Water Management Policies in Iran

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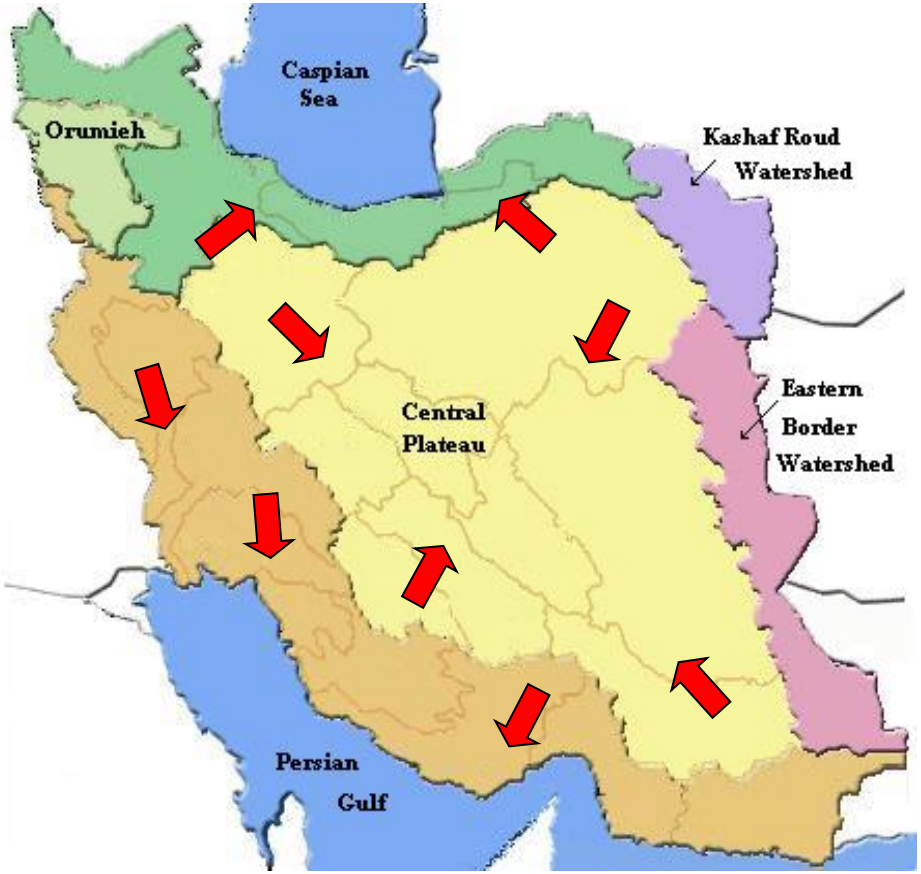
Outline

1. Overview of Water Resources and Demand
2. Major challenges
3. Recent Approaches and Water Policies
4. Conclusions

Overview of Water Resources and Demand

Six major water basins and rate of precipitation in Iran



Major catchment Basins location

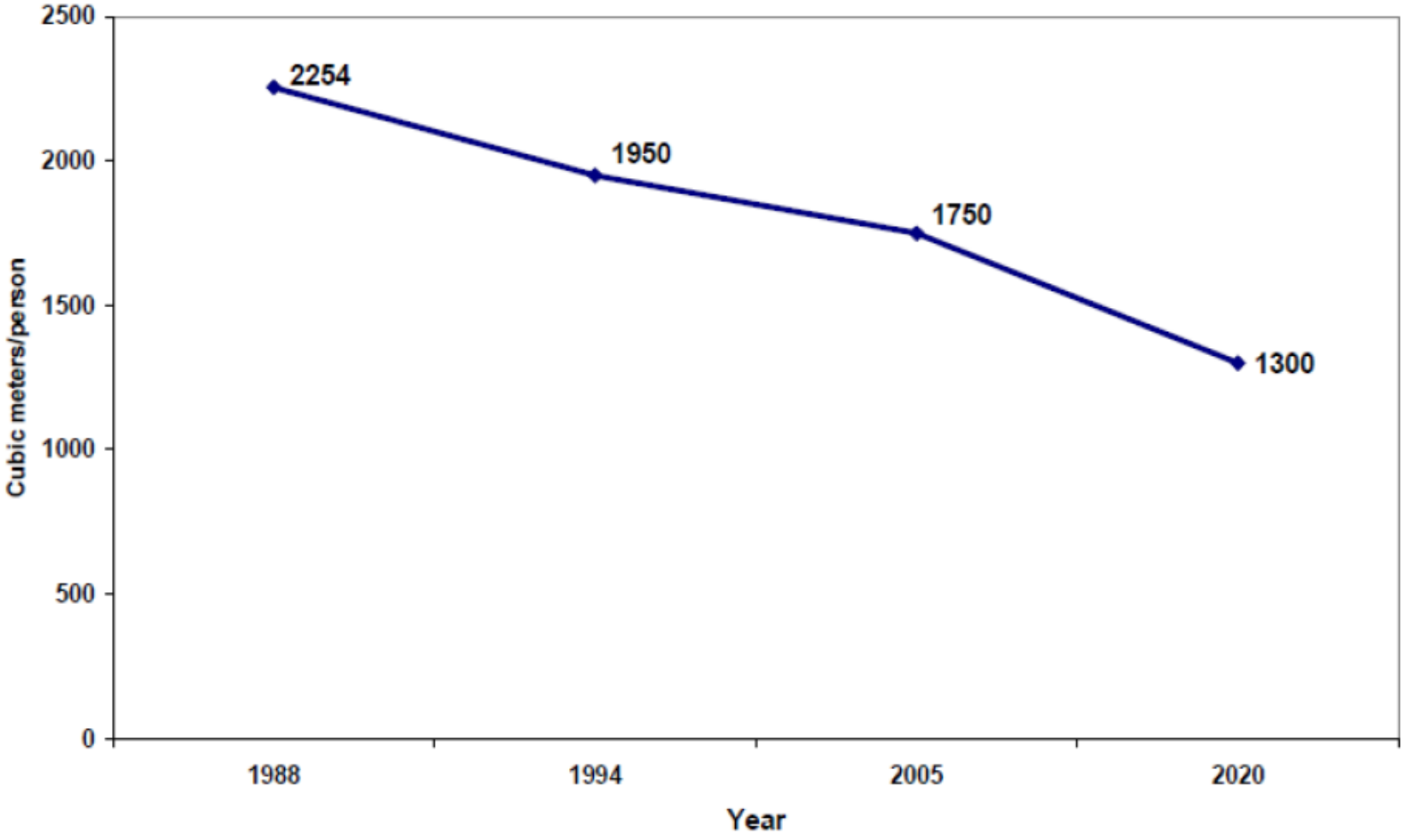
Basin	Area (×10^3 Km2)	Rainfall (km3/ year)	As % of total rainfall
Central Plateau	831	138	32
Persian Gulf and Oman sea	430	162	38
Caspian Sea	177	83	19.5
Hamoun Lake	106	12	3
Orumie Lake	53	19	5
Serakhs	44	11	2.5
Total	1641	425	100

