



## Prelude

# Stories of people and water

### SOR PAOLO AND SORA MARIA

Sor Paolo and Sora Maria are a retired couple in their late sixties who 20 years ago invested their savings in a piece of land at Lunghezza, near Rome on a curve of the river Aniene. It was an excellent place for fishing – Paolo's favourite pastime. Ten years after buying this land, they started to build a house. When Sor Paolo retired from his job in Rome, the couple moved to Lunghezza.

In November 1999, heavy rains in the Apennines caused minor floods in the Aniene valley, and in early December the upper Aniene dam had to be opened to release water from the San Cosimato hydropower basin. A sudden increase of runoff proved perilous for downstream banks. Thousands of hectares of arable land were flooded, including Paolo's property. The emergency services were efficient, so there were no casualties or losses of livestock. Property damage was covered by insurance, and the regional government made a small subsidy available.

However, since the 1999 flood, Paolo and Maria do not feel safe at home. Sor Paolo still takes his fishing kit to the river in the early morning, but there are no more fish in the Aniene, so he just spends hours watching the river flow by. Sometimes the stream carries by big masses of foam, and sometimes there is a greasy layer covering the water. Sor Paolo knows that pollution comes from the industrial area of Tivoli, about 6 km upstream from his land; public health authorities have warned Lunghezza farmers to stop using river water to irrigate vegetables and water animals. Sor Paolo will probably have to pay somebody to dig a well so that he can have clean water for his vegetables and flowers. This is an expensive job, and he does not like having to pay for it when the waters of the Aniene are right there.

### DON BELISARIO

The small forest-covered canyon where Don Belisario and his family live contrasts sharply with the bare landscape of the hills surrounding the town of Jocotán in Eastern Guatemala. Every morning Don Belisario thanks the Virgin of Ocopa that he did not clear the trees from his plot, as his neighbours did. During an agroforestry course that he attended, he learned that trees prevent the canyon's creek from drying up. This water is an essential asset in Don Belisario's livelihood: it allows him to water the grafted fruit tree plantlets that he sells to other farmers, and the forest nursery that he looks after for the municipality. Creek water is also essential for the ceramics cottage industry that the women of the family run.

However, these activities are not enough to make the household budget; during the rainy season, Don Belisario has to rent 1.5 ha of hillside land to grow maize and beans for family consumption. Over the last 20 years, hillside agriculture has become difficult in Jocotán. Lost harvests and poor yields have many causes: the population has grown beyond the hills' agricultural carrying capacity; household lands have shrunk because of inheritance splits; and deforestation has increased, accelerating runoff. On top of all this, climate change is making rainfall increasingly unpredictable. The effects of environmental degradation on people's livelihoods are clear in Jocotán: lost or meagre yields are pushing hundreds of *campesino* families towards poverty and food-insecurity every year. To counteract drought, people are growing sorghum instead of maize. Some innovators have adopted new agricultural technologies recommended by

extensionists. High-yielding and drought-resistant hybrid maize and bean seeds, which need expensive chemical fertilizers and pesticides, have also been introduced. There are demonstration plots for land husbandry, water harvesting and agroforestry plantations, but these are too labour-intensive for most families. As nobody can live from farming alone, most men migrate seasonally to banana plantations and big ranches on the coast. Others work in the towns, often looking for ways to reach Mexico and the United States.

So far, the tree nursery has helped Don Belisario avoid migration, but for how much longer will water to irrigate the nursery be available from the creek? In 2000, Don Belisario remembers, it took only five minutes to fill his watering can from the creek's main source; now it takes ten. He also remembers that the source went dry for several days last year, and he lost more than 200 mango plantlets. Since then, every Sunday, Don Belisario prays the saints not to let his source die.

### CHAPAJI

Chapaji is the richest man in Bhusunde Bazar, a rural village in the middle hills of Nepal. He is the owner of the biggest and best-stocked shop in town, and the most important intermediary in Bhusunde Khola valley. Yet Chapaji cannot forget that his wealth and power originated from the 8 ha of terraced paddy field that he inherited from his father. This is a vast area of land to people in the middle hills of Nepal, where most families own less than 1 ha of rainfed land. Chapaji's terraces are in a very special position. They are high enough to be protected from the Bhusunde river floods during the rainy season, and low enough to be permanently irrigated by several local sources during even the driest season; they produce two high-yielding harvests a year.

In his early years, Chapaji used to loan his rice surplus to upland families who lacked land or rainwater and could not satisfy their own needs from on-farm production. Nowadays, the rice business has become a secondary activity for Chapaji, and tenants take care of it. However, Chapaji is still sentimentally attached to his land, and very concerned about the maintenance problems reported by tenants. For the last ten years, increasing work has been needed to keep the sophisticated hydraulic system in operation. This system allows water to flow gently through the terraces, preventing both stagnation and emptying. During heavy monsoon showers, huge amounts of rainwater mixed with sediment and stones pour on to the delicate earth mounds, sweeping away the bamboo and wood check-dams. These light structures are very efficient at managing the gentle stream of the paddy terrace, but totally inadequate for withstanding runoff from the hill. The tenants complain that the rainy season harvest is spoiled and too much maintenance is needed to make their business tenable. They have asked Chapaji to revise the terms of their contracts, leading him to understand that they will give up their jobs if he does not consider their claims.

While trying to find ways of keeping the tenants happy without losing too much of his own profit, Chapaji curses the people in hillside villages, who have progressively extended their farming and grazing land into the forest buffer zone, which had protected his terraces against runoff and landslides for centuries. He is furious with the people in upland settlements, who he sees as being able only to make children they cannot feed and to fell sacred trees for fuelwood and fodder. They do not understand that the gods created the forest to protect the property and life of those with a wealthy and successful karma. These miserable people have no right to interfere with this divine design and should be stopped. Chapaji decides to visit his friends at district headquarters to see what can be done.