Write your name here

Surname	Other names

Centre Number	Candidate Number

Edexcel GCE

Geography

Advanced
Unit 3: Contested Planet

Friday 7 June 2013 – Afternoon
Time: 2 hours 30 minutes

Paper Reference
6GE03/01

You must have:
Resource Booklet (enclosed)

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer TWO questions in Section A and ALL parts of Section B.
- Answer the questions in the spaces provided – *there may be more space than you need.*

Information

- The total mark for this paper is 90.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*
- The quality of your written communication will be assessed in ALL your responses – *you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Spend approximately 80 minutes on Section A and 70 minutes on Section B.
- Check your answers if you have time at the end.

Turn over ▶

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P 4 1 3 6 2 A 0 1 3 2

PEARSON

SECTION A

Answer TWO questions in this section.

You are reminded of the need to use examples to support your arguments.

You are advised to spend approximately 80 minutes on Section A.

Energy Security

1 Study Figure 1.

(a) Using Figure 1, explain why, as countries develop economically, they move through the energy transition.

(10)

(b) To what extent are domestic energy resources important in determining the energy security of countries?

(15)

(Total for Question 1 = 25 marks)

Water Conflicts

2 Study Figure 2.

(a) Using Figure 2 and your own knowledge, suggest the physical and human factors that might help to explain the global pattern of water stress.

(10)

(b) Using named examples, assess the advantages and disadvantages of contrasting technologies to secure water supplies in **developing** countries.

(15)

(Total for Question 2 = 25 marks)

Biodiversity under Threat

3 Study Figure 3.

(a) Using Figure 3, explain how the three threats shown can affect physical processes within ecosystems.

(10)

(b) To what extent are local, small scale conservation schemes likely to protect biodiversity more successfully than global initiatives?

(15)

(Total for Question 3 = 25 marks)

Bridging the Development Gap

4 Study Figure 4.

(a) Using Figure 4 and your own knowledge, explain how trade patterns influence the global development gap.

(10)

(b) Using named examples, evaluate the view that migration to megacities is the best solution to rural poverty in the developing world.

(15)

(Total for Question 4 = 25 marks)

The Technological Fix?

5 Study Figure 5.

(a) Using Figure 5, explain the advantages and disadvantages to **people** and the **environment** of the different types of cooking technology.

(10)

(b) Using named examples, assess the extent to which technological innovation may have **unforeseen** social, environmental and economic costs.

(15)

(Total for Question 5 = 25 marks)

Put a cross in the box indicating the first question you have chosen to answer ☒.
If you change your mind, put a line through the box ☒
and then put a cross in another box ☒.
You will be asked to indicate your second question choice on page 11.

Chosen Question Number:

Question 1 ☒ **Question 2** ☒

Question 3 ☒ **Question 4** ☒

Question 5 ☒

(Total for Question = 25 marks)

Put a cross in the box indicating the second question you have chosen to answer ☒.
If you change your mind, put a line through the box ☒
and then put a cross in another box ☒.

Chosen Question Number:

Question 1 ☒ **Question 2** ☒

Question 3 ☒ **Question 4** ☒

Question 5 ☒

(Total for Question = 25 marks)

TOTAL FOR SECTION A = 50 MARKS

SECTION B

Answer ALL parts of this section, referring to the advance information you have been asked to study.

You are reminded of the need to use examples from any part of your GCE Geography course to support your answers.

You are advised to spend approximately 70 minutes on Section B.

Superpower Geographies

6 (a) Explain why there are, and have been, tensions between superpowers and other countries in East Asia.

(14)

(b) Assess the extent to which each of the four East Asian countries named in Figure 2 have the characteristics of superpowers.

(14)

(c) To what extent are trends in population and resource consumption in China and Japan sustainable?

(12)

(Total for Question 6 = 40 marks)

(Total for Question 6 = 40 marks)

TOTAL FOR SECTION B = 40 MARKS
TOTAL FOR PAPER = 90 MARKS

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RESOURCE BOOKLET

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Do not return the Resource Booklet with the question paper.

