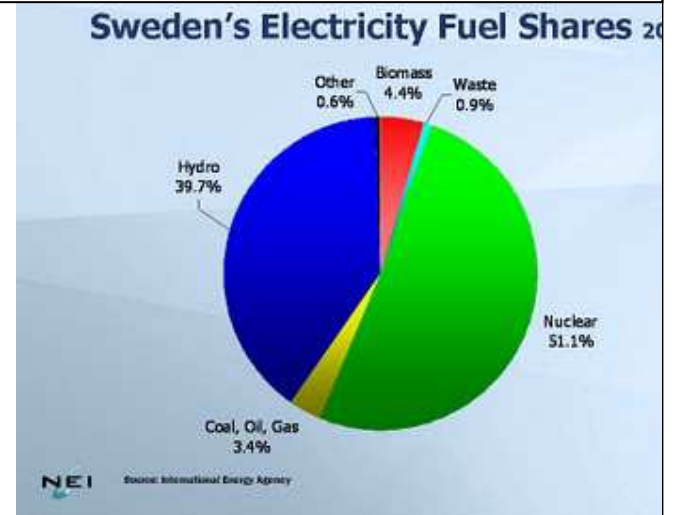
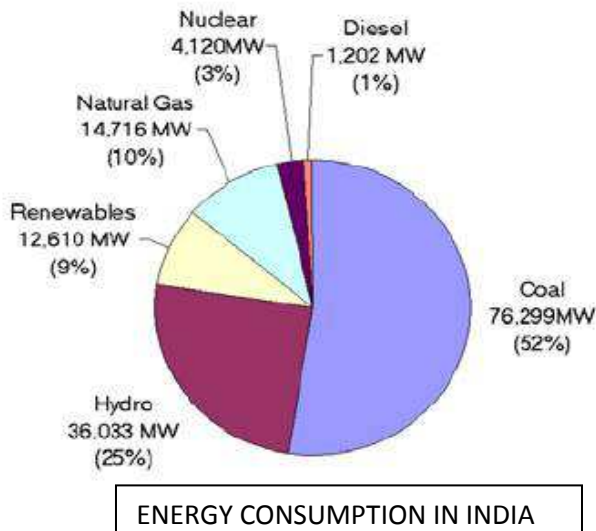


## ENERGY MIX

The energy mix for a country depends on :-

1. The resources available in the country in terms of coalfields, oil fields etc. This cuts down on more expensive imports
2. Some countries are better endowed with the possibilities for renewable energy; they sit near a plate boundary for geothermal energy or are in a very sunny or windy area, or have heavy rainfall and steep mountainous area that make HEP possible
3. A country may opt to develop its own resources rather than depend on the import of energy such as oil from the unstable Middle East, this gives a country greater energy security
4. Low levels of development may mean that LEDC countries still depend on traditional economies and fuel sources such as fuelwood. MEDC countries may have the technology in their industrial and post industrial societies to develop advanced energy production means such as nuclear and some of the renewables
5. Most countries have now signed up to agreements to limit carbon emissions and are trying to move to less polluting 'green' sources of energy

