

3.2. Advanced materials Research and development:

In Ethiopia where 80% of the population lives in rural areas, the major challenge confronting the country is the traditional mode of agricultural systems that are being practiced hitherto. Energy is also scarce and the community depends mostly on fire-woods and fossil fuels for cooking, heating, lighting and cottage industry. Hence, energy problem has contributed to food shortage and curtailed economic development. Environmental pollution is another formidable challenge that hampers the socio-economic development of our country. This is attributed mainly to population growth, lack of proper waste management systems and poor urban planning and other anthropogenic factors. To address these challenges, Ethiopia needs to build institutional excellence in the area of nanotechnology. Accordingly, we suggest the topic **fabrication of advanced materials (metal oxides/chalcogenides, metal organic frame works, conducting polymers, nanocomposites/organic-inorganic hybrids)** to the following applications to be considered for a call for proposal by the coming year:

- **Agricultural applications:** development of novel nano-fertilizers, enhancing and sustaining release of nutrients, controlled release of fertilizers, reduced leaching and fixation, enhancing plant germination and growth, post harvest technology and food processing, prolonging the post-harvest life of food;
- **Application to energy:** solar cell (substitute of silicon by cheaper nano-materials), improved materials for super capacitors, batteries;
- **Application to Environment and Monitoring:** depollution/remediation/detoxification via: photocatalysis, sorption/desorption, ion exchange, photo-disinfection; sensors