

# National Consultation framing climate agenda towards climate and carbon neutral Afghanistan

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## Ministry of Energy and Water MEW

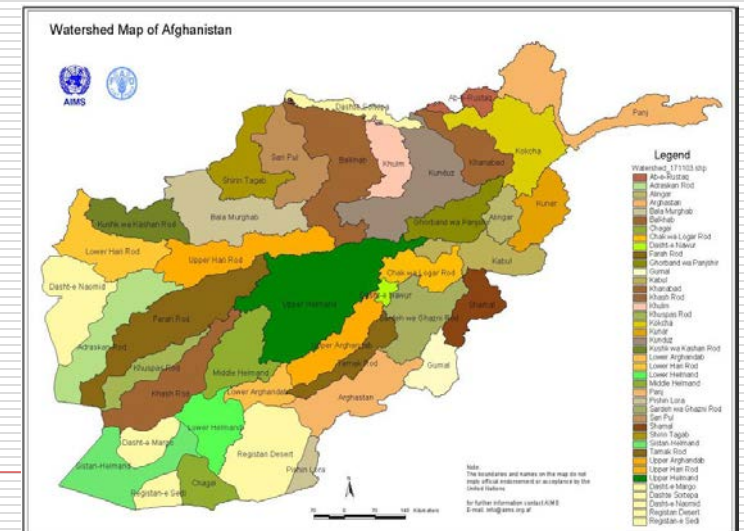
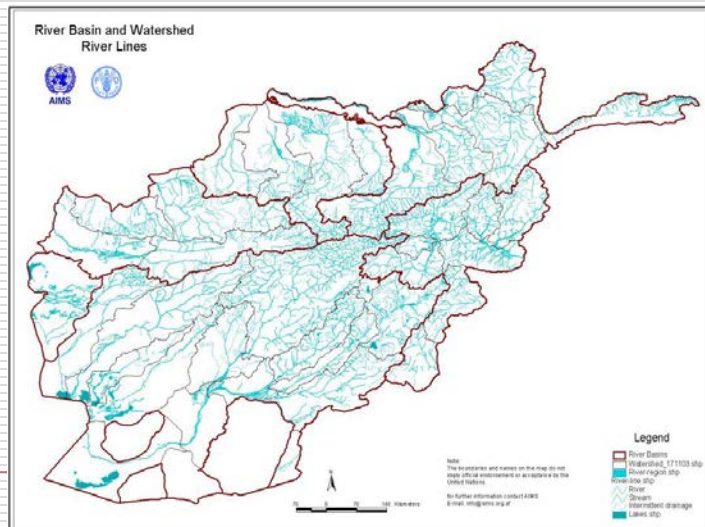
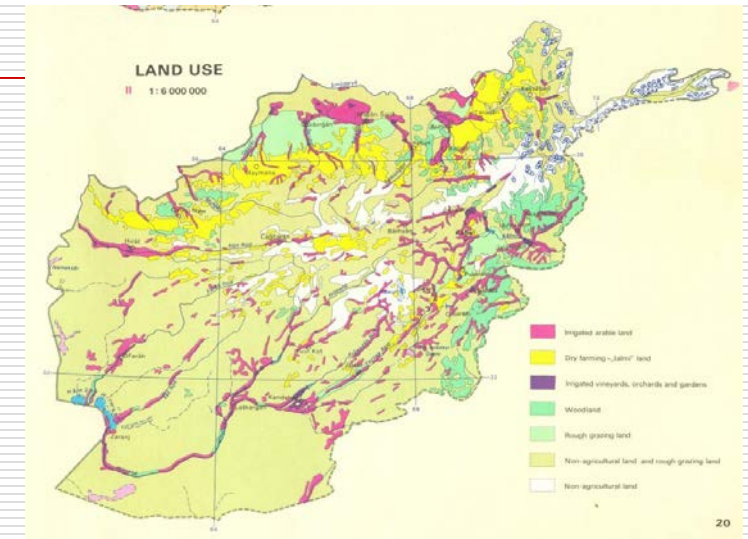
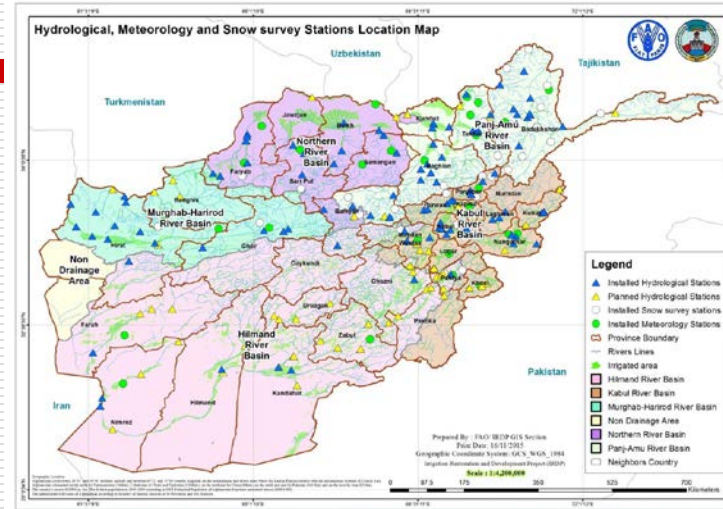
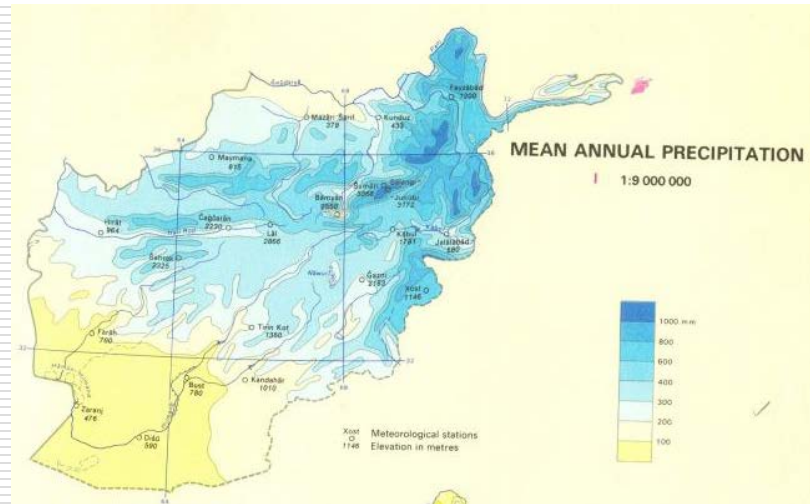
### Climate change impacting Water Resources of Afghanistan



