



WM'2012

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# Advancing Environmental Remediation and Decommissioning in the IAEA Member States

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# Barriers to Start ER and D&D Programs

- Lack of funding
- Lack of national policy
- Lack of technology, experience
- Lack of transportation and disposal systems
- Lack of regulatory and/or legislative framework
- Regional issues
- Lack of owner (or driver)
- Public resistance
- Conflicting interests
- Uncertainty, complexity or unknown risks

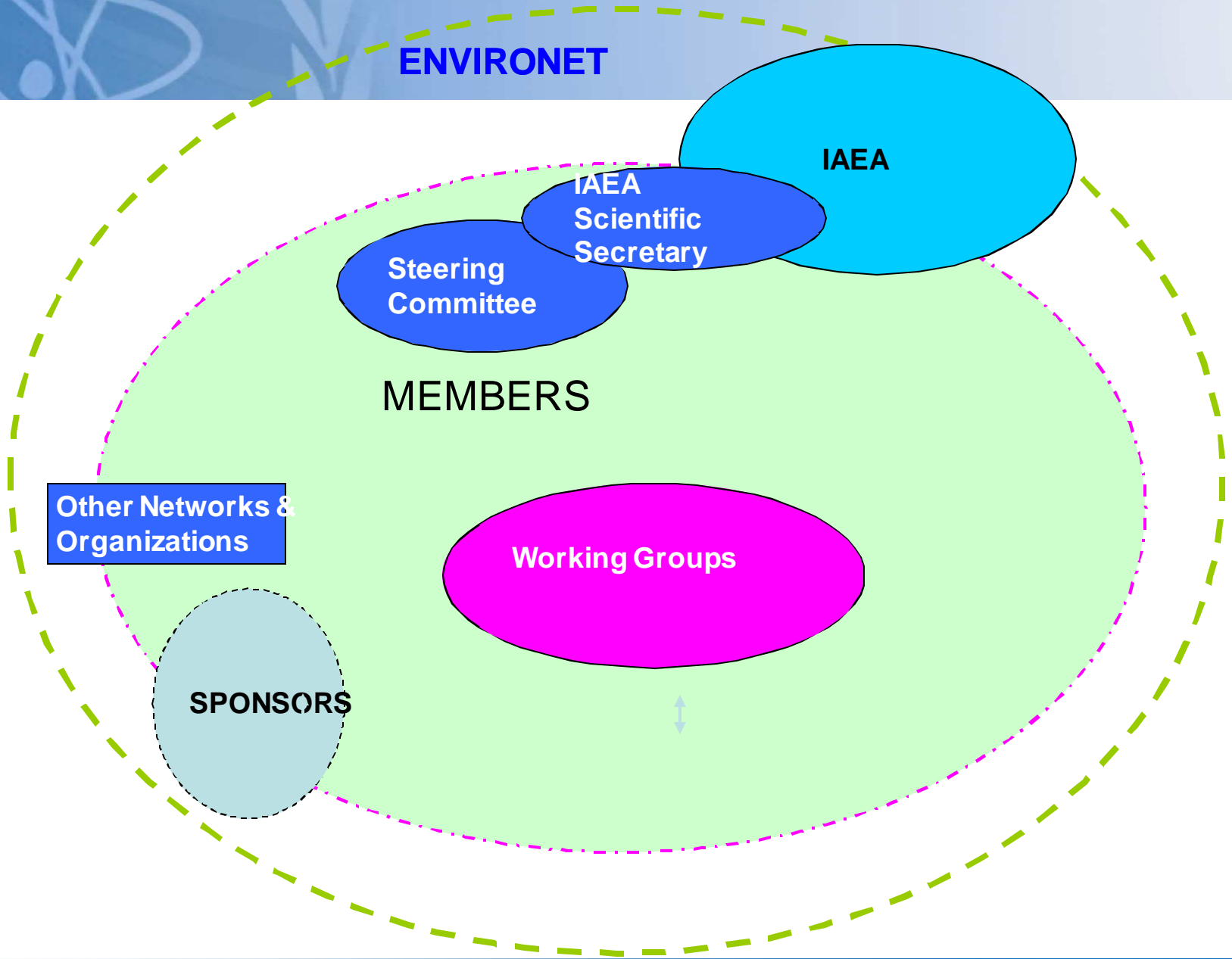
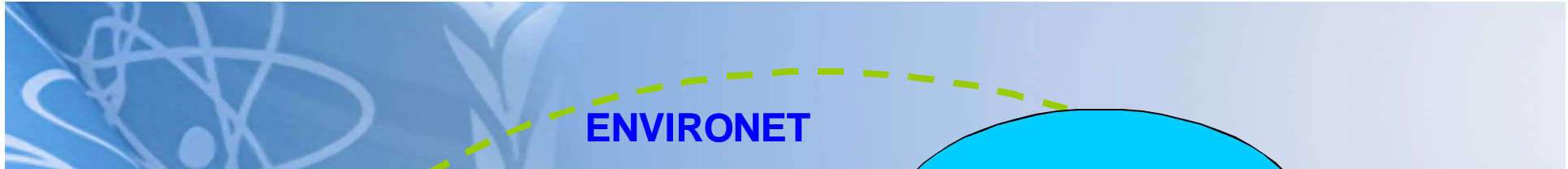
## How to respond?