Water availability and use in Iran

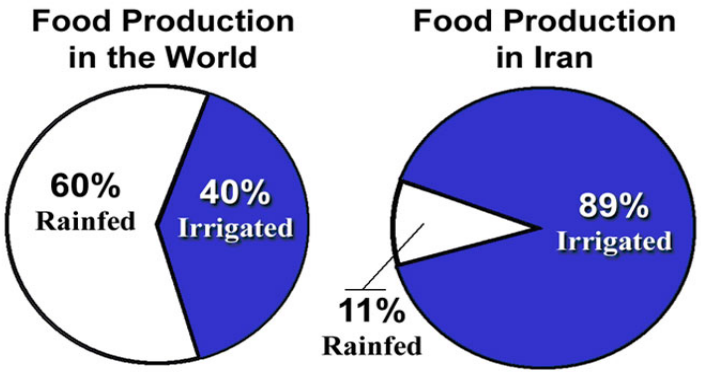
Component	Volume (bm^3)	Percent of total
Precipitation	413	100
Evaporation	283	70
Renewable water	130	30
Surface water	105	
Ground water	25	
Total water use	87.5	100
Agriculture	82	94.25
Domestic	4.7	4.75
Industry	0.8	1

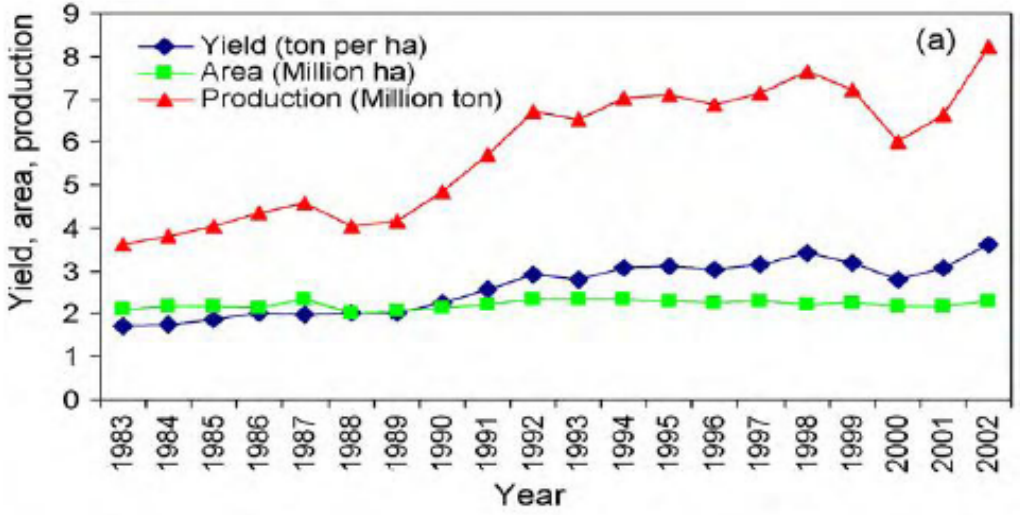
Table 2: the water availability and use in Iran (Source: Alizadeh & Keshavarz, 2005: 96)

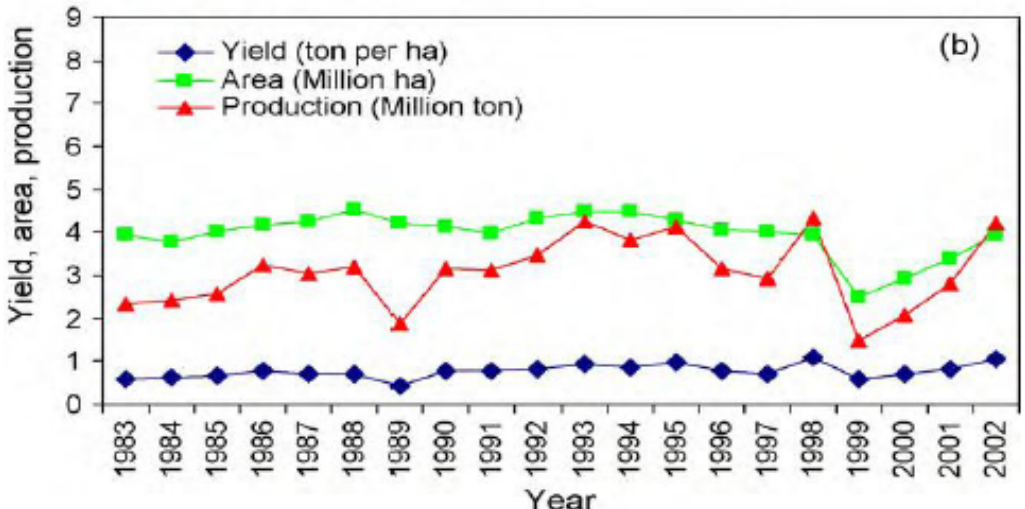
Renewable fresh water supply per person annually 1988-2020



