



United Nations
International Strategy for Disaster Reduction



THE WORLD BANK

Central Asia and Caucasus Disaster Risk Management Initiative *Progress Report*

Central Asia Regional Economic Cooperation
Senior Officials' Meeting
28-29 May 2009 - Ulaanbataar, Mongolia

Agenda

- Objectives
- Partnerships
- Progress Report (since SOM in Sept. 08):
 - Component I: Disaster Mitigation, Preparedness and Response
 - Component II: Disaster Financing and Risk Transfer
 - Component III: Hydro-meteorological Forecasting, Data Sharing and Early Warning.
- Summary of Initial Findings and Recommendations
- Proposed next steps



Objectives

- To reduce the vulnerability of the countries of Central Asia and Caucasus to the risks of disasters
- To support CAREC's Special Initiatives under the 2006 CAREC Comprehensive Action Plan (initially proposed at CAREC SOM in September 2008)
- To form the foundation for regional and country specific investment priorities/projects in the area of early warning, disaster risk reduction and financing
 - While initial focus is on non-structural measures, structural investments could be supported later to protect assets, lives and livelihoods
 - Funds could also be provided for adaptation to climate change and streamlining adaptation activities into development programs.



Partnerships

- Coordinated by the UN International Strategy for Disaster Reduction (UN/ISDR) secretariat, the World Bank, and (for Hydromet) the World Meteorological Organization (WMO), under the CAREC umbrella
- Financed by the Global Facility for Disaster Reduction and Recovery (GFDRR) and other interested donors.
- Building upon and amplifying the many initiatives that already exist in the region by countries, multilateral and bilateral agencies, and
- To complement and consolidate activities of the International Finance Institutions (IFI), the EU, the UN (notably UNDP, the UN Office for the Coordination of Humanitarian Affairs (OCHA) and UNICEF), regional cooperation institutions, bilateral donors such as Switzerland, Finland, Japan and others.

Progress on Component I

- Objective: strengthen the capacity and promote a coordinated approach to disaster preparedness and response in CAC region, working through existing partnerships to identify opportunities and gaps, and work together towards filling these gaps.
- Risk Assessment Desk Review has been completed (by UNISDR consultant), to provide a simplified quantitative risk assessment and determine the social and economic loss potentials and the likelihood of occurrence of different hazards at country and regional levels.
- Second consultative meeting on the establishment of a Central Asian Coordination Center for disaster preparedness and risk reduction was held in Almaty on April 15-16, 2009, co-hosted by Kazakhstan and UNOCHA.



Progress on Component II

- Objective: develop disaster risk financing and risk transfer mechanisms (such as catastrophe insurance and weather derivatives) to reduce the burden on government budgets and on the population's assets
- A Disaster Risk Financing Options Study was completed, based on the findings of a joint UNISDR-WB mission in January 2009. Study included an assessment of (i) current practices to finance damages, (ii) the state of the current private insurance market in providing catastrophe insurance, and (iv) the viability of creating a regional disaster insurance mechanism through risk pooling
- A regional roundtable on Disaster Financing was held in Almaty on January 22, 2009 connecting some 60 participants (from Government, academia, and about 15 donor agencies) in 5 CA cities by video-link



Progress on Component III

- Objective: to strengthen Hydromet services, data sharing and early warning system in CAC region, initially through assessment of capacity and data sharing procedures, and identification of regional and country specific investment priorities
- The Hydromet Regional Assessment took place in March-April 2009, through a joint mission to all 8 CAC countries, composed of specialists from UNISDR, WMO, the Finnish Meteorological Institute and the WB. The draft regional report is expected by the end of June 09.
- A regional Hydromet roundtable was held in Tashkent on March 27, 2009, connecting by video-link some 50 participants in 5 cities and WMO, UNISDR in Geneva. It was agreed to hold a workshop in Sept/Oct. 09 to discuss implementation and financing plan of a regional Hydromet program and country-specific projects.

