The IAEA recognises 15 uranium deposit types most comprising multiple subtypes. Essentially an empirical system, the IAEA classification scheme categorises uranium deposits chiefly by host rock and/or structure. The uranium deposit models presented here were generated in the framework of a mineral systems approach in which mineral deposits are regarded as products of a series of critical processes required to: (i) mobilise ore components from their sources, (ii) transport, (iii) accumulate them in more concentrated form and (iv) preserve them through time. These process-based models have great predictive power and, thus, are suited to mineral potential and quantitative resource assessment studies concerned with the number, size and location of speculative uranium resources.

IAEA URANIUM DEPOSIT CLASSIFICATION SCHEME

Deposit Type		Deposit Subtype		Deposit Class		Examples
1	Intrusive	1.1	Anatectic (pegmatite–alaskite)			Rössing, Namibia; Bancroft district, Canada
		1.2	Plutonic	1.2.1	Quartz monzonite	Bingham Canyon, USA; Chuquicamata, Chile
				1.2.2	Peralkaline complex	Kvanefjeld, Greenland; Poços de Caldas, Brazil
				1.2.3	Carbonatite	Phalabora, South Africa; Catalão, Brazil
2	Granite-related	2.1	Endogranitic			La Crouzille district, France; Xiazhuang district, China
		2.2	Perigranitic			Příbram district, Czech Republic; Niederschlema, Germany
3	Polymetallic iron oxide breccia complex					Olympic Dam, Carrapateena, Australia
4	Volcanic-related	4.1	Stratabound			Dornod (No. 7 ore zone), Mongolia; Maureen, Australia
		4.2	Structurally controlled			Streltsov-Antei, Russian Federation; Kurišková, Slovakia
		4.3	Volcano-sedimentary			Anderson Mine, USA; Sierra Pintada district, Argentina
5	Metasomatite	5.1	Sodium (Na)-metasomatite	5.1.1	Granite derived	Kirovograd district, Ukraine; Lagoa Real, Brazil
				5.1.2	Metasediment-metavolcanic derived	Krivoy Rog district, Ukraine
		5.2	Potassium (K)-metasomatite			Elkon district, Russian Federation
		5.3	Skarn			Mary Kathleen, Australia; Tranomaro, Madagascar
6	Metamorphite	6.1	Stratabound			Forstau, Austria; Nuottijarvi, Finland
		6.2	Structurally controlled	6.2.1	Monometallic veins	Schwartzwalder, USA; Ace-Fay-Verna, Canada
				6.2.2	Polymetallic veins	Shinkolobwe, Democratic Republic of Congo
				6.2.3	Marble-hosted phosphate	Itataia, Brazil; Zaozernoye, Kazhakstan
7	Proterozoic unconformity	7.1	Unconformity-contact			Cigar Lake, Key Lake, McArthur River, Canada
		7.2	Basement-hosted			Jabiluka, Ranger, Australia; Eagle Point, Canada
		7.3	Stratiform structurally controlled			Lambapur, Chitrial, India
8	Collapse breccia pipe					Arizona Strip, USA

