



Private Environmental Governance in the Ethiopian Pesticide Supply Chain: Importation, Distribution and Use



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ABSTRACT

Agricultural pesticides are important chemicals that are used to mitigate crop damage or loss and improve productivity. However, pesticides may cause negative environmental and human health effects depending on their specific distribution and use. Securing environmental safety and sustainability of pesticide distribution and use is widely seen as an important challenge for pesticide governance. This paper analyses how, why and under what circumstances Ethiopian pesticide supply chain actors deal with (un)safe distribution and use of pesticides and assesses their potential contribution to securing the quality, environmental safety and sustainability of pesticides importation, distribution and use. The framework developed for this is based on sustainable supply chain governance in order to assess the roles of and the interactions between the different chain actors, supporters and influencers. On the basis of field research in Ethiopia among key chain actors (importers, retailers, farmers) we analyse their involvement in three different environmental governance mechanisms: governing *material* flows of pesticides, managing *information* on health and environmental safety and providing training and capacity-building *services*. The study found the organisation of the pesticides supply chain in Ethiopia as atomistic. Environment and health hardly played a role in pesticides handling by the different supply chain actors, which was dominated by immediate profit motives. As a consequence smallholder farmers are put at risk because they are refrained from training, support or information provision on pesticides. Indeed, it was a failure of state governance that led importers and retailers to aggressive marketing and distributing pesticides unsafely and hinder the proliferate of private mode of governance. At the same time, a small signs of hope have also been identified at the supporters' and influencers' side of the chain. Successful environmental supply chain governance for safe pesticide distribution and use requires coordination and as well as training and information sharing (interaction) among pesticide supply chain actors, supporters and influencers at all levels-local, national and global as elements of one system of governance. Finally, the evidence presented in this paper suggests that due to limits in governmental capacity and concerns on commercial viability and on social and environmental impacts among private actors, there will be a role for private actors alongside public actors to ensure safe pesticide distribution and use. Public-private partnerships might constitute an attractive strategy for this aim.

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1. Introduction

The importance of agricultural pesticides for developing countries is undeniable. However, the issue of human health and environmental risks has emerged as a key problem for these countries in a number of studies ([1–4] and [5]; Stadlinger, 2013). Although the use of pesticides in Africa is relatively low [6–8], this

should not be equated with low risk. The unsafe distribution and use of pesticides in many African countries such as in Ghana [9] Tanzania [10], Uganda [8], Kenya [11] has been widely documented. Other parts of Africa have shown similar problems with poorly implemented pesticide legislation, leading to widespread use of highly toxic and illegal pesticides [2,12,13]. Also Ethiopia is confronted with a number of problems associated with unsafe handling of pesticide distribution and use. Over the last two decades, Ethiopia promoted a market economy and increased the involvement of private actors in many sectors, including in the importation and distribution of pesticides. Most pesticides used in Ethiopia are imported by international manufacturing companies represented by local agents (registrants) [14–16]. Pesticides were first applied

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in Ethiopia in the mid-1940s, but expanded only when commercial farming expanded in the early 1960s. Recent economic development led to rapid growth in pesticides use [15,17]. Currently, pesticide use practices are changing as a result of the government plan to intensify and diversify agriculture by promoting high value export crops such as flowers and vegetables. For instance, more than 212 types of pesticides with different active ingredients are being used to cultivate roses in Ethiopia [18]. But also, smallholders growing vegetables are facing challenges because they are usually resource-poor but also risk averse and under these conditions it is challenging to decide when, how, how much and which pesticide to apply among the hundreds available on the market ([16]; 2015).

Ensuring the quality of the pesticides in the market and regulating the distribution and use of pesticides after registration is an important aspect of pesticide governance. In order to control the import of hazardous pesticides, prevent the contamination of the environment, and minimise the effects on human health, the government of Ethiopia has developed a pesticide policy. To support this policy, Ethiopia has also accepted and ratified different international conventions and agreements including the Rotterdam, Stockholm, Basel, and Bamako conventions and the FAO code of conduct on pesticide distribution and use. The Ethiopian pesticide law covers the whole life cycle: from registration and procurement, via import/local manufacture and distribution to use by the growers [19]. However, this state-based regulatory system has shown limitations because the implementation and enforcement proves not fully effective (FDRE/EPA, 2006; [2,16,20]).

