



**Erasmus+**

**Erasmus+ Information Day  
24 November 2017**

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# **Preliminary results of cross-regional project SPHERA**

**Farhod Ahrorov  
Samarkand Agricultural Institute**

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*The EU programme for  
Education, Training, Youth and Sport  
2014 - 2020*

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## Wider objective

*To improve the public health sector and response to emergency and disaster situations in Uzbekistan and Nepal by providing specialists in health engineering and related areas*





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## Specific objectives

*Developing and enhancing relationships between universities and professional stakeholders in the public sector*

- *Creating 4 modules in Health Engineering and related areas to be integrated in existing or new masters programmes*
- *Increasing capacities among universities to develop new curricula that fit the needs of the public health sector encompassing stakeholder needs surveys and "training engineering*
- *Strengthen relations between Asian and EU HEIs in the area of Public Health and Health Engineering through comparable degrees.*



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## Project partners

*Universidad De Oviedo, Spain*

*Staffordshire University, UK*

*Universidade De Lisboa, Portugal*

*Edex - Educational Excellence Corporation  
Limited, Cyprus*

***Samarkand Agricultural Institute***

***Samarkand State Medical Institute***

***Samarkand Branch Of Tashkent University  
Of Information Technology***

*Tribhuvan University, Nepal*

*Pokhara University, Nepal*



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## Activities for 1<sup>st</sup> year

*Survey from public health sector on need analysis for the educational sector*

*Report and Fact Finding Study for design of curricula development*

*Development of common frame for CD in function of 1.1. and 1.2*

*Setting up 4 modules and purchase/installation of equipment for health engineering studies*

*Training of PC staff and curriculum modernization through training engineering in 4 areas*



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## Activities for 2<sup>nd</sup> year

*Setting up 4 modules and purchase/installation of equipment for health engineering studies*

*Training of PC staff and curriculum modernization through training engineering in 4 areas*

*Organisation of distance learning for selected courses*

*Start of Master program*





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## Activities for 3<sup>rd</sup> year

*Piloting of Master program*

*Development of frame for competences and LOs applied to teaching and learning*

*Development and implementation of internal quality control system with peer review and assessment on 1st year of Master programme and external report*

*Accreditation and licensing of Master programme*





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## Expected project results

*Survey on public health sector needs to be used in curricula*

*4 modules in health engineering and development of master programme*

*Quality assurance plan, delivery of learning outcomes and competences, internal and external monitorings*

*License and accreditation of program*





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# **SURVEY ON HEALTH & DISASTER ENGINEERING NEPAL & UZBEKISTAN**



## A1. Survey Goals

*Determine the needs and expectations of local society and stakeholders → to create the 2<sup>nd</sup> Cycle program in public health in disaster*



### ***Target Population:***

- **Public entities: Governing Bodies, Technical Staff, Universities**
- **NGO's: Environmental, Health and Educational**
- **Private entities**



## A2. Survey Organization

- **A. Introductory Note + Project Presentation**
- **B. Overall Characterization**
- **C. General Evaluation of Country Public Health (2 Questions – 25 indicators)**
- **D. Public health engineering (4 Questions – 17 indicators)**
- **E. Environment health Engineering (4 Questions – 13 indicators)**
- **F. Engineering in Disaster (4 Questions – 23 indicators)**
  - Q1 - Prevention
  - Q2 - Mitigation
  - Q3 - Emergency
  - Q4 - Recovery
- **G. Final remarks – Open question**





## A3. Data Collection

*Data collected by local partners from April – May 2017*

*Survey translated to local languages and applied in the most convenient ways to meet target population: on-line, interview, etc.*





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POKHARA  
UNIVERSITY

TRIBHUVAN  
UNIVERSITY

SAMAI  
SAMARKAND  
AGRICULTURAL  
INSTITUTE

SAMSMI  
SAMARKAND  
STATE MEDICAL  
INSTITUTE

SAMTUIT  
SAMARKAND UNI.  
OF INFORMATION  
AND TECHNOLOGY

Total  
(n)

Total  
(%)



35

39

74

**42,3**  
**%**



40

41

20

101

**57,7**  
**%**

20,0%

22,3%

22,9%

23,4%

11,4%

**175**

100%



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*B1. PERSONAL CHARACTERIZATION*

*B2. INSTITUTIONAL CHARACTERIZATION*

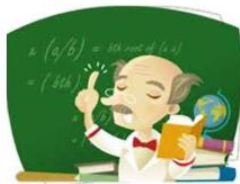
*A3. DATA COLLECTION*

*A4. SURVEY RESPONSES*

## **B. SAMPLE CHARACTERIZATION**



## B1. Personal Characterization



**28,0%**  
FACULTY



**23,4%**  
DIRECTOR



**14,3%**  
TECHNICAL EMPLOYEE



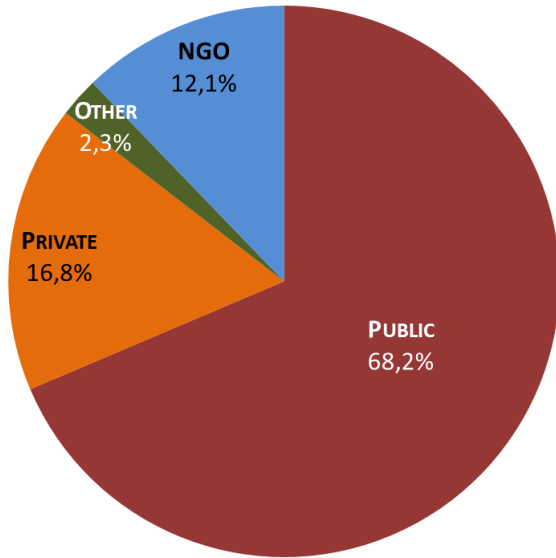
**7,4%**  
DOCTOR/MED. STAFF



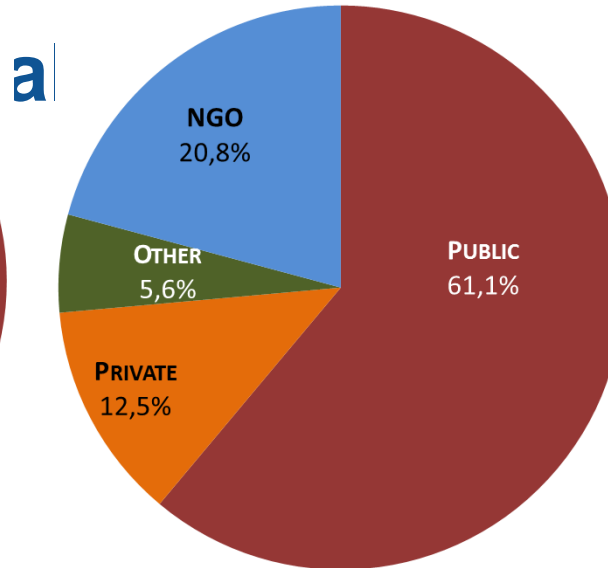
**6,9%**  
PROJECT COORD.



