Drought management and objectives of regional cooperation in transboundary rivers basins (Aral See basin)

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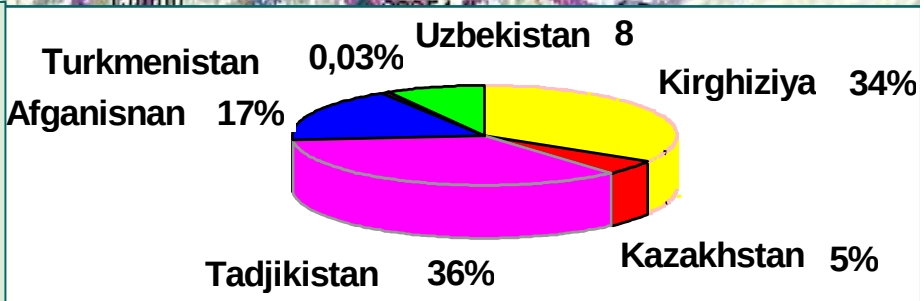
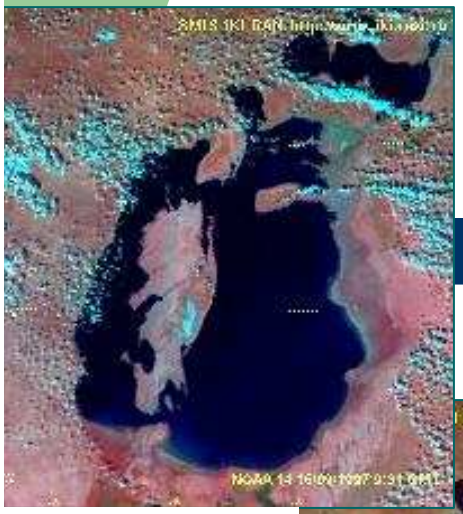
WATER RESOURCES IN ARAL SEE BASIN

The river flow is concentrated in the two largest transboundary rivers:
the Amudarya (78.5 km3 per year) and Syrdarya River (37.1 km3 per year), which run down from the mountains to the plains, cross the deserts and flow into the Aral Sea



INTENSIFICATION OF THE ARAL CRISIS



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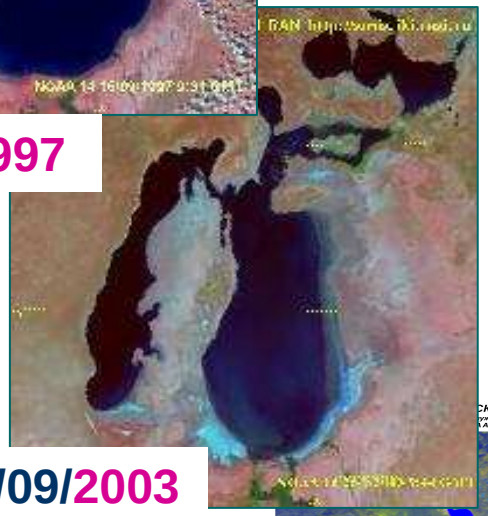

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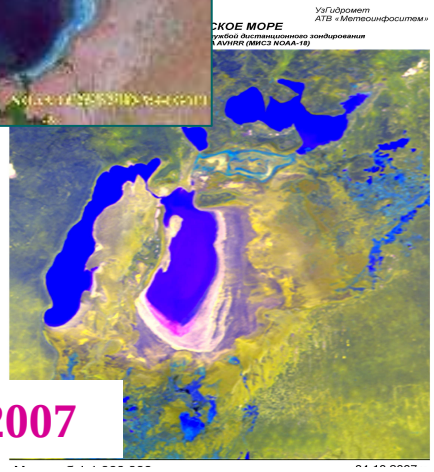

