Ahmed El Idrissi	Senior Animal Health Officer (Bacterial and Zoonotic Diseases)	FAO-HQ
2	Shukri Ahmed	Deputy Leader, Strategic Programme Leader 5	FAO-HQ
3	Akiko Kamata	Animal Health Officer	FAO-HQ
4	Annie Monard	Senior Locust Expert & Team Leader "Locusts and other transboundary plant pests and diseases"	FAO-HQ
5	Astrid Tripodi	Animal Health Officer	FAO-HQ
6	Béatrice Mouillé	EMPRES Laboratory Unit, Assistant Coordinator	FAO-HQ
7	Berhe Tekola	Director-Animal Production and Health Division	FAO-HQ
8	Bouna Diop	Secretary, PPR Global Eradication Secretariat	FAO-HQ
9	Caryl Lockhart	Veterinary Epidemiologist/GLEWS/ FAO	FAO-HQ
10	Catherine Bessy	Food Safety and Quality Officer	FAO-HQ
11	Chikelu Mba	Head, Seeds and Plant Genetic Resources Team	FAO-HQ
12	Daniel J. Gustafson	Deputy Director-General Programmes	FAO-HQ
13	Dominique Burgeon	Strategic Programme Leader 5 Leader/TCE Director	FAO-HQ
14	Dominique Menon	Agronomist	FAO-HQ
15	Eduardo Mansur	AGL Director- Former Forestry Director	FAO-HQ
16	Eran Raizman	Senior Officer Head, EMPRES	FAO-HQ
17	Esther Garrido Gamarro	Food safety and Quality Officer	FAO-HQ
18	Fatima Hachem	Nutrition Officer (former RNE Food Safety Officer)	FAO-HQ
19	Fazil Dusunceli	Plant protection Officer (Phytopathologist)	FAO-HQ
20	Felix Njeumi	Animal Health Officer (Disease Management)	FAO-HQ
21	Florence Poulain	Fisheries and Aquaculture Officer	FAO-HQ
22	Gracia Brisco	Food Standards Officer, Codex	FAO-HQ
23	Guillaume Belot	Veterinary Epidemiologist	FAO-HQ
24	Gwenaëlle Dauphin	Lead, EMPRES Laboratory Unit OFFLU focal point	FAO-HQ
25	Hans Dreyer	Director-Plant Production and Protection Division	FAO-HQ
26	Hilde Kruse	Food Safety Consultant	FAO-HQ
27	Jamie Morrison	Strategic Programme Leader 4 Leader	FAO-HQ
28	Jingyuan Xia	IPPC Secretary	FAO-HQ
29	John Ryder	Senior Fishery Industry Officer	FAO-HQ
31	Juan Lubroth	Chief Veterinary Officer	FAO-HQ
32	Julio Pinto	Animal Health Officer (GLEWS)	FAO-HQ
33	Keith Cressman	Senior Forecasting Officer	FAO-HQ

34	Keith Sumption	Secretary, EUFMD	FAO-HQ
35	Laurent Thomas	Deputy Director-General Operations	FAO-HQ
36	Leanne Stewart	IPPC Liaison Officer	FAO-HQ
37	Luca Russo	SP 5 02 Team leaders	FAO-HQ
38	Lee Myers	Acting Manager CMC-AH	FAO-HQ
39	Manuel Barange	Director, Fisheries and Aquaculture Policy and Resources Division	FAO-HQ
40	Marion Chiris	Locust Programme Officer	FAO-HQ
41	Marjon Fredrix	Integrated Pest Management, Farmer Field Schools	FAO-HQ
42	Mark Davis	Senior Officer-Pesticides Management	FAO-HQ
43	Markus Lipp	Senior Food Safety Officer	FAO-HQ
44	Martin Heilman	Food Safety Consultant	FAO-HQ
45	Mary Kenny	Food Safety and Quality Officer	FAO-HQ
46	Melba Reantaso	Aquaculture Officer	FAO-HQ
47	Mohamed Lemine Ould Ahmedou	Executive Secretary, CLCPRO and Coordinator of EMPRES Western Region	FAO-HQ
48	Mona Chaya	EMPRES-FCC-ICU Coordinator	FAO-HQ
49	Raffaele Mattioli	Senior Officer (Non-Infectious Diseases)	FAO-HQ
50	Ren Wang	Assistant Director General-AG	FAO-HQ
51	Renata Clark	Head of EMPRES Food safety	FAO-HQ
52	Samia Metwally	Animal Health Officer (Virology)	FAO-HQ
53	Sarah Cahill	Food Safety Officer	FAO-HQ
54	Shiroma Sathyapala	Forestry Officer	FAO-HQ
55	Shivaji Pandey	Senior Consultant-SO2	FAO-HQ
56	Simon Funge-Smith	Senior Fisheries Resources Officer	FAO-HQ
57	Sophie von Dobschuetz	Veterinary Epidemiologist	FAO-HQ
58	Stephen Baas	Natural Resources Officer (for Early Warning Systems)	FAO-HQ
59	Subhash Morzaria	Senior Adviser –EPT 2 Programme	FAO-HQ
60	William Murray	Deputy Director-AGP	FAO-HQ
61	YongZhen Yang	Agricultural Officer (Pesticides)	FAO-HQ
Italy meetings - external partners			
62	Eric Boa	Former Director	Centre for Agriculture and Bioscience International (CABI)
63	Wafaa El Khoury	Lead Technical Specialist (Agronomy)	IFAD
Kazakhstan mission - Caucasus and Central Asia Technical Workshop on locust			
64	Abdirashid Mukhyshov	Deputy Director, National Methodological Center of Phytosanitary Diagnosis and Prognosis	Ministry of Agriculture, Kazakhstan
65	Almaz Alakunov	Head, Plant Protection and Pesticide Registration Division	Ministry of Agriculture, Food Industry and Melioration, Kyrgyzstan
66	Armen Avagyan	Director, Veterinary Sanitary and Phytosanitary Service Centre	Ministry of Agriculture, Armenia
67	Attaullah Hanif	Technical manager, Emergency Pest Action	Ministry of Agriculture, Irrigation and Livestock, Afghanistan

