



Climate change adaptation strategies for a sustainable land use in the lower reaches of the Zayandeh Rud River, Iran

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Dipl.-Ing. Wolf Raber
raber@inter3.de
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Supervised by

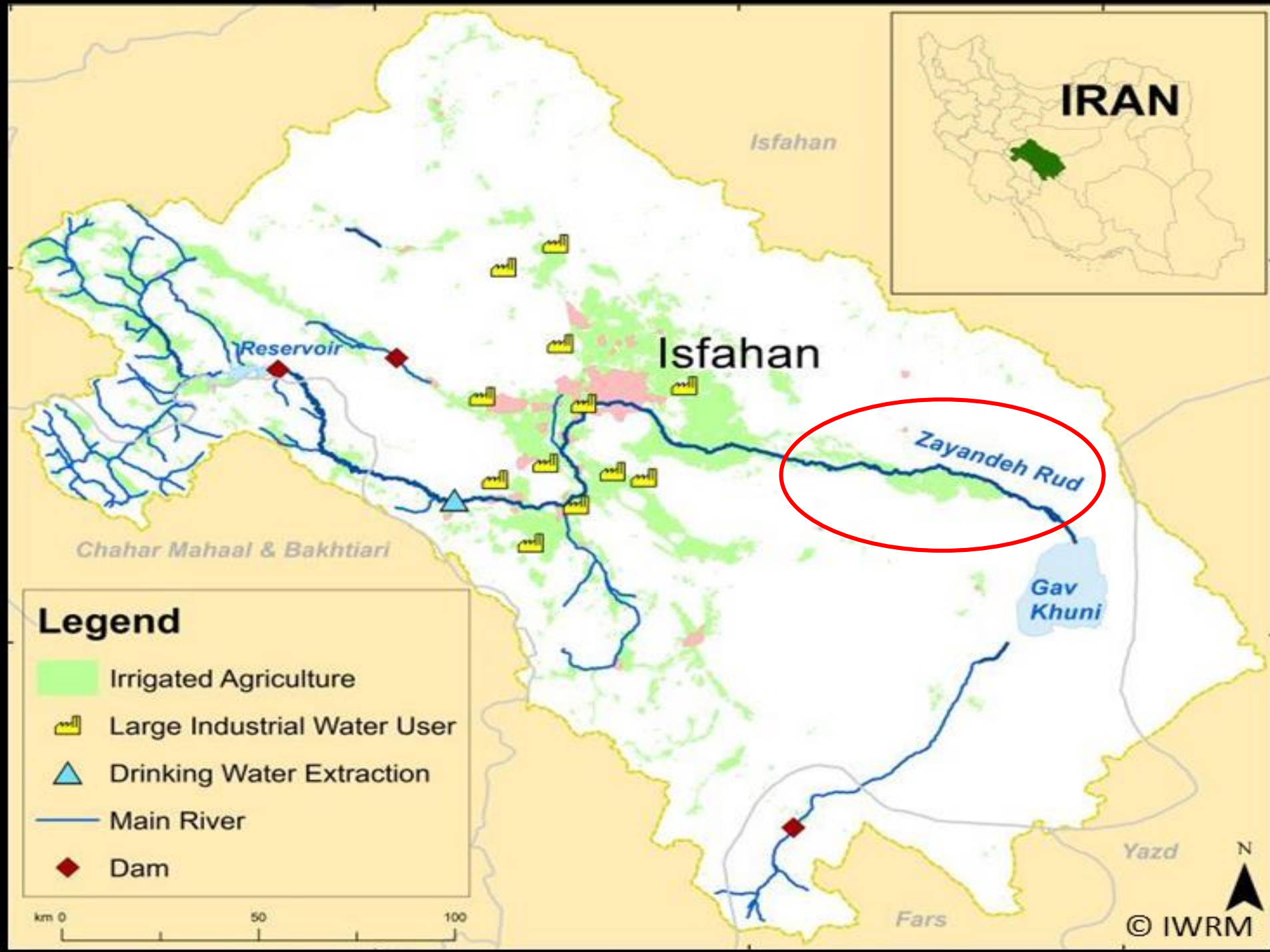
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Political dialogue and knowledge
Management on low emission
Strategies in MENA