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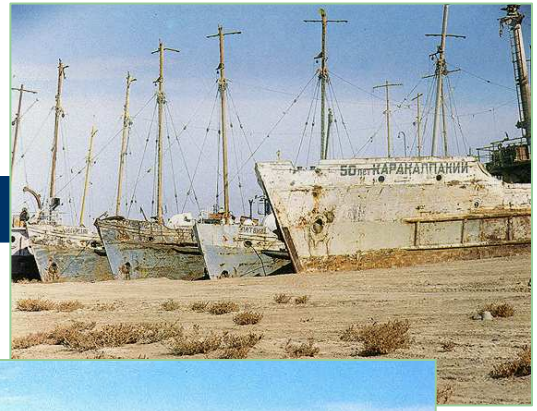
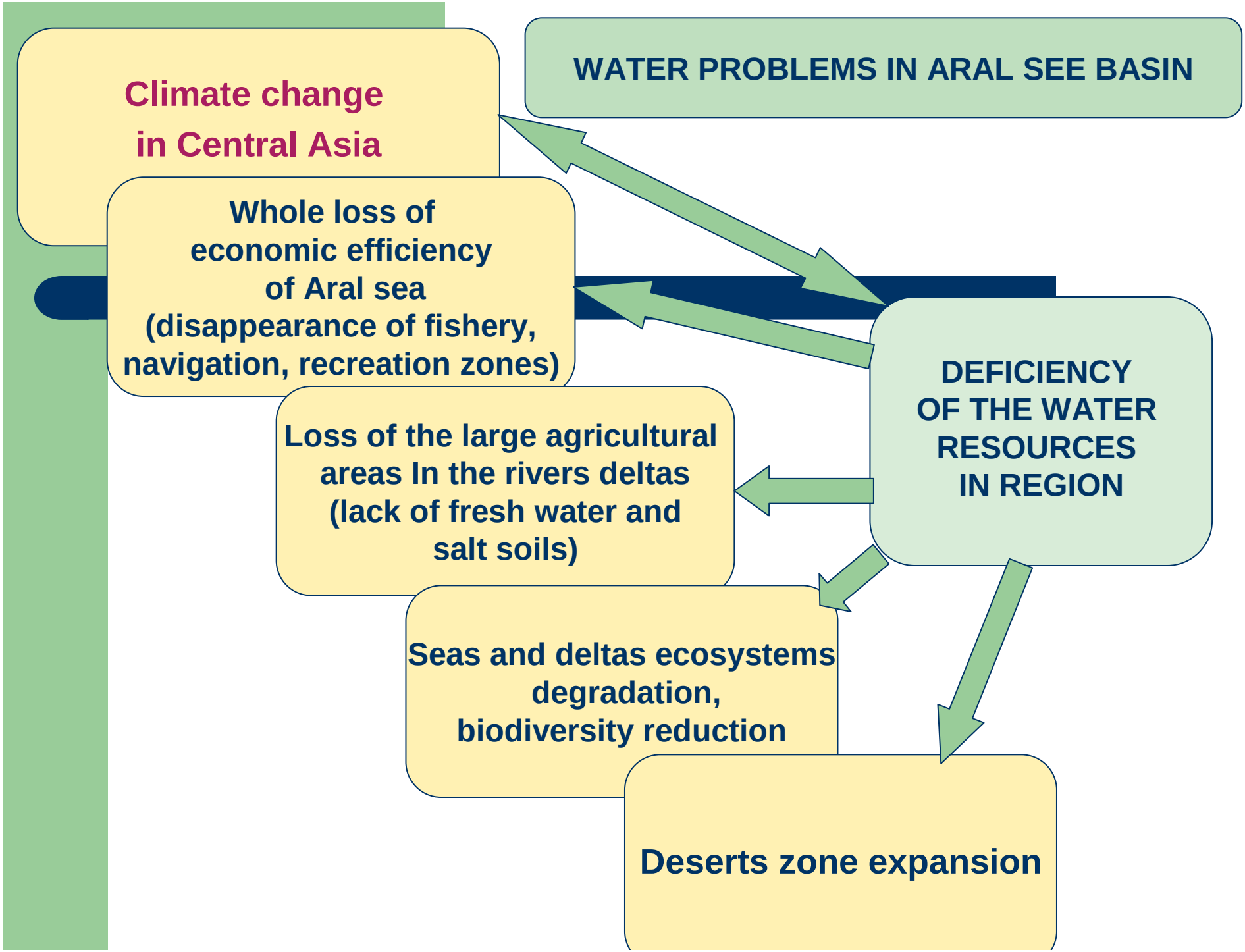
The **decrease of the water resources** is the main factor which deteriorates the situation in the Aral Sea basin in relation to climate change




