



**DISASTER HAZARD MITIGATION  
PROJECT funded by  
The World Bank**



**THE WORLD BANK  
DISASTER HAZARD  
MITIGATION PROJECT**

Presentation of WB and ADB projects, 17 May 2007

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**DISASTER HAZARD  
MITIGATION PROJECT**

- Agreements on Grant for development goals for "Disaster Hazard Mitigation Project" and Letter-Agreement on Japanese Grant for co-financing of the "Disaster Hazard Mitigation" Project signed on June 23, 2004 between the Kyrgyz Republic and International Development Association (IDA) and ratified by the Decree of the KR President #296 dated Sep. 8, 2004, and came into effect on Sep. 28, 2004.
- Letter-Agreement on Global Ecological Fund Grant for co-financing of the Project signed on August 12, 2005 between the Kyrgyz Republic and International Development Association (IDA) and ratified by the Decree of the KR President #472 dated Oct. 18, 2005.
- The Project came into force on September 28 2004.

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## DISASTER HAZARD MITIGATION PROJECT

<b>Estimated Cost of the Project</b>	<b>USD 10,96 million</b>
<b>Donors:</b>	<b>USD 6,91 million</b>
<b>The sum total of IDA grant</b>	<b>USD 1,95 million</b>
<b>The sum total of PHRD grant</b>	<b>USD 1,0 million</b>
<b>The sum total of GEF grant</b>	<b>USD 1,1 million</b>
<b>KR Government counterpart funding</b>	<b>2004 – 2009 years</b>
<b>Implementation terms:</b>	<b>The Ministry of Emergencies of the Kyrgyz Republic</b>
<b>Amounts paid as of April 1, 2007 (thousand USD)</b>	
<b>Total, including</b>	<b>2 757 434, 51</b>
<b>IDA funds</b>	<b>1 155 382, 69</b>
<b>PHRD funds</b>	<b>1 467 195, 19</b>
<b>The KR Government funds</b>	<b>134 856, 63</b>

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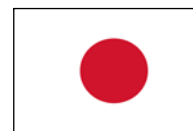
## DISASTER HAZARD MITIGATION PROJECT

### Project Donors

**International  
Development Association**



**The Government of Japan  
(PHRD grant)**



**Global Environmental Fund**

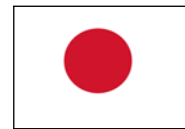


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## DISASTER HAZARD MITIGATION PROJECT

### Project preparation stage:

- Remediation of uranium tailings and waste dumps in the area of Mailuu-Suu city (TACIS), May 2003
- Environmental impact assessment and Environmental Management Plan for the Disaster Hazard Mitigation Project (TACIS), March 2004
- OSCE (IAEA). Investigation of uranium mining legacy in Mailuu-Suu (Frank Harris), 2004
- Disaster Hazard Mitigation Project preparation (PHRD grant)



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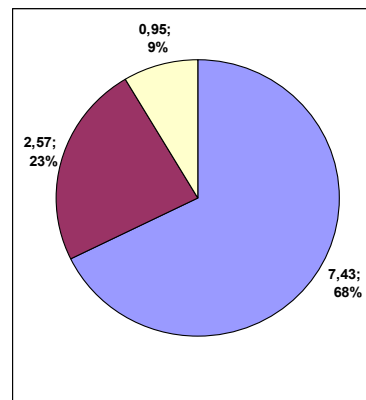
## DISASTER HAZARD MITIGATION PROJECT



### The Project consists of 3 components:

1. Uranium Mining Wastes Isolation and Protection
2. Disaster preparedness and landslide monitoring
3. Project Management

