CwC activity #4: Central versus local production of electricity

One hundred years ago, all electricity was generated locally at point of use (local production). Subsequently large generating plant was designed and manufactured in certain locations that converted the energy from burning fossil fuels into electricity; this electricity was then transmitted to the consumers (central production).

With increasing installation of micro-generation of electricity in or near our homes, there will be increasing production locally again.

Aim
To consider the two modes of production, local or central, and consider how this could impact our lifestyle

Tasks
Central and local production is illustrated in the two diagrams. Working in small groups –

- classify in each diagram which are the producers, which are the consumers and which are both consumers and producers
- list the tasks that the electrical grid performs in each scenario
- identify the advantages to the consumers of producing their own energy
- identify the advantages to society of local production using renewable energy
- what would be the impact on our lifestyle if there was only local production linked by a grid, but no centralised production
- list the advantages of having local sources of heating as well as electricity

Notes for teachers
This activity enables students to link the past and the future when local production is equally likely to be the principal source of supply. What is very discursive and should stimulate much discussion is how this impacts on our lifestyle which differs so much from that of 100 years ago. The social consequences of increasing local production are quite profound as it will generate local employment both for installation of such systems and balancing local demand and supply. This should be of interest to students who are already thinking about job opportunities and the skills they will need.

Materials: map showing location of power stations and grid lines; statistics about the electrical power plant nearest to you and how the electricity has to be transmitted; where does the gas come from that is used to heat our homes; are any estimates available of the potential for generating renewable heating or electricity locally.

Key words: fossil fuels, renewable energy, central and local production, lifestyle, job opportunities