WATER PROBLEMS IN ARAL SEE BASIN
Climate change
in Central Asia
Whole loss of
economic efficiency
of Aral sea
(disappearance of fishery,
navigation, recreation zones)
DEFICIENCY
OF THE WATER
RESOURCES
IN REGION
Loss of the large agricultural
areas In the rivers deltas
(lack of fresh water and
salt soils)
Seas and deltas ecosystems
degradation,
biodiversity reduction
Deserts zone expansion

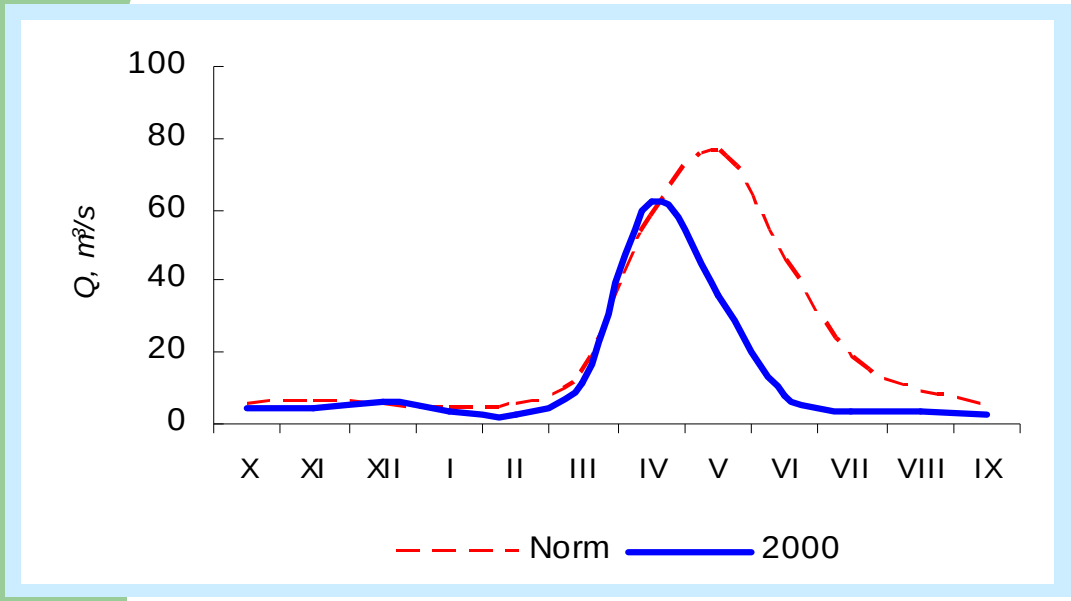
RECENT DROUGHTS IN CENTRAL ASIA

Drought is an insidious natural disaster. The hydrological drought-phenomenon among all natural disasters have most serious consequences for all five countries using water from main transboundary rivers in the Aral See basin.

- **The situation with the water resources becomes crucial during the dry years when hydrological drought is observed. The assessment of the driest period on the base of the extreme climate scenarios shows that *vegetation runoff in Amudarya and Syrdarya transboundary river basins might be decreased for 25-40%.***

- **Especially unfavorable conditions are expected in the middle and lower streams of Amudarya and Syrdarya (in irrigation zone).**

EXTREME LOW WATER PERIODS



Runoff hydrograph for Akhangaran runoff in 2000 year on comparison with mean annual values

Drought is very negative event which is cause substantial losses in agricultural production and difficulties in the fresh water supply for population

DROUGHT CONDITIONS IN CENTRAL ASIAN IN CONTEXT OF CLIMATE CHANGE

The additional risks are caused by the following factors:

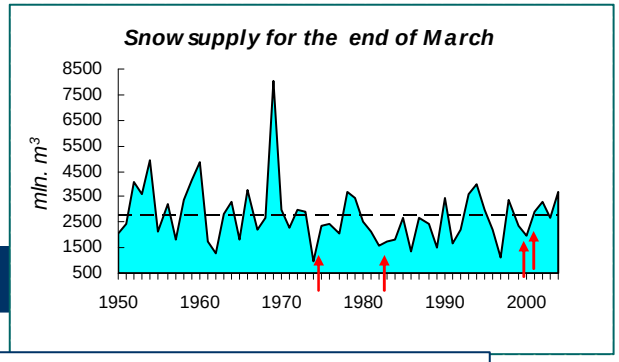
Increase of the duration of the dry hot period;

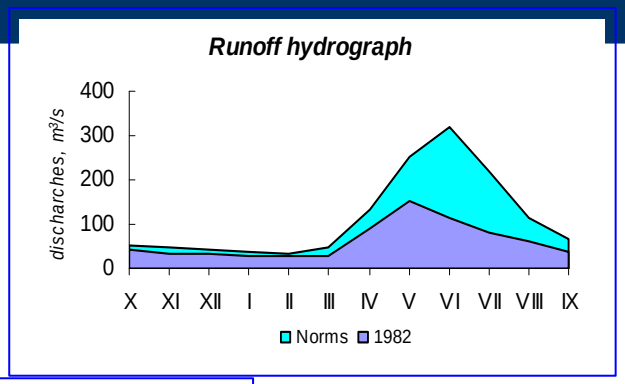
Increase of the frequency of droughts;

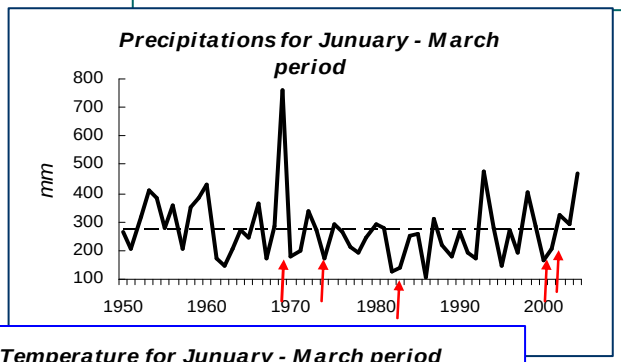
Increase of the water demands, especially for irrigation needs.

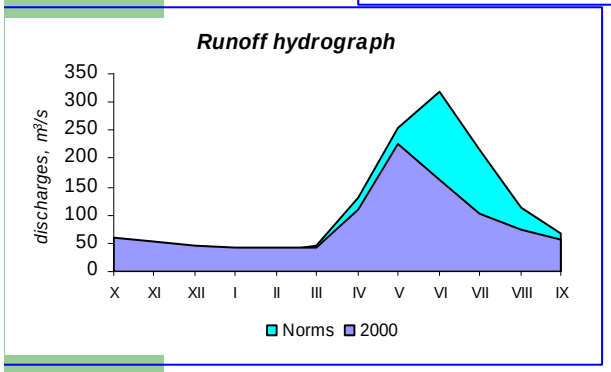
DROUGHT EVENTS

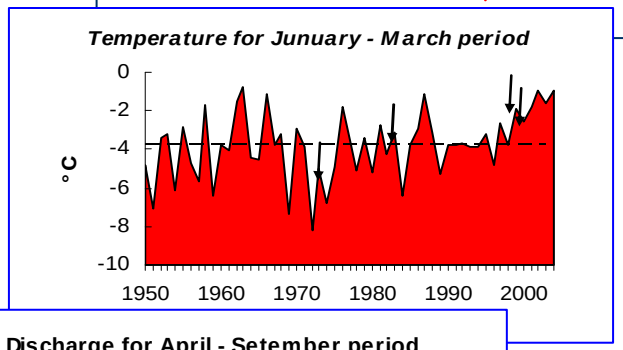
Meteorological conditions background preceded and accompanied droughts phenomenon