### Project Funds (in US\$ mln and %%)

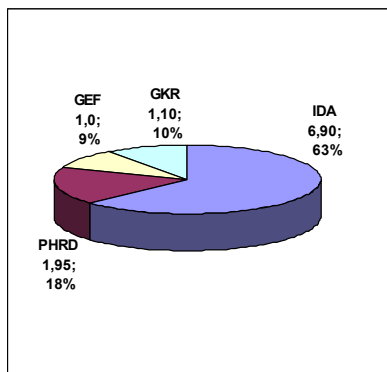


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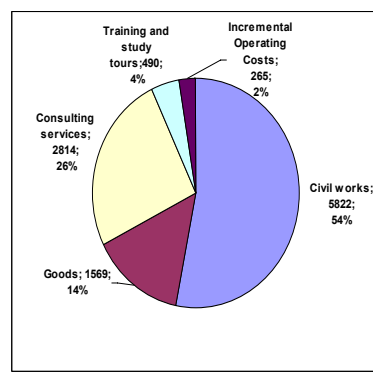
## DISASTER HAZARD MITIGATION PROJECT



**Distribution of Funds by Sources of Funding**  
(plan, in US\$ million and %%)



**Distribution of Funds by Project Categories**  
(plan, in US\$ million and %%)



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## DISASTER HAZARD MITIGATION PROJECT

**Actual utilization of project funds by items of expenditure as of April 1, 2007**  
(in USD and in %% of all expenses):

<b>Works</b>	<b>508 163,96 (18%)</b>
<b>Goods</b>	<b>325 263,13 (12%)</b>
<b>Consulting services</b>	<b>1 713 647,83 (62%)</b>
<b>Training</b>	<b>72 500,29 ( 3%)</b>
<b>Incremental Operating Costs</b>	<b>137 859,30 ( 5%)</b>

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## DISASTER HAZARD MITIGATION PROJECT

Actual utilization of project funds by project  
components as of April 1, 2007  
(in USD and in %% of all expenses):

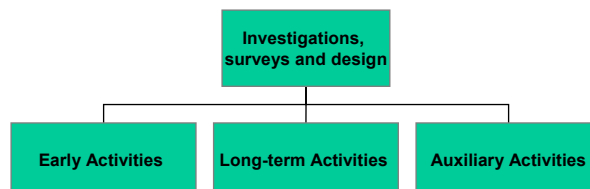
Uranium Mining Wastes Isolation and Protection	<b>1 191 810,54 (43%)</b>
Increase of preparedness to natural disasters and landslide monitoring	<b>1 026 960,53 (37%)</b>
Project Management	<b>538 663,44 (20%)</b>

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## DISASTER HAZARD MITIGATION PROJECT



### Component 1 Uranium Mining Wastes Isolation and Protection



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## Component 1 Uranium Mining Wastes Isolation and Protection

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### **OUTCOMES OF INVESTIGATIONS, SURVEYS AND DESIGN (GeoConsult & WISUTEC JV)**

#### **Rehabilitation Strategy**

**23 tailings and 13 waste dumps at the Mailu-Suu area**

**Package of material and documents on isolation, protection and relocation of abandoned uranium mining wastes in Mailuu-Suu area from disturbance by natural processes such as landslides, floods, leaching and dispersal by ground- and surface-water drainage**

Total area of tailings and dumps – 606,8 thousand square meters  
Total volume of deposited material – 2963 thousand cubic meters

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## Early activities

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### ● **Surveys and design works**

- Design on Tectonic landslide off-loading (Tailing No. 3)
- Design on temporary protection dams along Ailampa-Sai river (Tailings Nos. 2 и 13)
- Design on protection of waste dump No. 6
- Design on monitoring systems on Koi-Tash landslide
- Design on river bank strengthening works along Mailuu-Suu river (Tailings Nos. 5 and 7)
- Feasibility study on diversion of surface water runoff on Koi-Tash landslide
- Design on rehabilitation of waste dumps Nos. 1 and 2
- Design on relocation of waste dump No. 5

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## Early activities

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- **Tectonic landslide partial off-loading**

Purpose: stabilization of landslide, threatening to Tailing No. 3

Off-loading was completed in November 2006, .  
30 thousand cubic meters of soil are excavated  
Actual cost is US \$147 thousand

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## Tectonic landslide partial off-loading

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Access road for partial off-loading of Tectonic landslide



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## Tectonic landslide partial off-loading

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Outcrop of rocks on upper terrace of the landslide



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## Tectonic landslide partial off-loading

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Water diversion system on Tectonic landslide



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## Early activities

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- **Temporary protection of tailings Nos. 2 and 13 along Ailampa-Sai river**

Purpose: strengthening of Ailampa-Sai river banks to protect tailings Nos. 2 and 13 from erosion

The works were completed in August 2006  
Actual cost is US \$69 thousand.