Disaster Risk Assessment Desk Review

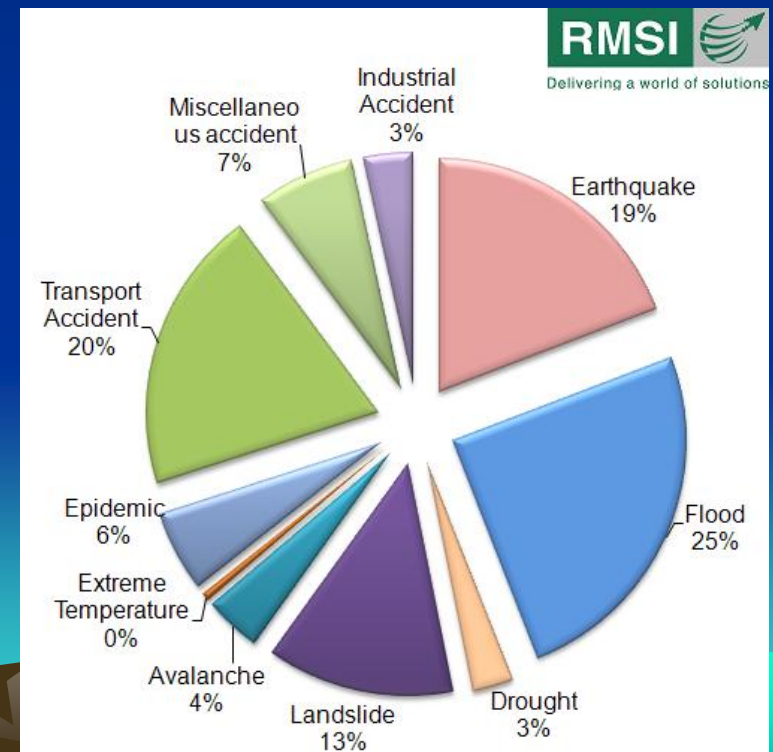


Regional setting



Key Findings -Disasters

- Earthquakes - dominant disaster risk in CAC followed by floods, landslides, and droughts as per economic risk assessment analyses
- Industrial accidents, transport accidents, miscellaneous accidents, and epidemics are other significant disasters
- During the last 20 years (1988-2007), the reported 177 disasters have caused 36,463 deaths
- However, earthquake caused the maximum number of deaths: 32,834.



Key Findings – Social Vulnerability

- The social vulnerability (SV) ranking of each country was estimated based on the average number of people killed per year per million
- The average number of people killed per year per million in Armenia during 1988-2007 is 6.3 times more than that of Tajikistan (the second highest).
- In terms of relative SV ranking, Armenia ranks highest followed by Tajikistan, Georgia, Azerbaijan, Kyrgyzstan, Kazakhstan, Uzbekistan, and Turkmenistan.
- People killed per year per million in the Caucasus is more than 9.8 times that of Central Asia.
- However, the analysis is 'biased' due to the December 1988 earthquake in Spitak, Armenia, in which 25,000 people died.