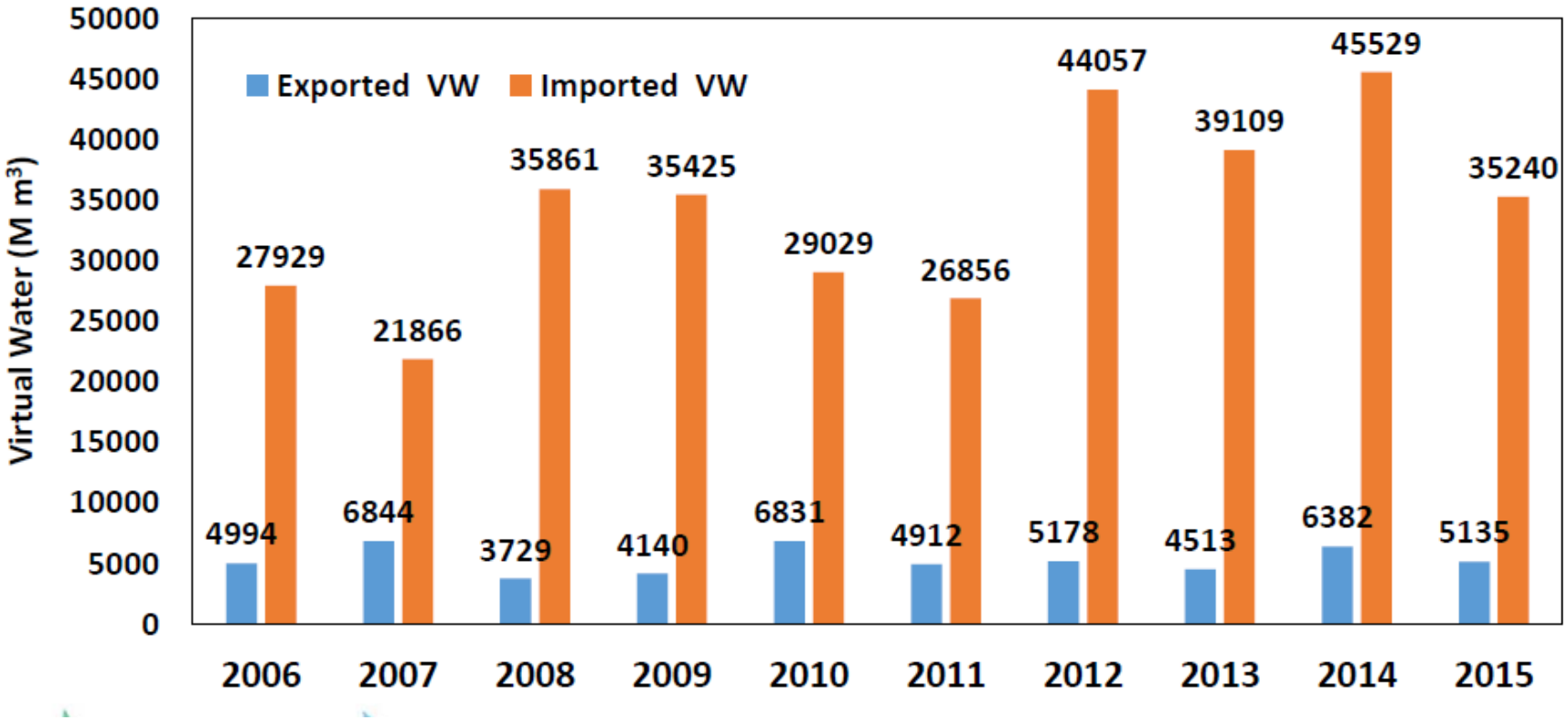
Yield, area and production for irrigated and rainfed wheat during 1983-2003







