

Modified Enlarged 18pt

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Monday 23 May 2022 – Afternoon

A Level Economics

H460/01 Microeconomics

Stimulus Material Insert

Time allowed: 2 hours

plus your additional time allowance



Changing consumer trends in the UK?

Renewable energy sources, including wind, solar power and biomass, now provide more electricity to UK homes and businesses than fossil fuels, such as coal and gas. This was first achieved in the third quarter of 2019, see Fig. 1.

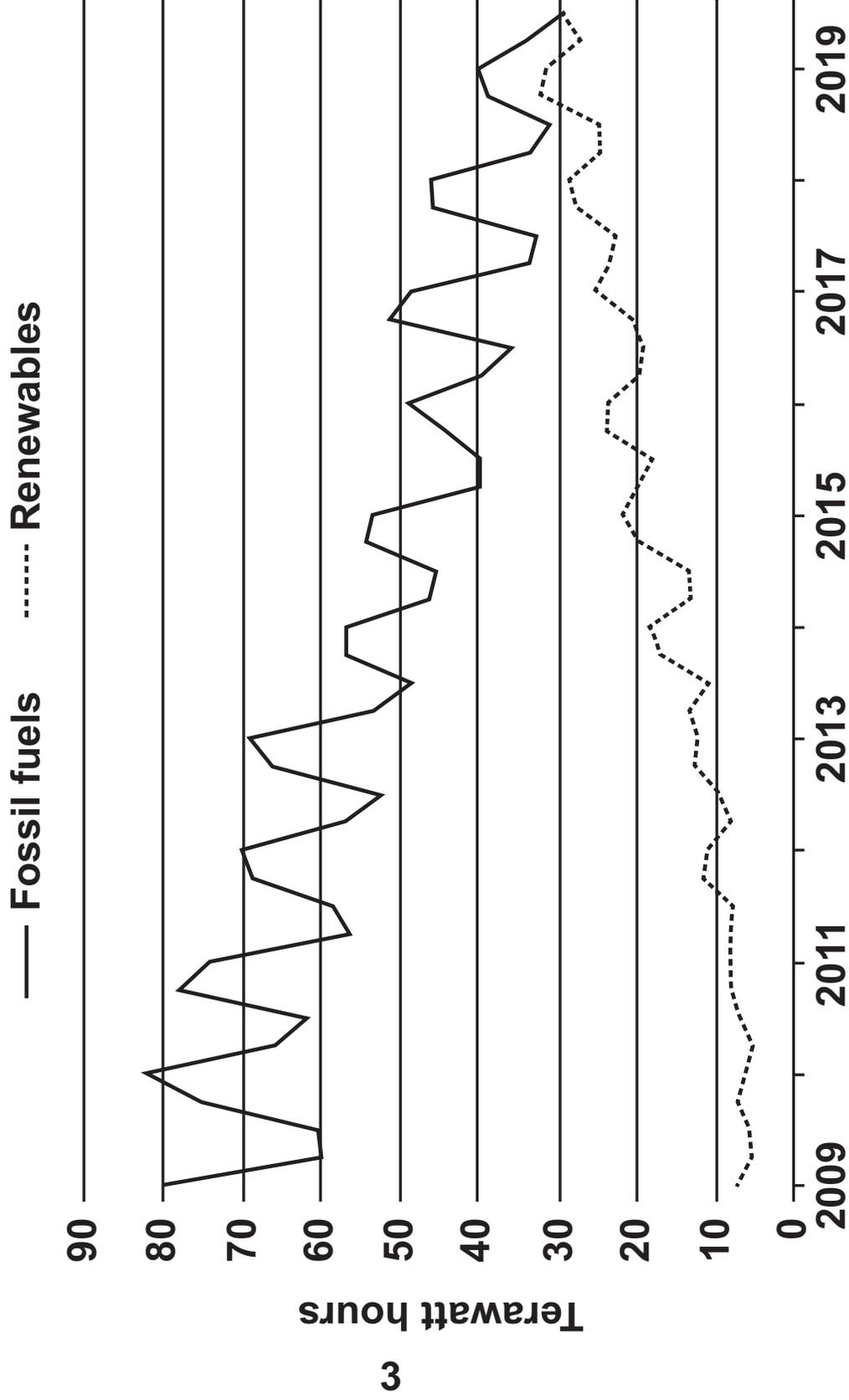
Coal is now used for less than 1% of electricity generation in the UK, with only four coal-powered plants remaining, ahead of a ban in 2025. Gas is the largest fossil fuel (38%) in the UK energy system. In terms of renewable energy sources, wind power is the UK's largest, making up 20% of the UK's electricity, followed by 12% from biomass and 6% from solar power. Nuclear power provides the remainder of the UK's electricity.