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## Temporary protection of tailings Nos. 2 and 13 from erosion by Ailampa-Sai river waters

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Riverbank protection works (protection of tailing No. 13)



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## Temporary protection of tailings Nos. 2 and 13 from erosion by Ailampa-Sai river waters

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Riverbank protection works (protection of tailing No. 2)



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## Early activities

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- **Diversion of surface water runoff on Koi-Tash landslide**

**Purpose:** stabilization of landslide through decrease of soil humidity level

At present high dynamics of the landslide body does not allow to undertake scheduled actions. Definite period of time is needed for landslide monitoring, following which the decision with respect to further "destiny" of the landslide is to be taken. The landslide represents a major risk in case of its sliding, since this will result in overriding of the Mailu-Suu river bed, following flooding of wide area and erosion of tailings Nos. 5 and 7. At the same time owing to reasons stated an option of protection of these tailings is considered through Mailu-Suu river bank protection actions.

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## Early activities

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- **Monitoring system on Koi-Tash landslide**

In the nearest future extensometers and piezometers will be installed on the landslide body, designed for monitoring of physical surface movement of the landslide and humidity level at a depth from 10 to 20 meters.

Indicators will transmit information through radio channels to the central control point located in Mailuu-Suu administration office.

Landslide monitoring and early warning system will allow to avoid possible losses and at the same time will give the opportunity to carry out forecasting of landslide's further evolution and decision making with respect to methods for its stability

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## Early activities

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### **Protection of waste dump No.6**

Purpose: strengthening of Karagach river-bed to prevent erosion of waste dump No. 6

Works to be completed in July 2007

Estimated cost is US\$204 thousand

Photos as of January 2007



## Early activities

Protection of waste dump N.6 (April 2007)



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## Early activities

Protection of waste dump N.6 (April 2007)



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## Early activities

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### **Design on Mailuu-Suu riverbank protection works (Tailings Nos. 5 and 7)**

Purpose: protection of tailings Nos. 5 and 7 against erosion by waters of Mailu-Suu river in case of Koi-Tash landslide movement and overriding of the river-bed.

At present monitoring of Koi-Tash landslide dynamics is being carried out. Works are scheduled to be commenced in 2008.

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## Early activities

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### **Design on rehabilitation of waste dumps Nos. 1 and 2**

Purpose: protection of waste dumps Nos. 1 and 2 against erosion by waters of Kulmen-Sai river

Decision:

- Relocation of radioactive materials from waste dump No. 1 to waste dump No. 2.
- In-situ rehabilitation of waste dump No.2
- Works to commence in the 3 Quarter 2007

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## Early activities

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### **Design on relocation of waste dump No. 5**

Purpose: elimination of radioactive impact on population of waste dump No. 5, located directly on the territory of Kara-Agach village

Activities:

- Relocation of radioactive materials from waste dump No. 5 to waste dump No. 6
- Construction of access technological road for transportation of radioactive materials from Isolit plant to waste dump No. 6
- Resettlement of inhabitants of one homestead land
- Works to commence in the 3 Quarter 2007

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## Early activities

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### **Urgent maintenance of tailings and selected waste dumps (erosion protection)**

Tailings Nos. 5, 7, 14 and 16  
Waste dumps Nos. 4 and 11

Estimated cost of works is US\$190 thousand  
Works to commence in June 2007

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## Long term activities

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### **Relocation of radioactive wastes**

- 1) Tailings Nos. 3, 18, (113 thousand of cubic meters)
- 2) Waste dump No. 5 (53 thousand of cubic meters)

Purpose: to relocate the total volume of radioactive materials of the specified tailings and waste dumps to the tailing No. 6 as the most acceptable option of engineering protection and isolation of the schemes.