68	Bejan Rekhviashvili	Deputy Head, Plant Quarantine Division, National Food Agency,	Ministry of Agriculture, Georgia
69	Damad Sultanov	Acting Director, National Centre for Plant Protection	Ministry of Agriculture, Azerbaijan
70	Dmitrii Govorov	Deputy Director	Russian Agricultural Center
71	Furkat Gapparov	Head, Laboratory for Locust Research	Uzbekistan Research Institute for Plant Protection
72	Khamzat Belkharoev	Deputy Director	Russian Agricultural Center
73	Kiyomuddin Ganiev	Head, State Enterprise on Plant Protection and Agriculture Chemicalization	Ministry of Agriculture Tajikistan
74	Lasha Nutsubidze	Head, Phytosanitary Monitoring and Risk Analysis Division, National Food Agency	Ministry of Agriculture, Georgia
75	Mars Almabek	Deputy Director, State Inspection Committee in the Agricultural Sector,	Ministry of Agriculture, Kazakhstan
76	Meret Geldiyev	Head, Plant Protection Department	Ministry of Agriculture and Water Management, Turkmenistan
77	Mohammad Iqbal Karimi	Acting Director, Plant Protection and Quarantine Department	Ministry of Agriculture, Irrigation and Livestock, Afghanistan
78	Mukhtar Zhanabayev	Chief Expert, State Phytosanitary Department, State Inspection Committee in the Agricultural Sector	Ministry of Agriculture, Kazakhstan
79	Norik Barseghyan	Deputy Director, Center of Services for Veterinary-Sanitary	Ministry of Agriculture, Armenia
80	Safarali Nasirov	Head of Division, Crop Production Department	Ministry of Agriculture, Azerbaijan
81	Saidmurod Khayriddinov	Head, Locust Control Expedition	Ministry of Agriculture Tajikistan
82	Sapargeldi Orunbayev	Head, Dashoguz Region Department	Ministry of Agriculture and Water Management, Turkmenistan
83	Utkir Mirzaev	Head, Forecast Department	National Center for Plant Protection and Agricultural Chemistry, Uzbekistan
84	Zhanybek Derbishaliev	Director, Department of Chemicalization and Plant Protection,	Ministry of Agriculture, Food Industry and Melioration, Kyrgyzstan
Egypt mission - FAO Regional Office for Near East and North Africa			
85	Dost Muhammad	Plant Production Officer	FAO-RNE
86	Mamoon AlSarai Alalawi	Secretary-CRC	FAO-RNE
87	Pasquale Steduto	Deputy ADG	FAO-RNE
88	Abdessalam Ould Ahmed	Assistant Director General, Regional Representative- Near East	FAO-RNE
89	AbdelHamied Hamid	Senior Forestry Officer	FAO-RNE
90	Lotfi Allal	ECTAD Team	FAO-RNE
91	Magdi Latif	Knowledge/Information Management Officer	FAO-RNE
92	Markos Tibbo	Animal Health Officer	FAO-RNE
93	Shoki Aldobai	Crop Protection Officer	FAO-RNE
94	Toni Ettel	Programme Coordinator	FAO-RNE
Egypt mission - external partners			
95	Akila Saleh	Director, Founder, Coordinator	Egyptian Food Safety and Food Security Information Centre

96	H. El Mahdi El Bushra	Foodborne Diseases Surveillance, Regional Adviser for Emerging Diseases Communicable Disease Surveillance, Forecasting and Response,	WHO Regional Office for the Eastern Mediterranean
97	Ibrahim Mahrous	CVO and Chairman, General Organization for Veterinary Services	Ministry of Agriculture and Land Reclamation (MoALR)
98	Akmal Elerian	Senior Program Manager	USAID Egypt-Office of Health and Population
99	Ali Abbas Qazilbash	Chief Technical Advisor, UNIDO Regional Food Safety Project	UNIDO
100	Gamal Abdelatef	Director General	General Department for Locusts and Agro-Aviation Affairs, Ministry of Agriculture & Land Reclamation
101	Hala El Hennawy,	Medical Epidemiologist	WHO Egypt
102	Mohamed Ahmed Ali	Head of Environmental Research Division + EPT2-PREDICT2 Focal point,	Ministry of Higher Education (MHE)
103	Nabih Abdel Hamid	Director	Egyptian Food Safety and Food Security Information Centre
104	Nabil Darwish	President	Poultry Producers Association – Egypt
105	OsamaTaha	Locust Info	
106	Paola Antoun & Haydar Fersoy		RECOFI
107	Riadh Ben-Ismaïl	Regional Adviser, Tropical Diseases and Zoonoses	WHO
Thailand mission - FAO Regional Office for Asia and Pacific (RAP)			
108	Aurélie Brioudes	Regional Surveillance Coordinator	FAO-RAP
109	David Brown	Interim Fishery Programme Consultant	FAO-RAP
110	Carolyn Benigno	Animal Health Officer	FAO-RAP
111	Filip Claes	Regional Laboratory Coordinator	FAO-RAP
112	Johannes Ketelaar	Chief Technical Advisor for the regional IPM program	FAO-RAP
113	Kachen Wongsathapornchai	Regional Epidemiology Coordinator	FAO-RAP
114	Katinka DeBalogh	Senior Animal health Production Health Officer	FAO-RAP
115	Patrick Durst	Senior Forestry Officer	FAO-RAP
116	Peter Black	ECTAD Deputy Regional Manager - Asia	FAO-RAP
117	Shashi Sareen	Food Safety Consultant	FAO-RAP
118	Sridhar Dharmapuri	Regional food safety officer for Asia	FAO-RAP
119	Wantanee Kalpravidh	ECTAD Regional Manager-Asia	FAO-RAP
120	Weimin Miao	Aquaculture Officer	FAO-RAP
121	Yongfan Piao	Senior Plant Protection Officer	FAO-RAP
122	Yurdi Yasmi	Forestry Officer	FAO-RAP
Thailand mission - external partners)			
123	Tipvon Parinyasiri	Director	Bureau of Food, Thai FDA
124	Daniel Schar		USAID and OFDA
125	Flavie Goutard	Epidemiologist Researcher	CIRAD-UR AGIRs
126	Francois Roger	Regional Director	CIRAD

