

Research Application Summary

**Safe food, fair food project: research centers and universities working for food safety in informally marketed livestock products in sub Saharan Africa**

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**ABSTRACT**

In sub Saharan Africa (SSA), informal markets provide affordable animal-source foods to large populations. However such foods carry hazards. The Safe Food, Fair Food Project was implemented between 2008 and 2011 to develop capacity in participatory risk assessment for improved food safety and enhanced market access by smallholder farmers in SSA. The project was a collaboration between the International Livestock Research Institute (ILRI), eight African universities, one African and three European advanced research institutes. The Project was implemented in eight countries, Kenya, Tanzania, Ethiopia, Ghana, Côte d'Ivoire, Mali, Mozambique and South Africa. Iterative training in participatory risk analysis was provided to stakeholders and students. Food safety situational analysis and risk assessment studies were conducted. Graduate fellows worked with communities to assess food safety and provide advice on its management. These results were shared in national workshops, followed by a global synthesis workshop. Findings of the study were received by all stakeholders who concluded that i) informal food chains are important to African economies and ii) food safety risks were less serious than previously perceived. Key messages for universities and training of students to facilitate change at community level included (i) working in multi-disciplinary teams and (ii) skills in participatory methods. Key messages for improving institutional arrangements for effectively reaching farmers include (i) importance of research consortia and (ii) need for long term involvement.

**Key words:** Community engagement, multi-disciplinary teams, participatory risk assessment, skills, Sub-Saharan Africa

## Résumé

En Afrique subsaharienne, les marchés informels fournissent des aliments d'origine animale à des prix abordables pour les populations. Cependant, ces aliments comportent des dangers. Le projet Safe Food, Fair Food a été mis en œuvre entre 2008 et 2011 pour développer les capacités en matière d'évaluation participative des risques pour améliorer la sécurité sanitaire des aliments et améliorer l'accès des petits exploitants au marché. Le projet était mis en œuvre en collaboration entre l'Institut international de recherche sur l'élevage (ILRI), huit universités africaines, un institut africain et trois instituts européens de recherche avancée. Le projet a été mis en œuvre dans huit pays: le Kenya, la Tanzanie, l'Éthiopie, le Ghana, la Côte d'Ivoire, le Mali, le Mozambique et l'Afrique du Sud. Une formation itérative à l'analyse participative des risques a été dispensée aux acteurs et étudiants. Des études d'analyse situationnelle en matière de sécurité sanitaire des aliments et d'évaluation des risques ont été menées. Les diplômés ont travaillé avec les communautés pour évaluer la sécurité alimentaire et donner des conseils sur sa gestion. Ces résultats ont été partagés lors des ateliers nationaux, suivis d'un atelier de synthèse globale. Les résultats de l'étude ont été reçus par toutes les parties prenantes qui ont conclu que i) les chaînes alimentaires informelles sont importantes pour les économies africaines et ii) les risques de sécurité alimentaire étaient moins graves que précédemment perçus. Les principaux messages pour les universités et la formation des étudiants pour faciliter le changement au niveau communautaire comprenaient (i) le travail en équipes pluridisciplinaires et (ii) les compétences en méthodes participatives. Les principaux messages pour améliorer les arrangements institutionnels visant à atteindre efficacement les agriculteurs comprennent (i) l'importance des consortiums de recherche et (ii) la nécessité d'une implication à long terme.

Mots clés: engagement communautaire, équipes multidisciplinaires, évaluation participative des risques, compétences, Afrique subsaharienne

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## Background/ Rational for study

The Safe Food Fair Food Project focused on assessing food safety risks in livestock and fish products which are the most risky in terms of food safety. In sub Saharan Africa (SSA), 85 to 90% of animal products are distributed through informal marketing systems which are not always effectively regulated by state services. Such foods are affordable to the majority including to poor consumers and contribute significantly to the economy. Animal-source foods are nutritionally dense sources of energy, protein, and various essential micronutrients (Smith *et al.*, 2013) and even when consumed in small amounts they have positive impacts on growth, cognitive function, and physical activity of children, better pregnancy outcomes; and reduced morbidity from illness (Neumann *et al.*, 2002, 2012; Smith *et al.*, 2013).

On the other hand, animal-source foods may carry biological and chemical hazards with them. Food borne diseases (FBD) caused by such hazard, are potentially serious public health problems. Biological FBD are often zoonoses (diseases which transmit from animals

to humans), and diarrhea is the most common illness associated with informally-marketed foods (UNICEF, 2009; WHO, 2010). The large proportion of diarrhea cases occurs in the developing world because of the lack of sanitation and unregulated food distribution systems; however, rigorous implementation of food safety measures is difficult due to limited resources and adverse effects on the livelihoods of actors along value chains in these countries.

The Safe food, fair food (SFFF) Project was conducted in selected SSA countries between 2008 and 2011 to develop capacity in participatory risk assessment to improve food safety while enhancing market access by smallholder farmers in SSA. After the success of the Project, its second phase commenced in 2012, involving more field-based activities including intervention and monitoring. The present paper presents lessons from the first phase of the Project.