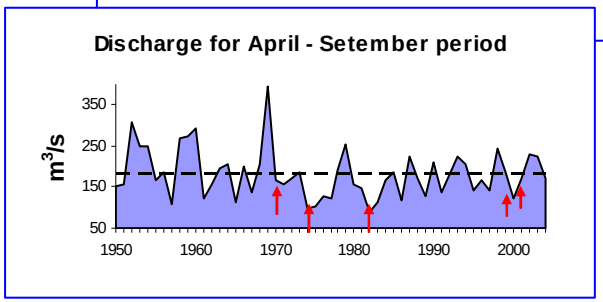












Hydrographs corresponded to most severe droughts events

NECESSITY OF REGIONAL COOPERATION AND JOINT ACTIONS

- ❖ Drought is a regional phenomenon in Central Asia, and regional efforts in water management are already underway to mitigate it
- ❖Wider spectrum of benefits from greater transboundary cooperation include planning, hydrometeorological observation, forecasting and early warning, land management, environment and food security could be obtained.
- ❖The global scale of the problem (negative impacts of desertification and drought) requires joint actions and transboundary cooperation

AIM OF THE CENTRE

to serve as an consultative and advisory body on drought preparedness, monitoring, early warning and mitigation of negative drought consequences in Central Asia in the context of climate change

Drought Management Centre for Central Asia (DMCCA)

WMO is currently working on establishing the DMCCA for Central Asia.

WMO Consultant visited the five Central Asian countries ie., Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan in November 2009 to consult with all the relevant organizations and institutions and prepare the project proposal.

TASKS OF THE CENTRE

Drought management has three major components:

- Monitoring and early warning
- Risk and impact assessment
- Mitigation and response

TASKS OF THE CENTRE

Monitoring

Development of national and regional drought adaptation strategies, design the system of continuous drought monitoring in CA

Development

of methods for estimation and forecast of atmospheric, hydrological and soil drought (intensity, extension, duration), its early diagnostics, assessment of its impact on crops, pastures, according to ground and satellite information

Early warning and mitigation

Timely preparation and delivery to users the relevant information (drought prediction, early warning and mitigation)

Cooperation

Increase of synergies among NMHSs, Scientific Community, international and nongovernmental organizations on drought issues

- **Users requirements identification**
- **Researches carrying out**
- **Information dissemination**
- **Data quality control**
- **Experience, lesson learned and products synthesis and exchange**

EARLY WARNING SYSTEM

❖There is an urgent need to establish effective early warning systems (EWS) for drought, especially in the Central Asian countries under the increasing intensity and frequency of droughts.

❖ There is a pressing need to discuss and recommend standard indices for droughts of different categories to improve EWSs.

EARLY WARNING SYSTEM

RISK ASSESSMENT

MONITORING & WARNING

DISSEMINATION & COMMUNICATION

RESPONSE CAPABILITY

+

❖**Agreement on exchange of hydrometeorological data between Central Asian countries**

❖**AISHF (block EW)**

❖**Trainings for specialists:** (a) on implementation of forecasting system in the conditions of information deficit, (b) user service, (c) on exchange of experience for the forecasters of Tajikistan, Kyrgyzstan and Uzbekistan.