Key Findings – Urban Vulnerability

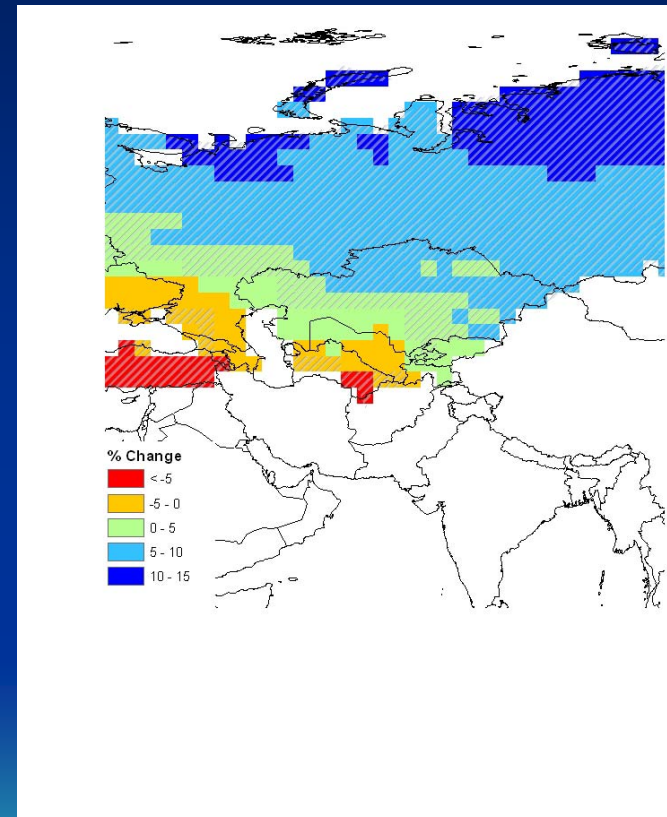
- Tashkent, Baku, Almaty, Tbilisi, Bishkek, Yerevan, Dushanbe, Ashgabat and Astana are the most populated cities with intense economic activity.
- All these cities, with the exception of Astana, are highly vulnerable to earthquakes and all nine are potentially vulnerable to floods.
- Taking into account the cities' hazard zonation and populations, earthquakes emerge as by far the major risk, while the risks posed by floods and landslides are far less significant.
- Tashkent, Baku and Almaty form the group with the highest risk, followed by Tbilisi, Bishkek and Yerevan.
- The single most important factor affecting vulnerability is the increase in population sizes.

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Climate Change Impact

- The review finds a general increase in temperature.
- A high-resolution climate change model of the region appears to be more stable and predicts a temperature increase of 4°C to 6°C over the next 80 years.
- Potential for minor increases in maximum rainfall in the Caucasus region.
- The main impact will be a decrease in water availability and potential for droughts.



Way Forward

Based on the analysis, the review makes the following recommendations to reduce disaster risk in CAC:

- ***Additional analyses***

Three levels of analyses are envisioned to refine the result . These analyses should be limited to earthquakes and floods as they are the most damaging quick-onset disasters.

- ✓ Level 1: An analysis similar to this one based only on historical records should be repeated at a higher level of resolution.
- ✓ Level 2: On a second level, using the same methodology, worst-case scenarios should be considered for the highly populated cities.
- ✓ Level 3: On a third level, fully probabilistic analysis containing all the elements of standard risk analysis should be performed for the hazards and regions identified as high risk in levels 1 and 2.

Way forward

- *Coordinated response to disasters*
- *Centralized database*
- *Strengthening institutions*
- *Improvement to disaster risk assessment*
- *Poverty alleviation and awareness*

**A Study of Catastrophe Risk
Financing Options:
*Mitigating the Adverse Financial
Effects of Natural Hazards on the
Economies of Central Asia***