### **Methodology and Approaches**

The approach was three pronged: a) to build champions of risk analysis among senior academics by involving them in training and projects; b) to build capacity for risk analysis through training graduate fellows and undertaking proof of concept studies; and c) to generate evidence on food safety in informal markets. The Project was undertaken in Cote d'Ivoire, Ethiopia, Ghana, Kenya, Mali, Mozambique, South Africa and Tanzania.

In 2008, training courses on participatory risk analysis were conducted in Pretoria, South Africa and Addis Ababa, Ethiopia and graduate students and risk champions (stakeholders from both public and private sector involved in animal source food production, marketing and food safety) identified in the eight countries were invited. Lectures were mainly provided by Advanced Research Institutions (ARI) and the International Livestock Research Institute (ILRI) with African universities providing some lectures and organizing practical work. Throughout the project follow-up training was provided (in Arusha, Addis Ababa, Pretoria and Abidjan).

Between 2008 and 2009, food safety situation analyses were conducted to study food safety policy and value chains of animal-source foods, and to prioritize food safety problems in the eight countries. A meeting was organised with all stakeholders in all the countries to analyze the food safety situation. In parallel, the proof of concept participatory risk analysis studies were conducted by graduate students between 2009 and 2011. In all 25 students (8 female, 17 male) were involved, 23 of them from developing countries. Five received PhDs, 18 MSc and two undergraduate students. More than 50 presentations of the work were made at international conferences and more than ten journal articles produced.

The results of food safety situational analysis and risk assessments were presented in national workshops between 2010 and 2011 and involved food safety stakeholders both from the public and private sectors in each country. Food safety issues were discussed in a participatory manner. Finally in September 2011, a global synthesis workshop was held in Addis Ababa, Ethiopia. The research findings were presented by Project students and

key messages identified for sharing with policy and the stakeholders. The students and researchers participated in the First International Congress on Pathogens at the Human-Animal Interface held in Addis Ababa, and 21 research papers were presented there. At the end of the Project, impact assessment was carried out between January and March 2012 and findings synthesized and shared (ILRI, 2012).

**Emerging issues/ findings and lessons.** Key evidence messages from the project were:

- 1. Importance of informal food chain in African economy.** The informal food chain has been neglected by the many States. As a result of evidence presented, participants of national workshops agreed that poverty alleviation and improvement of food safety cannot be achieved without focusing attention on informal food chains which are prevalent in SSA countries.
- 2. Risks in informal food markets are not necessarily high.** Stochastic risk assessments using data partially collected through participatory appraisals revealed that the risks of the informally-marketed foods were not that high as previously perceived. For example, in Debre Zeit, Ethiopia, although prevalence of *S. aureus* in milk was high and raw milk consumption common, the annual incidence of staphylococcal food poisoning due to consumption of dairy products was low: 20 per 1000 people. This was because people in these areas consume fermented dairy products and the low pH reduced risk by 93.7% (Makita *et al.*, 2012).

Based on the Project findings, key messages for universities were identified as below:

- 1. Ability to work in multi-disciplinary teams.** The problems faced by farmers are complex and cannot be solved by a single disciplinary approach. Biological sciences are necessary for understanding food safety problems. Statistical thinking is essential for understanding impact and causes of biological phenomenon. At the same time, social science provides insights on farmers perceptions and attitudes and how to foster behavior change. Economics on the incentives for changing behavior, and, gender analysis on how women's and men's differing perceptions, vulnerability and capacity affect risk exposure and management. Working in multi-disciplinary teams helps to integrate knowledge to respond to respond to farmers needs.
- 2. Skills in participatory methods.** Formal participatory methods allowed rapid collection of information in data constrained environments. Participatory appraisals are effective in improving engagement with farmers and the other actors along value chain and data collection.

Key messages for institutional arrangements for reaching farmers include importance of:

**Research consortia.** The project was made possible through donor funding that built a consortium of a CG research center, advanced research institutions and African universities. The research institutions brought capacity in participatory risk analysis while linking 12 institutions allowed mutual learning. The project resources facilitated field work, training and presentation at conferences.

**Long-term involvement through programs rather than one-off projects.** Because projects are time-bound, long term engagement with farmers was not possible. In all cases, research results and advice were provided to communities, but to bring about lasting change, a longer engagement would be necessary in which risk management is also supported.

### **Conclusion and recommendations for action**

In conclusion, the SFFF project introduced the Participatory Risk Analysis approach to food safety in developing countries. The concept was proven and capacity was developed for students and lecturers both for research and community engagement. To use these approaches, universities need to strengthen their academic programmes to produce graduates with multi-disciplinary skills. Student research projects should include participatory and gender sensitive approaches to data collection and analysis. All results must be shared with communities and long-term engagement is more effective at supporting farmers to change behavior and take up innovations. Research consortia involving multiple southern and northern partners are useful for resource mobilization and peer-to-peer learning.

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