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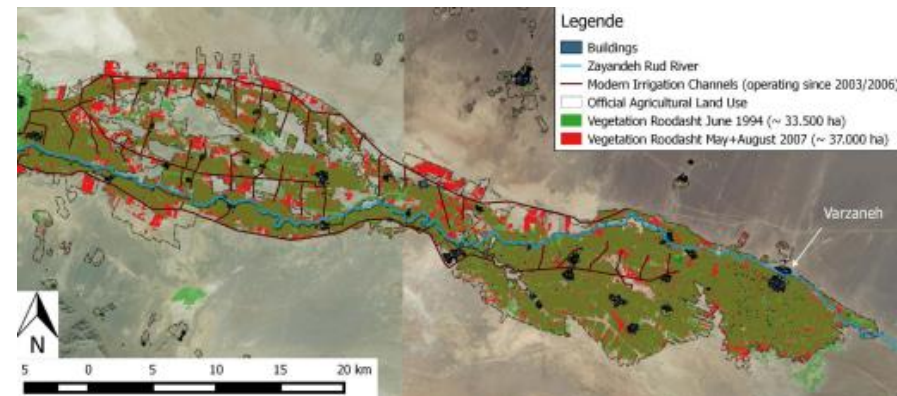
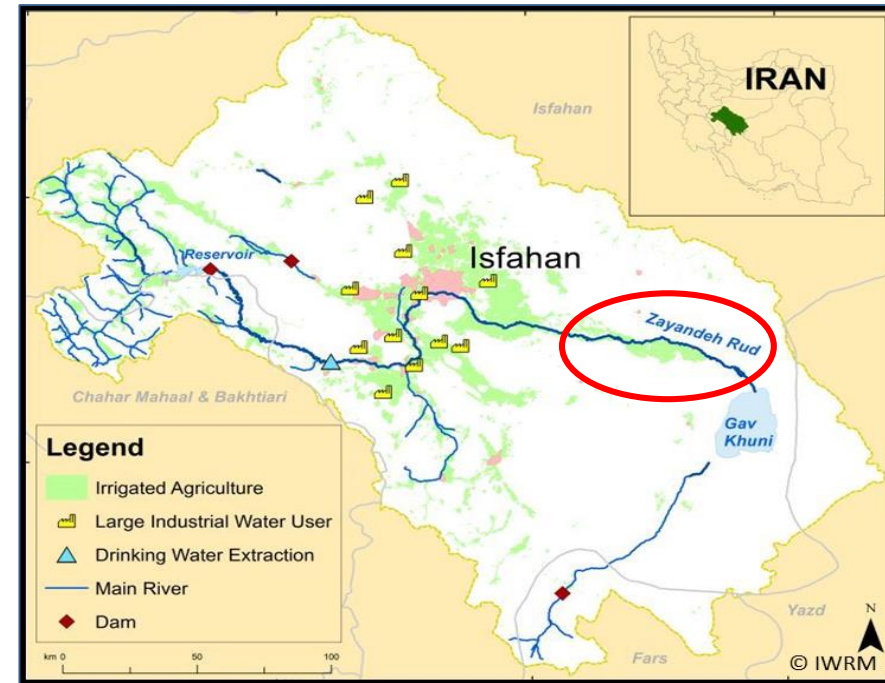


Federal Ministry for the
Environment, Nature Conservation,
Building and Nuclear Safety



- Downstream of the Zayandeh Rud
- Upstream of Gavkhuni wetland
- Surrounded by desert and poor vegetated rangeland
- Harsh arid climate: strong wind, mean temp 24 °C, annual precipitation 88 mm
- 50.000 ha arable land modern and trad. Irrigation network
- 12.000 household
10.000 active farmers

→ Farmers are the main stakeholders



Land use concepts that prevent land degradation and use water resources efficiently