127	Khwanchai Kreausukon	Director Veterinary Public Health Centre for Asia Pacific	Chiang Mai University
128	Parntip Ratanakorn	Dean	Faculty of Veterinary Medicine, Mahidol University, Bangkok, Thailand
129	Ronel Abila	OIE Sub-regional Representative	OIE/SEACFMD
130	Stan Fenwick	One Health Workforce	Tufts University, Thailand
131	Sudarat Damrongwatanapokin		USAID and OFDA
France mission - external partners - OIE headquarters			
132	Alain Dehove	Director of Finance	OIE HQ
133	Catherine Bertrand-Ferrandis	Head of Communications Dept.	OIE HQ
134	Gounalan Pavada	OFFLU Focal Point	OIE HQ
135	John Stratton	Deputy Head of Regional Affairs Dept.	OIE HQ
136	Mariano Ramos	CMC-AH Focal Point	OIE HQ
137	Maroussia Clavel	Head of the Performance Management Cell	OIE HQ
138	Matthew Stone	Deputy Director General -International Standards and Science	OIE HQ
139	Paula Cáceres	Head of WAHIS Dept.	OIE HQ
140	Tianna Brand	Head of Programmes Dept.	OIE HQ
Switzerland mission - external partners - WHO headquarters			
141	Angelika Tritscher	Coordinator	WHO HQ
142	Anne Claire Luzot	WHO Evaluation office	WHO HQ
143	Bernadette Abela-Ridder	Team Leader, Neglected Zoonotic Diseases	WHO HQ
144	Peter Ben Embarek	INFOSAN manager	WHO HQ
145	Pierre Formenty	Team Lead – Emerging and Epidemic Zoonotic Diseases	WHO HQ
Ghana mission - FAO Regional Office for Africa			
146	Abebe Haile Gabriel	Deputy Regional Representative for Africa	FAO-RAF
147	Berhanu Bedane	Animal production and Health Officer	FAO-RAF
148	Beth Crawford	Regional Strategic Programme Coordinator	FAO-RAF
149	Charles Bebay	Regional Manager a.i., FAO ECTAD West/Central Africa	FAO-RAF
150	Martinus Van Der Knaap	Senior Fishery and Aquaculture Officer	FAO-RAF
151	Mohamed Ag Bendech	Senior Food and nutrition Officer	FAO-RAF
152	Tijani Bukar	FAO Africa Regional Representative	FAO-RAF
Ghana mission - external partners			
153	Kenneth M. K. Gbeddy	Director	Veterinary Services of Ghana
154	Pulkuu	Epidemiologist	VSD
155	William Amanfu	Epidemiologist	Disease Management and Risk Assessment Expert
Kenya mission - FAO Country Office			
156	Fasina Folorunso	ECTAD Team Leader	FAO-Kenya
157	Grace Bore	ECTAD Regional Operations Officer	FAO-Kenya
158	Jose Lopez	RTEA Regional coordinator	FAO-Kenya