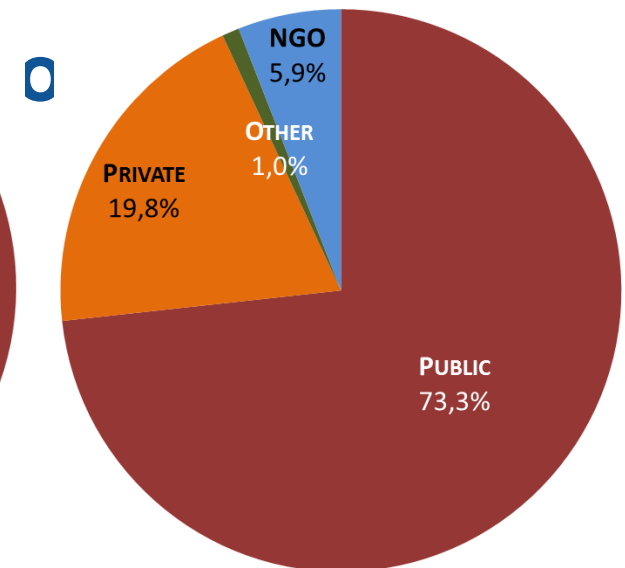
**5,1%**  
STUDENT



**INSTITUTION SECTOR**



**NEPAL**



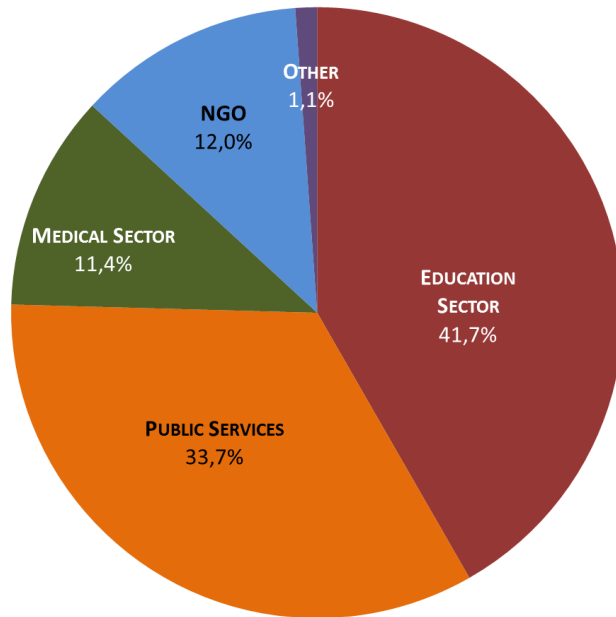
**UZBEKISTAN**

*Majority of answers from Public Institutions  
Higher % NGO among NP answers*

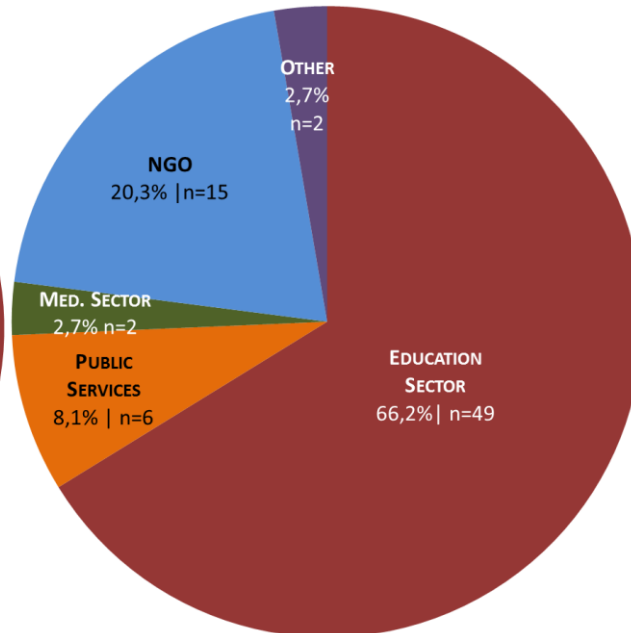




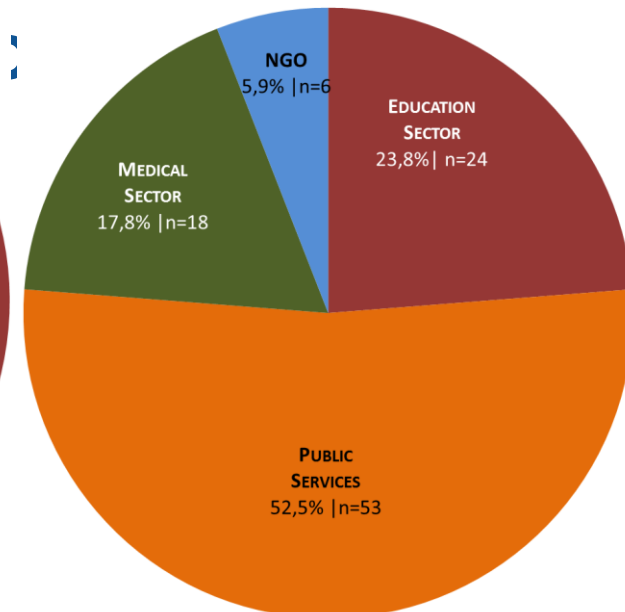
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**TYPE OF ACTIVITY**



**NEPAL**



**UZBEKISTAN**

*Top 3 Institutions in NP were HEI's (> 40%)*

*Top 3 Institutions in UZ were HEI's + Health Clinic (> 30%)*



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*C1. PUBLIC HEALTH GLOBAL EVALUATION*