❖**Early warning: bulletins, cadastre**

-

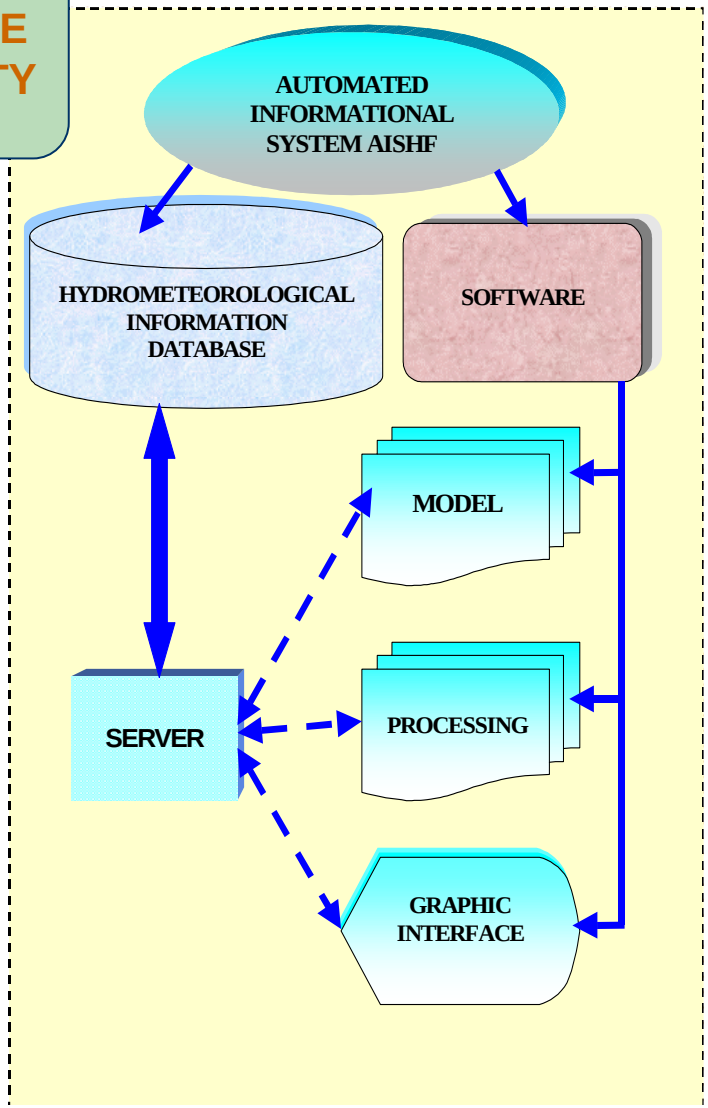
❖**Regional system of drought indices**

❖**Regional training-workshop on indices**

❖**Integrated Drought Information System**

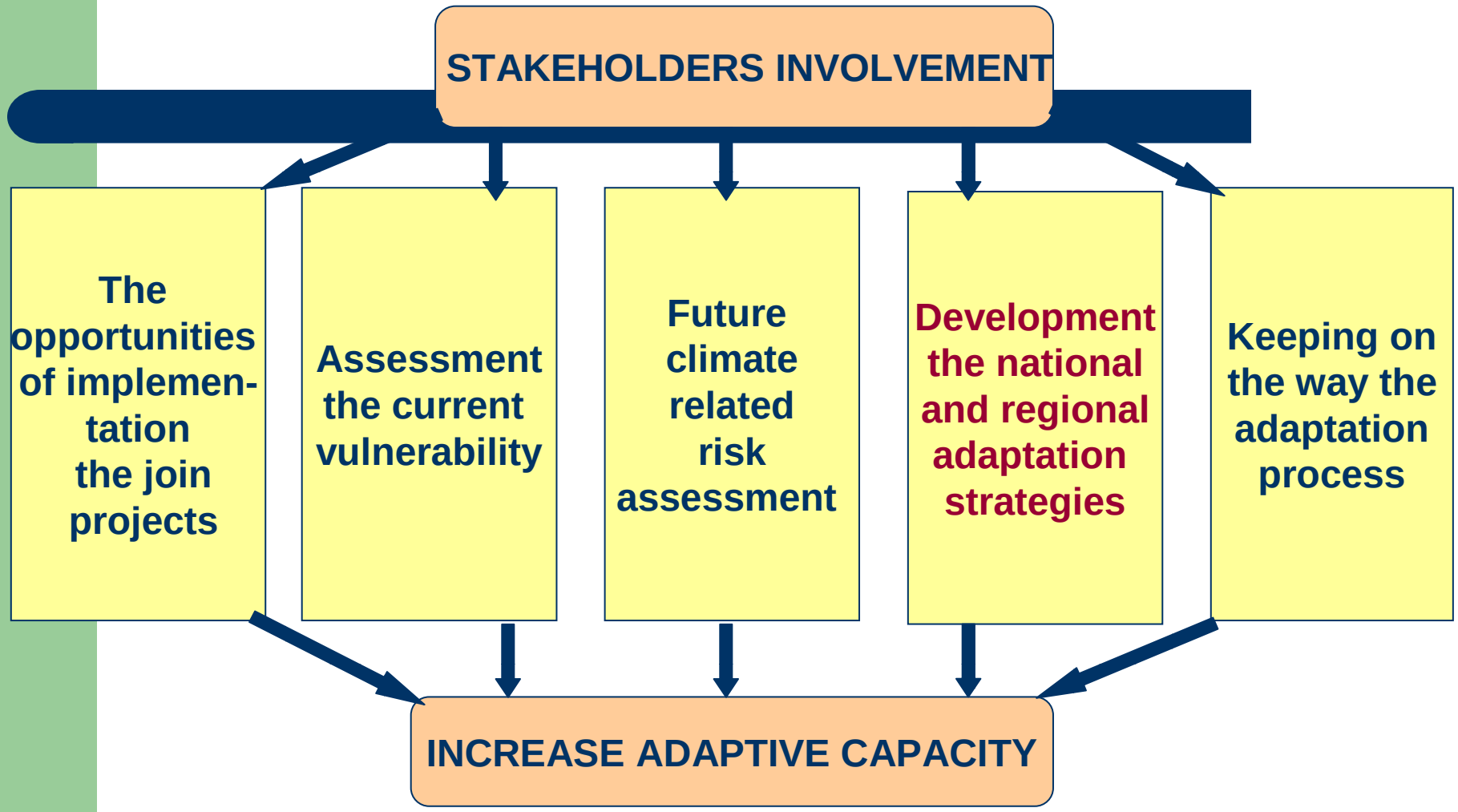
❖**Sectoral Impacts of Drought: Indicators for Early Warning and Assessment**

