Integrated Water Resources Management (IWRM) and SEA of Kabul and Amu Darya Rivers
The regional project study area
Equipment

The field trips to study area, Kafirnigan River

Flow METER
Equipment

Field trips to the study area, Panjshir and Kabul Rivers
Field trips to the study area, Kyzyl-Suu River
Results

Daroot – Korgon summer NDVI value 2013
Results

- Two years (1994, 2003) have been found with significant correlation coefficient between NDVI and climatic variables.
- Not enough to establish a significant annual trend between NDVI and climatic variables.
- Seasonal trend was found: as a rule, the lowest NDVI values are observed in May than reaches its peak at the end of July and at the beginning of August and decreases at the middle or end of September.
- Trend was found in NDVI values over the last five years in Daroot-Korgon – there is an inter-annual even distribution of values without any sharp fluctuations and variations.
Outcomes of the project:

1. Conclusion of contracts with experts.
2. Conclusion of contracts with the equipment suppliers.
4. Departure to the research site and meeting with local authorities to obtain permits for research activities in the planned area.
5. After receiving the appropriate equipment: conducting trainings with project participants and students of the Institute.

Time series of NDVI over the last five years
Land cover classification of Daroot - Korgon

Chong-Alay Valley map. Land cover classification of Daroot Korgon administrative center

Classification:
- 1 - Cropland
- 2 - Water
- 3 - Bare Soil
- 4 - Vegetation
Results and Findings

Number of rooms per household in % in Chui valley villages:
- 3 rooms: 16.9%
- 4 rooms: 42.3%
- 5 rooms: 23.9%
- 5+ rooms: 16.9%

Number of rooms per household in % in Daroot Korgon settlement:
- 3 rooms: 17.6%
- 4 rooms: 29.4%
- 5 rooms: 29.4%
- 5+ rooms: 23.5%
Conclusion

- Social vulnerability (water issues, food insufficiency)
- Presence of poor and rich class social disputes and tensions
- High dependence on agriculture and cattle breeding
- Poor quality of institutional and government support
The several workshops were conducted during the project implementation.
The several workshops were conducted during the project implementation.
The several workshops were conducted during the project implementation.
The international conference was conducted on 24-26 June, 2019.
Publications in a peer reviewed journal

Central Asia Journal of Water Researches
(Submitted and it is under reviewing)

- **Relationship between weather data and NDVI using satellite imagery: Sary-Tash, Kyrgyzstan**
  Zheenbek Kulenbekov, Baktyiar Asanov:
  American University of Central Asia, Kyrgyzstan.

- **Integrated Water Resources Management and Environmental Assessment of Ghorband-Panjshir and Kunduz Rivers Basins**
  Habibullah Habib, Noor Ahmad Akhundzadah, Wafa Wafaurahman, Mohammad Hairan:
  Kabul University, Afghanistan.

- **Modern Technologies for the Assessment of Environmental and Socio-Economic Fields in The Kafirnigan River Basin**
  Zamoniddin Nasriddinov, Munimjon Abdusamatov, Anvar Kodirov, Jafar Niyazov, Nuraly Mirakov:
  Tajikistan Mining Metallurgical Institute, Institute of Water Problems, Hydropower and Environment, and Hydro-Meteorology Agency under Tajikistan Government State Committee of Environmental Protection.
Dear Zheenbek Kulenbekov,

Greetings from 24th WCASET-2019!!!!!!

We are glad to inform you that your paper entitled “Vegetation Stress Study in Chon-Alai Area Using NDVI, Kyrgyzstan” bearing the paper id Wcalet 2019_79LVAl has been accepted for “Oral Presentation” in 24th WCASET conference.

IFERP is allocating a Unique Digital Object Identifier (DOI) number for your paper.

DOI: 01.1617/vol6iss11pid005127

Also, we request you to kindly proceed for registration process.

Visit the below mentioned link for registration and fee details.

Registration link- http://wcalet.com/kuala-lumpur/registration.php

After Registration, kindly send payment proof for our verification.

We will inform you regarding the payment status within 24hrs of Registration.

For any other queries, don’t hesitate to drop us an email. We will be happy to help.