Introduction: Key government disaster management functions



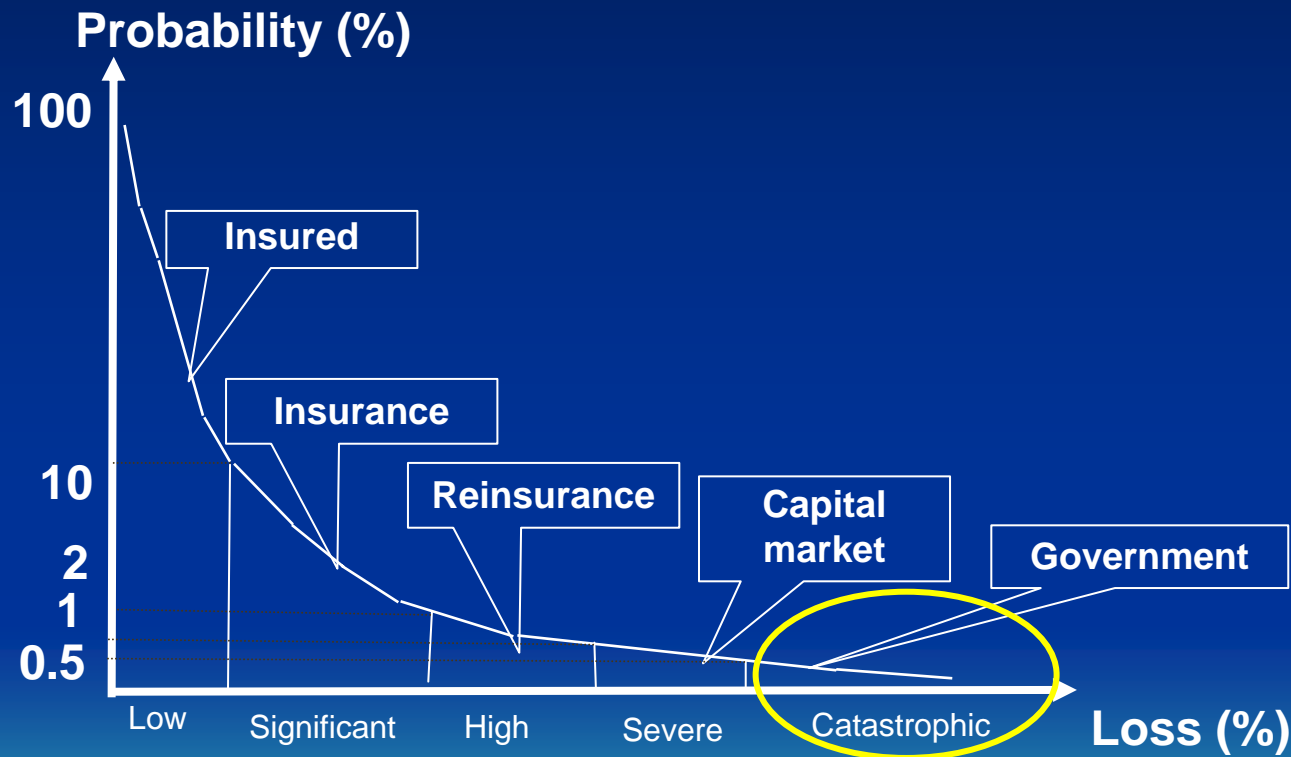
•Key levers:

- Enforcement of construction codes,
- land zoning regulations
- post-disaster subsidy policies

Source: World Bank, 2005

Government should invest in national catastrophe risk management prior to natural disasters, and be a provider emergency response, rescue, and emergency relief services in the aftermath of natural disasters as a pure public good.

Role of government in national catastrophe risk insurance programs



Governments should be reinsurers of last resort only for highly unlikely catastrophic events.

Findings from the study

- Despite the growing economic losses from natural catastrophes in the region, over 99 percent of households and businesses remain uninsured against natural hazards
- Governments are fiscally ill-prepared to face economic losses from large catastrophic events
- Adverse impacts on countries' fiscal stability and macro-economic performance could be substantial:
 - Mismatch between the planned annual budgetary appropriations and the size of potential economic losses
 - In all countries but Kazakhstan, it would take between 100-200 annual planned emergency budgetary allocations to cover the economic losses from a severe catastrophic event with a 200 year return period.



Findings (cont.)

- Potential large adverse social implications of natural disasters on the population:
 - In the absence of effective post-disasters government social safety nets and the well functioning catastrophe insurance market, almost all homeowners and small businesses will have to rely on their own resources to recover from major catastrophic events.
- In all surveyed CA countries, national annual budgetary allocations for emergencies, are the only source of funding to deal with consequences of natural hazards.
 - Disaster funds can only reimburse a small fraction of total losses sustained by people affected by disasters. These amounts vary from a few hundred dollars (in Kyrgyzstan, Uzbekistan, Turkmenistan and Tajikistan) to about a \$1000 in Kazakhstan.