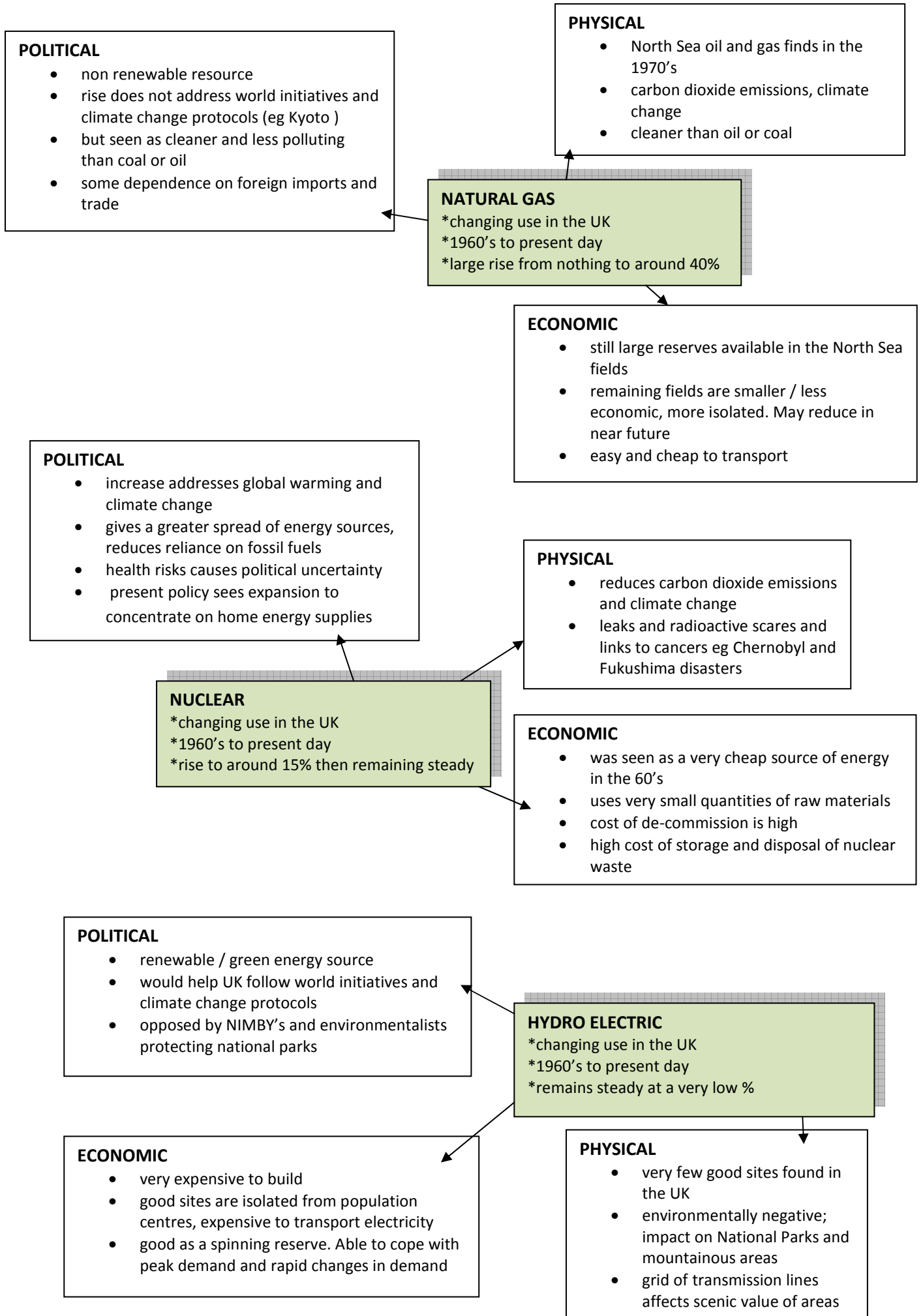


## INDIA

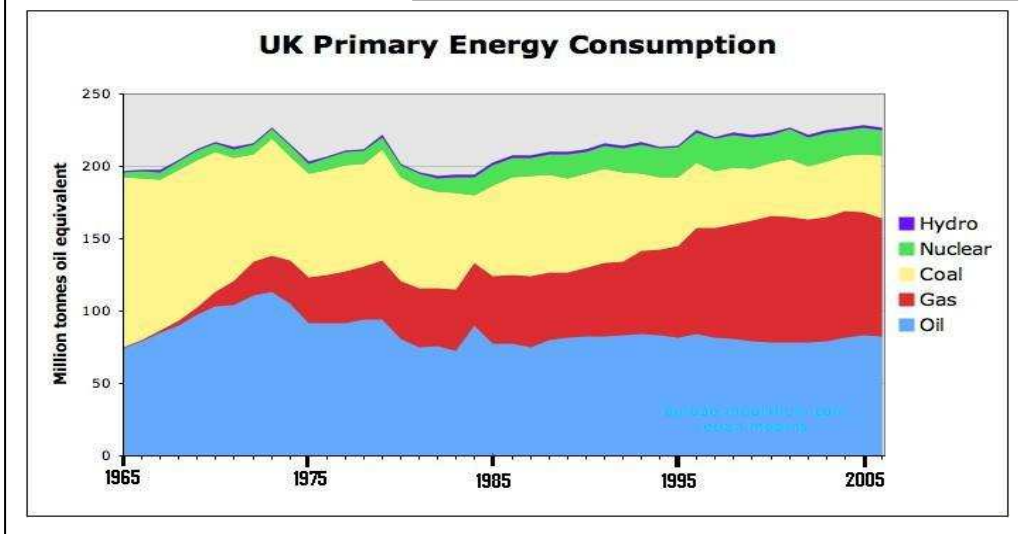
- 34% of India's total energy is supplied by coal, 22% by oil and 4% by gas. That makes 60% by fossil fuels which makes it very difficult for India's expanding economy to address its rising carbon emissions
- India has vast reserves of coal but very limited oil and gas and therefore depends heavily on imports from the Middle East
- Only a very small percentage of the energy needs come from nuclear, HEP and other renewables but India has plans to expand in these areas, particularly in the north where the steep slopes and heavy precipitation make HEP production possible
- In Urban areas industry, transport and homes are heavy users of imported oil, but in rural areas, which are responsible for consuming 60% of the energy, biomass (wood, crop residues, dung) are traditionally used for heating, cooking and lighting
- Unsustainable exploitation of woodlands has, however, led to soil degradation and soil erosion