Action Plan Implementation



Negotiation Process

Common problem definition

Problem solving measures

Action plan

Baseline study / Vulnerability analysis

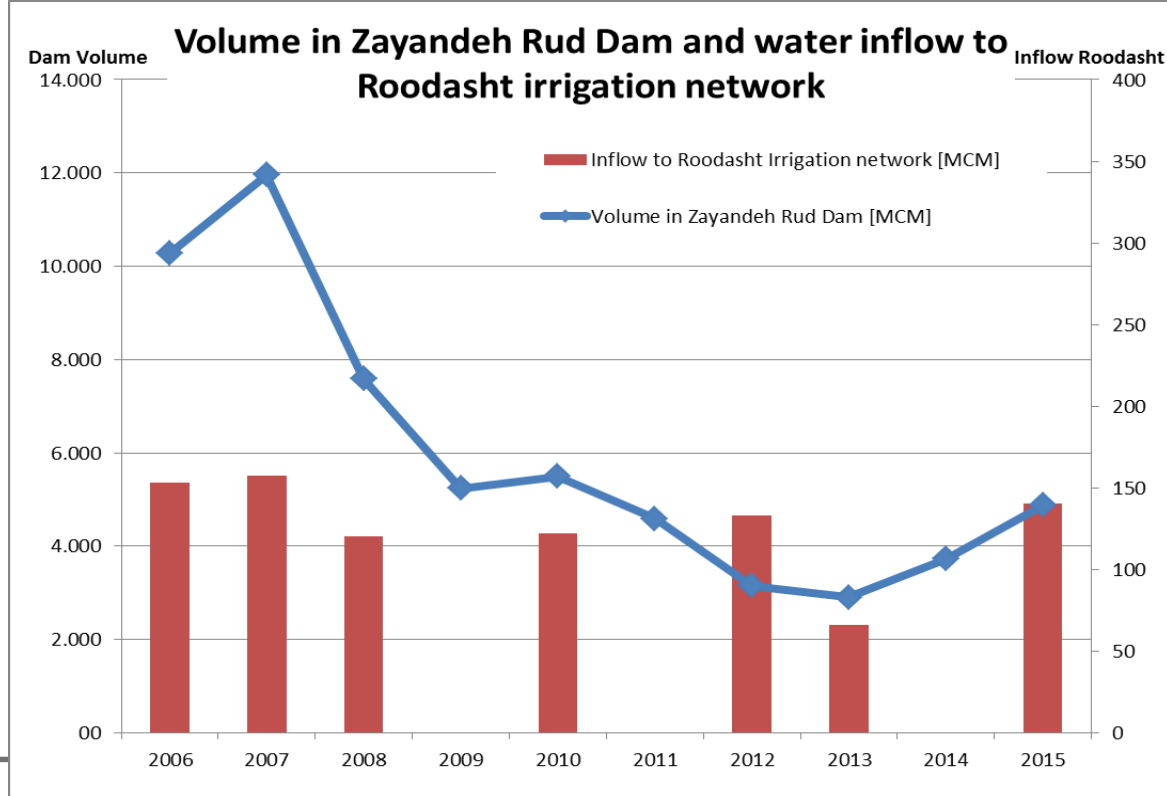
Farmer interviews

Expert interviews

Data review

Remote sensing monitoring

- Exposure to poor and unceratin water availability



_Variance in temperature and precipitation

_Water users in the basin increased

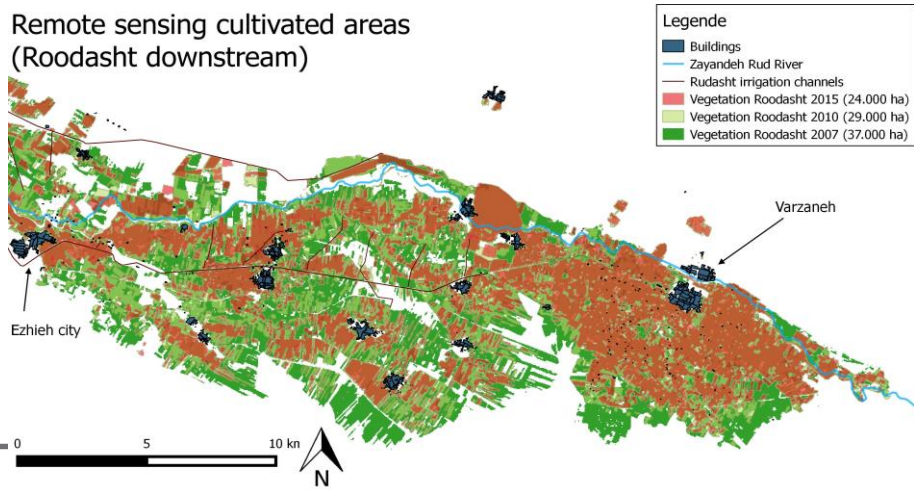
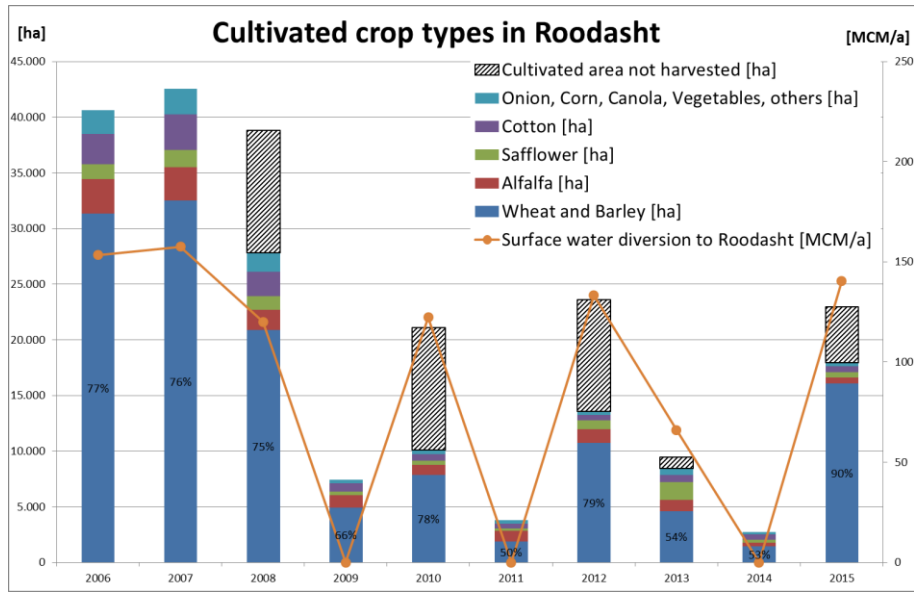
_Intransparent water rights and decision making

- Exposure to poor and unceratin water availability
- Low agriculture production and product diversity, degrading soil quality

_Water insecurity reduces product diversity and foster soil degradation by salinization/alkalinity, erosion and missing organic matter

_Little adaptive capacity due to lacking seeds, markets and know-how

_Uncertain future restricts on-farm modernization



- Exposure to poor and uncertain water availability
- Low agriculture production and product diversity, degrading soil quality
- Limited regional value creation and job opportunities
- Risk of pauperization of farmers households

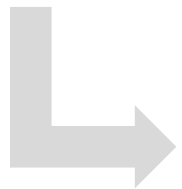
_Income strategies, knowledge and information are limited to agriculture

_Limited agricultural production impacts directly on livelihoods, increases debt burden, reduces land price

_Uncertain future restricts investment in processing facilities and collaborative action



- Exposure to poor and uncertain water availability
- Low agriculture production and product diversity, degrading soil quality
- Limited regional value creation and job opportunities
- Risk of pauperization of farmers households
- Poor efforts on environmental conservation in the region
- **High risk of environmental degradation/dessertification and social conflict followed by rural exodus**



Sandstorms increase in Isfahan city

Sandstorms carry toxic micro dust from dried out wetland

Poor farmer families migrate to Isfahan city

- Exposure to poor and uncertain water availability
- Low agriculture production and product diversity, degrading soil quality
- Limited regional value creation and job opportunities
- Risk of pauperization of farmers households
- Poor efforts on environmental conservation in the region
- ➔ **High risk of environmental degradation/dessertification and social conflict followed by rural exodus**