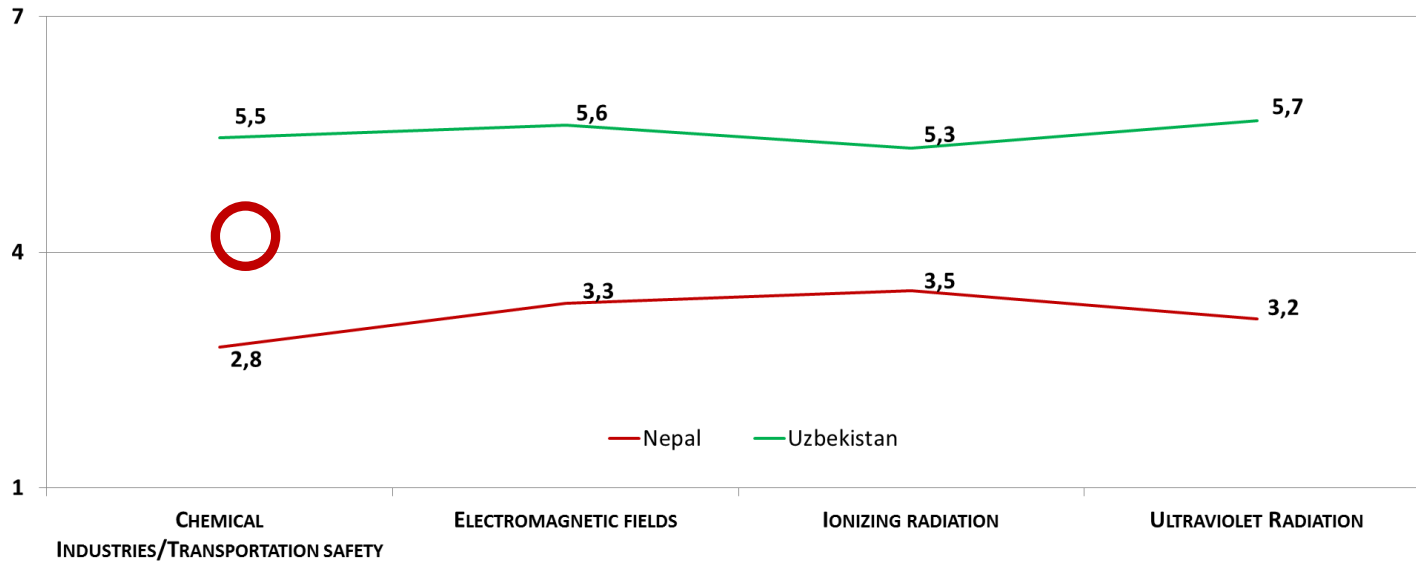
*C2. RISKS PROBABILITY AND IMPACT*

*C3. PUBLIC HEALTH AND RISKS SYNOPSIS*

## **C. PUBLIC HEALTH AND RISKS**



## RADIATION/INDUSTRY C1. Public Health Global Evaluation

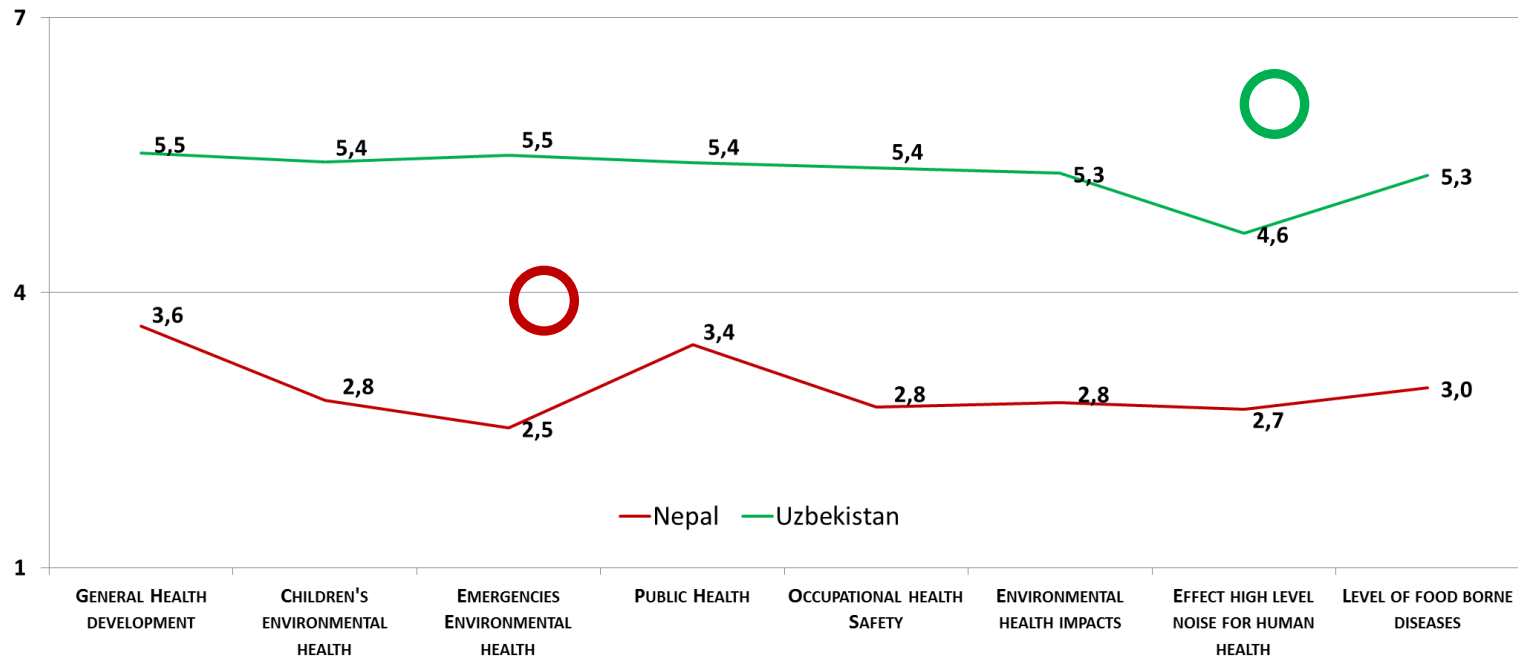


**UZ:** all aspects accessed as positive averages  
**NP:** Chemical Industries and Transp. safety lowest average



## HEALTH FACTORS

### C1. Public Health Global Evaluation

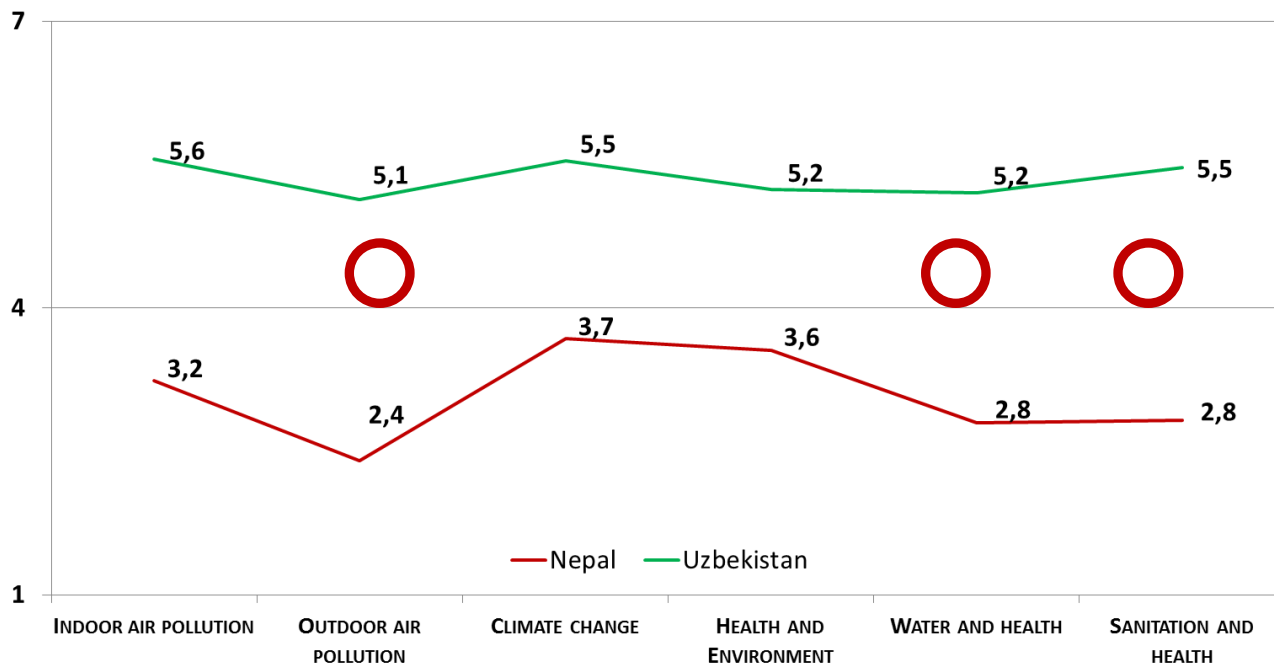


**UZ:** Lowest average to noise level for human health

**NP:** Environmental health aspects registered lower average evaluations



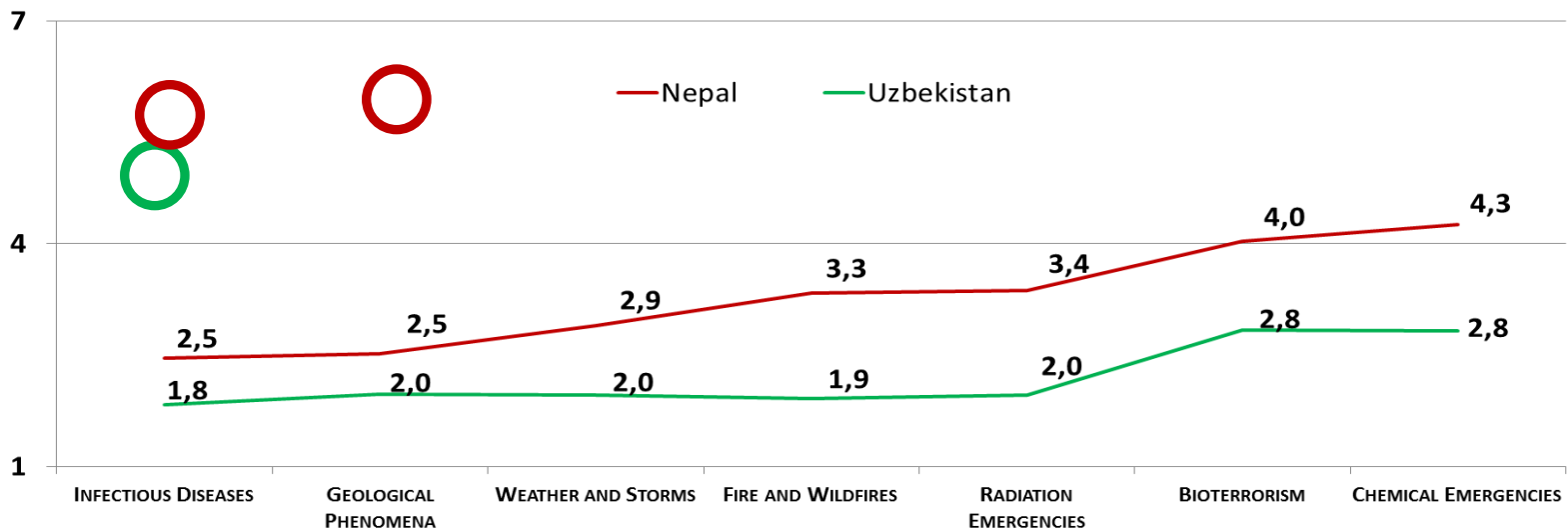
## ENVIRONMENTAL FACTORS C1. Public Health Global Evaluation



**NP:** critically low average in outdoor air pollution, water & health and sanitation & health



## C2. Risks Probability and Impact



**UZ:** Current positive situation but some risks and their impacts are a cause of concern. Lower risks than NP averages.

**NP:** All risks ranked as having a high impact, infectious diseases with highest negative impact



WHERE WE ARE RIGHT NOW:

## C3. Public Health and Risks Synopsis

*UZ:*

- **Infectious Diseases**
- **Fire and Wildfires**
- **Weather and Storms**
- **Radiation Emergencies**
- **Geological Phenomena**

highest  
concerns with  
risks & impacts

*NP:*

- **Outdoor air pollution**
- **Infectious diseases**
- **Environmental health in emergencies**
- **Effect high level noise for human health**
- **Geological phenomena**

highest concerns  
with public health  
global evaluation

Risks &  
Impacts



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*D1. PREVENTION*

*D2. MITIGATION*

*D3. EMERGENCY*

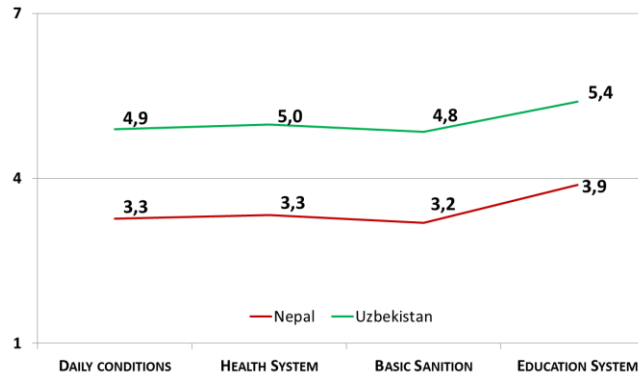
*D4. RECOVERY*

## **D. PUBLIC HEALTH IN ENGINEERING**





## D1. Public Health Engineering | Prevention



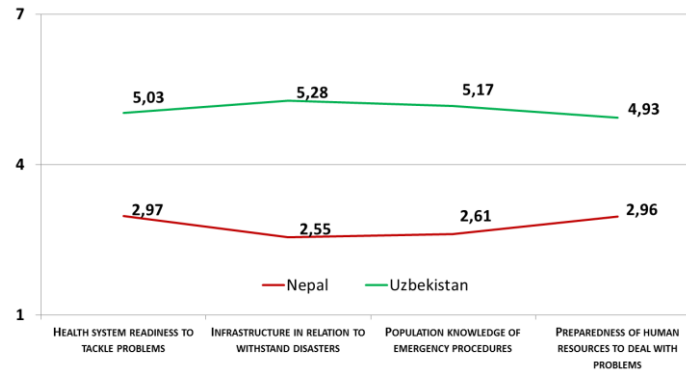
**PUBLIC SERVICES** less positive answers [μ]

	EDUCATION SECTOR		PUBLIC SERVICES		MEDICAL SECTOR		NGO	
	NP	UZ	NP	UZ	NP	UZ	NP	UZ
DAILY CONDITIONS	3,2	4,9	3,0	4,8	5,0	5,3	3,3	4,7
HEALTH SYSTEM	3,3	5,1	2,3	4,8	5,0	5,2	3,5	5,3
BASIC SANITATION	3,2	5,3	2,8	4,4	6,0	5,2	3,1	5,3
EDUCATION SYSTEM	3,9	5,8	3,0	5,1	6,5	5,7	3,9	5,7