## SWEDEN

- At present 46% of the electricity needs are generated by nuclear power stations, and 52% by HEP, leaving only 2% by fossil fuels (coal oil and gas)
- Sweden has few reserves of fossil fuels and relies on imports from Norway and Russia to cater for some of its heating and transport needs
- Sweden has a low carbon emissions policy and is promoting renewable such as biomass through the use of bio-fuels which now fulfils over 60% of district heating needs
- The 10 nuclear power plants are found in the populated south of the country and all are located on and cooled by lakes and rivers or are on the coast
- At present the Government intends to reduce Sweden's reliance on nuclear power due to worries about radiation and health problems, however, public opinion is still in favour of nuclear power, or at least it was in the pre-Fukushima period
- HEP is mostly produced in the highlands to the north, where physical conditions are favourable; higher rainfall, spring snow and ice melt, steep slopes and waterfalls, high energy and high discharge rivers and natural lakes for storage
- Both nuclear power and HEP give Sweden greater energy security and less reliance on imports



## CHANGING ENERGY CONSUMPTION IN THE UK



- ✚ COAL
- ✚ PETROLEUM / OIL
- ✚ NATURAL GAS
- ✚ NUCLEAR
- ✚ HEP

**POLITICAL**

- reduction addresses global warming and climate change
- seen to follow world initiatives and climate change protocols (eg kyoto )
- reduced strength of miners union
- gives a greater spread of energy sources / energy mix

**PHYSICAL**

- carbon dioxide emissions cause climate change
- environmentally negative; pollution, smoke, noise etc.

**COAL**  
 \*changing use in the UK  
 \*1960's to present day  
 \*large fall from over 50% to around 20%

**ECONOMIC**

- coal is difficult and expensive to mine
- easier surface / open cast coal is exhausted
- coal is expensive to transport

**POLITICAL**

- reduction addresses global warming and climate change
- seen to follow world initiatives and climate change protocols (eg kyoto )
- reduces dependence on imports especially from politically unstable parts of the world like the middle east

**OIL / PETROLEUM**  
 \*changing use in the uk  
 \*1960's to present day  
 \*rise to 50% by the 70's then slight fall to 40%

**PHYSICAL**

- north sea oil finds in the 1970's
- carbon dioxide emissions, climate change
- pipeline leaks, environmental damage

**ECONOMIC**

- easier cheaper oil and large fields are exhausted
- remaining fields are smaller / less economic, more isolated
- oil is easier and cheaper to transport than coal