159	Robert Allport	Programme Coordinator	FAO-Kenya
160	Sam Okuthe	ECTAD East Africa Regional Epidemiologist	FAO-Kenya
161	Stella Kiambi	National MERS CoV Coordinator	FAO-Kenya
162	Wilson Ronno	Crop Production/Agronomist Officer	FAO-Kenya
163	Yilma Makonnen	ECTAD Regional Manager	FAO-Kenya
Kenya mission - external partners			
164	Andrew Thaiya	Country Coordinator, OHCEA	USAID OH Workforce
165	Eric Fevre		International Livestock Research Institute (ILRI)
166	Muriithi Mbabu		Department of Veterinary services
167	Wakhusama	Deputy sub-regional representative OIE	OIE Nairobi
168	Andrew Edewa	Food safety and Sanitary and Photo sanitary Expert	AU
169	B.M. Prasanna	Director of CIMMYT's Global Maize Program	CIMMYT
170	Baboucarr Jaw	Programme Coordinator, VET-GOV Programme Coordinating Unit	African Union- IBAR
171	Edward Okoth	Senior Scientist	International Livestock Research Institute (ILRI)
172	Eston K. Mutitu	Researcher	Kenya Forestry Research Institute
173	Jimmy Smith	Director General	International Livestock Research Institute (ILRI)
174	Joseph Kamau	Country Coordinator	PREDICT 2
175	Lily Bebora		University of Nairobi
176	Marc-Alain Widdowson	CDC Kenya Country Director	Centers for Disease Control and Prevention, Kenya (CDC)
177	Mary Lucy	Manager	CAB International, Africa Regional Centre
178	Mbaria J. Mucunu	Chairman PHPT Department	University of Nairobi, College of Agriculture and Veterinary Sciences (CAVS)
179	Peninah Munyua	Epidemiologist and Lead One Health Program	Centers for Disease Control and Prevention, Kenya (CDC)
180	Raphael Coly	PAN-SPSO Project Coordinator (Food Safety)	AU-IBAR
181	Samuel Wakhusama	Deputy Sub-Regional Representative	OIE Sub-Regional Representation for Eastern and the Horn of Africa
182	Sevgan		CIMMYT
183	Wafula Kinyanjui		IGAD Centre for Pastoral Areas and Livestock Development (ICPALD)
Ethiopia mission - FAO Subregional and Country Offices for East Africa			
184	Abebe, Getachew	National Technical Coordinator, Ethiopia	FAOET
185	Bateno Kabeto	Agronomist, Pest Management	FAOET
186	Edward Kilawe	Forestry Officer	FAOSFE
187	Gedlu Mekonnen	Programme Coordinator Livestock	FAOET
188	Gijs vant Klooster	FAO PPR Ethiopia	FAOET
189	Mathew Abang	Plant Production and Protection Officer	FAOSFE
190	Oumar Diall	Sub-regional Livestock Officer	FAOET
191	Parick Kormawa	Sub-regional Coordinator	FAO SFE

192	Scott Newman	ECTAD Ethiopia Team Leader	FAOET
193	Senait Zwedie	Nutrition Policy Officer	FAOET
194	Warkicho Jateno	Nutrition Officer	FAOET
Ethiopia mission - external partners			
195	Hiwot Belihu Lemma		Ministry of Agriculture and Natural Resources
196	Zebdewos Salato	Locust Info	Ministry of Agriculture and Natural Resources
197	Dave Hodson	Senior wheat rust GIS and monitoring specialist	CIMMYT
198	Zebdewos Salato Amba	Team Leader of Migratory pest control	Ministry of Agriculture and Natural Resources
199	Weldehawariat Assefa	Director	Ministry of Agriculture and Natural Resources
Viet Nam mission - FAO Country Office			
200	Gnangiang Vo	ECTAD Team members	FAO-VN
201	Jongha Bae	FAO Representative	FAO-VN
202	Ken Inui		FAO-VN
203	Pawin Padungtod	Senior Technical Coordinator	FAO-VN
204	Roberta Tranquilli	International Operation Coordinator	FAO-VN
Viet Nam mission - external partners			
205	Can Nhi Van Van		
206	Do Huu Dung	Head of Planning Division	Department of Animal Health, Ministry of Agricultural and Rural Development (DAH/ MARD)
207	Hung Nguyen	Regional Director	International Livestock Research Institute (ILRI)
208	Nguyen Nhu Tiep	Director General	Agricultural-Fishery-Forestry Quality Assurance Centre (NAFIQAD/ MARD)
209	Nguyen Thu Thuy	Deputy Director General	Department of Animal Health, Ministry of Agricultural and Rural Development (DAH/ MARD)
210	Nguyen Van Long	National Focal Point for Aquatic Animal Health	Department of Animal Health, Ministry of Agricultural and Rural Development (DAH/ MARD)
211	Nhu Van Can	Director	Department of Aquaculture, DOA/ MARD
212	Satoko Otsu		WHO
EMPRES Historical Workshop - external participants			
213	Gillian Allard	Former Forest Protection and Health Officer	
214	Joseph Domenech	Former FAO Chief Veterinary Officer	FAO retiree
215	Mark Rweyemamu	Inaugural Head of EMPRES-Animal Health Component	FAO retiree
216	Nick Van der Graf	Former Director, Plant Production and Protection Division	FAO retiree
217	Peter Kenmore	Former Director, Plant Production and Protection Division	FAO retiree
218	Rohana P Subasinghe	Former Senior Fishery Resources Officer	FAO retiree
219	Thami Ben Halima	Former Secretary of CLCPRO/ Coordinator of the EMPRES Western Region	
Others - virtual consultation (skype/teleconference)			

220	Anna Ricoy	Disaster Risk Management Coordinator	FAO Regional Office for Latin America
221	Antonio Rota	Lead Technical Coordinator Livestock	International Fund for Agricultural Development (IFAD)
222	Brian Nsofu	Team member for the ASTF Midterm review	COMESA
223	Brian Perry	Chairman	Afrique One Aspire
224	Caroline Merten	Member of INFOSAN Advisory Board (formerly FAO FS Team until 2014)	European Food Safety Authority
225	Caroline Muren		Disease surveillance, vector regulatory and zoological services
226	Chiluba Mwape	Team member for the ASTF Midterm review	Southern African Development Community (SADC)
227	Daniel Beltran Alcrudo	Regional Animal Health Officer	FAO Budapest
228	Deyanira Barrero Leon	FAO Regional Animal Health Officer, Latin America	FAO Regional Office for Latin America
229	Evan S Muthuma		Veterinary Public Health
230	Henri Kabore	VET-GOV Programme Coordinator for ECOWAS	AU-IBAR VET-GOV
231	Jena-Michel Poirson	Former Food Safety Officer (until 2014)	ex-FAO
232	Joyce MulilaMitti	Plant Protection Officer	FAOSFS
233	Karim Tounkara	OIE Regional Representative for Africa, Bamako	OIE Africa, Bamako
234	Kevin Gallagher	FAO Representative	FAO Mongolia
235	Marc Abdala	FAO Representative	FAO Liberia
236	Ronia Tanyongana	Project Manager for the ASTF project	FAO-ZW
237	Sam Hamilton		Department of Agriculture and Water Resources, Australia
238	Simon Mwale	Team member for the ASTF Midterm review	CCARDESA
239	Tania Santivanez	Plant Protection Officer, Regional Office for Latin America and the	FAO-RLC
240	Tony Joannis		Regional Support Laboratory for Animal Influenzas and other Transboundary Animal Diseases, Nigeria
241	Vincent Martin	FAO Representative (Former Head of EMPRES Animal Health)	FAO-CN
242	Vivian Iwar	Head of Animal Resources development/Department of Agriculture and Rural Development	ECOWAS Commission
243	Deborah Duveskog	Community Adaptation and resilience Officer	FAO-KE
244	Cyril Ferrand	FS Cluster Global Coordinator (formerly REOA and manager of the Regional Cassava Initiative)	FAO-HQ
245	Neil Marsland	Senior Technical Officer	FAO-HQ
246	Washington Otieno	Team member for the ASTF Midterm review	CABI
247	Winfred Hammond	Former -Senior Entomologist	FAO retiree