## D2. Public Health Engineering | Mitigation

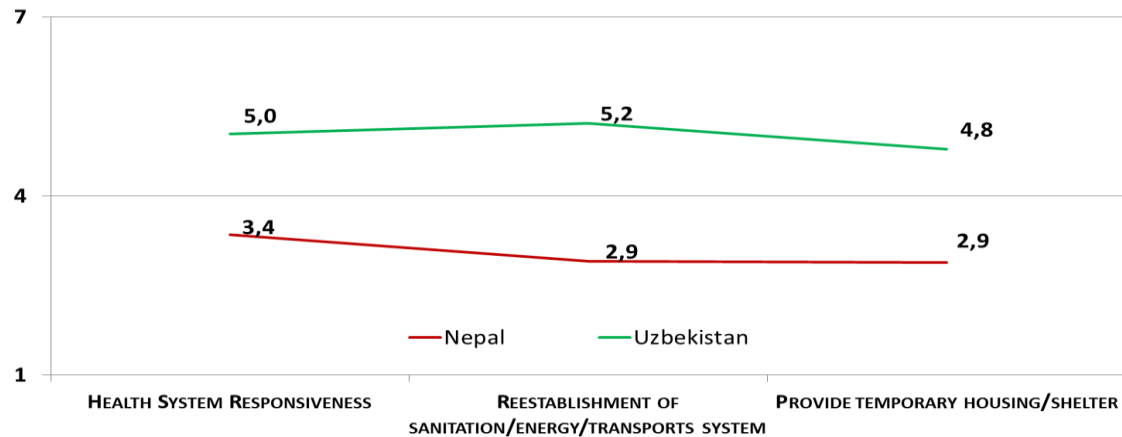
**PUBLIC SERVICES & NGO** answers, less positive [μ]



	EDUCATION SECTOR		PUBLIC SERVICES		MEDICAL SECTOR		NGO	
	NP	UZ	NP	UZ	NP	UZ	NP	UZ
HEALTH SYSTEM READINESS TO TACKLE PROBLEMS	3,1	5,2	2,2	5,2	4,0	4,7	2,9	4,3
INFRASTRUCTURE IN RELATION TO WITHSTAND DISASTERS	2,6	5,6	2,7	5,0	4,0	5,7	2,3	5,3
POPULATION KNOWLEDGE OF EMERGENCY PROCEDURES	2,6	5,5	2,2	4,8	5,0	5,6	2,6	5,7
PREPAREDNESS OF HUMAN RESOURCES TO DEAL WITH PROBLEMS	3,0	5,5	2,3	4,5	6,0	5,5	2,7	5,0



## D3. Public Health Engineering | Emergency



	EDUCATION SECTOR		PUBLIC SERVICES		MEDICAL SECTOR		NGO	
	NP	UZ	NP	UZ	NP	UZ	NP	UZ
HEALTH SYSTEM RESPONSIVENESS	3,4	4,9	3,2	4,9	3,0	5,6	3,1	4,7
REESTABLISHMENT OF SANITATION/ENERGY/TRANSPORTS SYSTEM	3,1	5,4	2,2	4,9	2,5	5,7	2,7	5,3
PROVIDE TEMPORARY HOUSING/SHELTER	2,9	4,8	2,5	4,8	4,0	4,9	2,6	4,3



## D4. Public Health Engineering | Recovery

**UZ:** PUBLIC SERVICES LESS POSITIVE [μ]

**NP:** NGO MORE WORRIED WITH RECOVERY DIMENSIONS

	EDUCATION SECTOR		PUBLIC SERVICES		MEDICAL SECTOR		NGO	
	NP	UZ	NP	UZ	NP	UZ	NP	UZ
RECOVER SANITATION SYSTEM	2,9	5,2	3,3	4,4	4,5	5,4	2,8	5,0
RECOVER ENERGY SYSTEM	2,7	5,1	2,8	4,4	4,5	5,0	2,6	5,0
RECOVER TRANSPORTATION SYSTEM	3,0	5,2	2,8	5,0	6,0	5,3	2,8	5,0
CONTROL HEALTH PROBLEMS AFTER DISASTER	3,0	5,1	2,7	4,7	5,5	5,5	2,5	5,0
REBUILT HEALTH INFRASTRUCTURE	2,8	5,0	2,8	4,7	4,5	5,4	2,4	5,0
REBUILT INFRASTRUCTURE	2,8	4,5	2,8	4,6	3,0	4,8	2,3	4,3



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*E1. PREVENTION*

*E2. MITIGATION*

*E3. EMERGENCY*

*E4. RECOVERY*

**ENVIRONMENTAL HEALTH ENGINEERING**



## E1. Environmental Health Eng. | Prevention

**NP & UZ:**  
PUBLIC SERVICES  
& NGO LOWEST  
[μ]

	EDUCATION SECTOR		PUBLIC SERVICES		MEDICAL SECTOR		NGO	
	NP	UZ	NP	UZ	NP	UZ	NP	UZ
WATER QUALITY FOR PUBLIC CONSUMPTION	3,0	5,5	2,7	4,8	3,5	5,5	2,5	5,3
AIR QUALITY	2,7	5,2	2,5	5,3	4,0	5,4	2,0	5,0
CLIMATE CHANGE EFFECTS ON POPULATION HEALTH	3,1	4,9	2,8	4,0	4,0	5,3	4,5	4,3
MEASURES OF ENVIRONMENTAL QUALITY PROMOTION	2,9	4,8	2,3	4,8	4,0	5,0	2,0	4,3
CAPACITY TO PLAN AND MANAGE THE TERRITORY	3,0	5,3	2,2	4,9	4,0	5,8	3,5	5,7



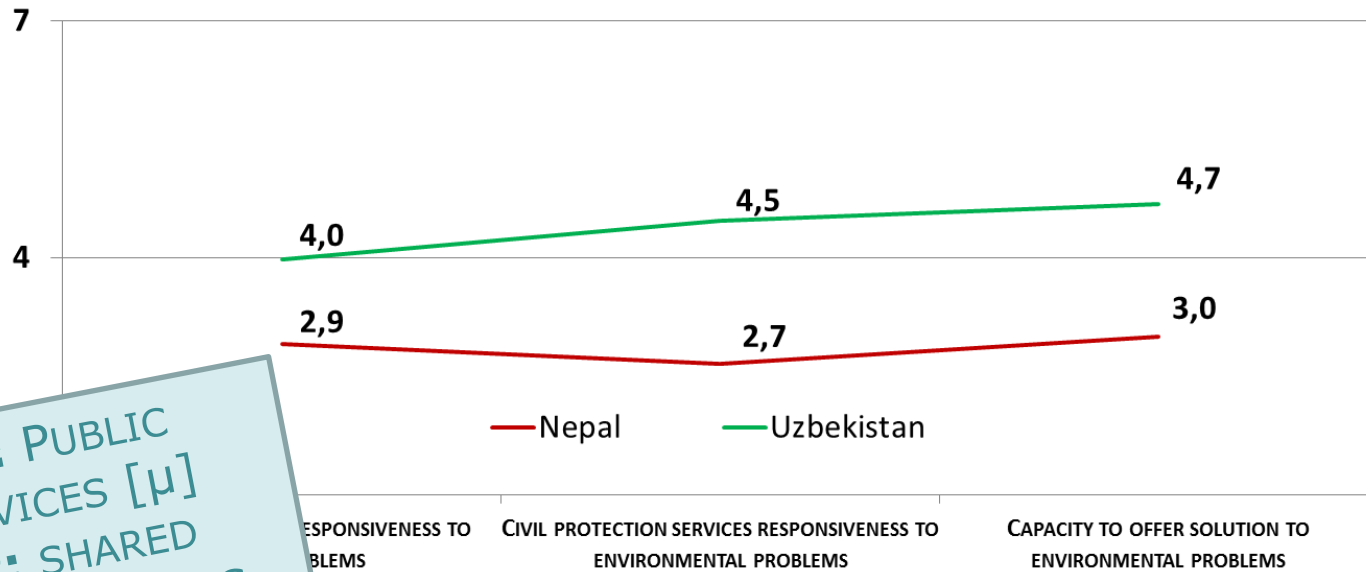
## E2. Environmental Health Eng. | Mitigation