State-based regulation seems not sufficient to secure sustainable pesticide distribution and use in Ethiopia. In order to fill this gap an important contribution could be made by involving private actors in pesticide governance and there is a growing number of analytical and empirical studies on the involvement of non-state actors in environmental governance [21–23]. However, there is little empirical and theoretical examination of how private actors might be involved in environmental governance in developing countries, such as Ethiopia. Therefore, this paper investigates why and how pesticide distribution and use might be unsafe and assesses the potential contribution from supply chain actors in securing the quality, environmental safety and sustainability of pesticides distribution and use.

After introducing the theoretical background and research methodology, this paper analyses how and to what extent different private actors in the supply chain, support, influence and (un)successfully articulate their interest in safe pesticide distribution and use. In the concluding section, this paper looks for the potential of private actors to take up new roles in pesticide governance to overcome the limits of state-based regulations and to contribute to a more effective and sustainable pesticide supply chain.

2. Conceptualizing private environmental governance in pesticide supply chain

The emergence of private environmental governance in recent decades suggests that state-based regulation is insufficient and that involvement of non-state actors needed to implement effective environmentally sound and socially responsible management practices [21–24]. Private environmental governance refers to actions taken by non-governmental entities such as reducing environmental and health risks and promoting a more equitable distribution of environmental amenities. Private pesticide governance arrangements are the formal and informal rules according to which humans and organisations interact and deal with pesticide distribution and use at different levels [25,26]. These arrangements steer who has

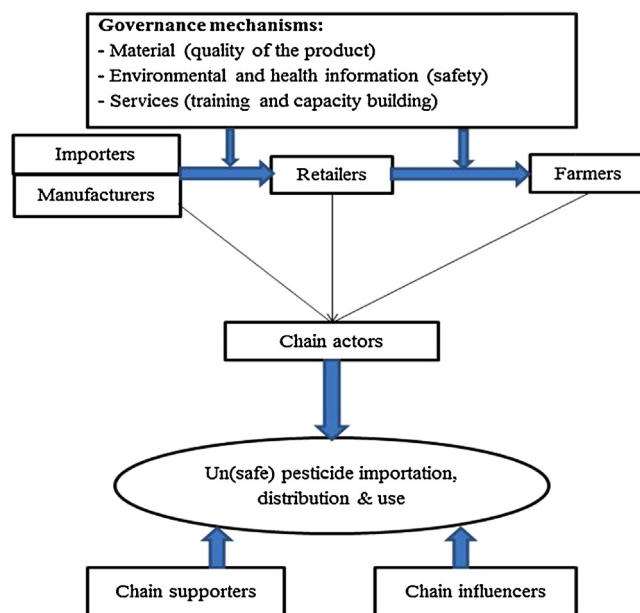


Fig. 1. Governance mechanisms in the pesticides supply chain.

access to what information, shape the incentives for various courses of action, and affect who has the capacity to act.

Understanding pesticides provision and use as a supply chain allows considering the roles of different non-state actors and their relations. As [27,28] made clear private companies do not operate as autonomous units but are part of larger supply chains. Within supply chains the provision of products, services, and information is organised through formal and informal institutions [29,30]. Different actors at the various levels aim at improving the performance of the entire chain but this need not be limited to economic considerations but may also include social, ethical, and environmental ones (Wijk et al., 2009; [31]; Bush et al., 2014). Supply chain governance involves the ability of one firm to influence the activities of other firms in the chain.

Our focus is therefore on analysing how key actors in the pesticide supply chain participate directly or indirectly in pesticide governance mechanisms that exist in the chain. In line with Roduner [29], Wijk et al. (2009) and Drost et al. [31], we distinguish three categories of key actors, first chain actors (who deal directly with pesticides: importers, retailers and farmers), chain supporters (who do not deal directly with pesticides but provide services to chain actors: business service providers, associations and NGOs) and chain influencers (who influence the performance of the chain actors and chain supporters: the regulatory framework and government policies). (See Fig. 1).

Different private actors may apply different governance mechanisms when addressing economic, social, ethical, and environmental issues [22,24,28,32,33]. We distinguish three complementary mechanisms that may potentially steer environmental safety and sustainability in the Ethiopian pesticides supply chain. First, there is the governance of the material (pesticides) flow, involving decisions on the kind of pesticides that are traded and used while considering their health and environmental impacts. Second, the management of information about the environmental health and safety of pesticides and how this is be offered by upstream to downstream actors and vice versa. Third, the provisioning of services such as training and capacity building that may contribute to reduced environmental and health impacts from pesticides. It is also important to assess the roles of supply chain supporters and influencers (see Fig. 1), whether public or private, in influencing the supply chain actors [21–23]. This framework

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