**Sayed Sharif Shobair**  
Coordinator & Chief Engineer FAO/IRDP/Advisor MEW

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Kabul Star Hotel  
Kabul – Afghanistan

# GENERAL INFORMATION



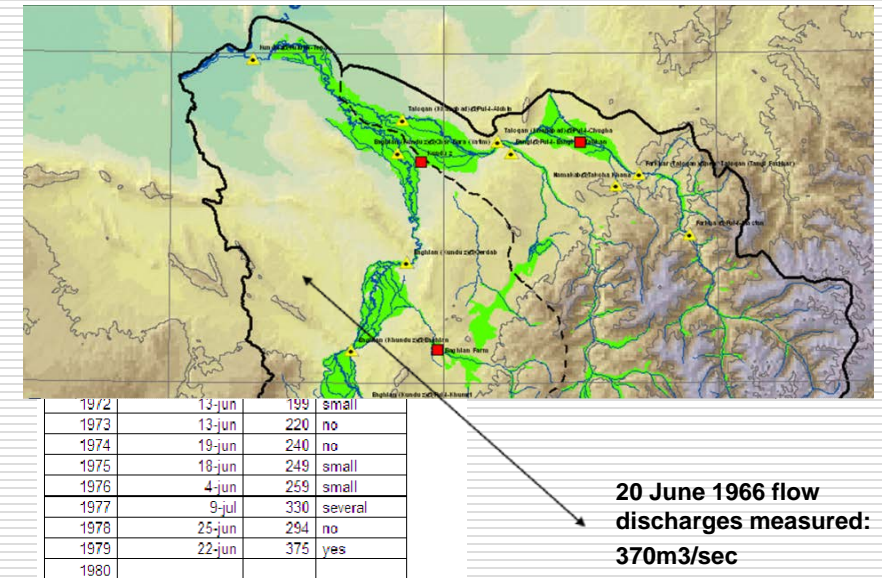
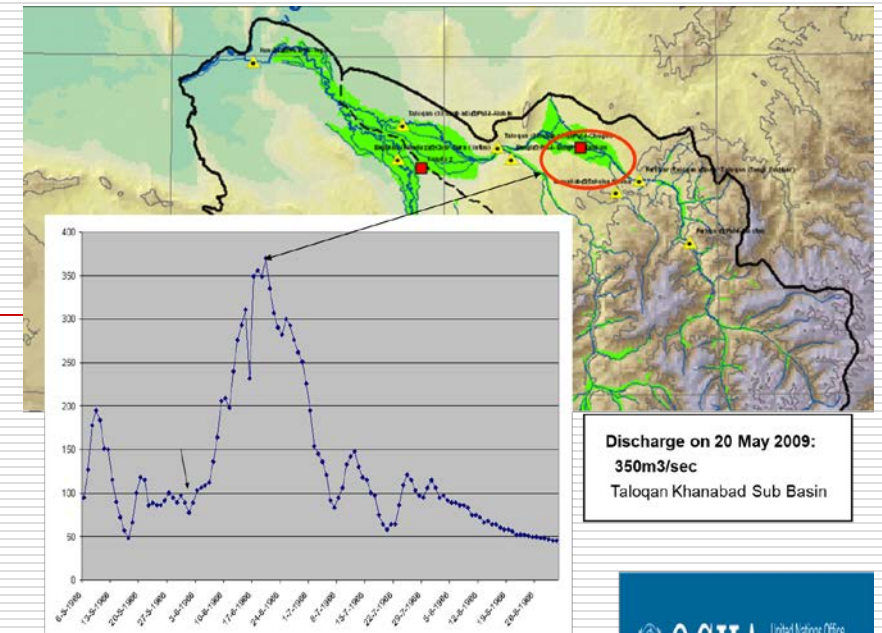