- ENVIRONET – Network on Environmental Management and Remediation
- E-learning curriculum
- Mobile Unit for Site Characterization
- DRCS – Directory of Radioactively Contaminated Sites
- TC Projects
- Central Asia Initiative
- RSLs
- Side Event to the GC 2011 → Working Group on Constraints in the Implementation of ER and D&D projects



## *“ENVIRONET” ...*

An international network on Environmental Management Remediation to deal with existing radiologically contaminated sites and preventing the generation of new legacy sites



# Training Curriculum

Topic	Levels			
Level	0	1	2	3
<b>Learning Mode</b>	eLearning	Face-to-face	Face-to-face	eLearning and Face-to-face
<b>Duration</b>	6 hours	1 week	1 to 2 weeks per topic	Variable
<b>Target Audience</b>	Public or stakeholder groups	Regulators	Regulators	Senior specialists for targeted topics
	Regulators	Graduates from Level 0	Senior level engineers and scientists	
	Educational institutions	Project managers	Project managers	
	Junior engineers and scientists	Mid-level engineers and scientists	Technical specialist	
	Prospective Level 1 candidates	Construction superintendents	Field engineer	
	Executive management	Owner representative	Owner representative	
	Funding entities	Select stakeholder members		
	Technical specialists			

DIRECTORY OF RADIOACTIVELY CONTAMINATED SITES



 Home

 Access Data

 Search

 Submit Data

 Help

Directory of Radioactively Contaminated Sites

Welcome to the

**click to view site data from the WWW**

## Directory of Radioactively Contaminated Sites

The Directory of Radioactively Contaminated Sites is a service that is provided by the International Atomic Energy Agency to its Member States. The DRCS contains information on contaminated sites and pertinent remediation activities.

The information is provided by the Member States and is compiled and stored by the Agency. The information can be viewed freely.

To view data click on 'Access Data'.

To participate in the DRCS programme, please contact the [DRCS Programme Officer](#).

### Note to the users:

**The DRCS is a continually developing database on radioactively contaminated sites and on the efforts to remediate them.**


**Currently the initial data entering procedures undergo the initial testing procedure and, therefore, the database may not contain any accessible data.**