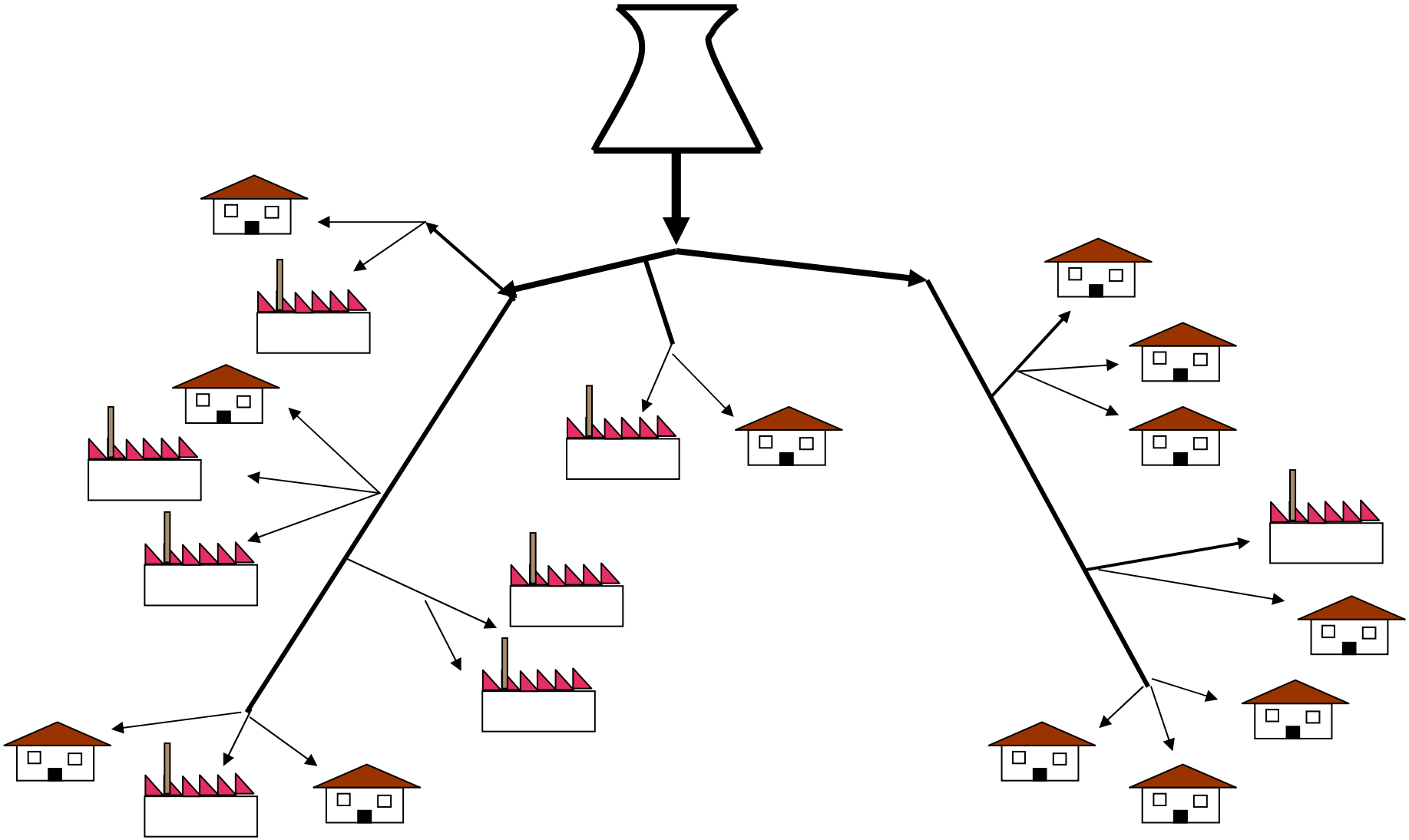
Skills: analysis, decision making

National Curriculum:science, technology, geography

Age range: 11+ key stage 3-4

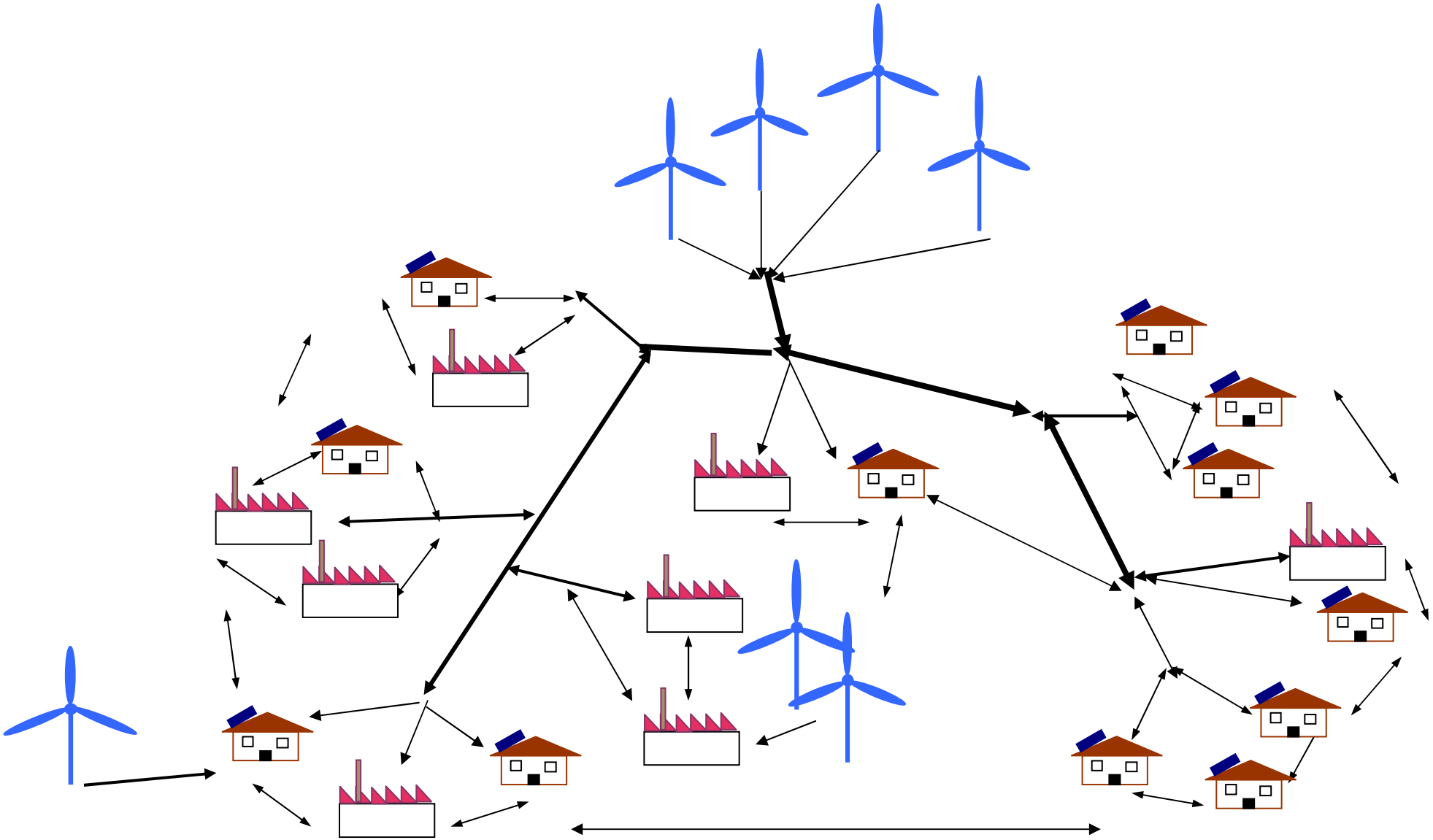
CENTRALISED ELECTRICAL ENERGY PRODUCTION

Where are the producer(s)? Where are the consumer(s)? Are there any groupings containing both producers and consumers?



LOCAL ELECTRICAL ENERGY PRODUCTION

Where are the producer(s)? Where are the consumer(s)? Are there any groupings containing both producers and consumers?

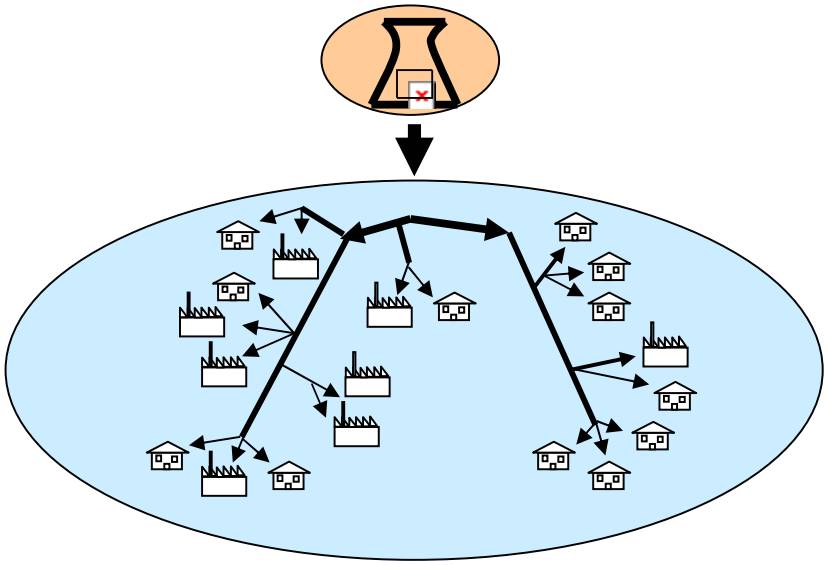


Worksheet: SOLUTIONS

Legend

ducers Consumers Producers and Consumers

Centralised Production



Local production