Global Water Initiative

A Partnership Funded by the Howard G. Buffett Foundation

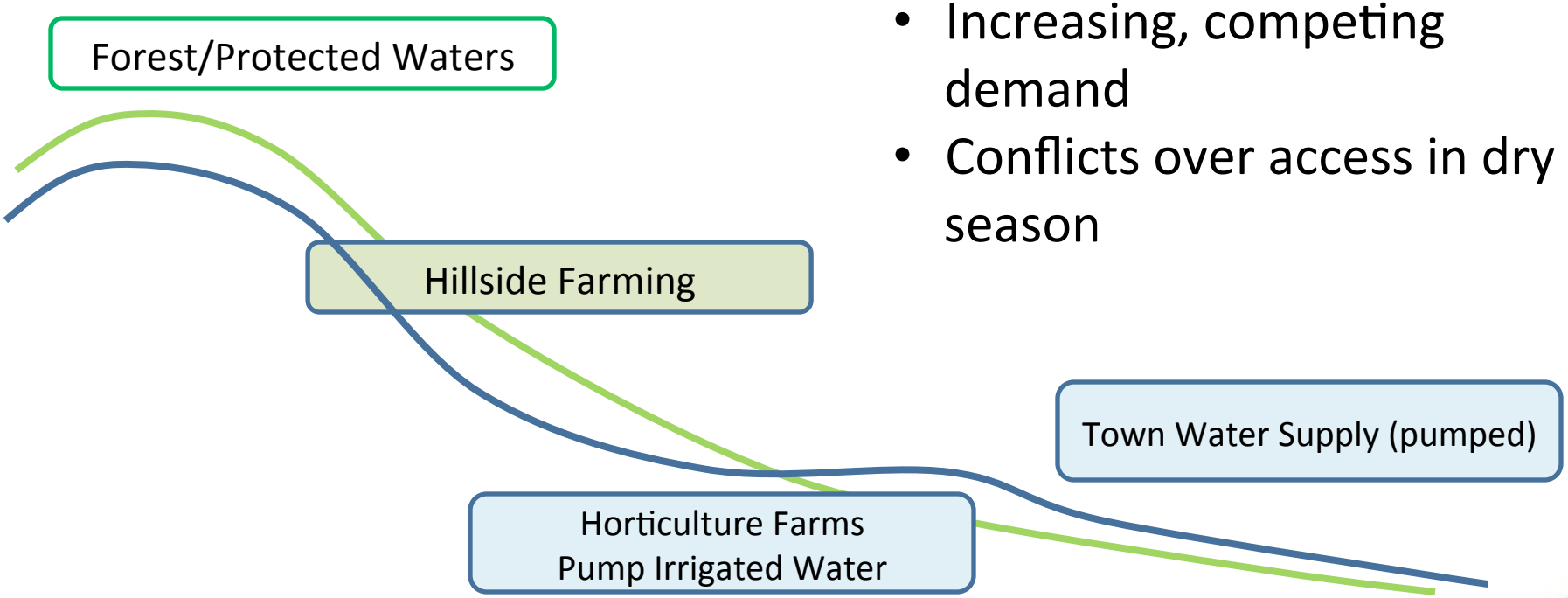
Supporting water resources for sustainable agriculture