# Impact of climate change

Three classes of water-related problems – having too little water, too much water, or water pollution – can be aggravated by climate change

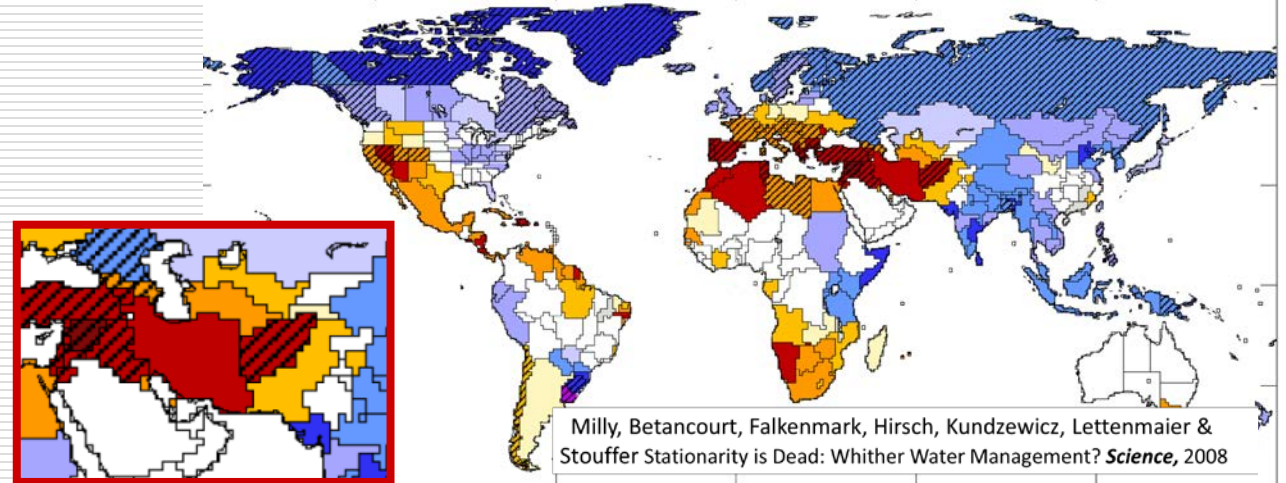
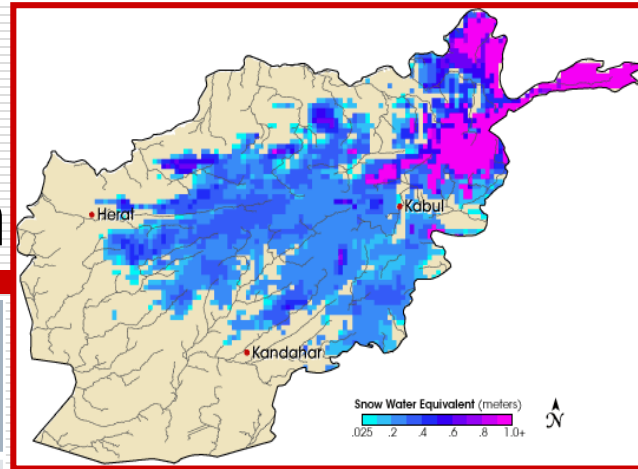
## Water Resources