With a view of this purpose Panel Of Experts (POE) has been engaged to carry out a comprehensive assessment of all decisions made in respect to safety and ecological compatibility

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## Long term activities

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### ● **Deposition of radioactive wastes**

The whole relocatable radioactive materials will be deposited at tailing No. 6

Design have been developed for relocation of radioactive material to tailing No.6 and further rehabilitation

Design have been developed for construction of access road from Isolit plant to tailing No.6

Protecting screen is made of PVC 1 meter thick.

POE opinion is required.

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## Panel of Experts

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### Terms of Reference:

- **Outcomes of Tectonic landslide stabilization**
- **Stabilization and Protection of Tailing No. 3**
- **Evaluation of potential disposal site**
- **Analysis of economic, social and environmental aspects**
- **Analysis of material on detailed Environmental Impact Assessment (EIA)**
- **Design and civil works implementation status**

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## Panel of Experts (working meeting)

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## Radioactive wastes relocation and remediation experience in the Kyrgyz Republic (settlements Kadji-Sai and Ak-Tyuz)

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### **Lievermor laboratory of California University**

- Waste water diversion
- Construction of protection dams
- Arrangement of anti-radon and clay antifiltering screen on tailing body
- Relocation of radioactive wastes

### **Ministry of Environment of Czechia**

- monitoring of environmental radiation pollution
- Remediation or relocation of radiation wastes



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## Remediation of radiation waste in Min-Kush settlement

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### **International OSCE Conference in Bishkek 11-13 April 2007**

**Project proposal of the Department of Emergencies Monitoring,  
Forecasting and Mining Tailing Management –**

**Remediation and reclamation of Min-Kush group of tailings  
and waste dumps**

**DHMP PIU Presentation – DISASTER HAZARD MITIGATION  
WORLD BANK PROJECT AS A POSITIVE INTERNATIONAL  
EXPERIENCE IN URANIUM MINING TAILINGS, WASTE  
DUMPS AND LANDSLIDE STABILIZATION IN THE AREA OF  
MAILUU-SUU CITY**



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## Auxiliary activities

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- **Access road**

Construction of a road for transportation of radioactive materials from Isolit Plant to tailing No.6  
Bids for civil works has been announced  
Road length is 2,3 km  
Estimated cost is US\$300 thousand

- **Access roads**

For partial off-loading of Tectonic landslide  
For monitoring system setup on Koi-Tash landslide

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## Auxiliary activities

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- **Disposal of soil removed from Tectonic landslide**

- **Replanting of grass on grazing land temporarily used during works implementation**

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## Auxiliary activities

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### Resettlement of population

Resettlement of inhabitants of one homestead land in Kara-Agach village for relocation of radioactive materials is the unique precedent for the time present (waste dump No.5)

Compensation amount (by the Government of the Kyrgyz Republic) is up to Som 200 thousand (US\$5.2 thousand)

MOE/PIU and Administration of Mailuu-Suu city came to an agreement with the family subject to resettlement

National Emergency Resettlement Strategy is under development under the ADB Project

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## Disaster Hazard Mitigation Project and local communities interests

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- Role and place of local communities in the National Emergency Management and Response Plan
- Authorities of Interministerial Committee in the municipal management
- Functions of MOE subdivisions on interaction with local communities
- Set of training materials for public including local communities
- Radio communication with remote settlements
- Local Small Public Health Programme (in Mailuu-Suu area)
- Water quality monitoring system in Mailuu-Suu area
- Set of activities in Mailuu-Suu area (technological road, resettlement, project office in Mailuu-Suu, staff employment, etc.)

