

Box 1

Smallholder value chains as complex adaptive systems: *Khat* in Kenya

Time: between 2013-2017 Kenya's exports of *khat* (*Catha edulis*) have grown by 10% per year, earning \$232 million and making *khat* the country's most valuable regional export. In February 2015, however, this expanding and highly lucrative value chain suddenly collapsed.

Uncertainty: although legal in Africa, *khat* is banned as a harmful drug in the USA, Canada, China, and most European countries. An influential Somali lobby group campaigns against trade in *khat* on the grounds that addiction causes unemployment and family breakdown. The export market also depends on efficient air cargo services since *khat* has to be consumed within three days.

Sensitivity to initial conditions: about 40% of the Kenyan crop is exported, with two thirds of exports going to Somalia, and one-third to the Somali diaspora in Europe. A Europe-wide trade ban on *khat* would therefore have a significant impact on the performance of the *khat* value chain.

Shocks: following a ban on *khat* imports by the Netherlands in 2012, the UK became the hub for illegal trade in *khat* to Europe and the USA. In June 2014, supported by Somali lobbyists, the UK declared *khat* a Class C drug, effectively closing the European market to imports from Kenya.

Interacting agents: the Europe-wide trade ban led to oversupply in the regional market for *khat*, which resulted in falling prices in Somalia. Farmers in Kenya saw the price of *khat* (locally known as *mira*) fall by one-third. At the same time, the Somali government increased taxes by 100% to \$200 per bag. This reduced demand from *khat* traders in Somalia who believed that consumers were unwilling to pay higher prices. Middlemen in Kenya responded by suspending the 16 daily flights from Nairobi to Mogadishu needed to supply the Somali market.

Adaptation: the Kenya *Miraa* Farmers and Traders Association (KMFTA) has held discussions with the British opposition Labor party and hopes that the ban will be lifted in case of a change of government. The association plans to engage the European Court of Justice to challenge the UK ban. Since the ban, government officials in Kenya have been meeting regularly with growers to discuss the latest developments and the possibility of growing alternative crops.

Conclusion: the experience of the *khat* value chain in Kenya makes sense when analyzed as a complex system where shocks produced sudden and unpredictable outcomes, where interacting agents created a "cascade" that closed down the value chain, and where asymmetric power between value chain actors and nation states prevented successful adaptation.