❖**Regional action plan**



TASKS OF THE CENTRE

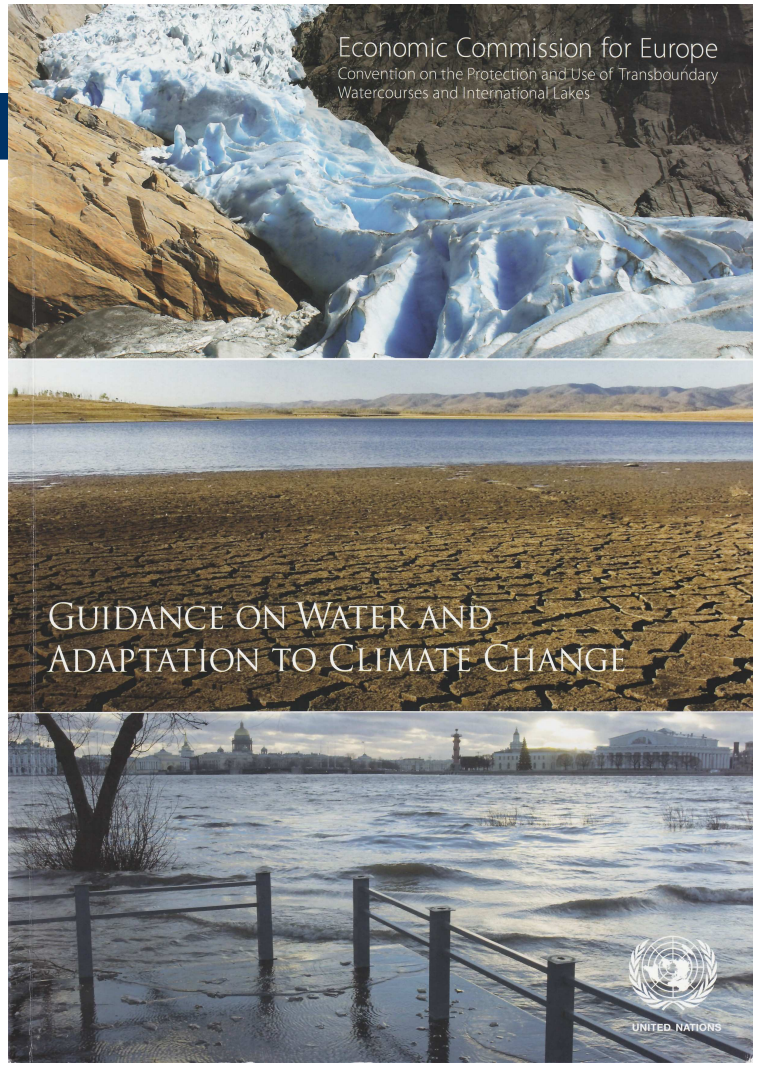
COOPERATION



TASKS OF THE CENTRE

COOPERATION

Coordination of NMHSs (National Meteorological and Hydrological Services) activities, Scientific Community, international and nongovernmental organizations and provision of operational guidelines which will promote the respective institutions in understanding drought phenomena and apply the products of early warning, forecasting and mitigation systems.