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## Component 1 “Isolation and protection of uranium mining wastes”

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### Demand for funding to implement interventions under the Project Component 1:

- Relocation of Tailing № 2, 13 (USD 650 thousand) and 8 (USD 450 thousand)
- Relocation of waste dumps № 7 and 12 (USD 560 thousand)
- Total need - USD 3,3 million

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## Component 2 Disaster Preparedness and Monitoring

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- National emergency management and response plan
- Functional review of the Ministry of Emergencies (MOE) and legislation review
- Interministerial coordination
- Training aids package and seminars
- MOE capacity building (ERC and GIS)
- Monitoring system in Mailu-Suu
- Water quality baseline establishment services
- Pilot landslides monitoring and early warning
- Strengthening of national seismic monitoring system
- Risks and hazards data collection and processing
- System of communication with remote villages
- Regional cooperation
- Study tours for emergencies management decision makers
- Community outreach, public awareness and information sharing

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## Component 2 Disaster Preparedness and Landslide Monitoring

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### MOE capacity building

**Interministerial Committee has been established with the purpose of development of:**

- ❖ National Emergency Management and Response Plan
- ❖ Detailed Regulation of Interministerial Committee on Emergency Mitigation and Rehabilitation
- ❖ Set of training material (including modules for training of pilot local communities)

**MOE staff was trained on emergency management and response in Asian Disaster Reduction Center (Tokyo) in September 2006. The next training tour is proposed to be in second half year of 2007.**



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## Component 2 Disaster Preparedness and Landslide Monitoring

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**ADRC will hold Asian Conference on Disaster Reduction  
25-27 June 2007 in Astana city with respect to issues:**

- Emergency risks management on a national level
- Education and training on emergency risks reduction
- Scientific skills, adapted to emergency reduction
- Cross-cutting: local communities, NGOs, mass media, etc.



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## Component 2 Disaster Preparedness and Landslide Monitoring

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### Emergency Response Center (ERC)

#### Phase I :

- Partial repair and equipping of ERC under MOE
- Bishkek-Osh videoconference communication

#### Phase II:

- Stationary ERCs in three oblast centers (Batken, Jalalabat, Osh)
- Mobile stations (3 in the Fergana area and 1 in the north oblasts)
- Collection and transmission of data through satellite
- Radio communication links between remote villages & towns

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## Emergency Response Center

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## **Component 2 Disaster Preparedness and Landslide Monitoring**

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### **Geographic Information System (GIS)**

- Equipping of GIS laboratory under MOE
- Training of GIS-laboratory staff
- GIS data collection and processing

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## **Component 2 Disaster Preparedness and Landslide Monitoring**

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### **Monitoring system in Mailuu-Suu area**

- Construction of river flow gauging station
- Automatic weather station
- Automated water quality monitoring stations
- Equipping of Central Epidemiological and Sanitary Inspection laboratory
- Surveys on water quality baseline establishment
- Design on landslide monitoring and early warning system

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## Component 2 Disaster Preparedness and Landslide Monitoring

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### Coordination of BGR Uranium Contamination Risk Reduction in Mailuu-Suu Project:

- design and works schedule
- investigation method and equipment
- points and cyclicity of water sampling
- base water quality level issues
- water quality monitoring system
- interim and final reporting



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## Component 2 Disaster Preparedness and Monitoring

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### Monitoring and early warning systems have been installed on 5 pilot landslides (in Jalalabat & Osh oblasts)

- Capitalnaya Pit Landslide (Kok-Jangak town)
- Landslide in the north-east part of Kok-Jangak town
- Taran-Bazar-School Landslide (Suzak rayon)
- Gulcha - 2002 landslide
- Gulcha – below Bazar landslide

Access roads have been constructed, boreholes have been drilled for installation of piezometers, extensometers and power distribution lines have been installed. Central checking points have been arranged in administration buildings (local administration office, school and others). Systems work in real-time operation mode. Actual cost of the works amounted US\$246 thousand. Works were completed in November 2006.