**Likewise, the help-function has not been enabled yet.**




# IAEA DRCS

 Home

 Access Data

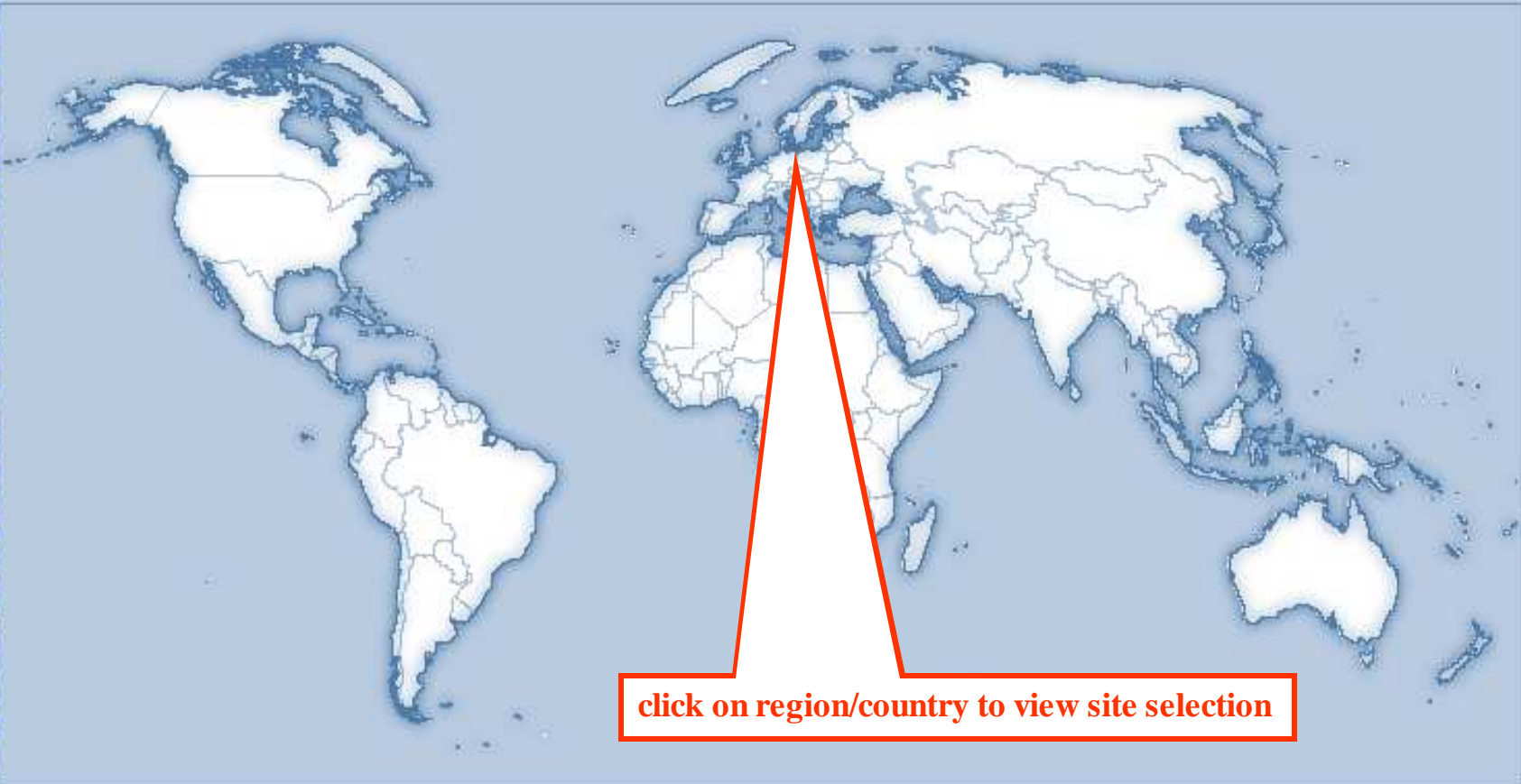
 Search

 Submit Data

 Help

Select Region:

Directory of Radioactively Contaminated Sites



**click on region/country to view site selection**





Submit Data : Main Menu |  Site Completed | Assigned to User: wefalck (1) | Save | Print

Site: **Kraton-E** | Country: **Russian Federation**

Directory of Radioactively Contaminated Sites

Main Data Categories	
100	<a href="#">Identification And Location Of The Site (Area)</a>
200	<a href="#">Legal / Institutional Responsibilities</a>
220	<a href="#">Ownership, Operation And Administration Responsibilities</a>
230	<a href="#">Administrative Responsibilities For The Site's Environmental Remediation</a>
240	<a href="#">Social &amp; Economic Aspects</a>
300	<a href="#">Site History</a>
410	<a href="#">Physical Geographical</a>
430	<a href="#">Geological And Hydrological Characteristics</a>
440	<a href="#">Climatological Characteristics</a>
450	<a href="#">Demographic Data</a>
460	<a href="#">Economic Data</a>
500	<a href="#">Type, Levels And Extent Of Contamination</a>
510	<a href="#">Radiological Contamination Level</a>
520	<a href="#">Contaminated Environmental Media Characterization</a>
540	<a href="#">Radioactive And Hazardous Waste Characterization</a>
600	<a href="#">Potential And Actual Hazards Issuing From The Site And Emergency Measures</a>
700	<a href="#">Restoration Strategies And Techniques</a>
900	<a href="#">Published Information On The Site</a>

click on data category to view details



click on menu button to return to data categories

Submit Data : Updating Previous Page Main Menu Next Page

Site: **Kraton-E** Country: **Russian Federation**

**410 PHYSICAL GEOGRAPHICAL CHARACTERISTICS**

412 Topographical map

If a map/document is available on Internet and can be accessed through HTTP or FTP connection, type its address in the field. To upload a map from your computer click on upload button and follow the instructions.