Findings (cont.)

- Low disposable incomes and the lack of trust among the population in insurance companies hinders the development of the personal insurance lines market in the region.
- Insurance regulators in CA lack the needed tools and expertise in understanding the true risk exposures of regulated companies to catastrophe risk
- Most of insurance companies do not have the necessary skills to offer coverage against natural hazards.
- Lack of effective insurance supervision along with cut-throat competition for new business results in very low premium rates for all-risk property coverage charged by CA insurers:
 - Inadequate premium rates mean that companies will not be able to afford placing reinsurance cover with credible reinsurance companies and hence would have to retain most if not all the risk themselves. This endangers their ability to pay claims in the case of a catastrophic event.

Recommendations

- Lessening the impact of natural disasters on government budgets:
 - √ To address government fiscal exposure to natural disasters, consider putting in place stand-by ex-ante disaster risk financing mechanisms, which would grant them immediate access to liquidity in the case of natural disasters.
 - √ Stand-by credit facilities, also known as contingent capital, can now be obtained from both the World Bank and ADB.
- Reducing the financial vulnerability of homeowners and SMEs to natural hazards.
 - √ CA countries should consider instituting a regional catastrophe insurance pool that would act as a regional aggregator of catastrophe risk and help governments access the global reinsurance market on better pricing terms.
 - √ The risk pooling arrangement for the Central Asian countries could be modeled after the regional catastrophe insurance facility for Southeastern and Central Europe.

Recommendations (cont.)

- Countries with larger-size economies – such as Kazakhstan and Uzbekistan – could consider creating national catastrophe insurance pools which can provide efficiently priced standalone catastrophe insurance to homeowners and small business owners, such as the Turkish Catastrophe Insurance Pool.
- Creation of stand-alone individual country catastrophe insurance pools in Turkmenistan, Tajikistan and Kyrgyz Republic is unlikely to be economically and technically feasible.
- The more advanced state of development of the Kazakh insurance market may provide the basis for a national Kazakh catastrophe insurance that could then be extended to other countries of the region.



Regional Hydromet Study



Rationale for Regional Approach

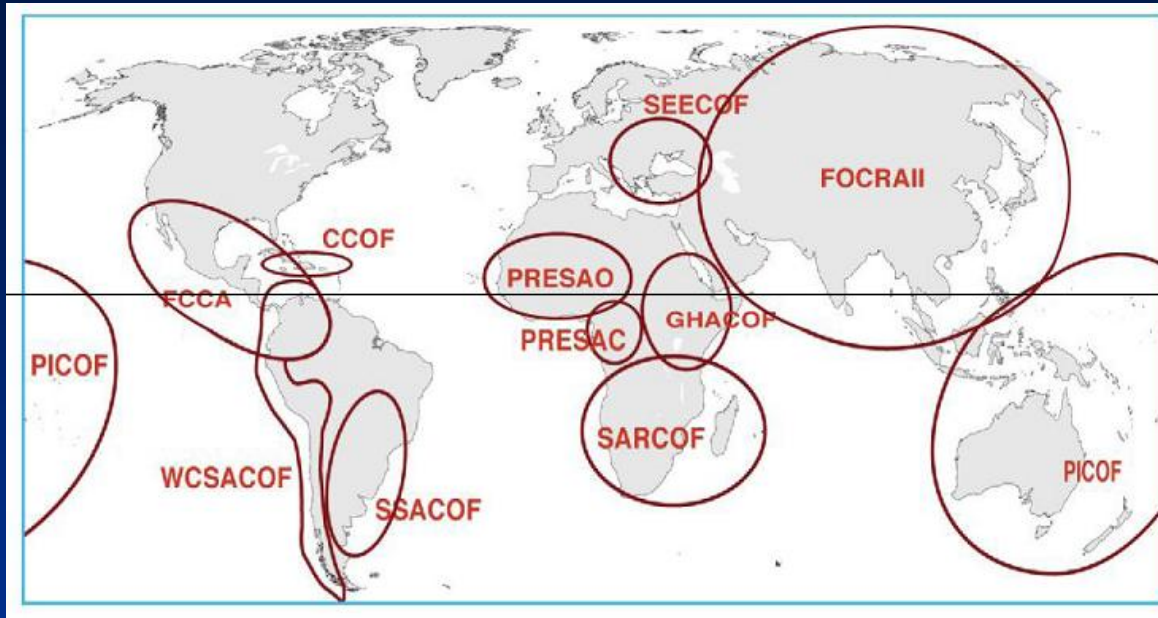
- Region is influenced by weather patterns, they don't stop at the borders
- Many hazards are common to a number of neighboring countries
- Sharing and exchange of information will allow for greater reduction of hazard risk at the national and regional level
- Individual countries may not be able to cope with a major disasters on their own
- Strengthening and maintenance of comprehensive, fully equipped hydrometeorological services are expensive
- Regional approach on modernization and strengthening of hydromet services will reduce investment needs by about 30%