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## Monitoring and early warning systems on 5 pilot landslides

System operating in real-time mode



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## Component 2 Disaster Preparedness and Landslide Monitoring

### Cooperation and coordination activities with CAIAG

- Unification and joint usage of landslide monitoring system
- Formation of national seismological observations network



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## Component 2 Disaster Preparedness and Landslide Monitoring

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### **Demand for financing for Component II activities implementation:**

- **Widening of MOE information and communication network throughout the republic**
- **Development of landslide slope monitoring system**
- **Development of regional emergency management and response plans**

**Requirement in additional financing for  
Component 2 is USD 1,7 million**

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## Asian Development Bank Reducing Vulnerability of the Poor to Natural Disasters Project

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- **Socioeconomic assessment of natural disasters impact on economy of Kyrgyzstan**  
(preliminary report is under consideration by ministries and agencies, equipment for ERC and GIS laboratory has been procured)
- **National Program and Population Resettlement Plan in the event of natural disasters threat**  
(selection of pilot NGOs is being held, NGOs will be trained in order to train 10 selected pilot local communities, where small mitigation projects will be implemented)
- **Training of communities and implementation of mitigation projects in local communities**

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### Selected pilot local communities

No.	Oblast	Rayon	Local government administration	Community
1	Chui	Kemin	Chong-Kemin	Tap-Suu
2	Chui	Moscow	Sretenka	Sretenka (Spartak)
3	Osh	Alai	Budalyk	Octyabr
4	Osh	Kara-Kuldja	Karaguz	Jetimdobo
5	Osh	Alai	Gulcha	Tashkoroo (Jylu-Suu)
6	Jalalabat	Suzak	Barpy	Achy
7	Batken	Kadamjai	Chauvai	Chauvai
8	Talas	Talas	Kuugandy	Uch-Emchek
9	Naryn	Kochkor	Sonkul	Tyulek
10	Issyk-Kul	Tyup	Karasaev	Toktoyan

### ADB Project Activities related to DHMP activities:

- Social and economic assessment of emergencies impact to the economy
- Planning subject to emergency risks
- National Strategy on Resettlement in the event of emergencies
- Involvement of NGOs and local communities in emergency training process
- Mitigation project implementation with participation of population

## Coordination with UNDP projects

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- **Disaster hazard mitigation in the most vulnerable communities of Osh and Jalalabat oblasts of the Kyrgyz Republic**
- **Strengthening of local government administrations capacity for emergency hazard reduction in the south of the Kyrgyz Republic**
- **Strengthening of coordination on emergency response in the Kyrgyz Republic**



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## Disaster Hazard Mitigation Project

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### **Training within the frame of two projects:**

- MOE employees, contractors' employees
- GIS laboratory staff
- Interministerial Committee members
- NGOs and local communities (is projected)
- Training of local population on operation and maintenance regulations for the supplied equipment (landslide monitoring, etc.)

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## The World Bank DISASTER HAZARD MITIGATION PROJECT



### International cooperation:

UNDP  
TACIS  
OSCE  
BGR  
ADRC  
CAIAG



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### Cooperation with other international projects

- IAEA Project "Safe Management of Residue from Uranium Mines and Milling Activities in Central Asia Region" RER 9/086 и TAD 9/002
- NATO Project SfP 981742 Legacy of uranium mining and environmental safety in Central Asia
- Norwegian – Kazakh – Kyrgyz project on uranium mining (Norwegian University of Life Sciences, Department of Plant- and Environmental Sciences)



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## The future of the Project

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### Activity prospects within the Country Development Strategy up to 2010

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### Development and introduction of Regional Emergency Management and Response Plans (CDS, 581, i)

**Purpose:** Harmonization of National and Regional Emergency Management and Response Plans

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**Targets:**

- Introduction of National Emergency Management and Response Plan
- Development of Regional Emergency Management and Response Plans
- Development and introduction of subregional and specific emergency management and response plans at a regional levels
- Introduction of Regional Emergency Management and Response Plans
- Adjustment of National Emergency Management and Response Plan
- Identification of National Plan with similar plans of Central Asian countries
- Arrangement and conducting of series of trainings