Regards,

Pratheeba
Program Manager
WCASET – 2019
Kuala Lumpur, Malaysia
Publications in the international conference proceedings

C 54
«GLOBAL SCIENCE AND INNOVATIONS 2019: CENTRAL ASIA» IV

Environmental and Socio-Economic assessment of vulnerable villages in Kyrgyzstan. Comparative analysis of Kuntuu, Boroldoi, Oirondu and Daroot Korgon settlements.

Publications in the international conference proceedings

Proceedings of the IX International Scientific and Practical Conference Social and Economic Aspects of Education in Modern Society
Vol. 2, January 20, 2019, Warsaw, Poland

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ENVIRONMENTAL AND SOCIO-ECONOMIC ASSESSMENT OF VULNERABLE VILLAGES IN KYRGYZSTAN. COMPARATIVE ANALYSIS OF KUNTUU, BOROLDOI, OIRONDU AND DAROOT KORGON SETTLEMENTS

M. Avazbekova\textsuperscript{1}, A. Aitbaev\textsuperscript{2}, Zh. Kulenbekov\textsuperscript{3}, M. Nurgaziev\textsuperscript{3}, B. Asanov\textsuperscript{4}

\textsuperscript{1}Ph.D student of Polytechnic University of Valencia, Spain
\textsuperscript{2}Student of American University of Central Asia, Kyrgyzstan
\textsuperscript{3}Ph.D, American University of Central Asia, Kyrgyzstan
\textsuperscript{4}Head of environmental laboratory, American University of Central Asia, Kyrgyzstan
Hydrography of Kabul River
## Results of Research

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameters</th>
<th>PCL</th>
<th>Samples Result</th>
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<td>Panjshir River, Sayad</td>
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</tbody>
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### Physical Parameters

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<tr>
<td>1</td>
<td>pH</td>
<td>Within 6.5-8.5</td>
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<td>2</td>
<td>TSS mg/l</td>
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<td>&lt;1</td>
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<td>3</td>
<td>TDS mg/l</td>
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<td>4</td>
<td>Temperature</td>
<td>5 to 15</td>
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<td>5</td>
<td>Conductivity</td>
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<td>384.3 ms</td>
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<td>6</td>
<td>NaCl</td>
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<td>7</td>
<td>Resistivity</td>
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<td>8</td>
<td>DO mg/l</td>
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<td>6</td>
<td>Chromium (Cr)</td>
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<td>7</td>
<td>Zinc (Zn)</td>
<td>5000</td>
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</table>
Results and Discussions

- Climate Change impacts gradually increased mean annual temperature inversely it decrease precipitation, River discharge and change landcover of both River Basin.

Change in mean annual temperature and precipitation

Figure: Study Map. study area.
Results and Discussions

Climate Change Impacts Assessment on Kunduz and Panjshir River Basins

Change in River Discharge

Baghlan Stream Guage Annual Discharge

Pul-I-Ashawa Stream Guage Historical Discharge

Kulukh Tepa Stream Guage Annual Discharge

Naghlo Stream Guage Historical Discharge
Climate Change Impacts Assessment on Kunduz and Panjshir River Basins

Change in Landcover
<table>
<thead>
<tr>
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<td>1090</td>
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<td>188</td>
<td>1</td>
<td>2344.03</td>
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<td>3018</td>
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<td>Fruit Tress</td>
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<td>1</td>
<td>64</td>
<td>0</td>
<td>60.79</td>
<td>0</td>
<td>8.2</td>
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<td>Vineyards</td>
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<td>1</td>
<td>0.98</td>
<td>0</td>
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<td>1339</td>
<td>10</td>
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<td>646.3</td>
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<td>Forest and Shrubs</td>
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<td>7</td>
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</table>
Climate Change Impacts Assessment on Kunduz and Panjshir River Basins

Change in Landcover

Kunduz River Watershed

Panjshir River Watershed

[Graphs showing change in landcover]
Conclusions and Recommendations

Results

- Climate Change impacts increase air temperature and wind storms.
- It gradually decreased precipitations and surface water.
- It changed landcover of the area.
- There is big potential for Climate Change Mitigation and Adaptation within the River Basins.