Appendix 4. List of documents consulted

FAO documents

1 FAO. 1996. Emergency Prevention System for Transboundary Animal and Plant Diseases (EMPRES): Livestock Diseases Component, 1996, not published.

2 FAO. 1999. Emergency Prevention System (EMPRES). Plant Protection: Preventing desert locust emergencies. Back ground note, presentation by the Agriculture Department to delegates at the FAO conference.

3 FAO. 2000a. Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases Desert Locust Management in the Central Region. Revised Programme document.

4 FAO. 2000b. Report of Seventh session of Desert locust control Committee (DLCC), Roma, 12-15 June 2000.

5 FAO 2002. EMPRES Transboundary Animal Diseases Bulletin Issue No 21. Available at http://www.fao.org/3/a-y3931e.pdf

6 FAO. 2004. African network on invasive species. Unasylva, 219(55): 65-66.

7 FAO. 2004. Director-General's Bulletin 2004, No.2004/20: EMPRES Emergency Centre for Locust Operations.

8 FAO. 2005b. Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases in Central Region -EMPRES Desert Locust Component, Progress Report January-December 2005.

9 FAO. 2006. Interim Report on the Global Programme for Control and Eradication of Highly Pathogenic Avian Influenza (HPAI). September 2006. Available at http://www.fao.org/docs/eims/upload/217280/rep_hpai_sfera_en.pdf

10 FAO. 2007. Aquaculture development. 2. Health management for responsible movement of live aquatic animals. FAO Technical Guidelines for Responsible Fisheries. No. 5, Suppl. 2. Rome, FAO. 2007. 31p. http://www.fao.org/docrep/010/a1108e/a1108e00.htm

11 FAO. 2008. Report of the FAO Workshop on the Development of an Aquatic Biosecurity Framework for Southern Africa. Lilongwe, Malawi, 22–24 April 2008. FAO Fisheries and Aquaculture Report. No. 906. Rome, FAO. 2009. 55p. Available at http://www.fao.org/docrep/012/i1084e/i1084e.pdf

12 FAO. 2009. Global review of forest pests and diseases. FAO Forestry Paper 156, FAO, Rome.

13 FAO/CLCPRO. 2009. Fifth meeting of the Executive Committee of the Western Desert Locust Control Commission (CLCPRO). Executive committee meeting report. Agadir, Morocco, 22-23 June 2009.

14 FAO. 2010. Director-General's Bulletin 2010, No.2010/24: Food Chain Crisis Management Framework (FCC)

15 FAO.2011a. The State of Food and Agriculture Report 2010-11 (SOFA): Women in Agriculture Closing the gender gap for development. Available at http://www.fao.org/docrep/013/i2050e/i2050e.pdf

16 FAO. 2011b. One Health: Food and Agriculture of the United Nations Strategic Action Plan (Brochure). Rome

17 FAO. 2011. EMPRES Transboundary Animal Diseases Bulletin Issue No.38, Rinderpest Special edition. Available at http://www.fao.org/docrep/014/i2259e/i2259e00.pdf

18 FAO. 2011. Guide to implementation of phytosanitary standards in forestry. FAO Forestry Paper 164, FAO, Rome. Russian version

19 FAO. 2011. Report of the technical workshop on Locusts in Caucasus and Central Asia.

20 FAO. 2011. Sustainable Animal Health and Contained Animal Related Human Health Risks – In support of the Emerging One Health Agenda. 106th Programme Committee, Rome 21-25 March 2011

21 FAO. 2012. Report of the 40th session of Desert Locust Control Committee (DLCC).

22 FAO. 2012. Reviewed Strategic Framework and Outline of the Medium Term Plan 2014-17. FAO Council 145th Session, Rome, 3-7th December 2012.

23 FAO. 2013. FAO Strategy for Partnerships with the private sector. Available at http://www.fao.org/docrep/018/i3444e/i3444e.pdf

24 FAO. 2014. Wheat Rust Diseases: Global Programme 2014-2017. Strengthening Capacities and Promoting Collaboration to Prevent Wheat Rust Epidemics, 2014

25 FAO. 2014a. Report of the 29th session of the Central Region Commission for Desert locust control (CRC).

26 FAO. 2014b. Report of the Meeting on the Desert Locust Control Financing system, 11-13 March 2014, FAO, Rome.

27 FAO. 2014. PC 116/5 - Indicative Rolling Work Plan of Strategic and Programme Evaluation 2015-17, November 2014

28 FAO-CA. 2014. Transboundary Plant Pests and Diseases: Management and Challenges. Committee on Agriculture, 24th session, Rome, 29 September - 3 October 2014.