Deposit Type		Deposit Subtype		Deposit Class		Examples
9	Sandstone	9.1	Basal channel			Dalmatovskoye, Russian Federation; Beverley, Australia
		9.2	Tabular	9.2.1	Continental fluvial, uranium associated with intrinsic reductant	Arlit district, Niger
				9.2.2	Continental fluvial, uranium associated with extrinsic bitumen	Ambrosia Lake district (Grants region), USA
				9.2.3	Continental fluvial vanadium-uranium	Salt Wash member, USA
		9.3	Roll-front	9.3.1	Continental basin, uranium associated with intrinsic reductant	Wyoming basins, USA
				9.3.2	Continental to marginal marine, uranium associated with intrinsic reductant	Chu-Sarysu basin, Kazakhstan
				9.3.3	Marginal marine, uranium associated with extrinsic reductant	South Texas, USA
		9.4	Tectonic-lithologic			Lodève Basin, France; Franceville Basin, Gabon
		9.5	Mafic dykes/sills in sandstone			Westmoreland district, Australia; Matoush, Canada
10	Palaeo quartz-pebble conglomerate	10.1	Uranium-dominant			Elliot Lake district, Canada
		10.2	Gold-dominant			Witwatersrand Basin, South Africa
11	Surficial	11.1	Peat bog			Kamushanovskoye, Kyrgyzstan; Flodelle Creek, USA
		11.2	Fluvial valley			Yeelirrie, Australia; Langer Heinrich, Namibia
		11.3	Lacustrine-playa			Lake Maitland, Lake Way, Australia
		11.4	Pedogenic and fracture fill			Beslet, Bulgaria
		11.5	Placer			Kyzyl Ompul, Kyrgyzstan; Red River Valley, USA
12	Lignite-coal	12.1	Stratiform			Koldzhat, Kazakhstan; Williston Basin, USA
		12.2	Structurally controlled			Freital, Germany; Turakavak, Kyrgyzstan
13	Carbonate	13.1	Stratabound			Tumalappalle, India
		13.2	Cataclastic			Mailuu-Suu, Kyrgyzstan; Todilto district, USA
		13.3	Palaeokarst			Sanbaqi, China; Tyuya-Muyun, Kyrgyzstan
14	Phosphate	14.1	Organic phosphorite			Mangyshlak Peninsula, Kazakhstan; Ergeninsky region, Russian Federation
		14.2	Minerochemical phosphorite			Phosphoria Formation, USA
		14.3	Continental phosphate			Bakouma district, Central African Republic
15	Black shale	15.1	Stratiform			Ranstad, Sweden; Chattanooga Shale Formation, USA
		15.2	Structurally controlled			Ronneburg district, Germany; Dzhantuar, Uzbekistan

The figure below provides a summary of the model structure and content fields. For of ease of use, the models are summarised with respect to detail provided. It should be noted that for Subtypes, only the provinces for the Deposit Type are shown because a more detailed subdivision has not been undertaken.

Item		Comments
Deposit type name and number		Identifying information as summarised in Table 1
Descriptive model	Brief description	Brief description of key characteristics of the described deposit type
	Subtypes and classes	Relevant deposit subtypes and classes as summarised in Table 1
	Type examples	Significant global examples representative of the described deposit type
	Genetically associated deposit types	List of uranium deposit types, subtypes and classes that are genetically associated with the described type
	Principal commodities	List of the principal commodities associated with the described deposit type
	Grades and tonnages	Grade and contained U tonnage data from log data where amount of data is sufficient
	Number of deposits in UDEPO	Number of deposits of this type/subtype/class in the UDEPO database
	Selected Permissive Provinces	List of relevant IAEA uranium provinces (only subdivided for deposit types), based upon the permissive tract approach.
	Tectonic setting	List of tectonic setting(s) in which the described deposit type may form
	Typical geological age range	Information about the typical geological age range of the described deposit type
Mineral systems model	Source	– All critical geological processes required to mobilise the necessary ore components from their sources – Source processes are divided here into several constituent processes relating to provision/generation/mobilisation of: ▪ Energy to drive and sustain the mineral system ▪ An environment favourable for uranium deposition (ground preparation) ▪ Melts and/or fluids ▪ Ligands ▪ Metals ▪ Reductants, adsorbents and/or reactants
	Transport	– All critical geological processes required to transfer the ore components from source to trap ▪ Transport occurs exclusively via highly effective, permeable melt or fluid pathways that are available at the time the ore components are transportable
	Trap	– All critical geological processes required to form a suitable trap, or traps, along the transport pathway ▪ Traps are defined here as highly effective melt or fluid channels that can focus melt or fluid flow and accommodate significant amounts of metal ▪ Trap processes are divided here into two constituent processes related to the physical and chemical aspects of the trap
	Deposition	– All critical geological processes required to extract ore components from melts or fluids passing through the trap and depositing them
	Preservation	– All critical geological processes required to preserve the mineral system and associated mineral deposits through time
Key reference bibliography		List of references relevant to the type of mineral system