**UZ & NP:  
PUBLIC SERVICES  
LOWEST [μ]**

	EDUCATION SECTOR		PUBLIC SERVICES		MEDICAL SECTOR		NGO	
	NP	UZ	NP	UZ	NP	UZ	NP	UZ
MEASURES TO MITIGATE EFFECTS OF CLIMATE CHANGE	3,2	4,6	2,7	4,3	4,5	4,7	3,0	4,0
PROMOTION OF THE INFRASTRUCTURE AND EQUIPMENT QUALITY AND RESILIENCE	3,2	5,0	3,0	4,4	4,5	5,4	3,5	4,7
PROMOTION OF AIR/WATER QUALITY	2,9	5,2	2,7	4,4	4,5	5,3	2,9	5,0



## E3. E



**UZ: PUBLIC SERVICES [μ]**  
**NP: SHARED WORRIES AMONG GROUPS**

	EDUCATION SECTOR		PUBLIC SERVICES		MEDICAL SECTOR		NGO	
	NP	UZ	NP	UZ	NP	UZ	NP	UZ
HEALTH STRUCTURES RESPONSIVENESS TO HEALTH PROBLEMS	2,8	4,2	2,8	3,7	5,0	4,8	2,9	3,3
CIVIL PROTECTION SERVICES RESPONSIVENESS TO ENVIRONMENTAL PROBLEMS	2,7	4,8	2,0	4,0	4,5	5,4	2,5	4,7
CAPACITY TO OFFER SOLUTION TO ENVIRONMENTAL PROBLEMS	3,0	5,0	3,0	4,3	3,5	5,4	2,8	5,0





## E4. Environmental Health Eng. | Recovery

**NP:** PUBLIC SERVICES HIGHLY WORRIED

	EDUCATION SECTOR		PUBLIC SERVICES		MEDICAL SECTOR		NGO	
	NP	UZ	NP	UZ	NP	UZ	NP	UZ
CAPACITY TO RETURN TO NORMALITY BEFORE THE DISASTER	2,8	4,6	2,3	4,3	4,5	5,0	3,1	4,3
CAPACITY TO IMPROVE THE ORIGINAL SCENARIO	3,3	5,0	2,8	4,6	5,0	5,3	3,5	4,7



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*F1. PREVENTION*

*F2. MITIGATION*

*F3. EMERGENCY*

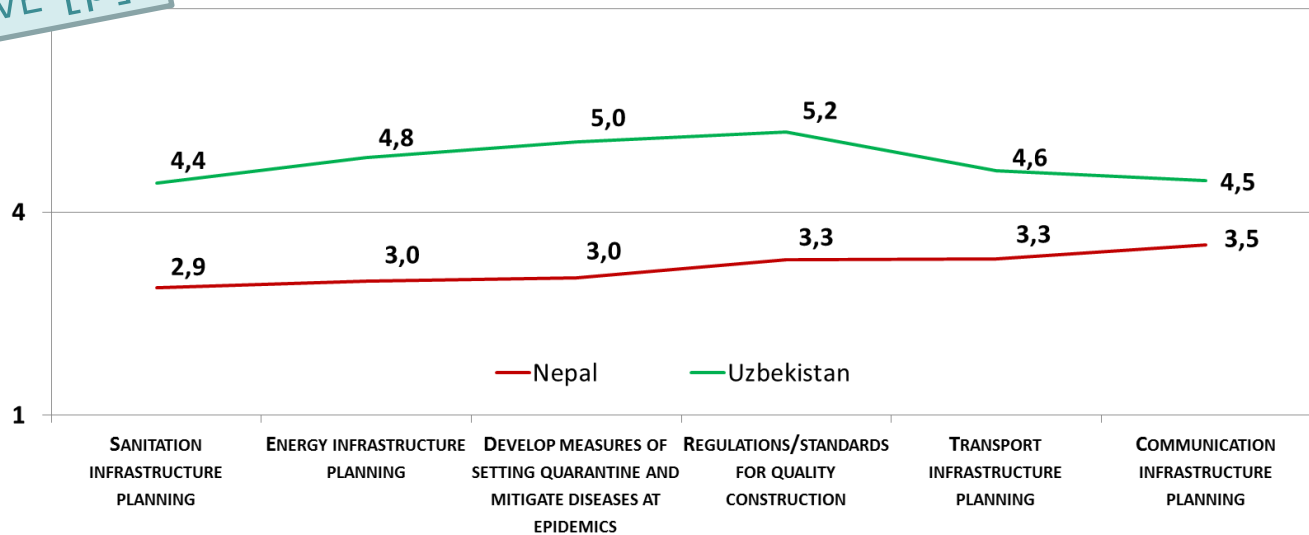
*F4. RECOVERY*

## **ENGINEERING IN DISASTER**



## F1. Engineering in Disaster | Prevention

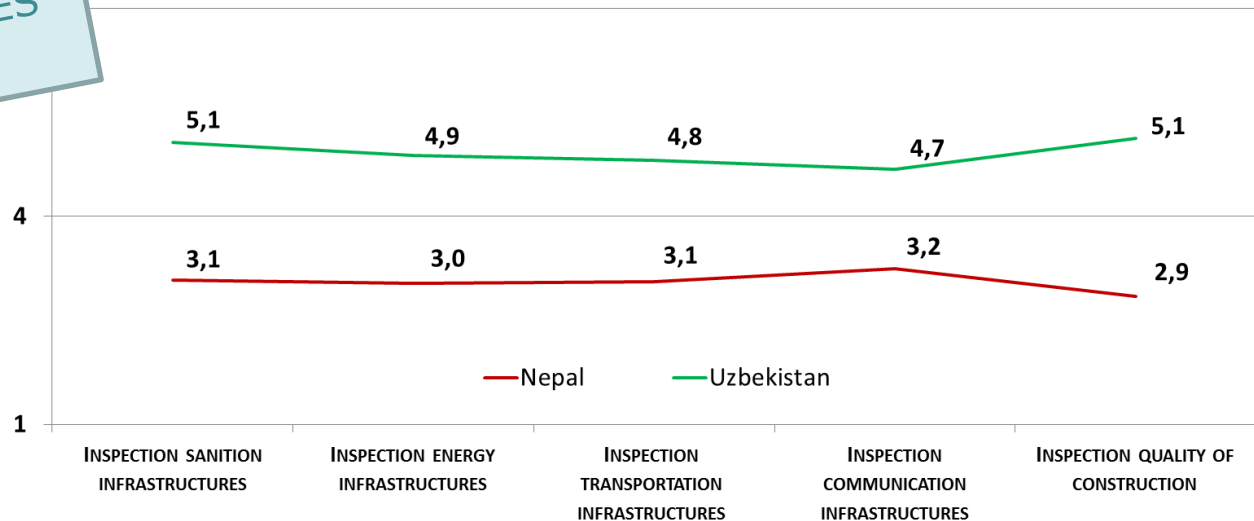
ALL ACTV. SECTORS  
SHARE SOME  
WORRIES, NGO'S IN  
UZ WITH LOWER  
VALUES, ABOVE [μ]