29 FAO. 2015a. Report of the Technical Workshop on the Development of a Strategy for Improving Biosecurity (Aquatic Animal Health) in the Subregional Countries of the Mozambique Channel (Madagascar, Mozambique and the United Republic of Tanzania). Maputo, Mozambique, 2–4 April 2013. FAO Fisheries and Aquaculture Report No. 1067. Rome. 107 pp. Available at http://www.fao.org/3/a-i5140e.pdf

30 FAO. 2015. FCC-EMPRES information sheets a collection of FAO achievements. Available at http://www.fao.org/3/a-i5279e.pdf

31 FAO. 2015. Technical Workshop on Locusts in Caucasus and Central Asia (CCA). FAO report, Pushkin, Russian Federation 26-30 October 2015. Report 68p.

32 FAO. 2015. 2014 Annual Report of the Office of the Inspector General (OIG). Report submitted to the Finance Committee, 157th Session (FC157/3). February 2015.

33 FAO. 2016a. Action Plan on Antimicrobial Resistance 2016-2020.Available at http://www.fao.org/3/a-i5996e.pdf

34 FAO. 2016. FAO Commission for controlling the Desert locust in the central region (CRC). Fifty years fighting desert locust. FCC-EMPRES Information Sheets.

35 FAO. 2016. FAO/WHO, 2016. Risk communication applied to food safety. Handbook, 99 pp

36 FAO. 2016. Food Chain Crisis: Early Warning Bulletin. July-September 2016, No.20, 2016

37 FAO. 2016. Food Chain Crisis: Early Warning Bulletin. July-September 2016, No.20. Available at http://www.fao.org/3/a-c0175e.pdf

38 FAO. 2016. Impact of the Ebola Virus Disease Outbreak on Market Chains and Trade of Agriculture Products in West Africa. Available at http://www.fao.org/3/a-i5641e.pdf

39 FAO. 2016. Technical Workshop on Locusts in Caucasus and Central Asia (CCA). FAO Report, Astana, Kazakhstan 14-18 November 2016.

40 FAO. 2016. The potential use of drones in locust early warning and preventive control. Conceptual project proposal.

41 FAO. 2017. GIEWS Special Alert: Outbreaks of Tilapia lake virus (TiLV) threaten the livelihoods and food security of millions of people dependent on tilapia farming. Special alert, no.338. 26 May 2017. Available at http://www.fao.org/fileadmin/user_upload/newsroom/docs/GIEWS%20Special%20Alert%20338%20Global%20I7326EN.pdf

42 FAO.2017. Transboundary Threats to Food and Nutrition Security in Southern Africa. FAO Sub-regional Office for Southern Africa - Resilience Hub (SFS-REOSA) Newsletter. Issue 1: April-June 2017. Available at http://www.fao.org/3/a-i7691e.pdf

Collaborations

43 FAO/WHO. 2010. FAO/WHO Framework for Developing National Food Safety Emergency Response Plans. Rome. 24 pp.

44 FAO/WHO. 2011. FAO/WHO guide for application of risk analysis during food safety emergencies. Rome. 52pp.

45 FAO/WHO. 2016. Risk communication applied to food safety. Handbook. 99 pp. Food Safety and Quality series

46 FAO/WHO. 2017. FAO/WHO: Providing food safety advice during emergencies. In press

47 FAO/OIE. 2015. Crisis Management Centre - Animal Health (CMC-AH) - Rapid Missions Update. October 2014 – October 2015. Available at http://www.fao.org/3/a-i5110e.pdf

48 FAO/NACA. 2001. Manual of procedures for the implementation of the Asia regional technical guidelines on health management for the responsible movement of live aquatic animals. FAO Fisheries Technical Paper No. 402, Supplement 1, 106 pp., Rome http://www.fao.org/3/a-y1238e.pdf

Past Evaluations

49 FAO.1995. C/95/4 -Programme Evaluation Report 1994-95. Final report, chapter 5. FAO Office of Programme, Budget and Evaluation (PBE).

50 FAO. 2001. Improving pesticide application techniques for Desert Locust control (GCP/INT/651/NOR). FAO Evaluation Mission Report. 26 February – 16 March 2001.

51 FAO.2002. Programme Evaluation of the Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES): Desert Locust. Final report. Programme Committee-87th Session (PC87/4).

52 FAO. 2005. Evaluation of the EMPRES Desert Locust Component: Central Region. Report of the evaluation mission. FAO Office of Evaluation (OED).

53 FAO. 2006. Joint FAO/France Evaluation of Support for emergency response to the expansion of Avian Influenza from East and Southeast Asia to other regions (OSRO/GLO/504/MUL). Final report. FAO Office of Evaluation (OED).

54 FAO. 2007. First Real Time Evaluation of FAO's Work on Highly Pathogenic Avian Influenza. Final report. FAO Office of Evaluation (OED)

55 FAO. 2007. FAO: The Challenge of Renewal. Independent External Evaluation of the Food and Agriculture Organization of the United Nations (FAO). Report submitted to the Council Committee for the Independent External Evaluation of FAO (CC-IEE). September 2007. Available at ftp://ftp.fao.org/docrep/fao/meeting/012/k0827erev1.pdf

56 FAO. 2009. Mid-term Evaluation of the EMPRES Desert Locust Program in the Western Region. Final Report, page 64.FAO Office of Evaluation (OED)

57 FAO. 2010. Second real-time evaluation of FAO's work on the Highly Pathogenic Avian Influenza. Final Report. FAO Office of Evaluation (OED).

