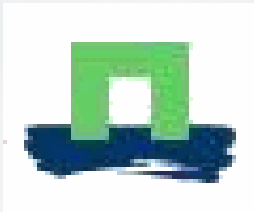


# Multiple use of water for people and livestock in the Legedini watershed

Eline Boelee<sup>1</sup>, Esther van Hoesve<sup>2</sup>, Pauline  
Scheelbeek<sup>3</sup>, Martine Jeths<sup>3</sup>



1. International Water Management Institute
2. International Livestock Research Institute
3. Wageningen University en Research Center

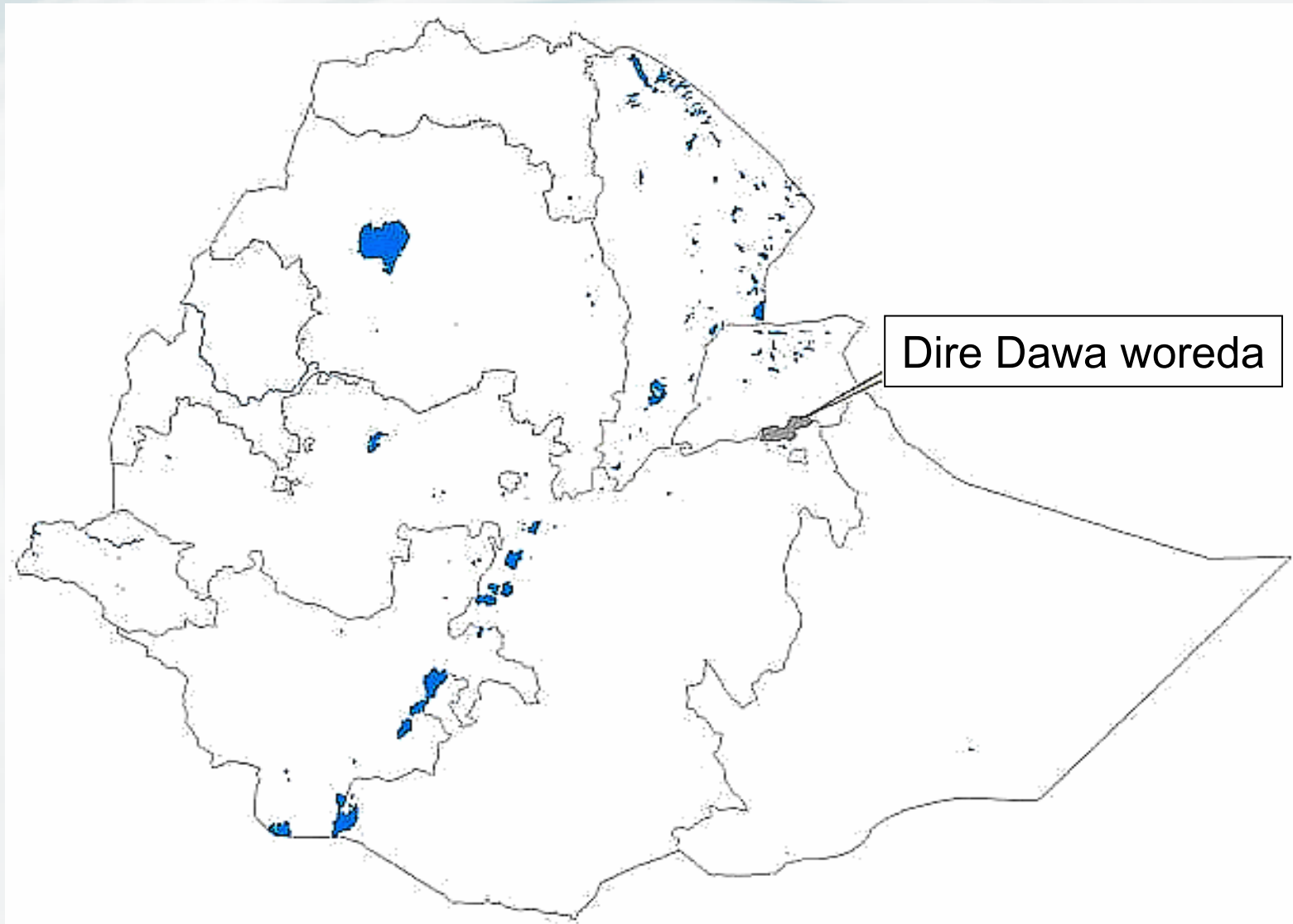


# Multiple use of water in Legedini

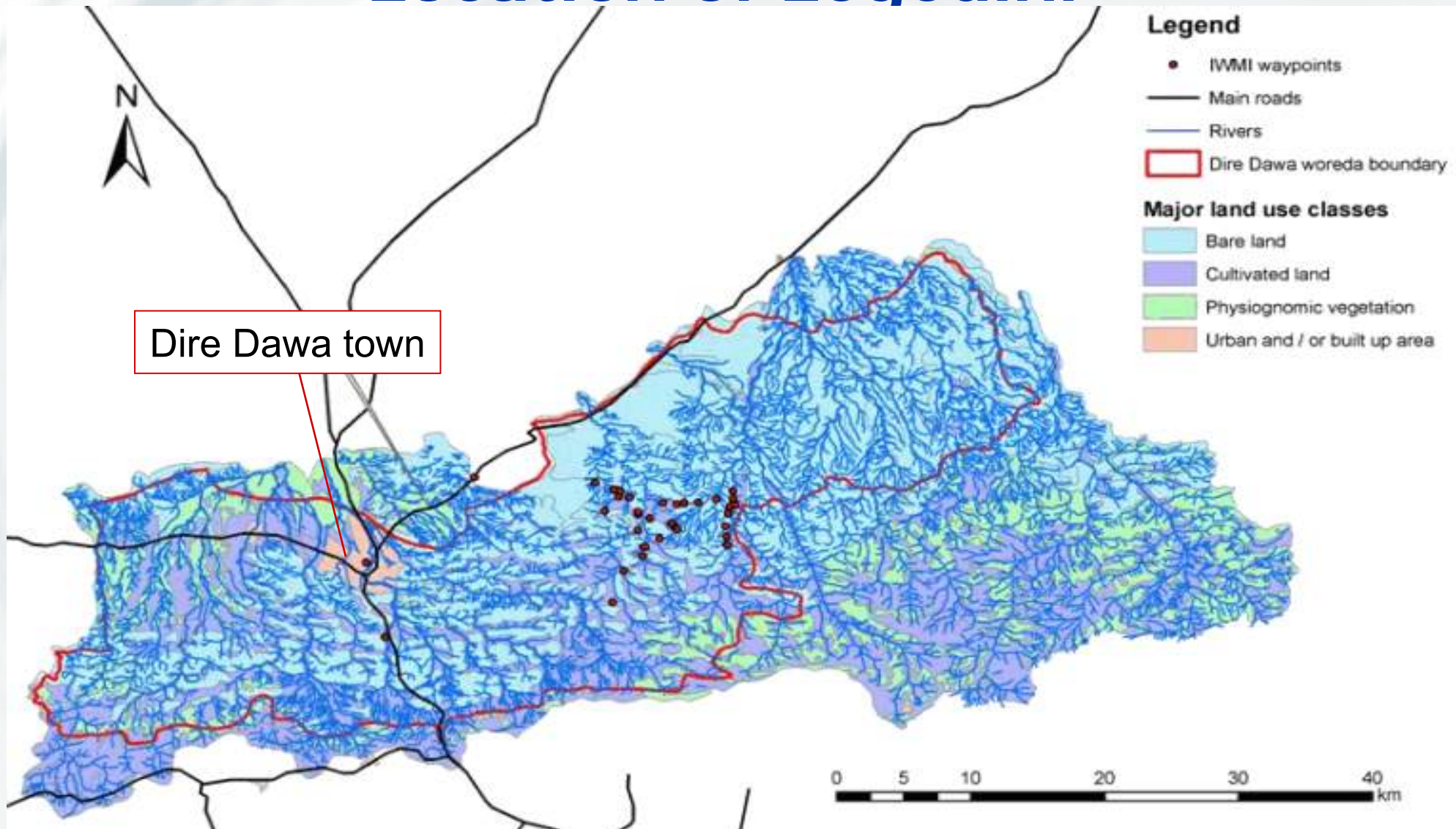
1. Study site
2. Situation analysis
3. Options for improvement