## F2. Engineering in Disaster | Mitigation

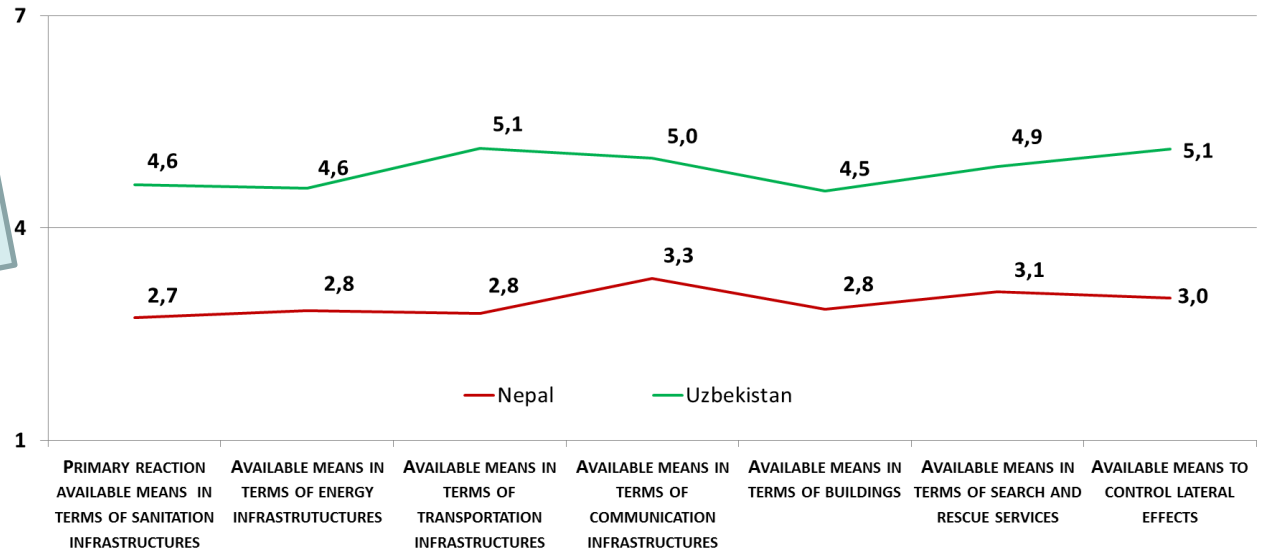
**NP:** PUBLIC SERVICES VALUES ABOVE  $[\mu]$   
**UZ:** NGO VALUES ABOVE  $[\mu]$





## F3. Engineering in Disaster | Emergency

**NP:** PUBLIC SERVICES VALUES ABOVE [μ]  
**UZ:** NGO VALUES ABOVE [μ]





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*G1. NEPALESE PRIORITIES*

*G2. UZBEK PRIORITIES*

## **PRIORITIES REGARDING PREVENTION**



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ACTION TYPE	MSc SPECIALIZATION	ACTIVITY
<b>PREVENTION NEPAL</b>	<b>Environmental Health Engineering</b>	<ul style="list-style-type: none"><li>• Air Quality</li><li>• Measures of environmental quality promotion</li><li>• Water quality for public consumption</li><li>• Capacity to plan and manage the territory</li></ul>
	<b>Engineering in Disaster</b>	<ul style="list-style-type: none"><li>• Sanitation + Energy infrastructure planning</li><li>• Develop quarantine measures and mitigate diseases at epidemics</li></ul>



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ACTION TYPE	MSC SPECIALIZATION	ACTIVITY
<b>PREVENTION UZBEKISTAN</b>	<b>Engineering in Disaster</b>	<ul style="list-style-type: none"><li>• Sanitation + Communication + Transport + Energy Infrastructures planning</li><li>• Measures of environmental quality promotion</li><li>• Water quality for public consumption</li></ul>
	<b>Environmental Health Engineering</b>	<ul style="list-style-type: none"><li>• Capacity to plan and manage the territory</li><li>• Climate change effects on population health</li><li>• Measures environmental quality</li></ul>
	<b>Public Health Engineering</b>	<ul style="list-style-type: none"><li>• Basic sanitation</li><li>• Daily conditions</li></ul>





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*H1. NEPALESE PRIORITIES*

*H2. UZBEK PRIORITIES*

# TOP PRIORITIES REGARDING MITIGATION



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ACTION TYPE	MSc SPECIALIZATION	ACTIVITY
<b>MITIGATION NEPAL</b>	<b>Public Health in Engineering</b>	<ul style="list-style-type: none"><li>• Infrastructure in relation to withstand disasters</li><li>• Population knowledge of emergency procedures</li><li>• Preparedness of human resources to deal with problems</li></ul>
	<b>Engineering in Disaster</b>	<ul style="list-style-type: none"><li>• Inspection of the quality of construction</li><li>• Inspection of the energy infrastructures</li></ul>
	<b>Environmental Health Engineering</b>	<ul style="list-style-type: none"><li>• Promotion of air/quality</li></ul>



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ACTION TYPE	MSc SPECIALIZATION	ACTIVITY
<b>MITIGATION UZBEKISTAN</b>	<b>Public Health in Engineering</b>	<ul style="list-style-type: none"><li>• Infrastructure in relation to withstand disasters</li><li>• Population knowledge of emergency procedures</li><li>• Preparedness of human resources to deal with problems</li></ul>
	<b>Environmental Health Engineering</b>	<ul style="list-style-type: none"><li>• Measures to mitigate effects of climate change</li><li>• Promotion of the infrastructure and equipment quality and resilience</li><li>• Promotion of air/water quality</li></ul>
	<b>Engineering in Disaster</b>	<ul style="list-style-type: none"><li>• Inspection of the energy + transportation + communication infrastructures</li></ul>



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*11. NEPALESE PRIORITIES*

*12. UZBEK PRIORITIES*

**TOP PRIORITIES REGARDING EMERGENCY**



<b>ACTION TYPE</b>	<b>MSc SPECIALIZATION</b>	<b>ACTIVITY</b>
<b>EMERGENCY NEPAL</b>	<b>Engineering in Public Health</b>	<ul style="list-style-type: none"><li>• Provide temporary housing/shelter</li><li>• Reestablishment of sanitation/energy/transport systems</li></ul>
	<b>Engineering in Disaster</b>	<ul style="list-style-type: none"><li>• Primary reaction available means in terms of sanitation infrastructures</li><li>• Available means in terms of transportation infrastructures + energy infrastructures + buildings</li></ul>
	<b>Environment al Health Eng.</b>	<ul style="list-style-type: none"><li>• Civil protection responsiveness to health problems</li></ul>