geographyjohn

## GEOGRAPHY

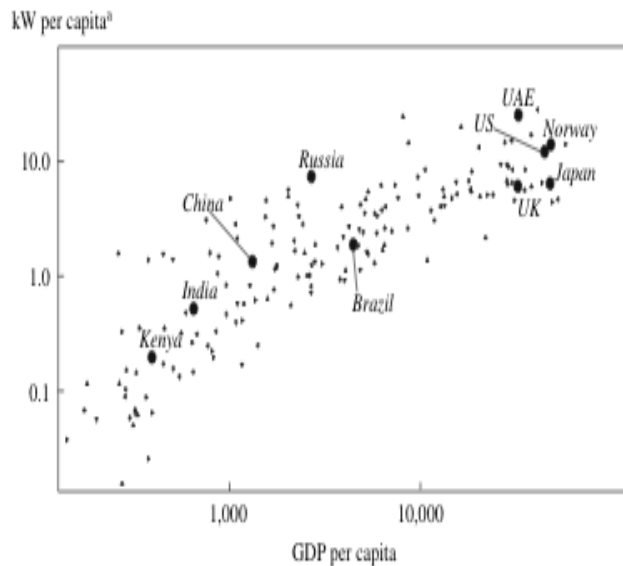
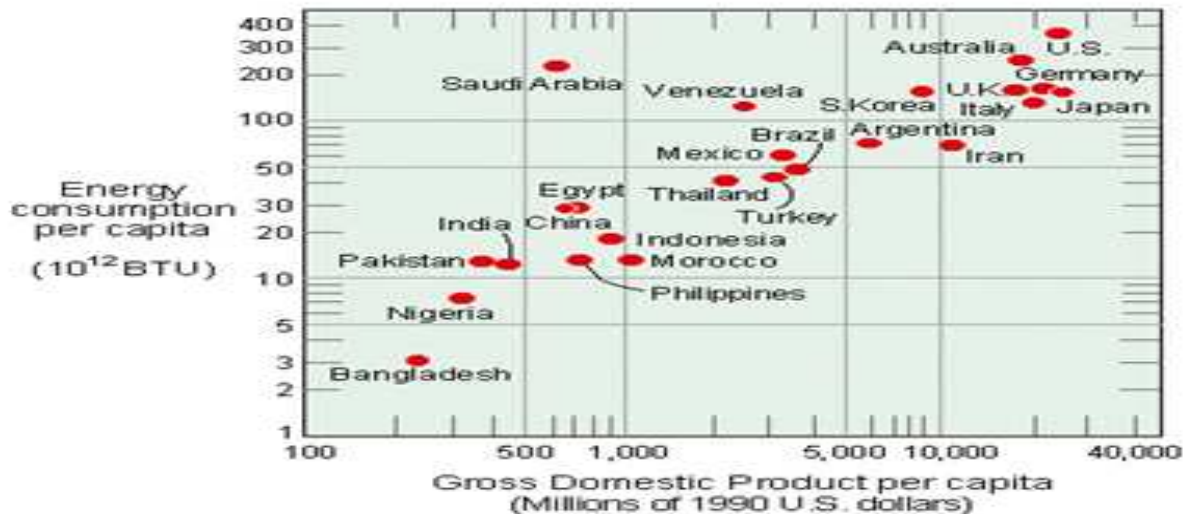
### CASE STUDY REVISION BOOKLET

#### THE ENERGY MIX OF A COUNTRY : LEVELS OF DEVELOPMENT AND ENERGY USE

INDIA

SWEDEN

UK



The more developed a country is the more energy it uses. This is a positive relationship and works well for most countries

These two graphs show levels of development measured in Gross Domestic Product per capita, which is a measure of all the wealth generated by a country in a given year divided by the population of that country to take the differing sizes of countries into account

Energy is shown as kW per capita which is the Kilowatts produced per person and BTU which stands for British Thermal Unit a more traditional unit of energy

#### Developed countries use more energy because :-

- They have a greater level of urbanisation and people living in towns and cities use more energy
- They have a greater level of industrialisation using energy in manufacturing industries
- They have a more mechanised and intensive system of agriculture
- They have a larger service sector, consuming more energy in offices, schools, hospitals etc
- They have systems of transport, road, rail, air that use a great deal more oil
- Domestically their homes have more energy using facilities and appliances, central heating, aircon. Etc

#### Some countries don't follow this pattern because :-

- They have large reserves of energy resources such as oil which makes it very cheap to use, see Saudi Arabia, Venezuela and UAE on the above graphs
- Some large countries like Russia and Canada use large amounts of energy on transport and have extreme climates that require large energy inputs in winter for heating