



ECONOMIC AND SOCIAL COMMISSION FOR  
WESTERN ASIA – ESCWA

Distr.  
LIMITED  
E/ESCWA/SDPD/2005/WG.5/21  
12 November 2005  
ORIGINAL: ENGLISH



Global Water  
Partnership  
Mediterranean



Federal Institute for Geosciences  
and Natural Resources



Partner für Perspektiven  
Weltweit

German Technical  
Cooperation

Seminar on Water Governance: Role of Stakeholders  
Beirut, 14 - 15 November 2005

## Water Rights and Water Markets in the Falaj Systems of Oman

ECONOMIC AND SOCIAL COMMISSION  
FOR WESTERN ASIA

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05-0603



## Water Rights and Water Markets in the Aflaj System of Oman

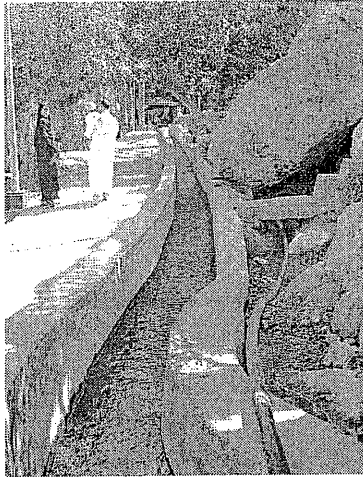
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### Talk preview

- Falaj system in Oman
- Importance of falaj system in Oman
- Types of water rights in Oman
- Characteristics of water rights

## Falaj system

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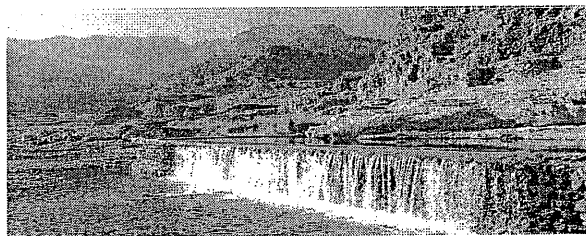


- A traditional water network system
- 1000s of years old
- Types
  - Ghaili
  - Daudi
  - Aini

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## Ghaili falaj

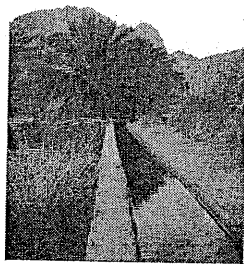
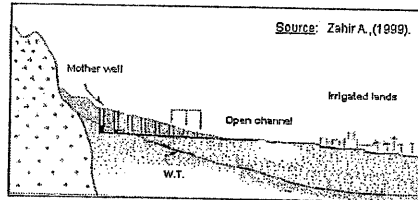
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- Source of water: perennial wadi's (valleys)/shallow aquifers
- Water is collected by small man-made small dams
- Collected water is diverted into the irrigation channels
- Flow is a function of how much water flows in the wadi
- Flow is relatively unstable/seasonal

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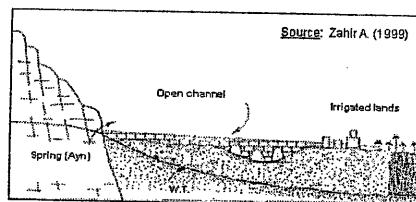
## Daudi falaj



- A horizontal underground water channel is dug from an aquifer
- Channel can be as long as 17-km
- Characterized by relatively high (and stable) discharge rates

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## Aini falaj



- Water is drawn from a natural spring ('Ain')
- Collected water is diverted to the irrigated lands
- Rate of flow is a function of spring discharge
- Flow is relatively stable

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## Importance of aflaj systems

	Ghaili	Daudi	Aini	Total
Number of falaj	1993	967	1152	4112
% of total number	48%	24%	28%	100%
Irrigated area (ha)	5579	13946	6973	26498
% of irrigated area at the national level*	8%	20%	10%	38%
Annual water supply (Mm <sup>3</sup> )	97	243	119	459
% annual water supply	21%	53%	26%	100%

Source: MRMEWR (2002), Al Sarhani (2000)\*

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## Importance of aflaj systems

- Aflaj are important source for irrigation and tourism
- Integral part of rural life on which the community depends
- They are used to raise funds for the community
- Form enchanting oasis in the middle of desert

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## Water rights in the aflaj systems

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- Used to allocate water shares among users
- Time based: *Athar* (30 min per irrigation cycle)
- Independent of land property, i.e. they can be traded, inherited, or donated
- Farmers cannot use falaj water for irrigation unless they own or rent shares
- All community members have free access to water for their own domestic use

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## Types of water rights

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1. Private water rights
2. Public water rights
3. Semi-public water rights

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## Private water rights

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- Owned by individuals (and families)
- Can be explicit or implicit
- Explicit water rights: identified in the property license
- Implicit water rights: no identified in any documentation
- Implicit water rights can be inherited but not traded or rented, i.e. tied to the property

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## Public Water Rights

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- Owned by community members
- Established to generate funds (through auctioning)
- Funds are used to cover maintenance, operation costs
- Rented weekly, monthly, or annually

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## Semi-public water rights

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- Owned by charity institutes (now under the state control)
- Returns used to finance mosques, schools, and needy members of the community
- Managed in the same manner as the public rights
- Rented only, i.e. cannot be sold.
- Size of shares may increase through donations

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## Characteristics of water rights of aflaj systems in Oman

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- Separation from land
  - often independent of land property
  - this allows water to be exchange freely among users
- Duration
  - lifetime
  - transferred from one generation to another through inheritance

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## Characteristics of water rights of aflaj systems in Oman

- Privacy
  - rights are recognized at the national level
  - have the same legal aspects as any other private asset
  - sale of rights is done through legal contracts
- Proportionality
  - rights are expressed as timeshare per irrigation cycle
  - embodies the principle of sharing available supplies
  - when flow is low, water cycle is extended to avoid water losses
  - this allows more management flexibility when dealing with uncertainty

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## Characteristics of water rights of aflaj systems in Oman

- Seniority/priority
  - the physical structural layout of the falaj gives priority for domestic water uses
  - domestic users have free access at the main source only ...why?
    - (i) health reasons (ii) equity
  - protection zone radius: 3.5 km

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