- ❑ Decrease of snow pack & reduction of melting time – Permanent snow and glaciers are retreating
- ❑ Changes in Hydrological Regime of Rivers (Glacial Regime to snow & snow regime to rainfall)
- ❑ Floods in spring and drought in summer – reduction of water availability for crops during high water requirement
- ❑ Surface water and groundwater pollution
- ❑ Decline of ground water levels including man-made interventions such as boring deep wells for irrigation purposes, usage of solar pump for irrigation



# Surface Water Potential Reduction

Name of Basins	Water availability 1948-1980 BCM	Water availability 2008- 2016 BCM	Reduction %
Panj-Amu	21.5	18.7	13.1
Kabul	19.3	17.1	11.3
Helmand	10.4	8.4	19.0
Harirud - Morghab	3.4	2.5	25
Northern	2.1	2.2	-1.5
<b>Total</b>	<b>56.7</b>	<b>48.9</b>	<b>13.4 %</b>



Projection of changes in annual runoff (2041-2060 vs 1900-1970), for SRES A1B. Colour represents a median from 12 models. Presence of colour means that 8 or more models agree as to the direction of change (hatching: agreement of 11 or 12 models).

## Groundwater Potential Reduction

From 18 BCM to 17 BCM (around 5 %)



# Effects of climate change- Drought/Water Scarcity in Afghanistan

## Hydrometeorologic

- ❑ Precipitation patterns are changing (volume, intensity, frequency, distribution)
- ❑ Frequency and intensity of floods and droughts is changing
- ❑ Less snowfall more rainfall
- ❑ Longer wet season (early snow)
- ❑ Drier dry season
- ❑ More prolonged droughts
- ❑ Avalanches and Landslides
- ❑ Increased amount of water induced hazards  
Increased flash floods



## Agriculture

- ❑ Increase in the evapotranspiration/ crop water requirement
- ❑ Change in the crop calendar and cropping patterns:  
Usage of more drought tolerant crops
- ❑ Reduction of production of pastures and converting pastoral land to rainfed land.
- ❑ Soil degradation, Overgrazing, Deforestation, Desertification and Sand dunes
- ❑ Sand dune / movement of sand in the agricultural land

## Energy

- ❑ Hydropower potential is expected to decline

## Health

- ❑ Increase the risk of oxygen depletion due to Higher temperatures
- ❑ Both extreme rainfall and droughts can increase the total microbial loads in fresh water and hence the risk of contamination of public and private water supplies and disease outbreaks.

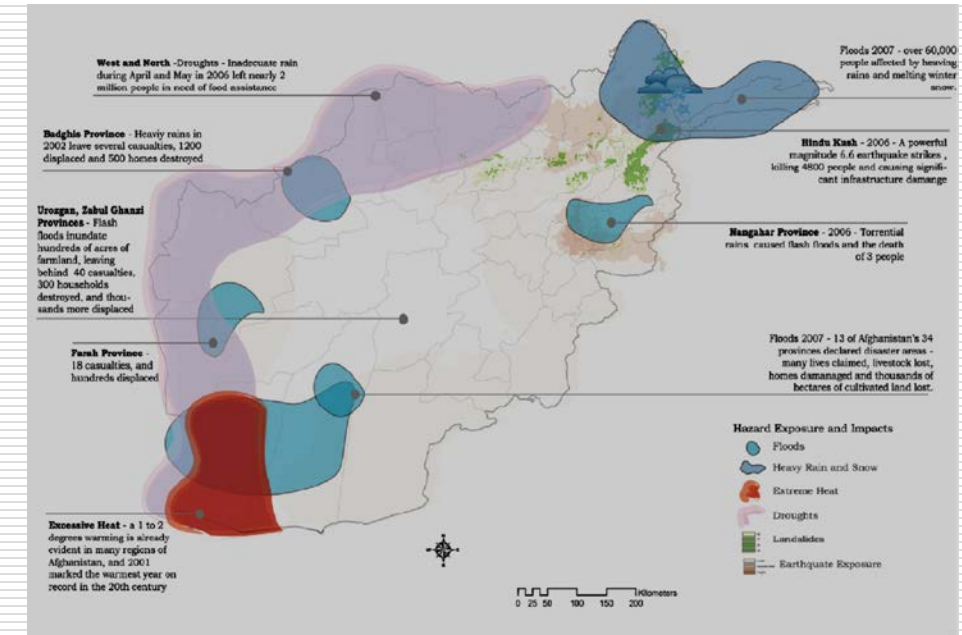
# Effects of climate change- Drought/Water Scarcity

