

## **Optimization of renewable energy storages (in collaboration with University of Dar Es Salaam, Tanzania)**

Supervisor: Johannes Jäschke (jaschke@ntnu.no)

Intermittent solar and wind energy need heat storage units in order to provide energy on a continuous basis. Energy storage can be in the form of electricity (electrical batteries) and heat (heat batteries). Energy can be provided as power (from generators) or as heat (solar collectors) and conversion between the two is possible both ways. Heat storage options include low temperature energy (typically ice), medium temperature energy (hot water) and energy for cooking (about 200 degrees).

Hybrid stand-alone systems then can have several energy sources and several storage options to serve diverse energy demands (heat and power) for the user during day and night. This scenario is subject to a modeling study, where a simplified model can be established for optimization purposes. Such a model can potentially be used for preparing guidelines on the energy management in a hybrid off-grid system.

The work relates to a solar energy storage system which is one of several joint research tasks between NTNU and University of Dar es Salaam (UDSM). Mobility support is provided through a NORPART project, so the students can get the **opportunity to join a group for a one month visiting period at UDSM** during the master thesis work.