BIOMASS

Your client is considering the acquisition of a small biomass fuelled energy from waste (EfW) plant in Prague. Your team have been commissioned to prepare a financial model forecasting the performance of the plant.

You have just come out of a meeting with your manager. She has a conference call with the client in 2 hours and needs numbers for what the scale of the revenue might be for over a five year period beginning on June 1st 2011, the projected operations commencement date. She would like to be able to give the client a monthly profile to determine what seasonal variation there might be.

During the meeting your manager handed you a file containing data obtained from the client.

Plant operation
On inception the plant has stores of 1,500 tonnes of biomass. The plant works at maximum capacity each month and processes 3 tonnes of waste per hour. The plant operates 24 hours per day, every day of the year.

The plant is expected to receive 2,300 tonnes of biomass per month from surrounding farms.

EFW PLANT REVENUES AND EXPENDITURE

Gate Fee revenue
The plant is paid an amount per tonne to receive the waste —the so called 'gate fee'.

Off-take revenue
The plant burns the biomass waste and generates electricity which it then sells to the national grid.

Waste treatment cost
Waste that is not burned has to be regularly treated so that it can be safely stored.

Benchmark figures for each revenue stream are detailed in Table 1 (below).

Table 1. BENCHMARK DATA	
Gate Fees	€17.30 per tonne
Waste Treatment	€4.10 per tonne
Calorific Value of Biomass	2.1 MW/h per tonne

(1 MW/h = one Megawatt hour = the amount of electricity generated in an hour)

REVENUES AND COSTS

Gate Fees
When farmers deliver their biomass waste to the plant for disposal, they have to pay the plant an amount per tonne of waste delivered.

Off-take revenue
As the waste is processed through the plant, it is burned and generates electricity. Different kinds of waste generate different amounts of electricity. This is called the calorific value and is a measure in mega-watt hours of how much electricity each tonne of waste produces.

The plant sells power to the national electricity grid. During the early months of the year temperatures in the area are rather chilly. Consequently the price of electricity will be higher in January and February than in the rest of the year.

The base price achieved is EUR 25/MWh each month. However, you should assume a price of EUR 45 / MWh in January and EUR 35 / MWh in February.

Waste treatment cost
Waste that is not burned is put into storage. It has to be treated to stop it from smelling and to prevent the release of toxins into the atmosphere. After treatment, the waste can still be burned and converted to electricity.

The waste left in storage at the end of each month is treated by a contractor, who charges a rate per tonne.

MODEL REQUIREMENTS

Because your team are all following the same standard in their modelling, you have been able to approach this assignment as a team modelling exercise. A colleague has already formatted a workbook for you. It contains all the timing assumptions and flags you will need to complete the task.

You are required to calculate the forecast revenue, net of waste treatment costs. All projections are to be made in real terms and total revenues to be expressed in EUR.

Please complete your calculations on a single ‘EfW’ sheet that can later be brought into the master model.