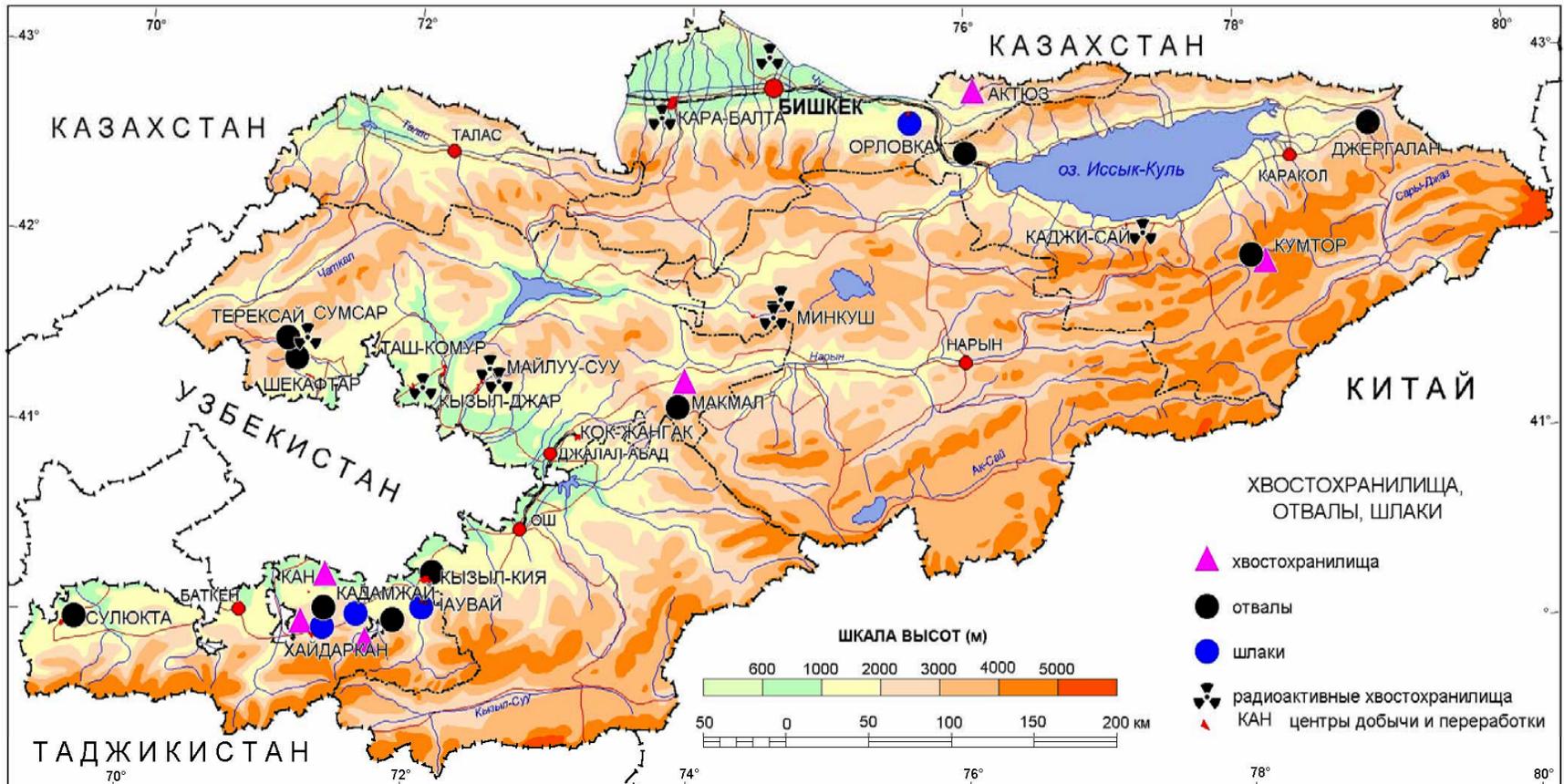


Radioactive Contamination Uranium Legacy in CA

NATO

SfP Project 981742

Хвостохранилища, отвалы, шлаки и основные центры добычи и переработки полезных ископаемых



Изображение границ не носит официального характера. © Цифровые слои созданы ОсОО "ГИС-Сервис", Бишкек, 2001. Источник: "Геоэкологическая безопасность и риск природно-техногенных катастроф на территории Кыргызстана", Бишкек, 1999.