Negotiation for problem solving strategies with sectors

- Agriculture
- Water
- Environment
- Civil Society



Reconciling Water Distribution

Transparent Water Rights

Extraction Monitoring

Enforcing Water Legislation

Agricultural Development

Agricultural Land Management

Adding Value to Agriculture

Regional Management

Regional Coordination

Income Diversification

Protection of Gav Khuni

Rehabilitation Masterplan

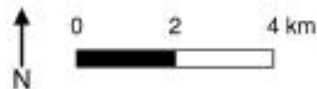
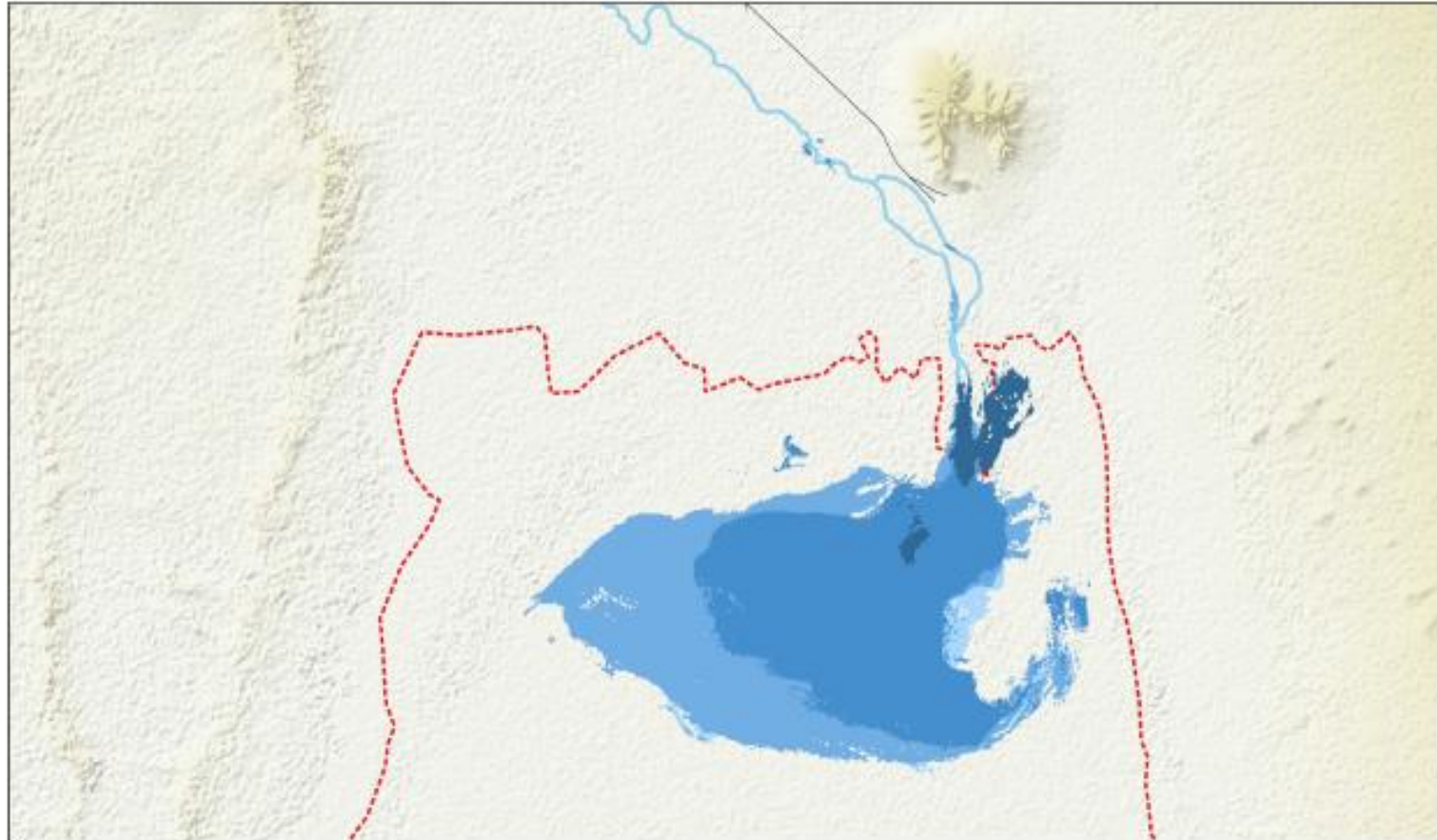
Reducing Vulnerability

Less environmental degradation/desertification

Less risk of social conflicts

! Measures need to be implemented simultaneously and affect each other !

Gavkhuni Wetlands December 2015 until March 2016



Legend

- | | |
|-------------------|-------------------------------|
| Former Wetlands | Water Level 04. December 2015 |
| Uncultivated Land | Water Level 13th January 2016 |
| Zayandeh Rud | Water Level 22. February 2016 |
| Roads | Water Level 9. March 2016 |

Legal Information:
Thomas Hengsbach
Kartographieverbund
Institut für Stadt- und
Regionalplanung
Technische Universität Berlin
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Data: Landsat 8- and SRTM-Images
& official Geodata from Estfahan
Regional Water Company