Agricultural Virtual Water Balance in Iran



Major Challenges and Trends

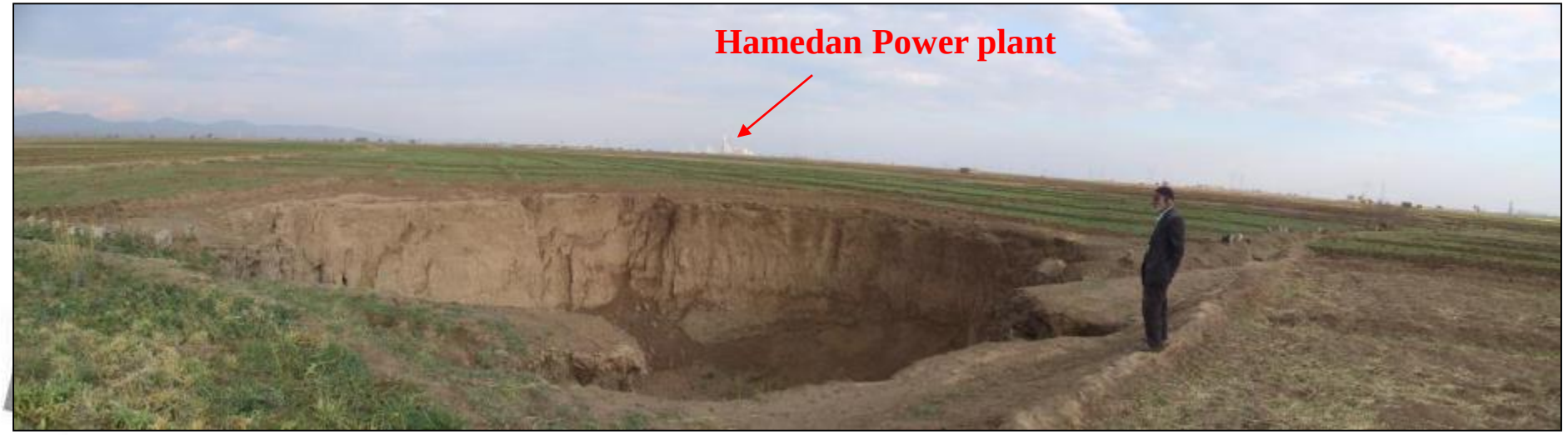
Major Challenges and Trends

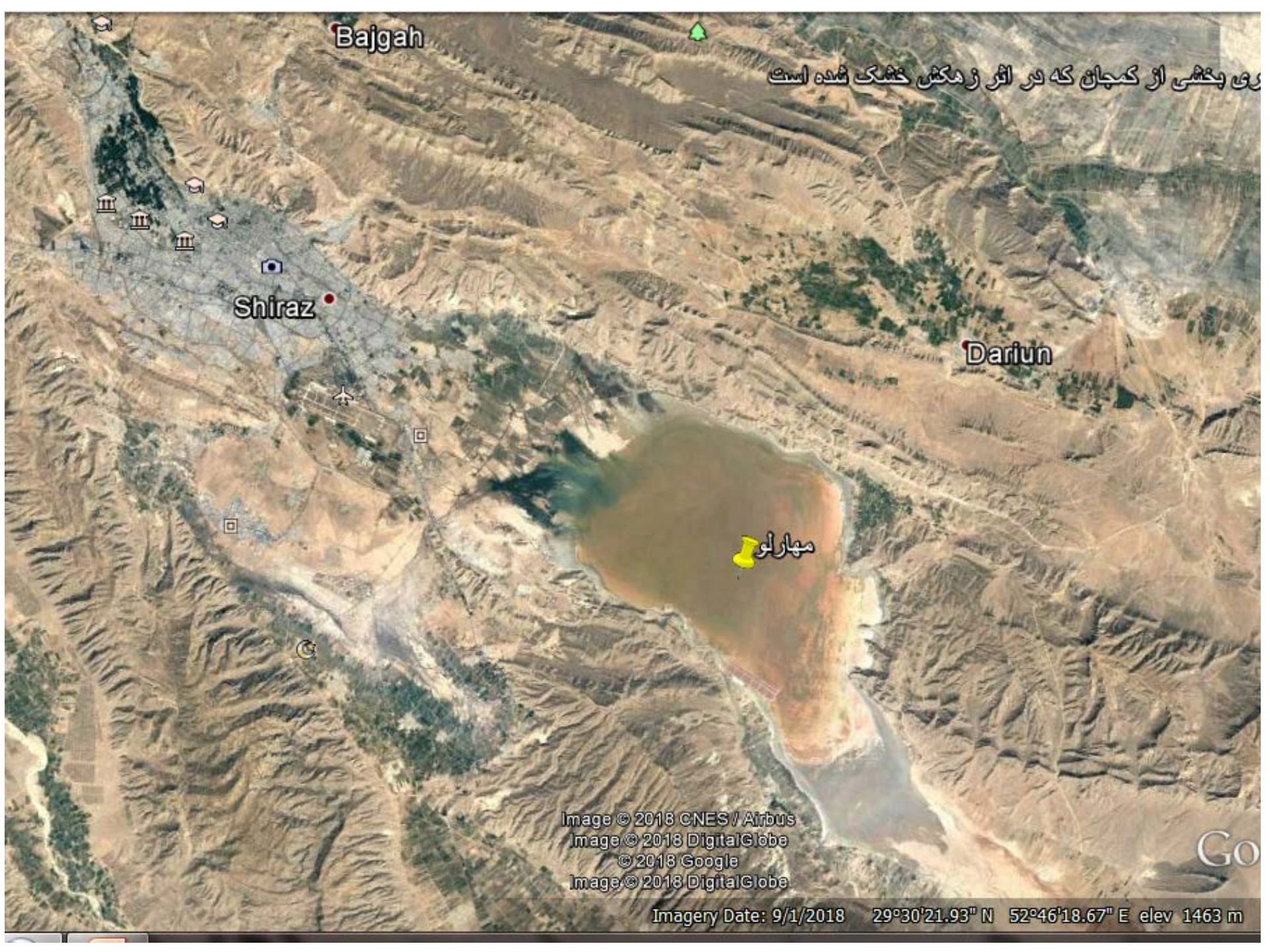
1. Unbalance use and supply of water resources
2. Excessive withdrawal of groundwater resources
3. Demand Management in accordance to priorities set in the National Water Plan
4. Pollution of water resources and its economic and environmental consequences
5. Efficiency in water irrigation systems
6. Risk Management of water related natural disaster (i. e. drought and flood)
7. Implementation of National Integrated Water Resources Management
8. Efficient and equitable water price for various uses
9. Land use planning
10. Unaccounted for water (UFW)