НАСЕЛЕННЫЕ ПУНКТЫ

- Столица
- Областные центры

ГРАНИЦЫ

- Государственные
- Областные

ПУТИ СООБЩЕНИЯ

- Железные дороги
- Главные автодороги

ДРУГИЕ ОБЪЕКТЫ

- Озера и водохранилища
- Реки

International Cooperation

- NATO SfP Project (since 2006) in Co-Operation with:
 - ENVSEC (Environmental Security) Initiative in the Ferghana Valley, including OSCE, UNEP, UNDP, local governments
 - with IAEA – Technical Co-Operation Assistance Programme since 2005, 1 regional and several national projects (in Kazakhstan, Kyrgyzstan and Tajikistan)
 - with ISTC (International Science and Technology Centre)
 - with the Government of Norway

Project Objectives

- Characterization of source-terms and determination of local contamination in selected uranium tailing and waste rock sites
- Radiation dose and impact assessments
- Identification of appropriate mitigation/remediation countermeasures

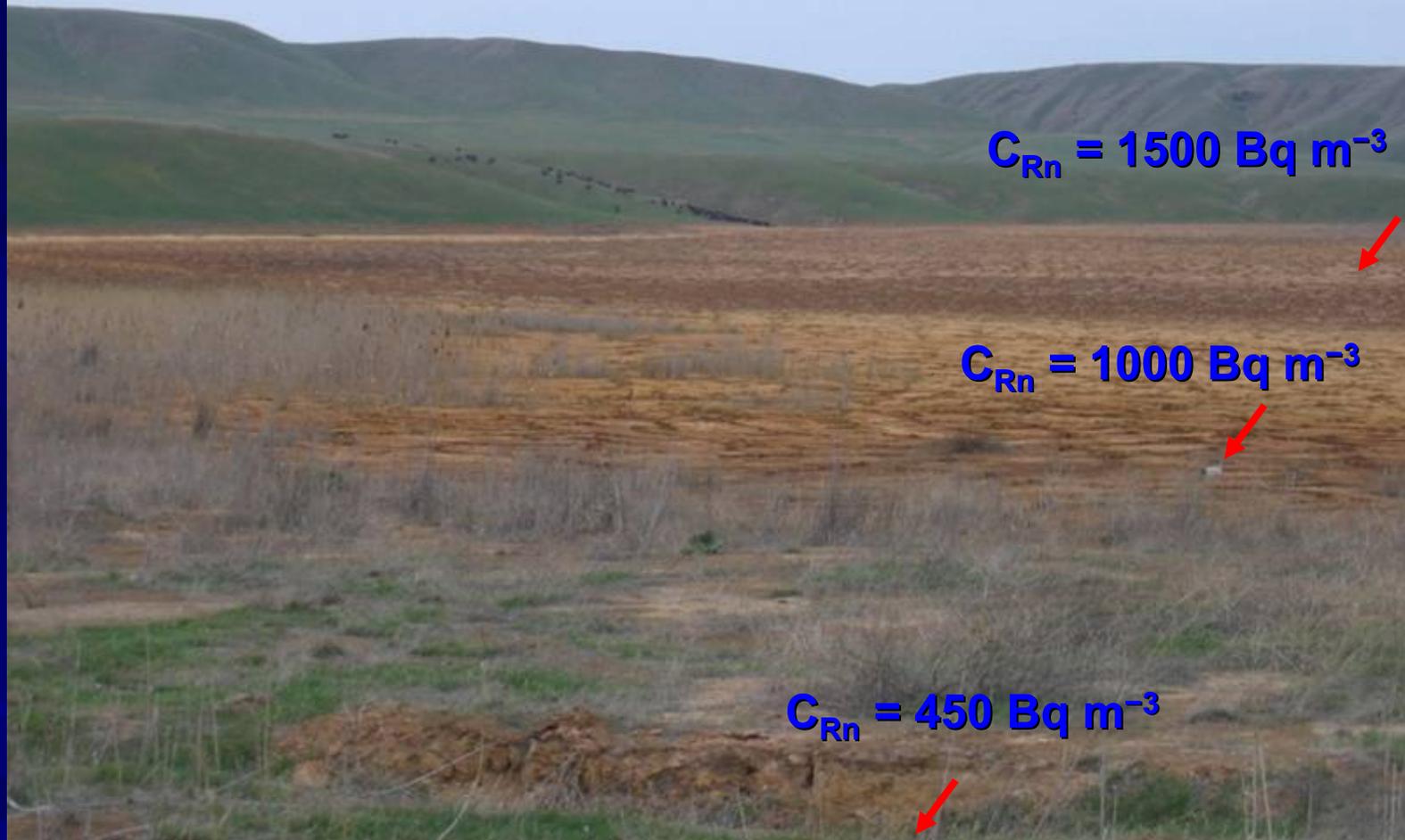
Work done

- Field assessment missions carried out at former U sites in:
 - Kazakhstan
 - Kyrgyzstan
 - Uzbekistan
 - Tajikistan
- Radioactivity measurement equipment provided/upgraded
- Analytical results provided by all participating institutions
- Training of young specialists (project participants) being completed
- Preliminary radiation dose assessments made
- Results reported at several meetings in the region (i.e. on Minkush, on Taboshar)
- Results comparable with IAEA
- International co-operation implemented

Results

- Kurday (KZ), Shekaftar (KG): normal (background) radioactivity levels
- Digmai, Taboshar (TJ): high activity levels at the Digmai tailings site: possible impact on population, specific situation in Taboshar
- Minkush (KG): specific radiological situation – misuse of spent radioactive materials, immediate countermeasures needed/requested
- Chorkesar (UZ): specific radiological situation, potential misuse of contaminated sites
- At all sites: in general low levels of indoor Rn in dwellings, houses, public buildings, *compliance with international standards needed*

