

**TARGETING THE RARE-EARTH ELEMENTS (REES) MINERAL DEPOSITS IN
KHYBER PAKHTUNKHWA: THE PRODUCTIVE IMPRINT OF PAKISTAN-CHINA
ECONOMIC CORRIDOR (CPEC)**

Muhammad Sajid

Department of Geology, University of Peshawar

mr.sajid@uop.edu.pk

Abstract

The production of REEs is dominated by China for number of years. The demand of these elements is increasing day by day due to their use in many modern instruments and devices including rechargeable batteries, catalytic converters, fluorescent lightings, cell phones etc. Due to wide range of applications, REEs are regarded as seeds for modern technologies. The applied as well as research sector organizations of developed countries are the major consumers of REEs as they increase the efficiency of solar cells, wind turbines and other renewable energy systems. These elements are primarily hosted in minerals like apatite, monazite, chevkinite which are found in alkaline rocks including alkali granites and carbonatites, in major. These rocks are distributed in different regions of Khyber Pakhtunkhwa (KP) in the northern portion of Pakistan and occur along, around 170km non-linear mountain belt, known as Peshawar Plain Alkaline Igneous Province (PPAIP), formed due to single geological event. The constituent rocks majorly include alkali granites, syenites, nepheline syenites, carbonatites and albitites, all known as the major producers for REE bearing deposits. The different locations in KP where these rocks are exposed include Tarbela, Ambela (Buner), Jambil (Swat), Warsak (Peshawar), Sillai Patti (Malakand) and Loe-Shilman (Khyber Agency).

Besides REEs, these rocks are also enriched in other metallic minerals including Zinc, Lead, Lithium and several gemstones. The enrichment of these minerals is reported in old literature but has not been adequately addressed due to lack of proper mining and analytical facilities in Pakistan. The CPEC provides a platform where a project incorporating exploration of these deposits in KP can be initiated using the expertise and advanced instrumentation of the world's largest producing country of REEs i.e. China. The organization of mineral exploration projects is essential to strengthen the mineral sector in Pakistan as it will open bunch of applied and research opportunities for the fresh graduates, scientists and engineers.