Upload

420 Land Cover

421 Sealed/built-up area (sq.km)

422 Prevailing land cover

423 Land-cover map

If a map/document is available on Internet and can be accessed through HTTP or FTP connection, type its address in the field. To upload a map from your computer click on upload button and follow the instructions.

Upload

Save Changes

Previous Page Main Menu Next Page

Directory of Radioactively Contaminated Sites



GLOSSARY

INFORMATION SUPPORT DATA BASE

Public Communication

Typical questions  
**FORUM**  
 answers contact

**URANIUM PRODUCTION LEGACY SITE REMEDIATION**

**Project design requirements**

- Regulatory and legal framework
- History and Site Characterization
- Radiation Safety criteria
- Environmental Quality Criteria
- Safety Assessment & EIA procedures
- Remediation Planning procedures  
End point, clearance criterias
- Prioritization & optimization procedure
- Monitoring and Surveillance Programs
- Project implementation
- LTSM (Long-term Site Management)
- Post closure & Institutional control
- Management for mixed rad&tox waste
- Best practice in Site icensing
- Data & Information management

**REFERENCES**

- IAEA DOCUMENTS
- ICRP EU
- National Regulatory documents
- REPORTS
- Training course materials
- Conferences and Meetings
- Publications
- Other

**BEST TECHNOLOGY**

- Geotechnical control
- Dams and Barriers
- Covers ( tailing, piles et sat.)
- Water treatment
- Erosion control
- Groundwater flux control
- Site decontamination
- Metal decontamination
- Construction removal
- Phyto-stabilization
- Reworking materials
- Driling facilities
- Machineries and transportation
- Tailing management
- Pile management
- ILS site remediation
- Mine closure

**TOOLS**

- Transport Model
- Dose Calculation
- Waste Management
- Risk Assessment
- Data Management
- Technology support
- Decision Making Tools
- Cost-Benefit Analyses
- U-Dose Calculator
- SATURN
- ECOLEGO
- AMBER
- RESRAD
- SAFRAN
- MANY OTHER

**CASE STUDIES**

- USA (UMTRCA)
- Canada
- Germany (WISMUT)
- CA ( KAZ, TAD, UZ, KIG)
- Russia
- Ukraine
- Brasil
- DIAMO
- Romunia
- France
- Australia