# 1. Study site: Legedini



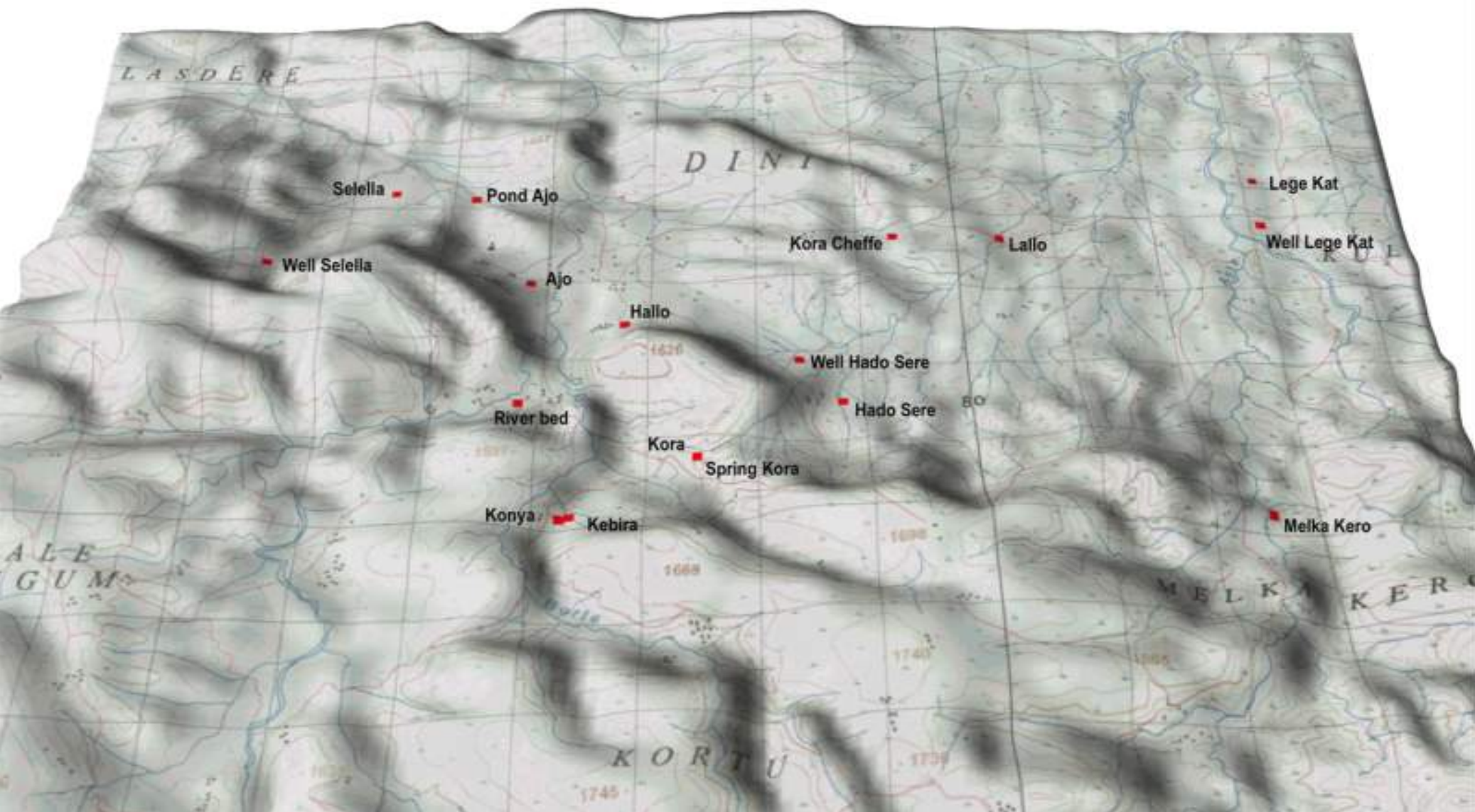
# Location of Legedini



# Legedini Peasant Association

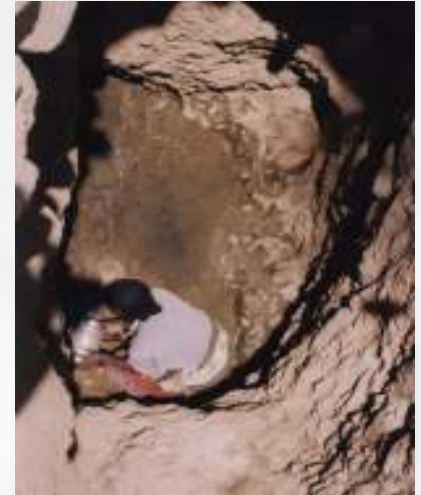
- Dire Dawa district
- 11 settlements over 9,300 ha, 637 cultivable, 0.8 ha cropland/hh
- Population 3000 - 4000
- Agro-pastoralists: 2000 cattle, 2500 goats, 1200 sheep, 200 donkeys, 200 chicken, 40 bee colonies
- Average sorghum & maize subsistence, 350-600 kg/ha/year
- Ethnic group Gorgora, muslim
- Altitude: 1100 – 1600 m, mountainous
- P = 400 - 650 mm bimodal (Jul-Sep & Mar-Apr)
- T = 26 – 30° C

# Legedini watershed



# Legedini watershed

- Multiple sources for multiple purposes
  - Shallow wells
  - Deep wells
  - Borehole with distribution network (serves 4 villages)
  - Protected spring with network
  - Unprotected spring
  - Water harvesting pond
  - Roof catchment on public buildings (in disuse)
- Main concerns:
  - Women - water for domestic uses
  - Men - water for irrigation



## 2. Situation analysis

- **Benefits** through water development
  - Directly & indirectly
- Food insecurity in all villages
  - Unreliable rainfall & degraded environment → few diversification opportunities → low income
- Water shortage in most villages
- In house water treatment and hygiene practices low
- Water **quality** varies between sources and over time
- **Institutional gap**
- **Key constraints**

# Direct benefits

- Improved human health (↓ diarrhea)
- Increased livestock production
  - Higher frequency of drinking
  - Higher water intake
  - Increased feed consumption
  - Less energy lost on walking for water
  - Reduction of # spontaneous abortions
  - Increased milk production/animal
- Drip irrigation stimulates good watering practices
- Opportunities: latrines, fencing of water bodies, terracing