Recommendations

- Climate Change Mitigation and Adaptation through Community Based NRM within the watershed.
- IWRM and CCMA implementation is highly required for River Basin Water Resources Conservation and Management.
- Disaster Management through Ecosystem based approaches.
- Sustainable energy extension and use (Developing hydropower, solar, biomass, hydrothermal, wind energy resources ant not fossil fuel energy use).
- Joint work of the Amu River Basin countries on.
Socioeconomic Assessment of Kabul and Amu Darya River Basins Selected Sites

Partnership for Enhanced Engagement in Research (PEER)
IWRM in Panjshir River Basin

IWRM Principles in Panjshir River

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<td>Water as a finite and vulnerable resource</td>
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<td>Participatory Approach</td>
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<td>The important role of women</td>
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<tr>
<td>Water as an economic good</td>
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</tbody>
</table>
Conclusion

• The socio-economic Assessment is estimate throughout some social and economic indicators in this study, Based on conducted study the Pul-e-Khumri life condition is better than the Sayad, beside the agricultural activities in Sayad here is some tourist and recreational activities in Sayad, The Pul-i Khumri is the capital of Baghlan province, it’s cleared that the business activities indicates that they are in good economic condition. Consequently the people of Pul-i- Khumri is in better social and economical conditions due to its geopolitical location and land available for agriculture.
Tajikistan

Project "Integrated Water Resources Management and Strategic Environmental Assessment Project Kabul and Amudarya Rivers"

Kafirnigan River

PEER NAS Forum, October 21-24, 2019
Objective of research

• Kafarnigan river

Kafirnigan River is one of the major tributaries of Amu Darya (together with Vakhsh and Panj). It rises on the Southern slopes of Gissar Range in Vakhdat district, formerly Kafirnigan district, and flows for about 400 km in the general South-Western direction past the cities Kafirnigan, Vahdat, and Dushanbe, where it turns South and runs through Khatlon Province toward the border with Afghanistan. It falls into Amu Darya some 40 km West of the confluence point of Vakhsh and Panj Rivers. Kofarnigan River is an important source of drinking water around the cities of Dushanbe and Vakhdat.
Tajikistan borders with Uzbekistan in the west and with Kyrgyzstan in the north, and with Afghanistan in the south, with China in the east. The total area of the territory of Tajikistan - 142.6 thousand km²
The field trips in Tajikistan
DEM of the study area
Field surveys

• Provided 5 socio economics surveys:
Environmental actions
WATER-SAVING TECHNOLOGIES: HYDROPONICS ON THE BASIS OF BASALT CLOTH EXPERIENCE OF THE REPUBLIC OF TAJIKISTAN
BOOKLET in ENGLISH and RUSSIAN languages ;

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THE SOCIO-ECONOMIC SITUATION ASSESSMENT IN TARGET VILLAGES OF TAJIKISTAN WITH THE GIS TECHNOLOGY APPLICATION

Nasriddinov Z.\textsuperscript{1} Abdusamadov M\textsuperscript{2} Kodirov A.\textsuperscript{2} Niyazov J\textsuperscript{2}
\textsuperscript{1}Mining-metallurgical institute of Tajikistan, Moskovskaya 6, 735730, Buston, Tajikistan zamoniddin@gmail.com
\textsuperscript{2}Academy of science of Tajikistan, Rudaki ave. 33, 734025 Dushanbe, Tajikistan, abdusamadm@rambler.ru
APPLICATION OF MODERN TECHNOLOGIES FOR THE ASSESSMENT OF ECOLOGICAL AND SOCIO-ECONOMIC INDICATORS OF THE KAFIRNIGAN RIVER BASIN

Nasriddinov Z.¹ Abdusamadov M² Kodirov A.² Niyazov J²

¹ Mining-metallurgical institute of Tajikistan, Moskovskaya 6, 735730, Buston, Tajikistan  zamoniddin@gmail.com
² Academy of science of Tajikistan, Rudaki ave. 33, 734025 Dushanbe, Tajikistan, abdusamadm@rambler.ru
Thank you for your attention!