Thirsty mangos and thrifty farmers: dialogues between the Water Footprint and Peruvian smallholder farmers

Dominguez-Guzman, C.; Verzijl, A.; Zwarteveen, M.

Publication date
2017

Document Version
Final published version

Thirsty mangos and thrifty farmers: dialogues between the Water Footprint and Peruvian smallholder farmers

BY MARGREET ZWARTEVEEN · PUBLISHED 14/04/2017 · UPDATED 15/04/2017

This post has been written by Carolina Dominguez-Guzman, Andres Verzijl and Margreet Zwarteveen

For the full article, see: Dominguez-Guzman, C., A. Verzijl and M. Zwarteveen. 2017. Water Footprints and 'Pozas': Conversations about Practices and Knowledges of Water Efficiency. *Water* (9):16.

"Eat me. I'm sweet." The delicious-looking mango that sits on the shelves of a Dutch supermarket can talk! Its voice is bound to be juicy, soft and sensuous.

Next to being sweet, the mango also carries stickers (in two different languages!) to explain that it is ripe (rijp) and that it is "nature's pride" and "fair for life". All to re-assure customers that there is no need to worry about the environmental and social conditions or impacts of the mango's production and trade. All is well with this mango: it is tasteful, good-looking, good-natured and beautiful. It can be enjoyed with a clear conscience – why, you might even have two!

This mango may have come from the Motupe valley in Peru, one of the areas from where many fruit export companies purchase their products. Perhaps they were even produced by Fabio and Juana Obando, a brother and sister who live and farm on the land they inherited from their parents. Mangos are just one of the steadily growing agro-export products of Peru. The government of Peru proudly promotes this sector, seeing it as an

attractive way to use its natural capital for boosting economic growth and national incomes. Its desert coast forms an ideal terrain for their cultivation, as its dry climate provides an effective shield from all kinds of pests and diseases. Yet, where the production and trade of many agro-export commodities is done by large-scale intensive agro-businesses, mango production is largely done by smallholders.

The Obando farm (picture: C. Dominguez-Guzman)

The only slight concern perhaps is water. The water needed to irrigate grapes, asparagus or indeed mangos needs to be brought from across the Andean mountain range through expensive infrastructures and tunnels. As several civil society and research organizations have pointed out, the rapid rise of agro-export production in Peru's desert valleys is deeply ironic when viewed in water-terms (see for instance https://www.theguardian.com/environment/2010/sep/15/peru-asparagus-british-wells): the crops are exported from a place where water is scarce (the desert coast of Peru) to places (the U.K., the Netherlands) where it is relatively abundant. This export of *virtual water* – or the water needed to produce these crops – on the waves of consumer demand and market forces goes against the earlier hopes of the scholar who invented the concept, Tony Allan. He initially expected that by trade in virtual water, regional and local water scarcities could be overcome. After all, it makes sense to cultivate crops that require a lot of water in water-abundant places. Water-scarce countries can then import them, thus overcoming their own lack of water. Actual trade in virtual water, however, seems to go mostly in the opposite direction: from desert areas to water-rich places. The market apparently does not follow the logic of comparative advantage as far as water is concerned.

A prominent Dutch water scholar, Arjen Hoekstra, combined the ideas of Tony Allen with those of the environmental footprint to come up with the concept of the Water Footprint (WFP; see www.waterfootprint.org). Applying value chain thinking to water, the WFP is based on the hypothesis that

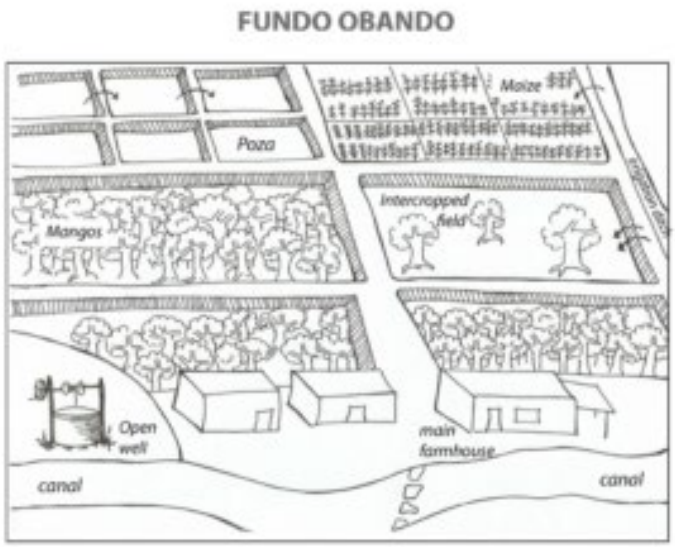
one important reason for water to travel in the wrong direction is that consumers are not aware of how much water goes into the products they consume. The WFP is a method to calculate and quantify this water, as a first step in creating more water consciousness. A second step could then be, as Hoekstra and others promoting the idea of the WFP propose, to have consumers pay more for those foodstuffs that are produced in water-wise ways. Ideally, this extra money could then flow back to the producers to help them pay for investments in technological or institutional innovations to improve their irrigation efficiencies.

The assumption that most farmers are wasting water is an important pillar of this reasoning. This assumption is based on the oft-repeated statement that 60–70% of the world's freshwater resources (estimates vary) are used in agriculture. If indeed much of this water is used inefficiently, possible solutions to water crises can be found in ways to make farmers grow more crops-per-drop. These for instance include the introduction of water-saving technologies (such as drip irrigation) and the pricing of water (or making its allocation subject to market or quasi-market principles). Both are oft-promoted solutions to make farmers use water more cautiously as well as redirect flows to where marginal returns are highest.