Initial Findings

- Typical User Needs (feedback from users):
 - More frequent data/information provision
 - More accurate weather forecasts
 - Provision of very short range weather forecasts (nowcasting)
 - Provision of tailored products, specific indices for different sectors
 - Monthly, seasonal outlook, advisories
 - Awareness of users on the hydrometeorological products through training seminars for users
 - Use language understandable by users
 - Close interaction, cooperation, joint discussion of ways to meet users requirements





Benefits from regional cooperation

Based on detailed gap analyses, assessment of the needs of customers and end-users, and reference to some more advanced European NHMSs, it was calculated that in South East Europe (SEE) countries the required investment of five years would be around €90.3 million.

This could be reduced to some €63.2 million if the investment is based on regional cooperation, effective data sharing and collective purchase of equipment and services, instead of strengthening the NHMSs individually.

The cost-benefit ratio in 1-10 years for the SEE countries could range from 1:6 to 1:20.

Recommendations

- Technical modernization
 - Re-equipment of existing observation network
 - Automation of observation network (priority to remote locations)
 - Use the lightning detection system
 - Establishment of Radar network
 - Establishment of robust Climate Data Base Management system
 - Strengthening of telecom system, information transmission in real time
 - Improve mechanisms of data sharing/exchange between countries
 - Wider use of Satellite data with high spatial resolution
- Application of new methodologies
 - Numerical Weather Prediction
 - Develop Long Range Forecasting comprehensive system
 - Implement application models – agrometeorological, hydrological etc.
- Building capacities
 - Education, training for personnel
 - Training for users
- International cooperation, integration in international, regional networks

Recommendations (cont.)

- To establish an effective system of cross-border exchange of warnings among NMHSs, the activities are to be properly coordinated in the regional scale
- Timeliness, frequency, content, format and delivery to be specified between the NMHSs
- Cross-border exchanges of warnings should not be limited to relatively short-lived meteorological hazards.
- NMHSs are encouraged to exchange for hazards of longer-time scale, such as hot, cold, wet or dry spells, drought etc.
- Thresholds and intensities for which these phenomena are considered potentially harmful should be agreed between the NMHSs concerned, in accordance with the warning purposes and criteria of each country.
- Exchange of warnings should in general be restricted to the cooperating NMHSs. Further dissemination is the responsibility of each NMHS



Development of Action Plans for Improving Weather and Climate Service Delivery in Kyrgyzstan, Tajikistan and Turkmenistan

Preliminary Results

Objectives and approach

- **Develop action plans (Hydromet modernization programs) for Improving Weather and Climate Service Delivery based on assessment of:**
 - Weather, water and climate risks
 - User/client needs in hydromet information
 - Status of Hydromet services (NMHS)
 - Economic benefits of NMHS modernization
- Key role of NMHS specialists and experts from weather dependant sectors
- National workshops in 3 countries (September - December 2008)
- Submission of results to the governments, GFDRR and donors (June-August 2009)