Photo : Hadis Kazem Pour

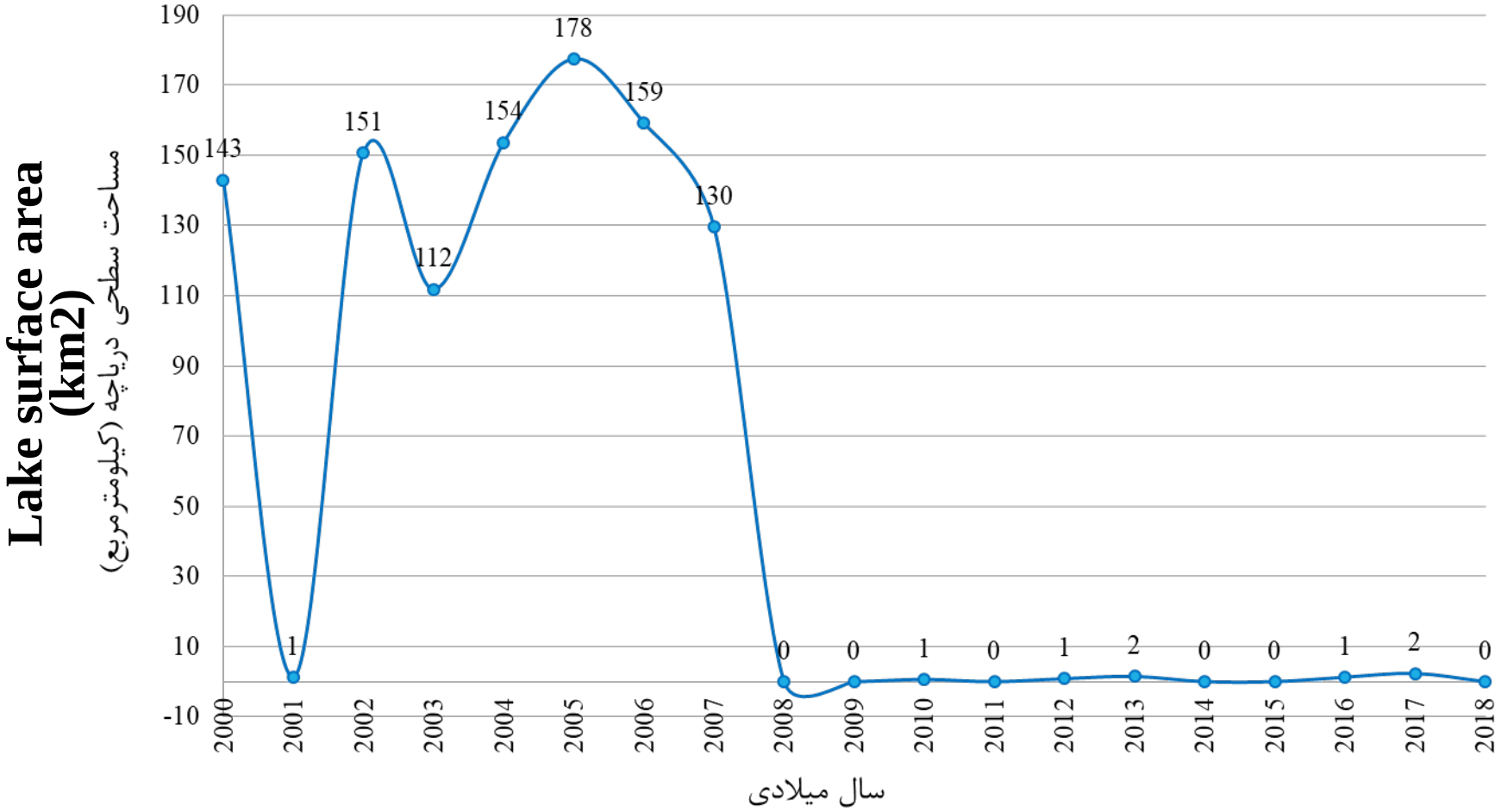
Sink holes – Ground Water Extraction (Semnan)

Hamedan Sink Hole

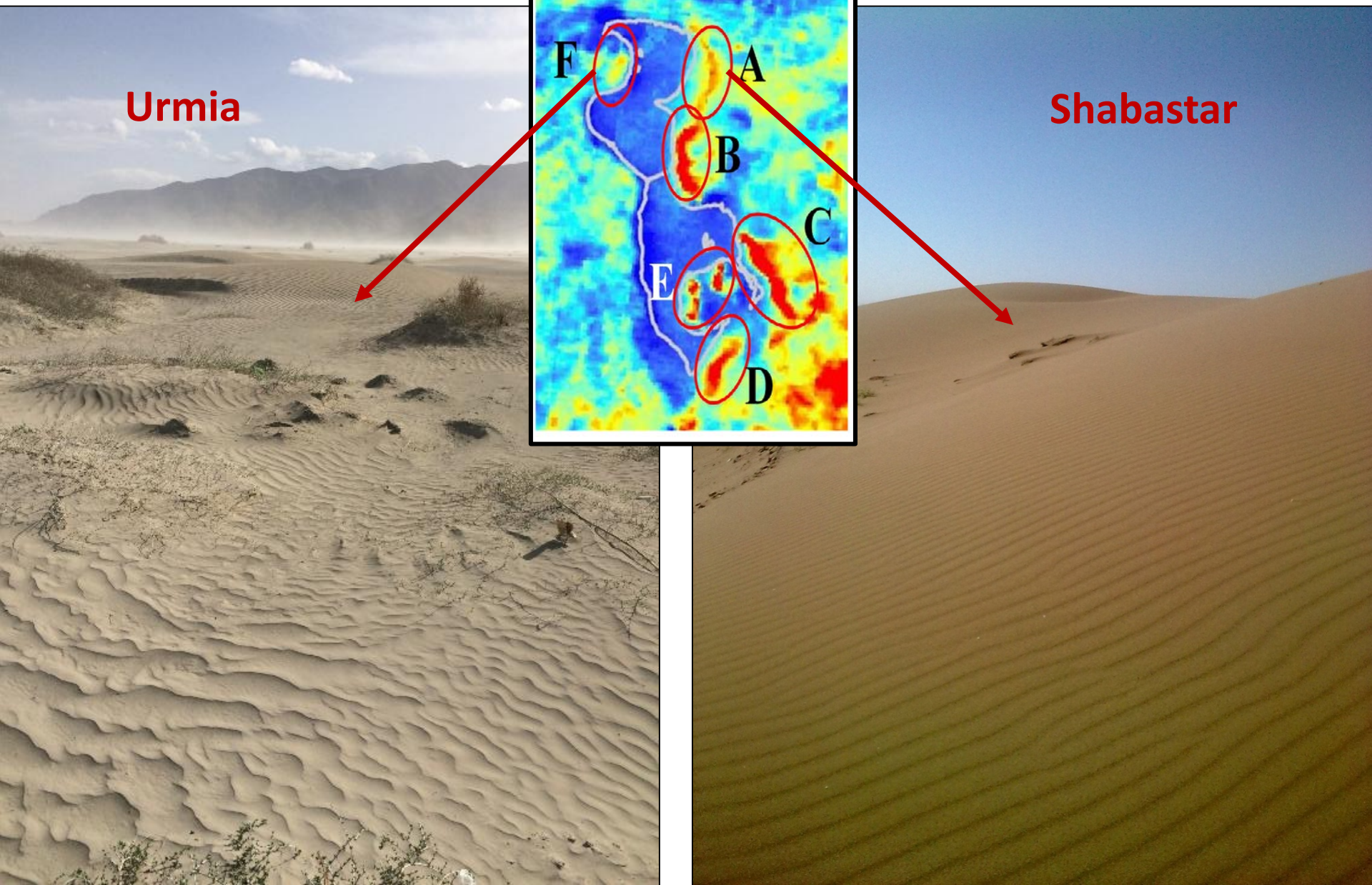



Bajgah
ری بخشی از کمجان که در اثر زهکش خشک شده است
Shiraz
Dariun
مهارلو
Image © 2018 CNES / Airbus
Image © 2018 DigitalGlobe
© 2018 Google
Image © 2018 DigitalGlobe
Imagery Date: 9/1/2018 29°30'21.93" N 52°46'18.67" E elev 1463 m