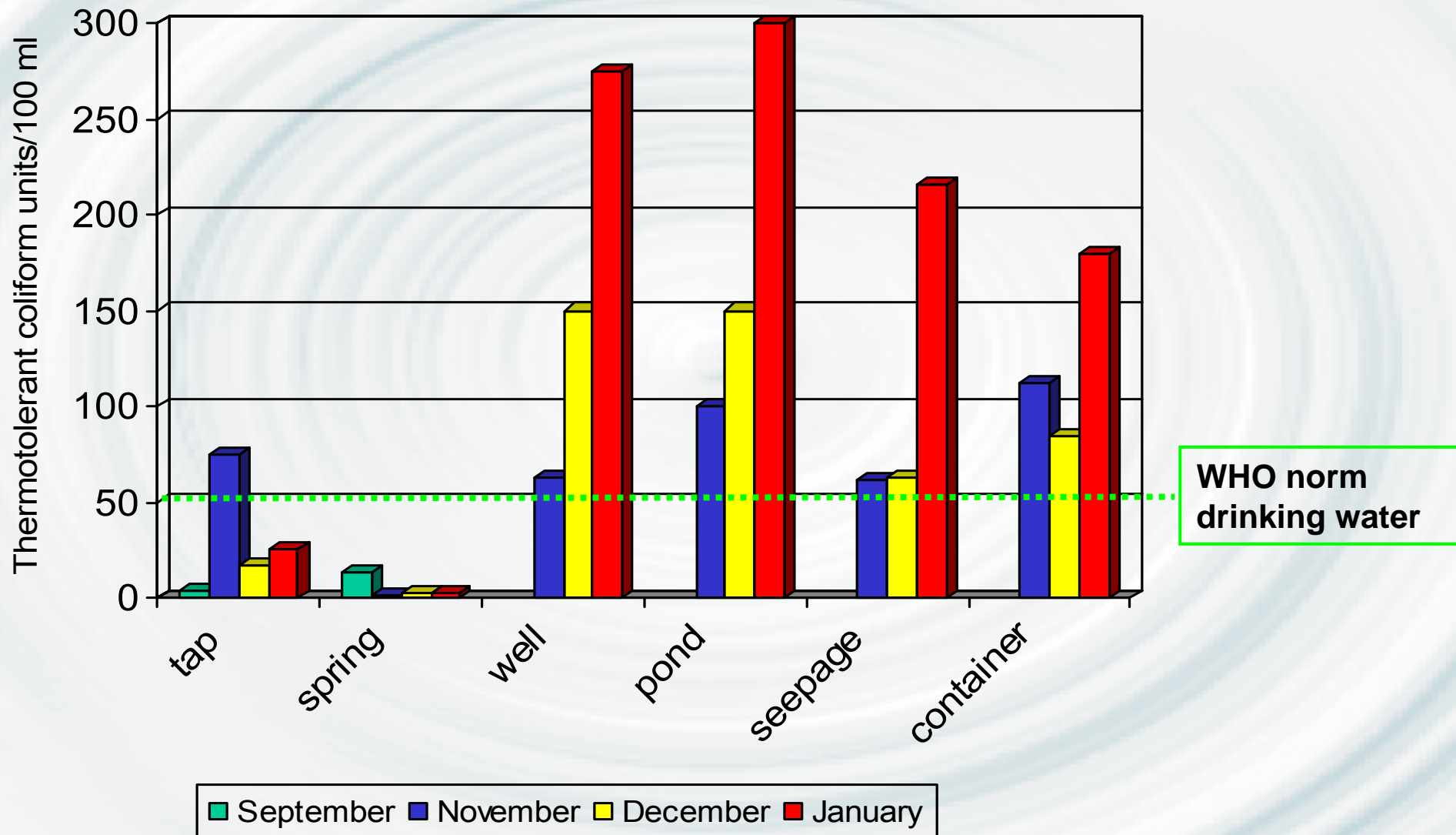
# Indirect benefits

- Women: time for milk group
- Increased income from milk, animals, eggs → improvement housing conditions
- Men: more time (and water?) for crop production
- Cultivation of papaya for home consumption and market
  - Learning through children
- Well-organized water association
  - People learned to organize themselves
  - Alternative to saving through livestock: bank account!