Economic losses and losses of life from extreme weather and water events are high

- Main unfavorable weather and water events:
 - Mudslides and floods
 - Avalanches
 - Drought
 - Hail
 - Strong wind and snow
- Total level of economic losses in the countries is in the range 0.6-1.6% national GDP (insufficient and poor data on losses)
- Dozens of lives are lost in weather emergencies

Tajikistan: Mudslides and floods



Kyrgyz Republic: Avalanches



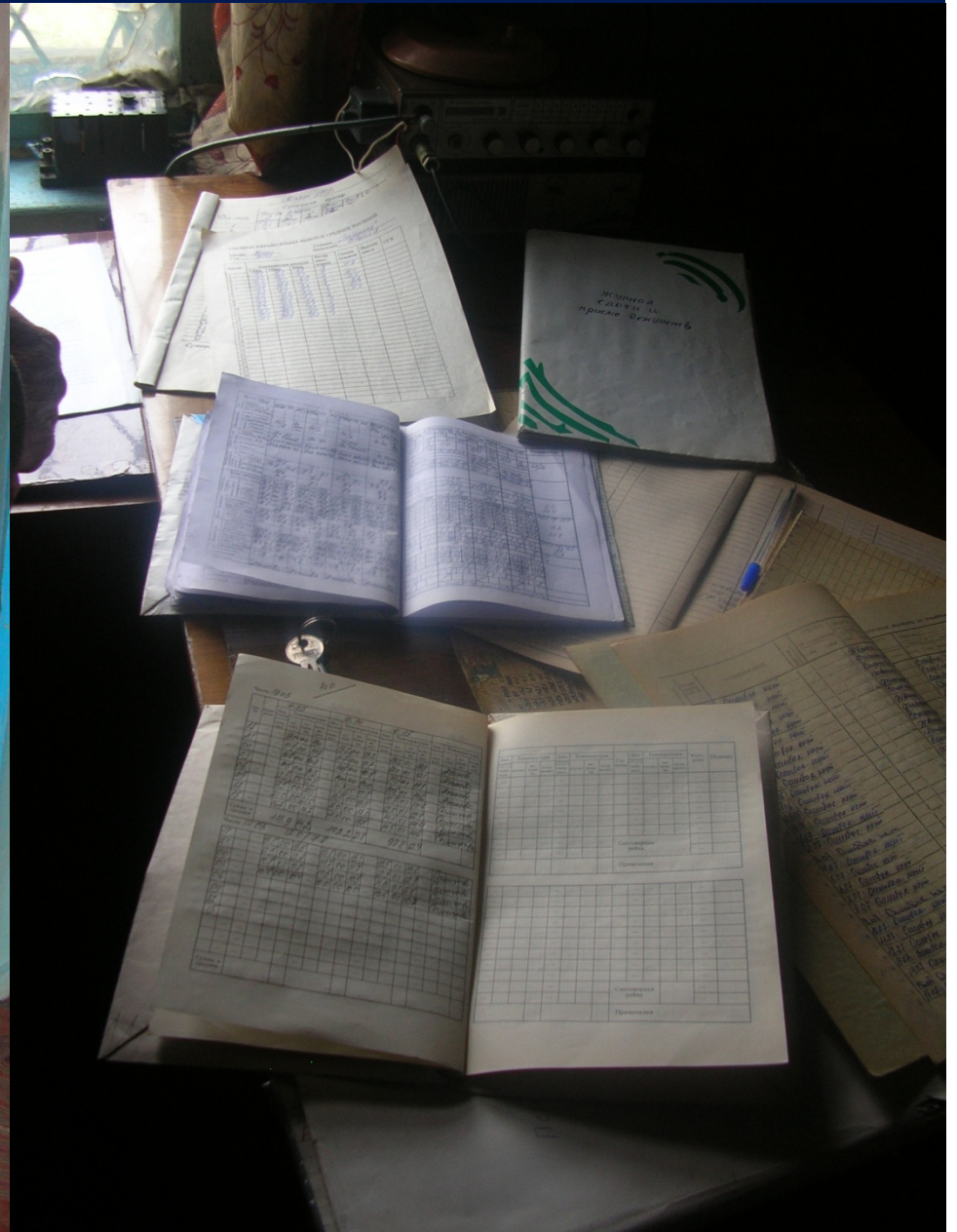
Status of NMHS considerably deteriorated in the last 20 years