<b>ACTION TYPE</b>	<b>MSc SPECIALIZATION</b>	<b>ACTIVITY</b>
<b>EMERGENCY UZBEKISTAN</b>	<b>Environment al Health Eng.</b>	<ul style="list-style-type: none"><li>• Health Structures + Civil protection responsiveness to health problems</li><li>• Capacity to offer solution to environmental problems</li></ul>
	<b>Engineering in Disaster</b>	<ul style="list-style-type: none"><li>• Primary reaction available means in terms of sanitation infrastructures</li><li>• Available means in terms of buildings + energy infrastructures + search and rescue services</li></ul>
	<b>Public Health Engineering</b>	<ul style="list-style-type: none"><li>• Provide temporary housing/shelter</li></ul>





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*K1. NEPALESE PRIORITIES*

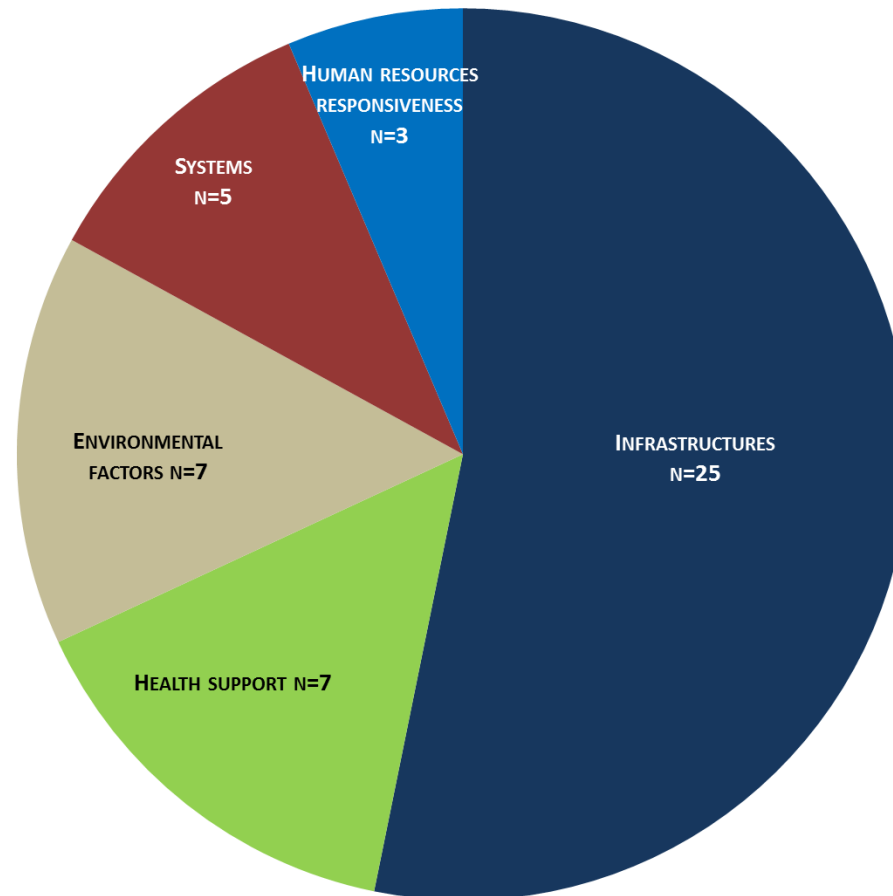
*K2. UZBEK PRIORITIES*

## **TOP PRIORITIES AT A GLANCE**





# K1. NEPAL



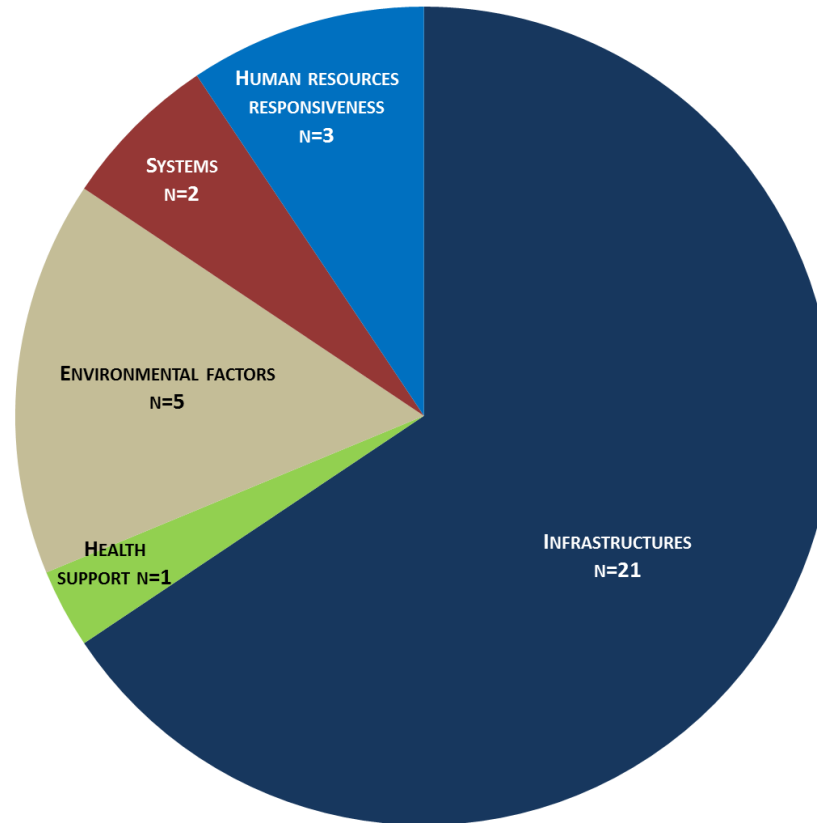
- ▶ 41 factors recoded by grant area of intervention. Selected by the below average values (3,0) + standard deviation (+0,2) in a range that varies from 2,6 – 3,2, in a scale from 1 to 7.



## K2. UZBEKISTAN



## K2. UZBEKISTAN



- ▶ 32 factors recoded by grant area of intervention. Selected by the below average values (4,9) in a range that varies from 4,0 – 4,9, in a scale from 1 to 7.





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# Modules for curricula development

*Environmental Health Engineering*  
*Engineering in Disaster*  
*Engineering in Disaster*  
*Environmental Health Engineering*  
*Public Health Engineering*





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**THANK YOU FOR ATTENTION**





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## *Contacts*

Samarkand Agricultural Institute

77, Mirzo Ulugbek street, Samarkand,  
Uzbekistan, 140103

Tel. 99866 2343390 (office)

99893 3445575 (mobile)

E-mail: [fahrorov@yahoo.com](mailto:fahrorov@yahoo.com),  
[fahrorov@gmail.com](mailto:fahrorov@gmail.com)