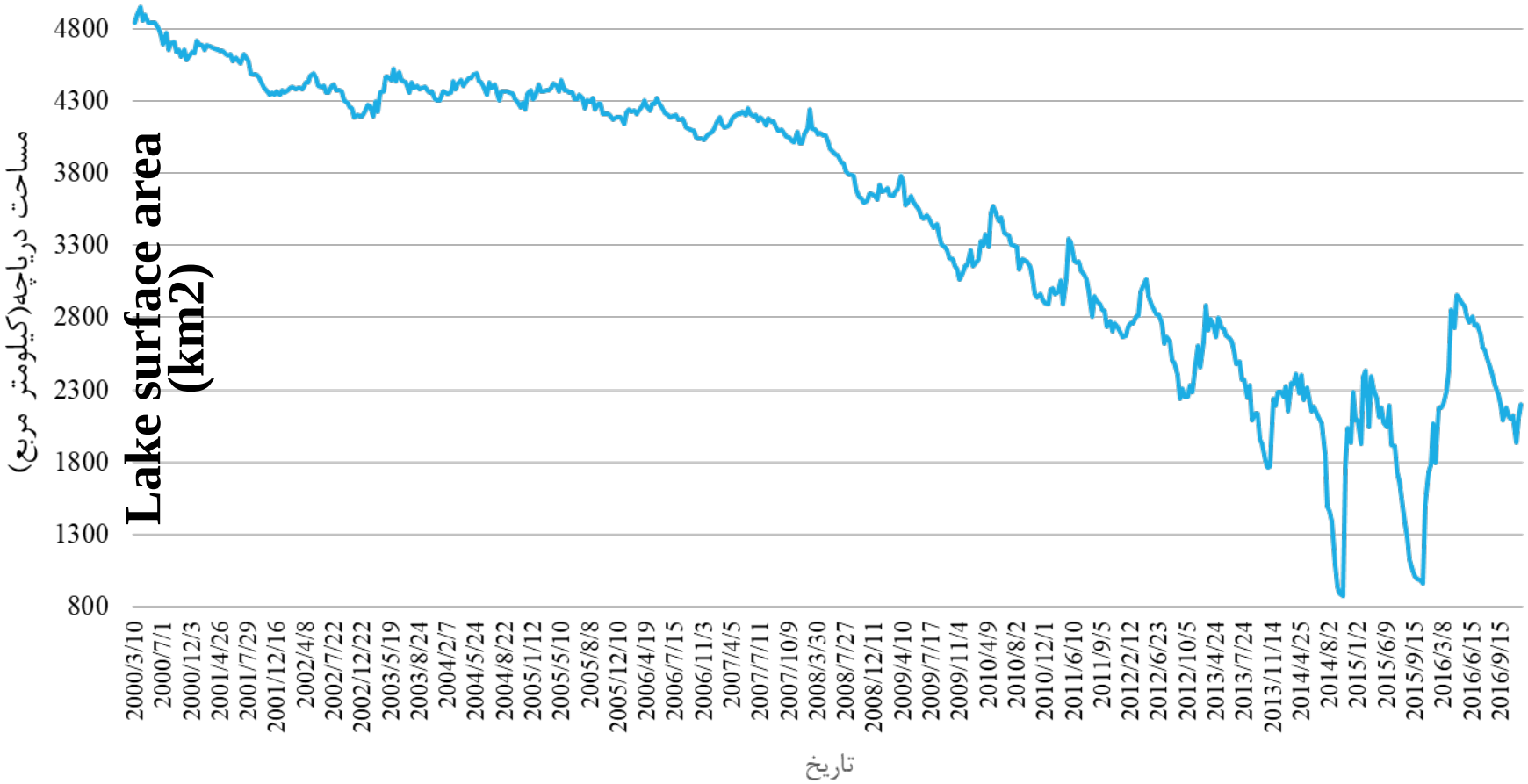
Moharlu (2000-2018)



Sand dune movements in west and east of the lake



Lake Urmia (2000-2017)



Esfahan, July 13th 2017

Photo: Majid Jamshidi

Fars News Agency

Zabol, July 5th 2016

Impacts of Socio-Economic

- The most important Impacts:
- Schools and Offices Closure and Cancelation of Flights
- Immigration
- Pulmonary, Respiratory, Cardiovascular and Mental Diseases
- Reduction of visibility
- decrease in production of food industries, crops (such as date) and livestock
- Reduce number of bees and honey production

Date production also dropped by more than 60 percent in 2010

Table: Amount of Economical Damages by SDS in Agriculture and Natural Resources Sectors			
Kind of Damages	**Description of Damage**	**Costs (Million Rials)**	**Total Sum (Billion)**
Reduce Biological Productivity	Reduce the amount of aquaculture production due to reduced sunlight Reduce production of imagination	182500	7471
	Drop production of wheat and rain products	186937	
	Reduce fruit production in gardens (citrus, pomegranate, figs, grapes, dates, others)	2833000	
	Reduce snacks production	4269000	
Cost of reclamation and replacement	Reforestation of the planting hands	1200000	9675
	Natural Reforestation	7718000	
	Restoration of pastures	621000	
	Pumping water of breeding fish for irrigation of plants for control of dusts	60000	
	Guiding excess water of Drainage channel to wetlands	20000	
	Damage to computer systems	150	
	Damage to air conditioning systems	300	
	Damage to the engine and navigation systems of the floating vessels	6000	
	Damage to electricity network of fish farms and shrimp (fuses and fittings)	50000	
The closure	The closure of government agencies and banks	10000	61
	Deceleration of services to aquatic animals due to frequent breaks	50000	
		1000	
Payment of damages and compensation to fishing activities during the occurrence of dust		150000	150
Immigration	Exit of Investors in the Field of Aquaculture	100000	100
Health	Increased allergic and respiratory illness for workers	20000	20
Total	-	17477887	17478

Despite having a more advanced water management system than most Middle Eastern countries, similar to the other countries in the region, Iran is experiencing a serious water crisis. The government blames the current crisis on the changing climate, frequent droughts, and believing that water shortages are periodic.