**Extra informational resources**

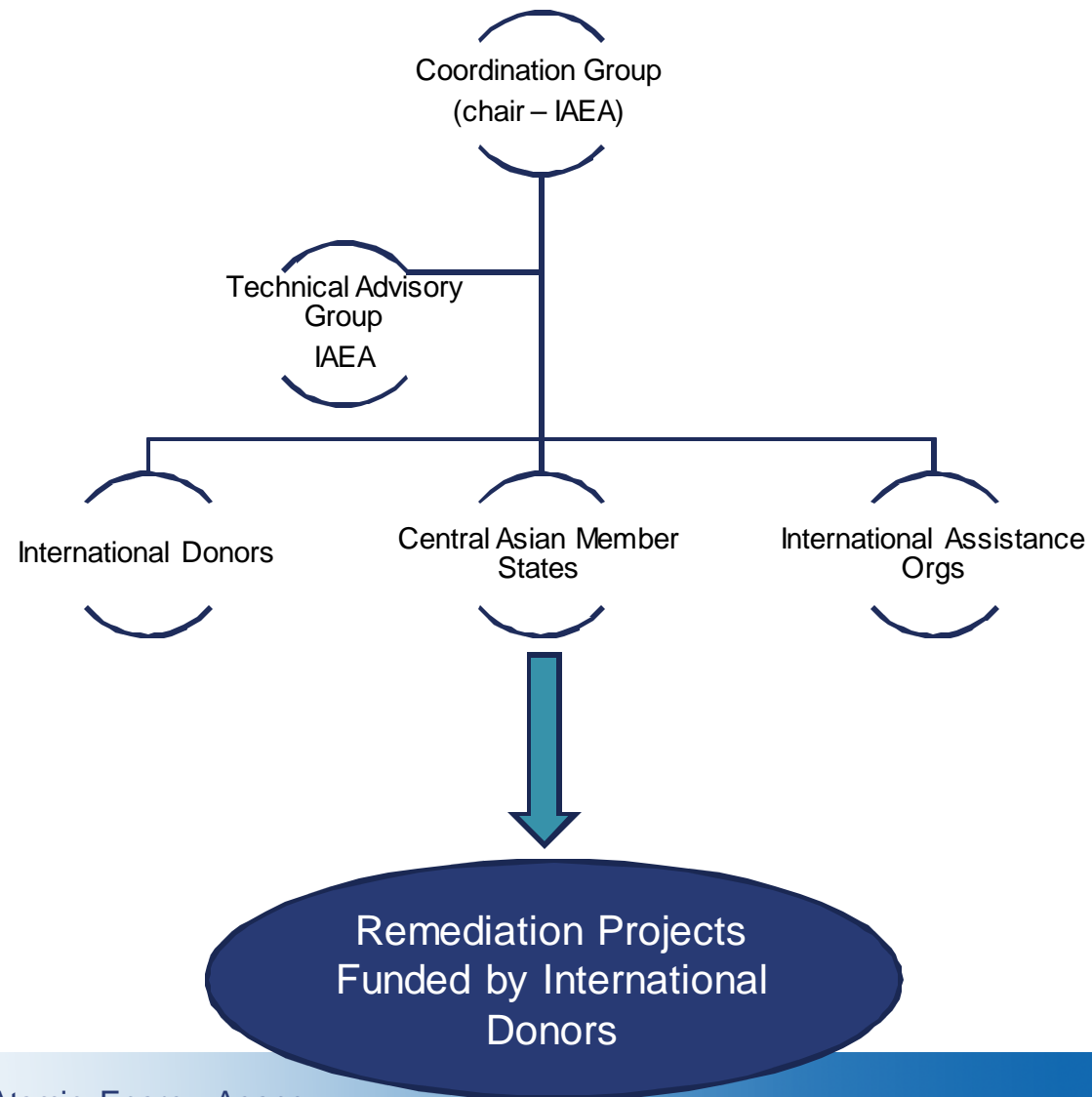
# On-going TC Projects

- Interregional (New): Promoting safe and efficient clean-up of radioactively contaminated facilities and sites
- Regional Asia & the Pacific : Developing Safe NORM Waste Disposal Technology and Long Term Repository Designs (ARASIA)
- Regional Europe:
  - Supporting Preparation for Remediation of Uranium Production Legacy Sites
  - Safe Management of Residues from Former Mining and Milling Activities in Central Asia
  - Supporting Environmental Remediation Programmes
  - Supporting Safe Management of Uranium Production Legacy Sites
  - Supporting the Return to Normal Radiological Environmental Conditions for the Territories Affected by the Chernobyl Accident
- Iraq: Decommissioning and Remediation of the Former Nuclear Facilities and Sites in Iraq
- Kazakhstan (New): Supporting the Transfer of Lands of the Former Semipalatinsk Nuclear Test Site for Economic Use
- Kyrgyzstan: Enhancing Radioecological Monitoring
- Kuwait: Monitoring and Assessing Naturally Occurring Radioactive Materials from the Oil Industry (Phase II)
- Libya: Managing Naturally Occurring Radioactive Materials in the Oil and Gas Industry
- Niger: New Strengthening National Capacity for Remediation of Uranium Mining Sites to Ensure Long-Term Safety and Public Health at the End of Operations
- Qatar (New): Monitoring and Assessing Naturally Occurring Radioactive Materials (NORM) from the Oil and Gas Industry
- Ukraine: Chernobyl NPP Units Decommissioning and Radioactive Waste Management at the Site Including Shelter
- Ukraine: Rendering Assistance in ChNPP Decommissioning and Safe Radioactive Waste Management
- Zambia: Assessing Radioactive Contamination of Surface, Groundwater and Other Resources in Mining Areas of the Southern, Copper belt and North Western Provinces