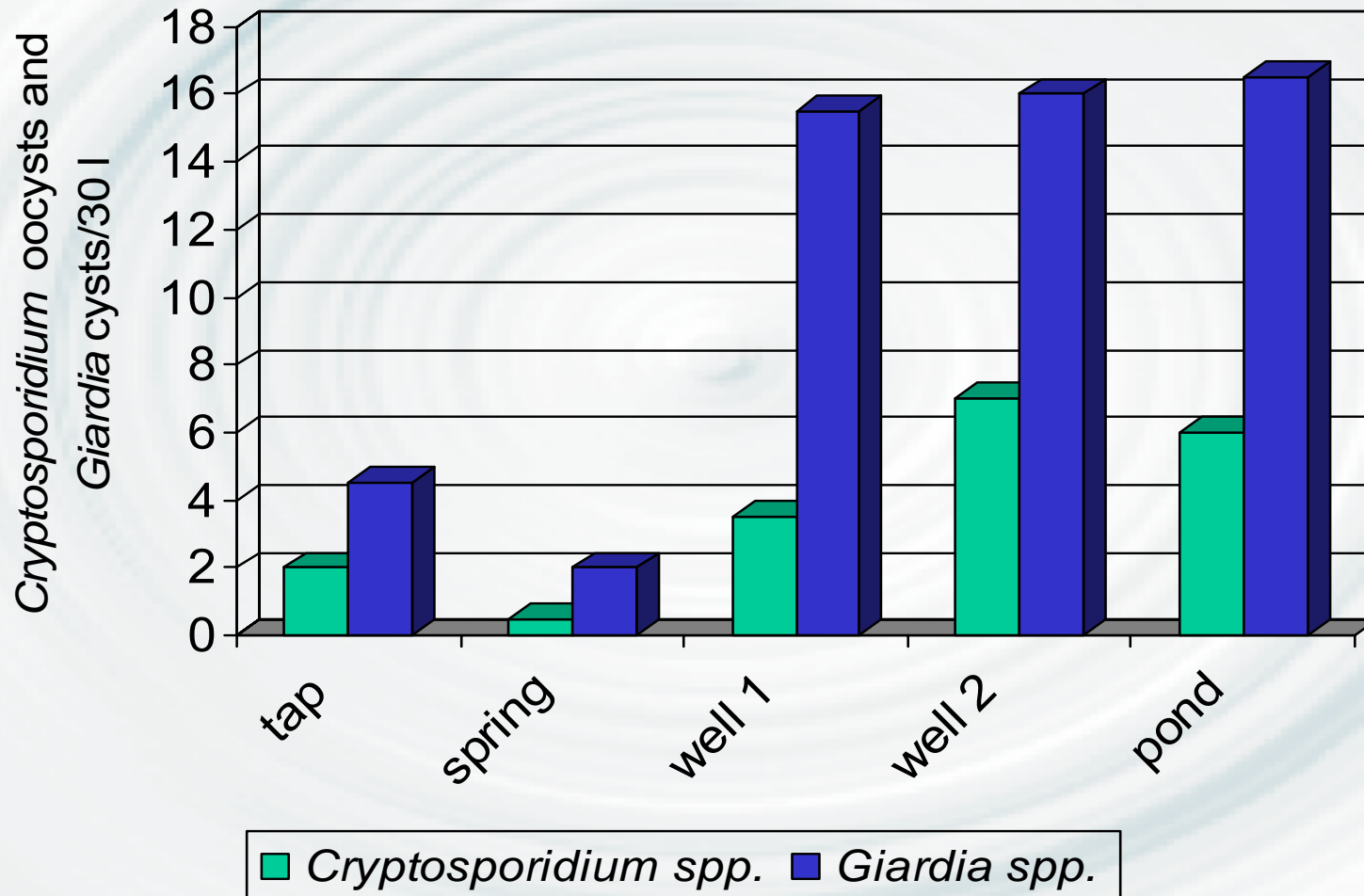
# Water quality analysis I

- Below WHO guidelines for
  - EC, chloride
  - pH, CaCO<sub>3</sub>
  - Nitrate
- Sulfate concentrations exceeded standards in December/January with 10-15% in open wells and seepage wells
- Over WHO norms for
  - Bacteria (except tap and spring)
  - Parasites
- High contamination after source

# Water quality analysis II



# Water quality analysis III



# Water quantities

- Best quality water from borehole and protected spring
  - Sufficient quantity for drinking
  - Borehole: 1.6 l/s during 10 h = 57,600 l/day for 3,000 people in 4 villages = 19.2 lpcd
  - Protected spring: 0.8 l/s during 24 h = 69,120 l/day for 1000-2000 people > 15 lpcd
- Water for livestock good enough and sufficient in water harvesting ponds
  - Tap and wastewater for young animals
- Not sufficient water for irrigation

# Institutional gap

- Project handed over from NGO to community, with support from ???
- Reorganization of Dire Dawa District Administration
- Regional Rural Development Co-ordination Office
  - no mandate yet
  - new staff
- Water, mines and energy office
  - Technicians reassigned to the Road Authority
  - No (human) resources for field visits and monitoring
  - No funding for projects

# Key constraints

- Institutional gap or temporary problem due to re-organizations?
- Communication
- Persistent food insecurity
- Dependency on donor
- Bad road, poor access to markets
- Water system not adequate in dry season



# 3. Options for improvement

- Strong community: made request for project
- Re-division of Peasant Associations
- Suggestions



# Re-division of PA

- Re-dividing Peasant Associations of Lege Dini, El Hamer and Ayale Gungun - difficult to govern??
- Opportunity: PA administrative cabinet
  - 6 persons
  - Chairman, vice-chair and security person elected by community
  - 3 representatives assigned by government:
    - rural development sector
    - capacity building/education sector
    - health sector
  - Potential for integrated approaches and implementation of true multiple use system

# Suggestions I

- Optimization of multiple sources for multiple uses
- Promote and extend water harvesting and reuse of water
- Water treatment for contaminated sources:
  - Protection of open sources
  - Appropriate home treatment
- Hydro-geological survey in Ajo (second borehole?)
- Additional reservoir Kora (protected spring)
- Development emergency plan

# Suggestions II

- Capitalize on benefits
  - Income generation
  - Organizational skills
- Water committee
  - Follow-up training
  - Basic education including for book keeping
  - Autonomy for O&M
  - Broader scope
- Coordinate & improve education / extension activities for increased effectiveness

# Multiple use of water in Legedini

**THANK YOU**