Dramatic water security issues of Iran are:

rooted in decades of disintegrated planning and managerial myopia.

A symptom-based management paradigm, which mainly focuses on curing the problem symptoms rather than addressing the main causes.

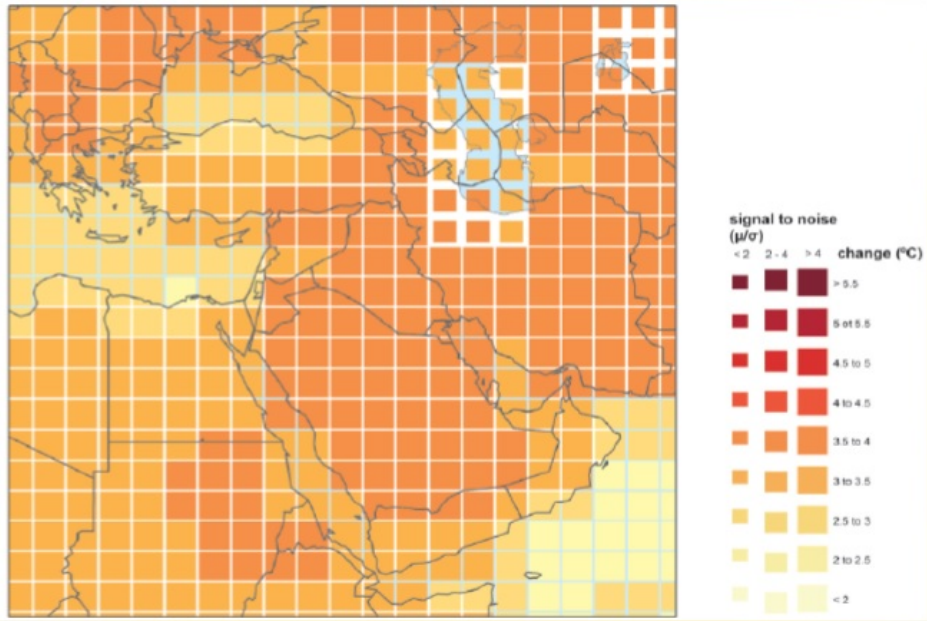
Three major causes for the current water crisis:

(1) Rapid population growth and inappropriate spatial population distribution;

(2) Inefficient agriculture sector; and

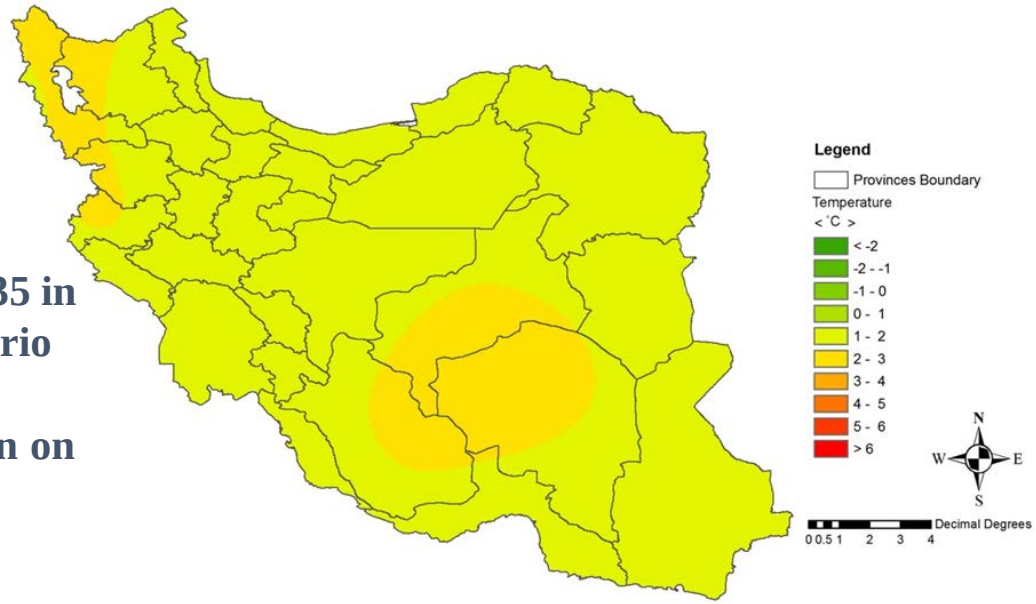
Background

Dust Climatology over West Asia



Percentage change in average annual temperature by 2100 from 1960-1990 baseline climate, averaged over 21 CMIP3 models for West Asia. The size of each pixel represents the level of agreement between models **(Met Office, 2011).**

- http://www.wmo.int/pages/prog/arep/wwrp/new/documents/1121_SDS_Technical_Report_en.pdf

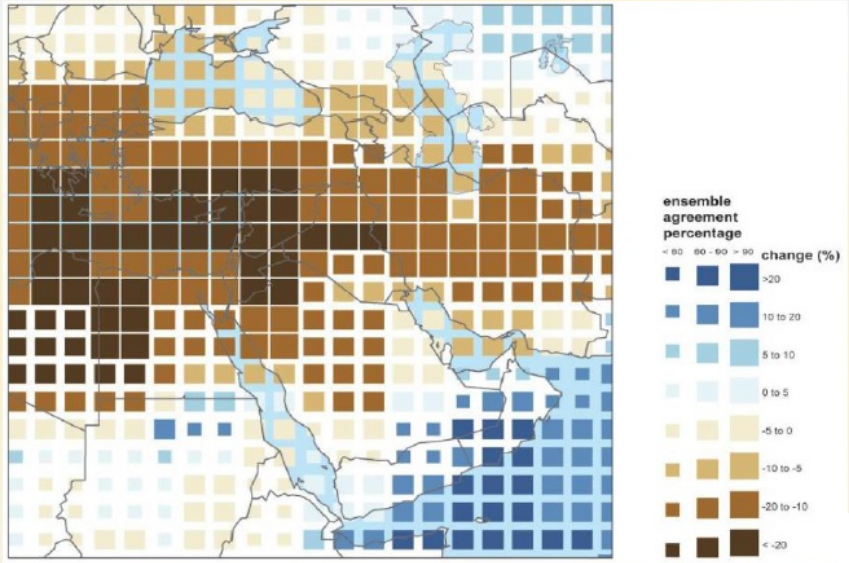


Annual Absolute Temperature Changes in 2035 in Comparison to 1961-1990 for Average Scenario