## Socio-Economic in Afghanistan

(Stockholm Environment Institute – Research work 2009)

- ❑ Increase of mean annual temperature by 0.6°C since 1960 mostly during autumn
- ❑ By 2060- average increases in temperature 1.4 - 4.0°C
- ❑ Warming is most rapid in spring/summer in the north and the central plains
- ❑ Winters are expected to be significantly drier in South
- ❑ Mean rainfall has decreased slightly (at an average rate of 0.5mm per month (or 2 % per decade) mainly 2.7mm per month (6.6 % per decade) in spring rainfall since 1960
- ❑ Climate risks estimated to reduce household income
- ❑ Climate risks could impact crops
- ❑ Non-farm household incomes will suffer more due to increased crop prices
- ❑ Increase in storage will minimize impact of extreme events

- ❑ Adaptation investments show potential to minimize impacts of future climate risks and meet food security objectives
- ❑ Climate change likely to impact food availability nationwide
- ❑ Policy intervention is needed to mitigate groundwater depletion and salinity



# Main challenges

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- ❑ Infrastructure security: Inadequate water resources **infrastructures**
- ❑ Incomplete hydrometeorological and water quality observation stations, shortage of reliable data and shortage of groundwater quality and water level data
- ❑ Availability of professional and capable staff
- ❑ Financial resource to be committed – mainly donors are funding **emergency type projects**
- ❑ **Non- compliance of rules and regulations**
- ❑ **Commitment** of communities
- ❑ **Security and political instability**
- ❑ Political will and supportive cooperative from all parties in the **implementation of IWRM** concepts and recognition of water as a sector
- ❑ Lack of interests of capable international companies
- ❑ Risk of not implementing the proposed recommendations & adaptation measures due to insufficient political will, as well as financial and institutional shortcomings

## The main challenges for future

- ❑ How to deal with water **demand and supply** ?
- ❑ How to protect or **restore ecosystems** balance ?
- ❑ How evolve the main economic sectors linked to water ?
- ❑ What are the new challenges for **energy supply** (hydroelectricity, etc.) ?
- ❑ How to deal with **demography** ?
- ❑ What about governance ?
- ❑ What kind of **change is acceptable** or not for our societies ?

# Solutions and Responses (cont.)

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1. **Establishment of relevant institutions** including research and modeling centers with TORs
  2. **Recognition of water as a main sector**
  3. Preparation and **upgrading of National Policies and Strategies** and action plan for drought and flood mitigation including consideration of climate change impacts and SDGs,
  4. Continuation of **emergency projects** such as National Emergency Employment Program, National Citizen Charter Program, Irrigation Restoration and Development Projects IRDP and other Nationwide programs are contributing to reduce drought, flood and climate change impacts
  5. **Capacity development** programmes for all stakeholders and water users
  6. **Conduction of awareness** and establishment of early warning systems
  7. Improve Hydromet and groundwater **observations**
  8. **Implementation of law** and regulations,
1. RBGD, drought and flood forecasting unit, River Basin modeling, etc by MEW – Research units has to be established by Universities & others
  2. To be recognized by the government
  3. National water sector strategy including action plan, Integrated flood malmanagement are under review by MEW
  4. IRDP under implementation by MEW, other projects by other line ministries
  5. Capacity development is part of IRDP/MEW project
  6. First early warning system for flood is going to be established at Panj river by MEW
  7. Under progress by MEW through IRDP
  8. Under progress by Legal Department of MEW – it needs improvements



