SUSTAINABLE IRRIGATION IN SOUTH AFRICA: EVIDENCE FROM HISTORY

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Presentation outline

1. Background
2. History of irrigation development
3. Case studies of sustainable irrigation
4. Implications for the future

Note: Based on a chapter by Lani van Vuuren of the book compiled by the ICID WG: History
History of water crisis, old and recent issues

Definition of crisis:

A crucial stage or turning point in the course of something, especially in a sequence of events or a disease; an unstable period, especially one of extreme trouble or danger in politics, economics, etc.

A time when a difficult or important decision must be made

(Dictionary.reference.com, 2015)
Background

- Productive agriculture sector, net food exporter
- Arable land: 15% of agricultural land
- Irrigation: 10% of arable land
- Mainly extensive agriculture in a semi-arid natural environment
- Water will limit future expansion of irrigation
- Less than 10% of population directly involved in agriculture
- At least 40% of population experience household food insecurity
History of irrigation development

- Phases of development
  - Agricultural phase up to 1875
    - Individual schemes
  - Agricultural-mining phase up to 1920
    - Co-operative schemes
  - Agricultural-mining-industrial phase up to 2015
    - Public schemes

- Purpose of irrigation development
  - Utilisation of water resources for agricultural development and prosperity of society
  - Economic existence/livelihoods of people in agriculture
History of irrigation development (Continued)

- Various crises
  - Natural – Droughts, floods
  - Economic – Great depression, business cycles
  - Political – Colonial, apartheid, democratic governments
  - Social – Inequality, poverty, unemployment

- Current challenges
  - Productive water use
  - Uplifting rural economies
  - Business opportunities in food value chains
  - Eradicating hunger and reducing poverty
  - Improving food security, nutrition and health
Case studies of sustainable irrigation

- Vaalharts, Lower Olifants and Loskop irrigation schemes (constructed in period 1930 – 1945)

- Observations common to most irrigation schemes
  - Infrastructure of dams/weirs/canals
  - Land area supplied with water/classification of soils as suitable for irrigation
  - Water allocation according to riparian doctrine, quotas and licensing
  - Crops cultivated (food, forage, fibre)
  - Irrigation technology (surface, sprinkler, micro/drip)
Case studies of sustainable irrigation (Continued)

- **Management of irrigation farms**
  - Markets for crops/livestock: Local and international
  - Financing: Fixed and operating capital
  - Entrepreneurial and managerial capacity

- **Management of irrigation schemes**
  - IMT from government to private WUA
  - Reduction of canal water losses
  - Expansion of irrigation with water savings
Implications for the future

- **Major challenges**
  - Producing more food with same or less water
  - Decision support through R&D

- **Requirements for sustainability and preventing a crisis/turning point for national and household food security**
  - Adaptation to changing markets
  - Investment in maintenance of infrastructure and new technologies
  - Improvement in human and social capacity
    - Knowledge
    - Practical skills
    - Productivity growth

- **Lessons from history**
  - Learn from the past to prevent mistakes in future