58 FAO. 2013. Evaluation of FAO's Regional and Subregional Offices for Asia and the Pacific. Final report. FAO Office of Evaluation (OED). Available at http://www.fao.org/fileadmin/user_upload/oed/docs/RAP_Evaluation_2014_MR.pdf

59 FAO. 2016. Final evaluation of the project Development of a Framework for the Progressive Control of Foot and Mouth Disease in Pakistan. Final Report. FAO Office of Evaluation – Project Evaluation Series, 2016

60 FAO.2016. Final evaluation of Capacity building for South African Professionals in the Field of Agriculture and Food Security (GCP/RAF/412/SAF). Final Report, p. 29. FAO Office of Evaluation(OED) – Project Evaluation Series, 2016

61 FAO. 2016. Evaluation of FAO Strategic Objective 5: Increase the resilience of livelihoods to threats and crises. Final report. FAO Office of Evaluation (OED)-Thematic evaluation series.

62 FAO. 2017. Bangladesh Food Safety Cluster Evaluation. Final report. FAO Office of Evaluation (OED)- Project series, 2017.

Others

63 ADF. 2003. Assistance to the preventive control of the desert locust in four member states of CLCPRO (PALPCP-CLCPRP) project. Appraisal Report. African Development Fund. 62p.

64 Arthur, J.R.; Baldock, F.C.; Subasinghe, R.P.; McGladdery, S.E. Preparedness and response to aquatic animal health emergencies in Asia: guidelines. FAO Fisheries Technical Paper. No. 486. Rome, FAO. 2005. 40p. http://www.fao.org/docrep/009/a0090e/a0090e00.htm

65 Beers, P. 2005. Aquatic disease emergencies and implications to international trade. p. 41–45. In: Subasinghe, R.P.; Arthur, J.R. (eds.). Regional workshop on preparedness and response to aquatic animal health emergencies in Asia. Jakarta, Indonesia, 21–23 September 2004. FAO Fisheries Proceedings. No. 4. Rome, FAO. 2005. 178p. Available at http://www.fao.org/docrep/009/a0192e/A0192E08.htm

66 CIDRAP. 2014. Article: H7N9 cases grow by 7, along with China poultry industry outcry. Article dated Feb 6th 2014. Centre for Infectious Disease Research and Policy. Available at http://www.cidrap.umn.edu/news-perspective/2014/02/h7n9-cases-grow-7-along-china-poultry-industry-outcry

67 Cressman, K. 2012. Desert locust economics: A case study 2003-05. http://fr.slideshare.net/FAOLocust/desert-locust-economics-200305-case-study?smtNoRedir=1

68 EMPRES (Desert Locust Component) Central Region. Report of the Evaluation mission. 24 February- 10 March 2003. FAO, 62p.

69 Fegan, D.F. 2005. Preparedness and response to aquatic disease emergencies: the relevance and role of the private sector. 113–121. In: Subasinghe, R.P.; Arthur, J.R. (eds.). Regional workshop on preparedness and response to aquatic animal health emergencies in Asia. Jakarta, Indonesia, 21–23 September 2004. FAO Fisheries Proceedings. No. 4. Rome, FAO. 2005. 178p. http://www.fao.org/docrep/009/a0192e/A0192E10.htm

70 Gibbs, P. 2014. The evolution of One Health: a decade of progress and challenges for the future. Veterinary Record 2014; 174:85-91 doi:10.1136/vr.g143. Accessed July 2016 http://veterinaryrecord.bmj.com/content/174/4/85.full#ref-14

71 Havelaar AH, Kirk MD, Torgerson PR, Gibb HJ, Hald T, Lake RJ, et al..2015. World Health Organization Global Estimates and Regional Comparisons of the Burden of Foodborne Disease in 2010.

72 Joffe S.1997. Economic and Policy Issues in Desert Locust Management: A Preliminary Analysis, FAO report.

73 Lecoq M., 2003. Desert locust threat to Agricultural Development and food security and FAO/international role in its control. Arab.J.Pl. Prot. 21:188-193

74 Magor J., Ceccato P., Dobson H.M, Pender J. and Ritchie L. 2007. Preparedness to prevent Desert locust plagues in the Central Region, an historical review. Desert locust technical series n°35.

75 Moore, B. 2005. Alien invasive species: impacts on forests and forestry. A review. Forest Health and Biosecurity Working Paper FBS/8E. Forestry Department, FAO, Rome.

76 Moussaoui M. 2010. Etude sur l'intérêt économique de la lutte préventive contre le Criquet pèlerin. Rapport de consultation FAO/CLCPRO. 33p.

