

# TRANSPOND – Transboundary environmental system for radioactive contamination

## Client II – International partnerships for sustainable innovation

**Residues from Soviet-era uranium and rare earth production are a strain on political peace in Central Asia. One example is the erosive discharge of radioactive mining residues into the transboundary waters of Syr Darya which is threatening the political stability between Uzbekistan and Kyrgyzstan. Solutions to preventing conflict would require a reliable data basis for water pollution, a cross-border exchange of data, and an improved infrastructure for environmental monitoring and environmental information in the riparian states. Such solutions have been lacking up to now. The German, Kyrgyz and Uzbek partners in the joint project “TRANSPOND” will develop a joint environmental information system and coordinated emergency instructions for the riparian states.**

### Contaminated in the Fergana Valley

All Central Asian republics have active or unrefined uranium and rare earth mining sites with radioactive mining and processing waste. There is a continuous erosion of radioactive particles from these remnants into the cross-border catchment area of Syr Darya in the Fergana Valley.

The transport of radioactive mining residues causes tensions between Kyrgyzstan and Uzbekistan, due in part to unreliable information on actual water pollution, an inadequate exchange of information between countries, and lack of coordination on joint options for action.



Former uranium mining site of Mailuu-Suu (Kyrgyzstan).

In order to create the foundation for conflict prevention, “TRANSPOND” initially strives to develop uniform laboratory methods that are technologically feasible for both countries to determine the radioactive pollution (situation) of suspended particles in the cross-border catchment area of the Syr Darya. The project also aims to set up a uniform environmental information system that can be used by environmental authorities in both countries. The system will incorporate the results of water quality monitoring of transboundary rivers and other current data. A further

project aim is to develop a forecast model in coordination with both countries for propagating radioactive components in transboundary waters as well as instructions for the event of short-term, but very high discharge based on this model.

### Close coordination between countries

“TRANSPOND” aims to overcome existing hurdles with innovative approaches to achieving its goals. The very limited technical and financial capabilities of the radionuclide laboratories of both target countries have to be optimally exploited to develop laboratory procedures for determining relevant radionuclides in suspended matter.

Complex standard radiochemical processes, which require a high expenditure on equipment and sometimes expensive consumables, will be modified for this purpose. The obtained results reflect acceptable accuracy at significantly lower analysis costs and can be used by as many laboratories as possible in the two partner countries of Kyrgyzstan and Uzbekistan (sub-project of IAF-Radioökologie GmbH). To this end, gamma and alpha spectrometric methods are substituted by simple, low-level counters for radiochemical preparation available in the target countries. In addition, there is no use of reagents available only at high cost in the target countries or which require increased occupational safety expenses. The challenge of developing an environmental information system shared by Uzbekistan and Kyrgyzstan lies mainly in system architecture and user and access management for authorities in different countries. Therefore, technical arrangements must be supplemented by confidence-building measures and a constructive dialogue between the authorities concerned (sub-project of WISUTEC Umwelttechnik GmbH). Finally,

the project aims to coordinate quick and sufficiently reliable forecasting models and agree on environmental policy instructions for contamination risk abatement that are accepted in both target countries (sub-project of Magdeburg-Stendal University of Applied Sciences).

The measures aim to provide reliable information on radioactive pollution of the river system, improve communication between Uzbekistan and Kyrgyzstan and facilitate effective joint action in the event of a significant sudden discharge of radioactive material into the river system.



Dumps of the former uranium mining site Yangiabad (Uzbekistan).

In conclusion, “TRANSPOND” works to promote improved handling of the radioactive pollution in the Syr Darya river system as well as stronger political stability between Uzbekistan and Kyrgyzstan.

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