# Solutions and Responses (cont.)

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| <p>9. <b>Awareness</b> of the communities (information, education and training) about <b>efficient use of water</b> through Irrigation Extension to inverse affects of over/improper usage of surface and groundwater resources.</p> <p>10. <b>Water Security</b> for food security and potable water to meet timely water demands for agricultural and other water users, it is recommended:</p> <ul style="list-style-type: none"><li>a) Rehabilitation of existing irrigation schemes to increase water use efficiency/ productivity</li><li>b) <b>Construction of storage reservoirs/ dams</b> (small, medium and large size) to reduce the impact of floods and droughts and other climate shocks</li><li>c) Introduction of <b>rainwater harvesting techniques</b> for agriculture and domestic uses,</li></ul> <p>11. <b>Natural Water Retention Measures/</b> Integrated watershed management/ ecosystem-based approach and green infrastructure: to reduce erosion, land slides, recharge of ground water and improve water quality and quantity.</p> | <p>9. Under progress by MEW/IRDP</p> <p>10. Under Progress by MEW</p> <ul style="list-style-type: none"><li>a) IRDP</li><li>b) Under progress by MEW</li><li>c) Manuals prepared by FAO / activities have to be considered by line ministries</li></ul> <p>11. <b>Artificial recharge of GW in Kabul</b>, Preparation of Panj-Amu River Flood management <b>Master Plan</b> and Flood Management projects by IRDP and MEW/ activities have to be considered by line ministries</p> |
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# Solutions and Responses (cont.)

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| <b>12. Diverting water from surplus area</b> to deficit area  | <b>12.</b> To be considered by MEW                               |
| <b>13. Possible river linking</b>   | <b>13.</b> To be considered by MEW                               |
| <b>14. Drought and flood assessment</b> , preparedness and mitigation planning plays important role for securely living environment of the ecosystem, | <b>14.</b> Under preparation                                     |
| <b>15. Wastewater reuse</b> after treatment and desalination  | <b>15.</b> To be considered by MUDH and Municipalities           |
| <b>16. sustainable urban drainage systems</b>   | <b>16.</b> To be considered by MUDH and Municipalities           |
| <b>17. wetland restoration</b>  | <b>17.</b> Under progress by NEPA                                |
| <b>18. soil management</b> , etc.   | <b>18.</b> To be considered by MAIL                              |
| <b>19. Drought and flood forecasting</b> and awareness plays important role for reducing vulnerability  | <b>19.</b> Under preparation by MEW and to be considered by MAIL |
| <b>20. Introducing of appropriate and simple water conservation techniques/technologies</b> ,   | <b>20.</b> To be considered by line Ministries                   |
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# Solutions and Responses (cont.)

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| <p>21. Preliminary flood risk assessment (including assessment of the projected impact of climate change trends; forecast of estimated consequences of future floods, ...).</p>  | <p>21. To be consider by MEW</p>  |
| <p>22. <b>Preparation of flood maps</b> and indicative flood damage maps, covering the geographical areas which could be flooded with a high probability (e.g. return period of 10 years); with a medium probability (100 years), and with a low probability (extreme events).</p> | <p>22. Partly under progress by MEW – to be considered by MEW in all RBs.</p> |
| <p>23. <b>Preparation and implementation of flood risk management plans</b>, aimed at achieving the required levels of protection.</p>   | <p>23. Partly under progress by MEW – to be considered by MEW in all RBs</p>  |
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# Drought/Water Scarcity and flood Mitigation

## Strategies

- ❑ **Demand and Supply management** and balance between water demand and supply,
- ❑ Hydromet data, information and knowledge sharing at different levels,
- ❑ **Good coordination** among line ministries/agencies responsible to deal with drought and flood issues
- ❑ Study of local communities past and present **coping strategies**/ learning lessons from them,
- ❑ Establishment of **sub-basin and basin councils**,
- ❑ Ensuring effective **water service pricing** and applying “users and polluters paying principal”
- ❑ To **recognize Afghanistan as a drought prone country**

## Drought mitigation for Agriculture & Pasture development

- ❑ Establishment of **research facilities** to address drought and flood
- ❑ Introduction of appropriate **irrigation methods** and technologies
- ❑ Introduction of **drought tolerant crops**
- ❑ Improving / **reviving the traditional Mirab systems** and built on that the modern IA and WUA suitable to the present situation
- ❑ Enforcement of proper rules and regulation
- ❑ Promoting micro-watersheds and clustering of micro-watersheds for supporting river basin approach
- ❑ **Promoting Karezes** and springs through:
  - **Recharging ground water** in the upper catchments by using simple water harvesting methods
  - Improving / **rehabilitation** of existing Karezes and springs
  - Proper regulation regarding **drilling of deep wells**

*"Let Kabul be without gold  
but not without snow"*

کابل بی زر باشد بی برف نی

**Thank you for  
your attention**