Digmay – Tajikistan, outdoor Rn





Sample collection

Min-Kush, Kyrgyzstan



Chorkesar, Uzbekistan



Taboshar - Tajikistan



Gamma dose rate at
FBR rock pile up to
 $1 \mu\text{Sv/h}$

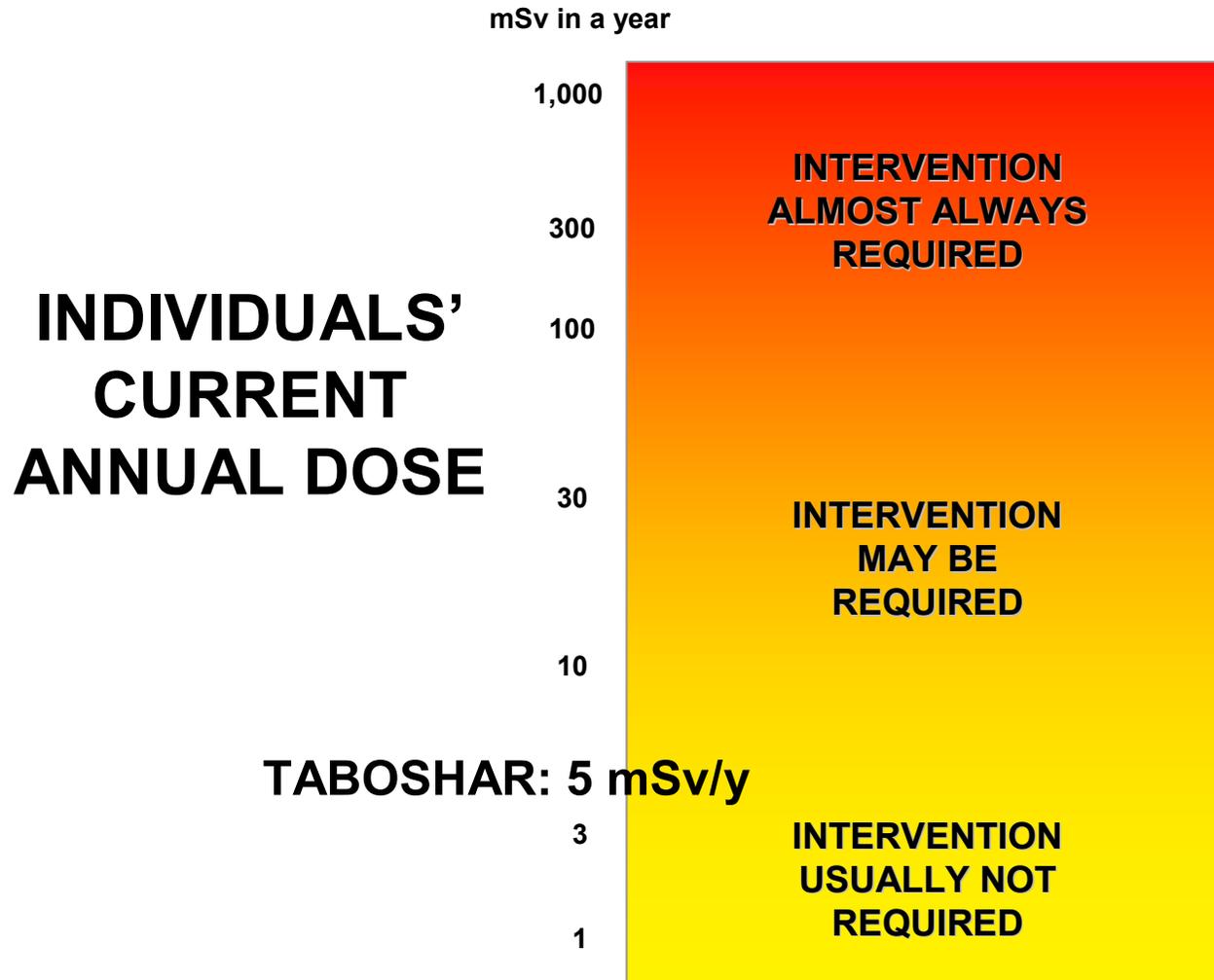


Gamma dose rate in the
school: $0.18 \mu\text{Sv/h}$, Rn low

Taboshar – Dose Assessment

- Indoor Rn: $100 \text{ Bq/m}^3 \sim 2.5 \text{ mSv/y}$
- Drinking water (Ra-226, U, Pb-210, Po-210): $< 100 \text{ } \mu\text{Sv/y}$
- Foodstuff (Ra-226, U, Pb-210, Po-210): $< 10 \text{ } \mu\text{Sv/y}$
- External radiation: low level U ore pile, i.e. exposure time 2000 hours/year (very conservative), dose $1 \text{ } \mu\text{Sv/h} = 2 \text{ mSv/y}$
- Total radiation dose at Taboshar: $\sim 5 \text{ mSv/y}$

Intervention Criteria



Risk assessment

Perceived risk versus actual risk:

- Perceived risk by population high, based on lacking information, low living standard, emotions – radiophobia
- Actual radiological risk: very low or none, i.e. dose of 5 mSv/h = probability to develop 1 case of fatal cancer in 10000 people, due to radiation

Preliminary Conclusions

- Radiation doses low, no radiological risk and no actual health impact on general population
- Radiation at investigated sites localised with no influence/impact on broader areas, such as Ferghana Valley
- However, specific radiological situation should be addressed adequately, in order to remediate/mitigate such situations and to protect groups of people exposed.