Kwasi Kwarteng, the government minister for energy and clean growth, said the renewables record is, "... yet another milestone on our path towards ending our contribution to climate change altogether by 2050. We've cut emissions by 40% while growing the economy by two thirds since 1990. Now, with more offshore wind projects on the way at record low prices we plan to go even further and faster in the years to come."

One of the largest firms in the UK is Shell, a multinational company. It provides 10% of the UK's oil and gas, employs about 6,000 people and serves over 5 million customers every week at more than 1,000 fuel service stations. It has the third largest number of fuel service stations, behind Tesco and BP.

FIG. 1

UK electricity generation per quarter (measured in Terawatt hours)



Source: CarbonBrief

30 However, Shell now faces the prospect of no more
petrol cars, lorries running on liquid gas, and solar or
wind powered homes and businesses. Even the fuel
service station is changing, with most now seen as a
35 retail outlet where people can do their food shopping,
pick up a parcel or drink a coffee. Managers at Shell
have taken all of these changes very seriously, as
they attempt to reinvent the company which is also
faced with new climate change targets. Some experts
40 have compared the changes to a new industrial
revolution.

Shell's managers have already taken some big
decisions. Shell has bought a company which makes
electric vehicle (EV) charging points for homes and
workplaces. It has also bought a supplier of electricity
45 and gas in the UK. Shell's managers see a time when
the business will supply all of an individual's energy
needs.