- Reasons for degradation – considerable underfunding of NHMS in the process of social and economic reforms
- Consequences
 - Deterioration of a quality of services
 - Increase of “excessive” economic losses and lost lives
 - Poor capacity to evaluate and forecast climate changes

Massive underfunding has led to:

- Deterioration of observation networks and reduction in observation programs by 30-50%
- Depreciation of equipment and outdated technology
- Lack of modern monitoring equipment and forecasting methods
- Insufficient scientific and research support
- Lack of trained specialists
- Lagging behind advanced NMHS and:
- Provision of poor services to people and national economy

Observer's working place



Quality of hydromet services does not correspond to safety requirements and economic development objectives

- Main weather dependant sectors
 - Agriculture
 - Power production
 - Water resources management and irrigation
 - Transport
 - Construction
- Many NMHS do not interact with clients
- Quality and variety of NMHS services need considerable improvement

Large scale problem require large scale solutions

- Experience shows that it is impossible to considerably improve quality of many NMHSs' services without massive upgrading of their infrastructure and institutional strengthening which considerably exceeds limits of traditional state budget funding
- Programmatic approach is needed to avoid a “poverty trap”
- Central Asia countries should embark on a large scale modernization of their NMHS in order to improve services to a satisfactory level
- Hydromet modernization is fully justifiable from economic perspective...

Main Results of Economic Assessment

- Estimated benefits from the current provision of the NHMS in the surveyed countries notably exceed the cost of government funding.
- Estimates from all employed methods in all studied countries suggest that benefits of NMHS modernization considerably exceed its costs:

Each dollar invested in potential modernization will help to avoid at least 2 to 5 dollars of economic losses on average

Main directions of investments in NMHS modernization

- Improve quality of forecasts provided to main customers, particularly the early warnings and hydrological data
- Institutional strengthening of NMHS, including staffing, financial and administrative underpinnings
- Compliance with international obligations

Expected results of NMHS modernization

- Capacity improvement and better service delivery
 - Increased lead time and accuracy for basic forecasts and forecasts of dangerous events
 - More reliable and “custom-made” information products
 - Increase in client satisfaction
- Reduction of economic losses and saved lives
 - Better disaster preparedness
 - Better food security
 - Improved transportation safety...
- Regional and global benefits, better ability to deal with climate change...

Financing NMHS modernization programs

- Government funding
- Donor and IFI assistance
- Benefits of a regional approach
- Need to ensure adequate coordination and sustainability of investments
- Incorporation of NMHS component in sectoral programs (power, agriculture, disaster reduction) or climate adaptation programs

Proposed Next Steps

next 3 months following CAREC SOM

- Hold the next regular Coordination Meeting of SEE and CAC (SEECAC Steering Committee) to discuss the project status and next steps.
- Finalize and publish CACDRMI assessment reports in both hard copies and electronically, including Russian translations.
- Finalize UNISDR matrix of on-going and planned projects covering the areas of disaster risk management and Hydromet.
- Discuss role of CAREC Institute in capacity building, research and outreach for disaster risk management.
- Prepare a regional meeting/workshop (planned for Sept/Oct 09) to discuss program/projects identified under the initial phase of CACDRMI, and agree on implementation and funding modalities for the most urgent interventions.