**Budget – USD 3,4 million**

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## Community-based emergency hazards reduction

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**Purpose:** Community-based emergency early warning and appropriate preparedness

**Targets:**

- Increase of a number of pilot communities, where training of population is conducted and mitigation projects are implemented
- Development of standard emergency management and response plans for communities and local government authorities
- Development of approaches for formation of local communities budgets more "sensitive" to emergency hazards
- Implementation of mitigation projects with participation of population and local budget
- Development of early warning system at community level
- Development of local (in communities) institutions on emergency management and response

**Budget – USD 4,9 million**

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## MOE information and communication capacity building (see CDS, 581, iii)

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**Purpose:** Extension of Emergency Response Center activities on provision of videoconference communication and transmission of data

**Targets:**

- Development of stationary ERC network in all regional centers of the country
- Optimization of mobile ERC stations network in regions
- Provision of emergency data transmission through ERC system
- Ensuring of reliable and steady satellite communication
- Joint (interministerial) usage of satellite communication channels
- Establishing and maintenance of unified emergency database

**Budget – USD 5,7 million**

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### Landslide movements monitoring and forecasting (CDS, 581, vii)

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**Purpose:** Improvement of landslide hazard forecast

**Targets:**

- Widening of landslide hazard monitoring and early warning at additional pilot projects
- Enhancement of monitoring system using methods of distant vertical probing
- Ensuring of landslide hazard monitoring data transmission and early warning through satellite communication channels
- Collection and processing of landslide hazard monitoring data using Geo-information technologies
- Establishing of unified landslide hazard monitoring system in the republic

**Budget – USD 3,3 million**

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### Geodynamic and seismic activity monitoring in Central Asia (CDS, 581, viii), jointly with CAIAG and Seismology Institute under National Academy of Sciences

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**Purpose:** Understanding and record of latest earth crust movement regularities with a view of emergency forecasting


**Targets:**

- Improvement of national seismic monitoring and geodynamic observations network
- Observation data transmission through uplinks
- Data processing and analysis using GIS technologies
- Improvement of geodynamic and seismological forecasting
- Establishing of unified system of geodynamic and seismic monitoring in the republic

**Budget – USD 4,7 million**

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**Monitoring and reduction of mountainous lakes, dams and dykes burst hazards (CDS, 581, xi), jointly with CAIAG and State Geology Agency**

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**Purpose:** Reduction of mountainous lakes burst hazards

**Targets:**

- Investigations, surveys and design works on mountainous lakes, dams and dykes
- Development and installation of monitoring systems in hazardous areas using distant methods
- Ensuring data transmission through uplinks
- Data processing and analysis using GIS-technologies
- Establishing unified monitoring system

**Budget – USD 2,8 million**

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**Rehabilitation of tailings pits and uranium mining waste dumps in the area of Mailuu-Suu (CDS, 581, xx)**

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**Purpose:** To decrease substantially an impact of radioactive tailing wastes and waste dumps on people, flora and fauna of the region

**Targets:**

- In-situ protection and isolation of uranium mining wastes
- Preparation for relocation of tailing and waste dumps radioactive material to another place
- Relocation of tailing and waste dumps radioactive material
- Storage of radioactive material and subsequent protection
- Ensuring infrastructure for rehabilitation and remediation works

**Budget – USD 23,5 million**

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**Rehabilitation and remediation of disposal sites for sick livestock and pesticides  
(jointly with the Ministry of Agriculture, Water Resources and Processing Industry)**

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**Purpose:** Reduction of emergency risk from disposal sites for sick livestock and pesticides

**Targets:**

- Inventory of disposal sites and development of action plan
- Investigations, surveys and design
- Training of staff and preventive measures
- Rehabilitation works

**Budget – USD 8,4 million**

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**The future of the  
Project**

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**Total IDA funding for  
above stated work  
directions is  
USD 55 million**

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**THANK YOU  
FOR  
KIND ATTENTION**