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<p>Presentation preference: Oral or Poster</p> <p>Major scientific thematic areas: TA7 - Waste Management and Decommissioning</p>	<p>Radioactive wastes in Portugal result mainly from the application of radioactive materials in medicine, research, industry and from U-ores mining and milling activities. Sealed and unsealed sources (including liquid effluents and NORM) classified as radioactive wastes have been collected, segregated, conditioned and stored in the Radioactive Waste Interim Storage Facility (RWISF) since the sixties. The Department of Radiological Protection and Nuclear Safety (DPRSN) of the Nuclear and Technological Institute (ITN) is responsible for the RWISF management, located nearby Lisbon (Sacavém). Despite recent improvements performed at RWISF, the 300 m<sup>3</sup> storage capacity will be soon used up if current average store-rate remains unaltered. Only in the last five years, about 700 requests to collect radioactive wastes were received at DPRSN and the number of conditioned sealed sources increased significantly for the same timeframe. Up to now, besides the 140 drums containing mostly <sup>60</sup>Co, <sup>137</sup>Cs, <sup>126</sup>Ra and <sup>241</sup>Am (incorporated in a cement matrix) that are stored at RWISF there are also 290 metallic drums containing compacted materials (such as gloves, papers, clothing and other contaminated items). Being aware of the tendency for radioactive waste production increase in Portugal and of the international rules and recommendations on disposal sites for this kind of wastes, it becomes clear that the Portuguese Radioactive Waste Interim Storage Facility must be updated.</p> <p>In this work, a first evaluation of suitable areas to host a new long-term radioactive waste storage facility was carried out using a Geographic Information System (GIS) base. Preference and exclusionary criteria were applied, keeping constant the map scale (1:1000000). After processing exclusionary criteria (protected lands, aquifer systems and active faults), remaining areas (polygons) were scored by overlaying the preference criteria (population density, maximum seismic intensity, and annual average precipitation). A composite score was determined for each polygon by summing the scores for all of the three preference criteria.</p> <p>Starting with an 80% cut-off of the maximum composite score, an area of 16049 km<sup>2</sup> was obtained (≈ 18% of the Portuguese mainland territory). In order to limit further more the calculated area, the results were re-analysed using a 90% cut-off, thus resulting a potential area of 8487 km<sup>2</sup> (≈ 10% of the Portuguese mainland territory).</p> <p>Work in progress will use this area as reference for site selection, criss-crossing appropriate criteria for scales ranging from 1:50000 to 1:25000.</p>