Source: Iran's Third National Communication on Climate Change

Background

Dust Climatology over West Asia

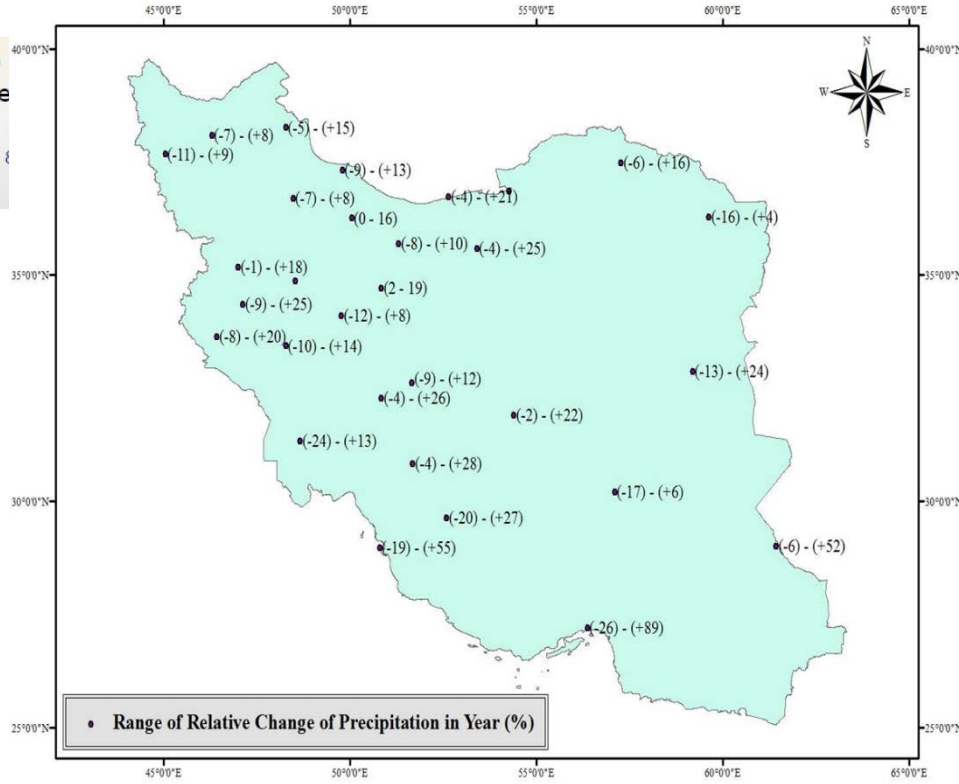


Percentage change in average annual precipitation by 2100 from 1960-1990 climate, averaged over 21 CMIP3 models for West Asia. The size of each pixel re the level of agreement between models **(Met Office, 2011).**

http://www.wmo.int/pages/prog/arep/wwrp/new/documents/1121_SDS_Technical_Report_en.pdf

Range of Long-term Annual Average Precipitation in 2016-2030 in Comparison with 1982-2009

Source: Iran's Third National Communication on Climate Change



Recent Approaches and Water Policies

Elements of Water Management

- **Policy Makers**
  - **Parliament**
  - **Supreme Water Council, presided by the President of Iran**
- **Governance (Ministry of Energy)**
  - **Deputy Minister for Water Affairs** (Iran Water Resources Management Company)
  - **Regional Water Companies**
  - **Deputy Minister for Water & Wastewater Affairs (Water & Wastewater Engineering Company)**
  - **Provincial Water & Wastewater companies**
- **Other Stakeholders**
  - **Ministry of Jihad-e-Agriculture**
  - **Ministry of Industry and Mines,**
  - **Ministry of Urban Development**
  - **Environmental Protection Organization**

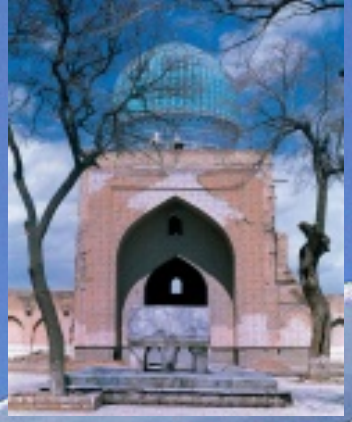
Recent Approaches and Water Policies

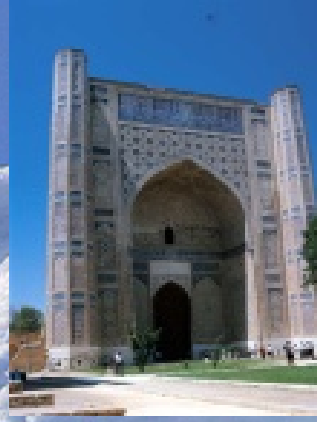
- Promotion of private investment in water projects
- Long-term development strategies for Iran's water resources
- Creation of water related councils
- Promotion of sustainable development and environmental views in water resources management
- Water management based on river basins
- economic instruments: getting the prices right - to promote prudent use of water
- monitoring programmes for surface and groundwaters, both as a planning tool and as an assessment instrument

How to Reach?

The long-term development strategies are on the basis of IWRM deserve to respond:

- Economic efficiency
- Water for food and social security
- Water for environment and sustainable development






Thank You