# Central Asian Coordination Group (CACG)

- Support the Central Asian member states to develop a portfolio of projects that will provide solutions for remediation of their legacy uranium production sites and give confidence to potential donors to invest in the region
- Through the CG, the IAEA Secretariat will provide a forum for the Central Asian member states and international partners doing work in the region
- The CG will avoid duplication of project work in Central Asia and assure that priorities are properly addressed and made known to the interested parties
- Technical advisory committee (TAC) will provide technical advice on the projects and function as a support committee for the CG

# Structure for Coordination Group



# International Forum on Regulatory Supervision of Legacy Sites (RSLS)

***To promote high standards of regulatory supervision for the management of legacy sites, in line with the IAEA Safety Standards and good international practices***

*To be achieved through:*

- collection and collation of information on nuclear legacy sites and experience of legacy supervision;
- exchange of information on nuclear legacy site restoration plans, and the role of regulatory supervision in planning activities;
- the generation of mutual understanding of how regulatory supervision can be made effective and efficient.



## Scope of Work of RSLS

- The scope of RSLS activities includes all types of nuclear legacy sites
- Provide support in development of effective and efficient regulatory processes, such as:
  - regulatory requirements and guidance development, licensing and authorisation,
  - inspection and compliance monitoring, and enforcement



# Constraints to implementing D&D and ER

- General Conference Side event to discuss constraints to implementing D&D and ER
- Aim: to understand why progress with D&D and ER in many countries is slow or negligible
- Main participants: UKTI (co-host); US; Russia; Japan; Kazakhstan; EBRD and European Commission
- Fundamental requirements for D&D and ER projects:
  - Legal and regulatory framework
  - Funding
  - Access to specialist resources (human and technological)

## Constraints to implementing D&D and ER

- Important considerations:
  - Institutional arrangements for liability and project management – need to ensure efficient use of scarce national resources
  - Waste disposal routes – need for integrated approaches to waste management
  - Technical expertise is concentrated in a small number of countries – need to create an environment that more easily allows technology and expertise to be transferred between countries



## Observations

- Additional efforts are needed to increase global rate of decommissioning and remediation (MSs, IAEA and other stakeholders)
- Considerable experience and data on decommissioning and remediation projects and future activities exists
- Increased sharing of MS experiences may facilitate greater implementation of decommissioning and remediation programs, with a focus on resolution of barriers
- These efforts would support implementation of Nuclear Safety Action Plan

## Constraints to Implementation of D&D and ER

- A need recognized to analyse and report on international good practices in implementation of decommissioning and remediation
- Recommended to follow a coordinated, multi-step approach:
  - Analyse global experience and needs
  - Plan and conduct a Technical Meeting (TM)
  - Work with MS to analyse TM results
  - Recommend specific opportunities and projects to advance specific decommissioning and remediation programs in MS

## Objectives of Future Effort

- Provide platform for coordination and assistance to MS to implement projects and resolve barriers
- Find shared problems between MSs to increase collaboration
- Find solutions that allow progress in decommissioning and remediation despite constraints or barriers (for example: lack of disposal solutions)
- Organize and leverage MSs expertise and experience
- Provide “practical” and “specific” assistance to MS
- Support Nuclear Safety Action Plan

## Resources and Timing

- Data mining of available IAEA resources – February/March
- Consultancy to plan survey - April
- Implementation of survey – May
- Announcement of effort at JC Review Meeting - May
- Receive survey results – July
- General Conference Side Event – September
  - Presentation on preliminary survey results and announcement on planned Technical Meeting
- Consultancy to plan Technical Meeting – September/October
  - IDN/Environet Annual Forum – November
- Technical Meeting – January/February 2013

## Conclusions

- Key requirement for ER and D&D: an appropriate legal and institutional framework including funding systems
- Arrangements for capturing and sharing experience from ongoing decommissioning projects are of crucial importance – important role of IDN and Environet
- Need to create an environment where technology and expertise developed in advanced programmes may more easily be applied in others
- May be beneficial to establish mechanisms to study good practice and to facilitate enhanced collaboration and sharing of expertise between programmes