LIST OF PROJECTS

1. Compare thermal power plants in Turkey against the European and the world best practice. This comparison will include
   a. The environmental standards relevant to construction and operation of coal-fired power plants in Turkey and comparison to EU standards.
   b. The efficiencies of the Turkish coal-fired power plants and comparison to European and world practice.

2. Produce a concept design and a proposal for a nuclear-fueled power plant to feed electricity into the Turkish grid. This will include
   a. a study on its economic and environmental feasibility
   b. fuel supply and the waste fuel handling
   c. the size and the type of plant
   d. concept design of the plant site and the components (the land area, the nameplate information and the nominal costs for the major components like turbine, pumps, etc, selection of the suppliers when possible)
   e. general arrangement drawings for the plant, the containment and the piping

3. Develop a proposal for nuclear-free electricity generation for Turkey in the future. This proposal will have the following components:
   a. Why should one be against a nuclear component in Turkish electricity generation?
   b. What is the projected electricity demand for the next 30 years? How will this demand be satisfied?
   c. Specific information about the alternative energy scenarios and the cost implications for industrial and domestic consumers.

4. The TEAS is predicting a 40% deficit in the electricity generation by the year 2016. Against such an eventuality, design a small local power generation facility for Bogazici University. This power plant will provide power to the entire university. Your design will have to include the following:
   a. The type of plant
   b. The physical location and the land area required
   c. The relevant environmental standards that the plant will need to comply with
   d. The sizing of the components
   e. The general arrangement drawings
   f. Estimated capital investment cost and the cost of electricity production

5. Estimate the potentially-available energy in the Bosphorus strait currents. Design a power plant that will exploit this potential for electricity production. Your design will have to include
   a. The type of plant
   b. The location
   c. The relevant environmental standards that the plant will need to comply with and the impact on shipping through the strait
   d. The sizing of the components
   e. The general arrangement drawings
   f. Estimated capital investment cost and the cost of electricity production

6. Develop a proposal for combined desalination plant – wind farm to be located on the coast somewhere in Turkey. This proposal will have to include the concept
designs for the wind farm and the desalination plant and cost projections. The system needs to produce enough electricity and fresh water for a holiday village of 500 residences. Your design should include:
   a. The type of plant and the location
   b. Relevant environmental standards that the plant will need to comply with
   c. Sizing of the components
   d. General arrangement drawings
   e. Estimated capital investment cost and the cost of electricity and water production

7. Study the domestic and small-scale commercial energy consumption patterns in Istanbul. This study will include a survey of six domestic and six small commercial user sites; the people living and/or working in each site; the hours of usage; listing of the electricity-consuming items and their usage patterns; the variation of the electricity consumption through the day; the variation between sites; the actual electricity bills; recommendations for potential conservation.

8. Study the domestic and small-scale commercial energy consumption patterns in a village. This study will include a survey of a number domestic and small commercial user sites; the people living and/or working in each site; the hours of usage; listing of the electricity-consuming items and their usage patterns; the variation of the electricity consumption through the day; the variation between sites; the actual electricity bills; recommendations for potential conservation. *Note: This project requires the project team to visit the village at least once during the course of the project. Do not take this project on unless you have the resources to make this possible.*

9. Study the domestic and small-scale commercial petrol usage patterns in Istanbul. This study will include a survey of six domestic and six small commercial vehicles; the hours of driving; the mileage and the petrol consumption; the variation between users; the resulting greenhouse gas emissions; the actual fuel purchase bills; and recommendations for potential conservation.

10. The gasoline usage in Turkey is about 4.5 million m$^3$/year. You are asked to investigate the feasibility of replacing part or all of this with agriculturally produced ethanol. Consider two scenarios: (a) 10% ethanol; and (b) 100% ethanol. The feasibility study will have to include the crop(s) to be used; the land area required; and a cost/benefit analysis.

11. Corn is the main crop used in USA for production of ethanol. There have been concerns raised that the energy that goes into the production of corn itself in USA and then ethanol from corn is more than the energy that is available in the resultant product ethanol. Estimate the energy required to produce one kg of corn in a typical Turkish farm. This will have to include working the land, harvesting, transport, and the fertilizers. *Note: This project requires the project team to visit a corn farm at least once during the course of the project. Do not take this project on unless you have the resources to make this possible.*