77 Pantenius C. and Munir B. 2012. A Four-Year Concept for Strengthening the Role of the Commission for Controlling the Desert Locust in the Central Region (CRC) to Preserve and Support the Preventive Desert Locust Control Capacity of the CRC Member States. FAO Consultancy report. 16p

78 Rick Davies, 2012, Criteria for assessing the evaluability of Theories of Change. Available at http://mandenews.blogspot.it/2012/04/criteria-for-assessing-evaluablity-of.html

79 Thomson A. and Miers H. 2002. Assessment of the socio-economic impact of desert Locusts and their control. Oxford Policy Management. The Department for International Development (DFID). 37p

80 World Bank.2010. People, Pathogens and Our planet: Towards a One Health Approach for controlling Zoonotic Diseases. Report no.50833-GLB

81 SADC. 2017. SADC Regional Aquaculture Strategy and Action Plan (2016-2026). Available at https://extranet.sadc.int/files/9514/6522/0178/SADC_FTC_1_2016_5a_Aquaculture_Strategy_English.pdf

Appendix 5. Evaluation team biographies

External Consultants:

1 **Tim Leyland (from the UK)** is a veterinarian from the Universities of London and Edinburgh, with 30 years of experience in providing veterinary services to remote, marginalized and conflict-affected communities. He notably set-up the Operation Lifeline Sudan animal health programme under the United Nations Children's Fund (UNICEF), a work later transferred to FAO. He worked as Research Director for Tufts University's Feinstein International Centre within the School of Nutrition, Science and Policy where he helped establish offices at the African Union's Inter-African Bureau for Animal Resources (AU-IBAR) in Nairobi and Addis Ababa, and contributed to the Livestock Emergency Guidelines and Standards (LEGS). He then worked for the Department for International Development's Research and Evidence Division before emigrating to New Zealand. He is the lead evaluator for the EMPRES Evaluation.

2 **Said Ghaout (from Morocco)** is an entomologist, specialist on locust management and holds a PhD.in Desert Locust and a master's degree in General Ecology from the University of Paris XI (France). He is also an engineer in Plant Protection, graduated from the Agronomic and veterinary Institute Hassan II (IAV) of Morocco. He has 30 years of experience in locust control. He served as the Director of the National Center for Locust Control of Morocco since 1996, where he led locust campaigns and participated in multiple international meetings, conferences and seminars as official representative of Morocco. He speaks Arabic, English and French.

3 **John Edwards (from Australia)** holds master's and PhD degrees in veterinary epidemiology. He has more than 35 years of experience in animal health and production, research and the management of livestock and public health programmes in Australia and Asia. He is an Emeritus Professor with Murdoch University and is an Executive Director of One Health Solutions, a company that provides consultancy services in the fields of biosecurity, epidemiology capacity development, one health and veterinary education. He is a former Chief Veterinary Officer of Western Australia (1992-2001), Dean of the School of Veterinary and Biomedical Sciences at Murdoch University (2004-2009) and worked as Regional Coordinator for the OIE Southeast Asia Foot and Mouth Disease Campaign (SEAFMD) (2001-2004).

4 **Katharina DC Stärk Spallek (from Switzerland)** holds a master's degree in Veterinary Epidemiology and a PhD in Epidemiology. She has extensive experience in public health policy and food safety and is currently the director of Quality, at Safe Food Solutions Inc. She also is professor of veterinary public health policy at the Royal Veterinary College, London. Her past evaluation experience focused on public health and animal-related hazards, surveillance and disease control programmes including economic assessments.

5 **Hanu Pappu (from the United States of America)** is a professor of plant pathology and holds the President Sam Smith Distinguished Professorship at Washington State University (WSU). He has been the director of the plant pathology graduate programme for the last seven years. His evaluation experience includes serving as an expert team member for the United States Agency for International Development (USAID) project evaluations in Bangladesh, Egypt, Ghana, Hungary, Poland and Uganda. His experience includes contributing to the Bill and Melinda Gates Foundation mapping exercise to identify priority research areas for plant health in Africa, 2009.

6 **Jose' Paclibare (from the Philippines)** has 22 years of experience in fisheries and aquatic resources. He holds a master's degree in fish health and a PhD in shrimp health. His past experience includes managing the Global Forum on Agricultural Research and Innovation programme which was a disease prevention technology for shrimp farmers and overseeing the preparation of a comprehensive national fisheries industry development plan for the Philippines.

FAO Office of Evaluation (OED) Staff:

7 **Marta Bruno** is the evaluation manager for the EMPRES evaluation. After studying history and geography in Cambridge, she worked as a researcher and lecturer in Russian and East European Studies at the Birmingham and Wolverhampton Universities, and on to various field-based assignments. She has long worked in sustainable livelihoods approaches, including in the FAO Emergency and Rehabilitation Division (TCE). She joined the Office of Evaluation (OED) in 2012. Her current evaluation work focuses mainly on countries in protracted crisis and FAO's resilience framework and implementation at the country level. She is fluent in Italian, English, French and Russian.

8 **Emmanuel Moncada** is a sociologist and is the evaluation expert (institutional and partnership analysis) for the EMPRES evaluation. He has 20 years of experience in emergency and conflicts settings. He has been the country representative for seven years for International NGOs in several African countries and in particular in East Africa. He has worked for the FAO Emergency and Rehabilitation Division (TCE) since 2007 as a programme officer within different food security frameworks, including food chain. His past evaluation experience focused on resilience programmes in African countries. He is fluent in Italian, English, French and Spanish.

9 **Maame Tabuah Duah** is the evaluation analyst for the EMPRES evaluation. She is a rural and urban development specialist with extensive experience in development evaluation, land-use planning and local development. Her current evaluations mainly focus on FAO's work on increasing resilience of livelihoods to threats and crisis. Prior to joining the Office of Evaluation (OED), she worked with the FAO Office of Strategy and Planning, Regeneris Economic Consulting Limited, and Ghana National Development Planning Commission. She holds a master's degree in urban economic development from the University College of London and a bachelor's degree in human settlement planning from Kwame Nkrumah University of Science and Technology, Ghana.

8. List of Annexes

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Annex 1. Terms of Reference

Annex 2. Historical workshop agenda and list of participants

Annex 3. Evaluation survey analysis

Annex 4. List of key products identified by survey respondents

Annex 5. Survey questions and answers

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