The WFP has quickly travelled the world, capturing the imagination of many. In 2015, the Swiss Development Foundation and the World Wildlife Fund together with the Peruvian National Water Authority (Autoridad Nacional del Agua, ANA) presented a report which makes the WFP concept one of the pillars of Peru's National Water Resources Strategy and Policy. While the Swiss Development Organization and the World Wildlife Fund collaborated in the development of the report, the overall Strategy and Policy Plan were developed with a loan from the World Bank. Three months after the launch of the report, the ANA issued a decree: RM 246-2015-ANA. The decree offers farmers the opportunity to obtain a 'blue water certificate' (*certificado azul* in Spanish) if they agree to have their water footprint measured, and if they commit to using water more efficiently and sustainably in the future.

What is happening here? Instead of being used to entice consumers to buy products that are produced in water-cautious ways, or to raise the water-consciousness of the public at large, the WFP has become a tool to 'discipline' farmers who supposedly waste water when irrigating their crops. When we discussed the possibility to obtain a blue certificate with Fabio and Juana, they were not all that interested. Why should they? Their irrigation logic is already premised on using water in the wisest possible way. As their farm is located in a very arid region where water availabilities are highly variable and difficult to predict, their irrigation strategies have evolved over centuries to make most of the available rain- and irrigation water. A

traditional irrigation method called *poza* is central to this strategy, which they use to irrigate as well as for harvesting rainwater. They combine *pozas* with inter-cropping techniques and water-saving agronomic practices. Fabio and Juana are convinced that what they do makes sense in terms of water, yields and profits, but also in terms of the longer-term health of their soils and mango trees. Fabio treats his mango trees as personalities, each having their own character and moods. He understands it when they are bad-tempered or tired.



Yet, what happens in the Obando farm, in several ways, runs counter to the way most agronomists and irrigation engineers envision modern mango orchards. Their expert advice has it that trees should be trimmed to remain between 2 and 3 m of height for easy picking and pest control. They also recommend planting trees closely together, spaced at 5 – 5 m (some even say 3 -3 m). Moreover, they hold that trees drop in productivity after a certain age, which is when they should be cut down and replanted. The trees in the Obando farm are tall (over 8 m), spaced 10 -10 m and among the oldest in Motupe. What is also different is that there are no polytube drip lines across the farm, no drip emitters next to each trunk. Instead, Fabio and Juana's trees stand tall in their *pozas*. Hence, in the eyes of the engineers responsible for assessing on-farm water efficiencies and handing out blue certificates, the Obando family water practices represent the almost iconic example of the traditional, old-fashioned and wasteful peasant farming.

Although the Obando and these experts fundamentally disagree, there are few if any occasions for the two to enter into a meaningful conversation with each other. A conversation about how to best assess and measure water use efficiencies, for instance. Which spatial (the farm, the globe, the river-basin, the country) and time scales (a cropping season, the life of a tree?) to use for such an assessment? Is it useful to limit measurements to just one crop – mango trees – excluding the other crops on the farm that benefit from the water that seeps from the *pozas* or the tertiary channels? Or are such seepages to be considered infiltration losses? How

meaningful is the distinction between blue water and green water, when both fill the *poza* reservoirs?

As it is, these, and many other questions, remain unanswered. The irrigation experts and agronomists are not conditioned to treat the water practices and knowledge of peasant farmers like the Obando family seriously. Their likely reflex upon seeing large ponds with standing water is instead to a priori dismiss these as wasteful. There also is little institutional or financial reward for them to engage in serious water conversations with farmers like Juana and Fabio. The prospect of helping sell more drip systems may be much more interesting in that respect.

The WFP idea provides an attractive and easy way to improve the water consciousness of consumers and the public at large. Yet, our story shows that something disconcerting may happen when it becomes yet another instrument of government-employed and donor-supported engineers and agronomists to modernize agriculture. Rather than sparking off conversations about efficient and wise water use, there is a risk that it ends up sanctioning those irrigation and farm practices that do not fit pre-conceived expert ideas of efficiency, modernity or progress. In the process, it may achieve the opposite of what it was intended to do: instead of promoting more cautious water used, it may erode or destroy traditional water wisdoms.

The lesson is that the translation of WFP ideas into improved on-farm irrigation practices needs to happen with patience, and with respect for how generations of living with water (as in Motupe) often yield intricate techniques for looking after, transporting, and caring for it. These techniques may form part of wider socionatural mechanisms for sharing available waters across places and times. Fostering such patience and respect requires active efforts to create space for conversations between irrigators, experts and other water actors. Spaces where both can re-think received wisdoms, where hierarchies between different forms of knowing can be transcended, and where the longer-term health of people and waters is valued higher than short-term market gains.

Tags: agrobusiness irrigation Peru water footprint Water governance

Margreet Zwarteveen

I am professor of Water Governance at IHE Delft Institute for Water Education and the University of Amsterdam. Trained as both an engineer and a social scientist, I study water allocation policies and practices, focusing on questions of equity and justice. My research includes the study of different institutional and technical modalities for allocating water and regulating water flows, and of different ways to understand or legitimize these. I use an interdisciplinary approach, seeing water allocation as the often contested outcome of interactions between nature, technologies and society.