Integrated Water Management Solutions

linking water for health and water for food

a case from La Trinidad, Nicaragua

The case of the Trinidad River in Nicaragua

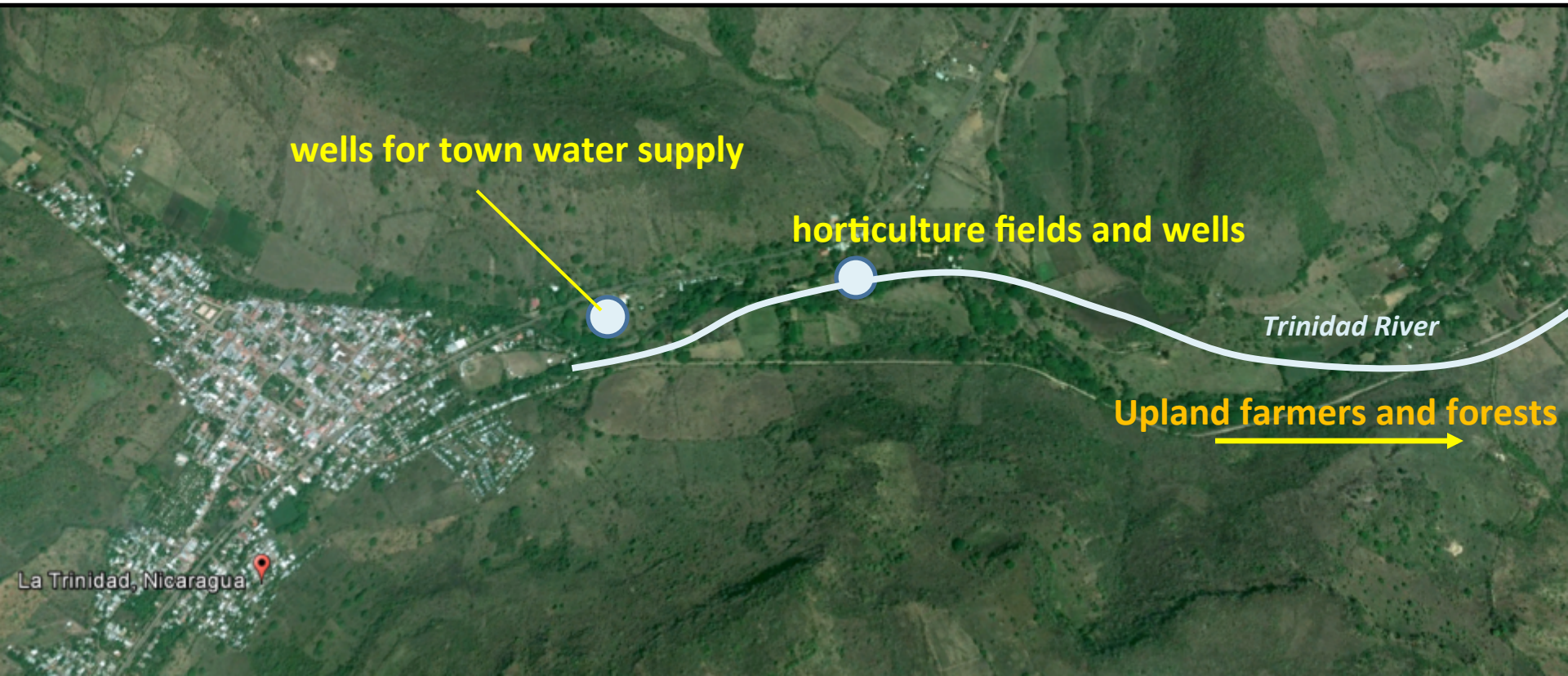


Scenario

- Multiple uses of water
- Increasing, competing demand
- Conflicts over access in dry season

Scenario

- Horticulture farmers and town water supply both depend on water from wells adjacent to the Trinidad River – both sets of users rely on same flow from river.
- Water scarcer in dry season (December to April). Competing demands – farmers, town
- Watershed-- degraded over several decades; water quality issues
- Municipal council passed ordinance to ban pump irrigation when river flow falls below certain point, usually late February. Vegetable producers complain of lost revenue.



Solutions?

- Interventions often sector-specific, singl dimension
- Integrated analysis reveals multi-faceted solutions

Solution A:
Watershed Management

- **Reforestation and conservation in highland watershed areas ...**
- **Improves rainfall capture**
- **Increases infiltration and**
- **Improves stream flows in the dry season**

- **Agroforestry systems (coffee is predominant)**

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Solution B: Improve on-farm water productivity

- Shift to less water intensive crops
- Drip or sprinkler irrigation (versus flood)
- Improve soil fertility and plant management
- Conservation agriculture to reduce water loss
  - minimum tillage
  - mulching
- Irrigate at night when water demand is lowest in urban area
- Meters to monitor water use for irrigation & reduce wastage

Solution C: Reduce water demand in urban area

- Introduce water meters and scaled fees to encourage conservation
- Repair leakage in pipes to reduce losses
- Harvest rooftop rainwater for non-drinking uses

Solution D: Infrastructure

- **Dam and store water**
- **Treat urban waste water to reuse for irrigation**

"Conflicts" around solutions

- Multiple solutions and competing interests
- Funds -- scarcer than water
- Requires tough decisions to find optimal, feasible, fair solutions
- Power differences among stakeholders.

  Smallholder farmers and typical water users at a disadvantage vis-à-vis large-scale landowners and industries that use water

How? Who decides?

Municipal-level Watershed Councils

Multi-actor, multi-level

Municipal government leaders, national government agencies, local actors (rural, urban), farmers, community leaders, church leaders, etc.

Engage all stakeholders

including those who are not obvious. For example, are there other users downstream of the urban area that also depend on the same river water?

Permanent actors are key – the users.

Engage stakeholders in the analysis and solution

Hands on, scenario playing. Solutions will change with circumstances.

Avoid having NGOs or external "experts" determine the solutions

Municipal-level Watershed Councils

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