REGIONAL TRANSBOUNDARY COOPERATION

On the way of adaptation strategies development as being based upon the main principles formulated in the Guidance on Water and Adaptation to Climate Change and focused on the following objectives:

- **identification of the single transboundary water use concept under expected hydrological drought conditions;**
- **drought forecast and assessment of its socioeconomic consequences;**
- **development and implementation of the task-oriented programs focused on the drought prevention and risk reduction for agriculture;**
- **development of the drought monitoring, collection, processing, exchange and providing the information on the drought prevention and assessment the vulnerable territories;**
- **preparation of population, officials of the management bodies to the actions under the drought;**
- **liquidation of hydrological drought after-effects;**
- **implementation the measures on the social protection of population affected by the drought;**
- **support of operation the Drought Management Centre for Central Asia;**
- **design, development and establishing the facility for timely and effective dissemination of the information acquired from drought early warning systems and its delivery to decision makers.**

DMCCA

as connecting link within Central Asia region for climate change related issues especially in the transboundary context is reliable and effective mechanism to promote the implementation of the UNECE Guidance on Water and Adaptation to Climate Change

- **its activities are going to be driven by main principles are stated in the Guidance that could be applied to drought management and drought planning;**

- **compromise ways as being politically, socially and environmentally well sounded ,use of best practice, lessons learned and scientifically sounded approaches are probably only ways to succeed with adaption strategies development and adaptation measures implementation issues in the Central Asia region that will promote and popularize the implementation of the principles of the Guidance.**

PROJECT PROPOSALS IN FRAMEWORK DMCCA

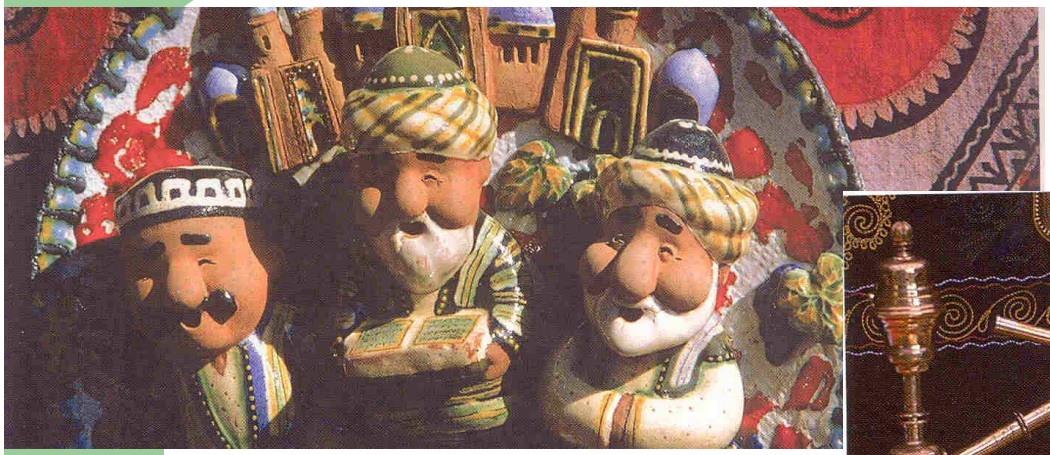
Development of a regional strategy on drought management under current and expected climate and its integration into the national strategies for sustainable development

Development drought monitoring and early warning in the regions interest

Assistance in the development of the national and regional infrastructures related to drought monitoring and early warning systems

Development of the infrastructure on the legitimate basis to provide smooth ,transparent and continuous process of acquisition, processing and disseminating data on droughts among CA countries

Training platform establishment on the basis of best practices regarding droughts and climate change with a special focus on the transboundary context

Push the Central Asia countries on the way of development their National Adaptation Strategy and Action Plans via popularization the integrative and incentive approaches to adaptive measures developments and implementation set out in the "GUIDANCE ON WATER AND ADAPTATION TO CLIMATE CHANGE "

THANK YOU FOR ATTENTION