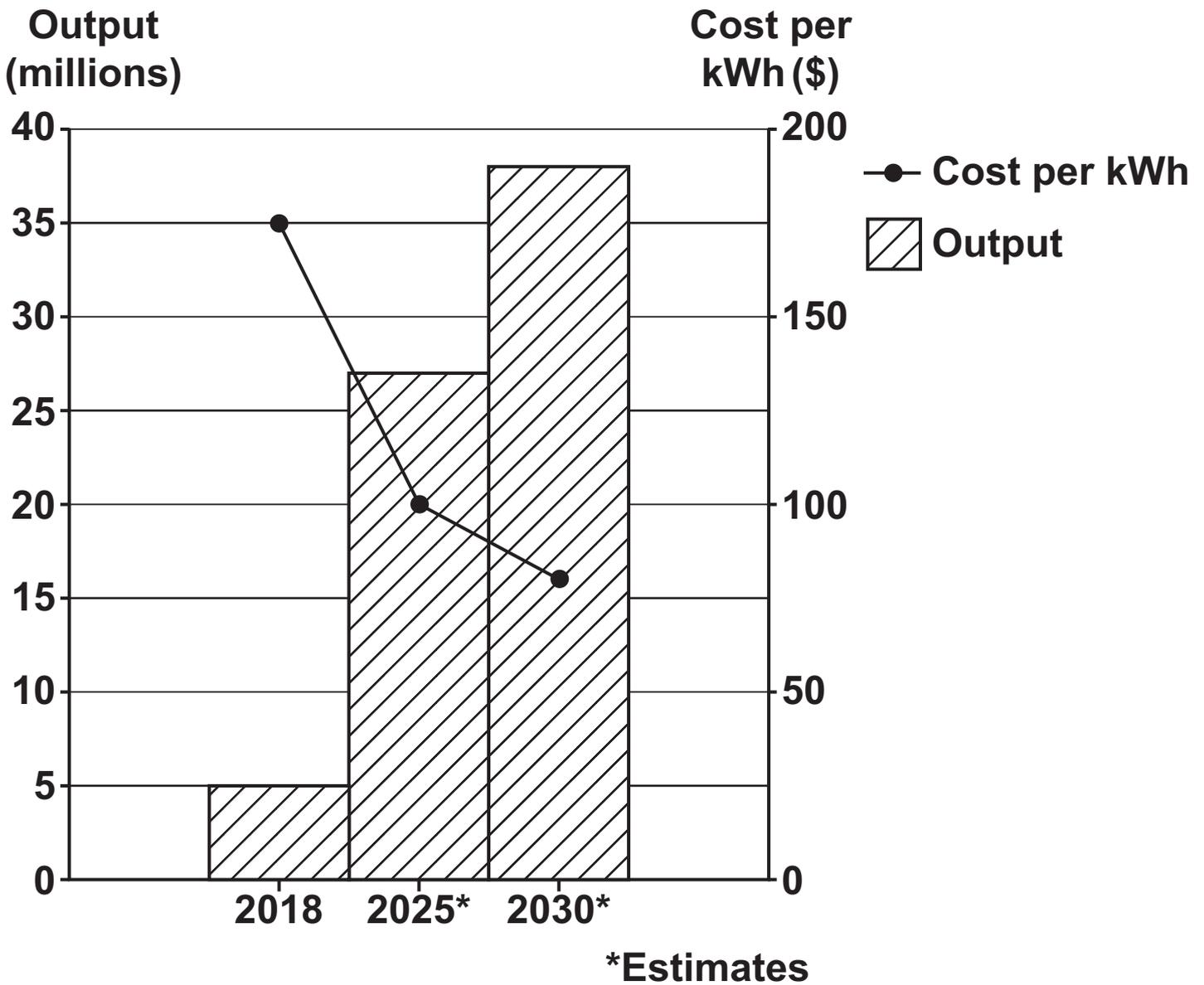
Shell is trying to take the lead in EV charging points
for battery-powered cars. At present, less than 2%
50 of cars on UK roads are battery-powered. However,
by 2040 a third of all vehicles could be electric. Shell
believes it is well placed to take advantage of this
growing market, as it has already launched a 'rapid
recharge service' which uses 100% renewable energy.
55 It announced the opening of its 50th EV charging
station in October 2019. Given its large number of fuel
service stations and its strong position in the market,
Shell plans to install hundreds more charging stations
around the UK.

- 60 The growth in EV charging stations will be necessary if the UK government's 'Road to Zero' strategy, to ban the sale of new petrol cars by 2030, is to be successful. As part of this strategy, more taxes may be imposed to change the marginal private cost of
- 65 using petrol cars, so that the price paid is closer to the marginal social cost inflicted on society. Once the price of battery-powered cars falls to a level closer to that of petrol cars, the use of a subsidy may also be beneficial.
- 70 One of the largest costs of running a petrol car is the petrol. The demand for petrol appears to be significantly price inelastic. A 2019 review of over 100 pieces of research about the price elasticity of demand for petrol found it to have a value of -0.26 in
- 75 the short run and -0.58 in the long run.

Another limit on the growth of battery-powered cars is the cost of producing the batteries. Many experts say that a battery-powered car cannot be price competitive until the cost of a battery falls below \$100 per kilowatt hour (kWh), see Fig. 2.

FIG. 2

Global car battery production



Source: Daily Telegraph

Some experts argue that the structure of this market will affect progress as, along with the energy and power generation markets, it is really a natural monopoly.

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