Background

Statkraft, and its subsidiaries SN Power and Aqua Imara, have experienced challenging rock behaviour during development of several projects in South America; East Asia and Africa. Many of these challenges were related to a variation of rock properties during construction and operation, compared to the estimated behaviour during planning. Such behaviour included swelling, disintegration, loss of strength and deformability properties, which is less familiar in the Norwegian environment.

MSc Project Task

This master thesis shall study material properties of various rock types from the actual project sites, to develop a database of parameters and give input to a methodology for rock testing of various rocks in future projects. The thesis will include:

• Brief review of the geological conditions of the case project(s)
• Review and discuss existing test methodologies for rock properties, including Ethylene Glycol test, swelling tests on intact/ crushed rock, cyclic tests, etc.
• Discuss existing data from undertaken testing with the relevant international testing facilities in Norway, Germany, Italy, Chile and Canada
• Sample and test specimen of the various rock types collected from the case project(s), including standard test suits (UCS, PLT, slake durability, etc.) and mineralogical (XRD test)
• Compile test data in a database
• Develop a flow chart for the test suited for different rock types