



2012

'Bridging Knowledge Systems for Pro-Poor Management of Ecosystem Services' ('BKS') project

*Presentation of the project*

The BKS project in a nutshell

Who knows better, the distant scientist or the local farmer? In most cases they are asking somewhat different questions, have access to different types of information and evidence and face different limitations in the quest to expand their knowledge. This project sets out to develop and test methods which can help to narrow the gap between scientific knowledge and traditional knowledge, so that the two together can more effectively inform the adaptation of small scale farming systems towards a more sustainable management of ecosystem services. This gap is multi-dimensional, ranging from epistemology (what is knowledge) to mundane logistics (opportunities to test or observe in the field or in the lab). The relationship between these two knowledge systems is also deeply unequal. Locally developed Traditional Ecological Knowledge (TEK) has often been exploited by, and then treated as inferior to, scientific (or 'global') knowledge. Yet reliance on scientific knowledge alone has often been a key reason why top-down aid programmes have struggled to deliver sustainable rural development in the global south.

The emergence of a new agricultural crop sets the scene where we examine how TEK and science may link up or supplement each other. More specifically we focused on an allegedly 'underutilised species' – a useful plant already known to farmers, but not (yet) as a cash crop. *Jatropha curcas* is such a plant, surrounded by ecological and economic uncertainty and controversy. Known to many African farmers as an amenity tree in the yard, in recent years it has been extensively promoted as a cash crop in the field. This represents a shift in ecosystem services, from mainly supporting and cultural services (producing shade, wind break, 'nice flowers') towards provisioning services (producing oil seeds for sale). This also represents a shift in knowledge on how to manage the tree, abandoning traditional practices (e.g. planting shoots coppiced from existing trees), in favour of 'modern' agronomic practices brought in by (mainly) western investors who have set up out-growers schemes in Zambia.

Our case study illustrates the critical importance of good research, built on knowledge exchange between farmers and scientists. Competing claims of invasiveness, impacts on soil fertility and human health have created controversy and confusion, whilst a demand-led quest for the holy grail of sustainable biofuels and casual observations of how well *Jatropha* grows in villages, has fuelled an investment hype. The arrival of western companies on their doorsteps persuaded many local farmers to ignore local knowledge of *Jatropha* and try it out as a cash crop in the field. However it turned out that as a productive field crop, *Jatropha* needs similar inputs as existing crops which fetch much higher market prices. This has forced companies to learn more about local conditions and farming systems and to shift towards more locally embedded practices such as live fences and intercropping. However this costly learning curve and the continued difficulty to achieve economies of scale have

now led to the collapse of outside investments and farmers who have jatropha trees, are left without a market.

Following these recent events we are examining different end-uses of jatropha trees, and the processes of knowledge production and circulation associated with these. We have mapped knowledge about traditional uses (e.g. medicinal and lighting services) and we are seeking to understand if, why and how they have declined.

We are undertaking action research on local oil extraction and soap making to uncover the drivers and barriers to adoption and diffusion of local soap production. This is not only important as an economic value added activity; enhanced soap use practices can provide further ecosystem services. We will be experimenting with citizen science approaches to disease monitoring, taking account of seasonal distributions of health threats which can be reduced by soap use, and seasonal cash flows which provide access to outside health products and services.

We have met farmers who have discovered new uses for jatropha as a pesticide (e.g. against stem borers in maize; see picture) and we are working closely with them to record local practices of crop pest monitoring and management.

We are also trialling participative methods to survey land use and socio-spatial practices and to reconstruct local environmental histories in order to understand how the spatial distribution of jatropha has expanded over time and is affecting the provision of ecosystem services within the settlement ecology of case study villages.

By combining participative methods with literature reviews, lab-work and computer modelling, and through various interactions between farmers, scientists, extension workers, NGO experts and policy makers we are building experience in co-learning and knowledge exchange 'across the gap'. We will use this experience to reflect critically on the tools to achieve it, the challenges to deliver it, and the potential benefits it can bring to improving our ability to understand, evaluate and influence change in agri-ecological systems and rural livelihoods.

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