Turn over ▶

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PEARSON

SECTION A

The following resources relate to Questions 1–5.

Figure 1 A model of the energy transition

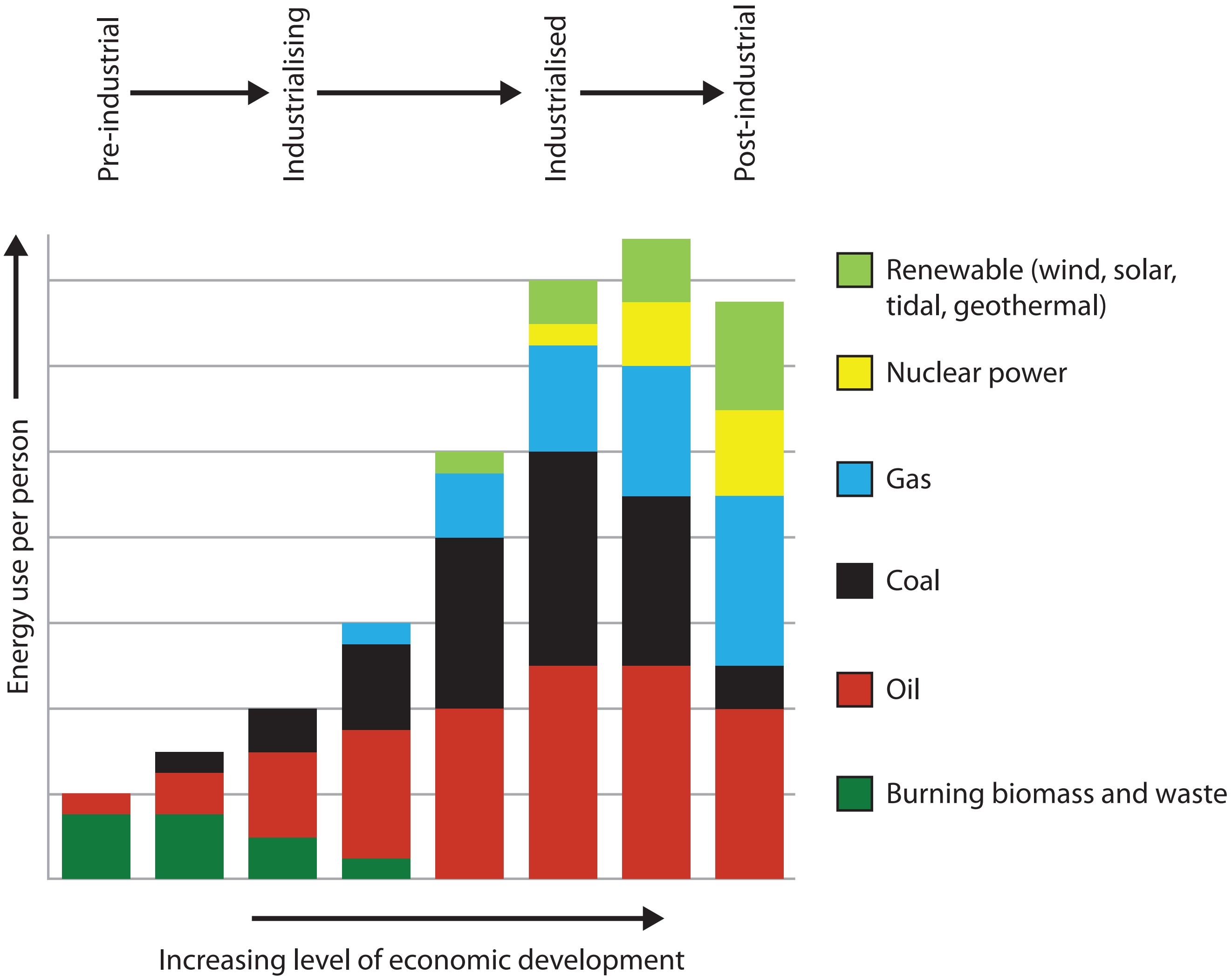
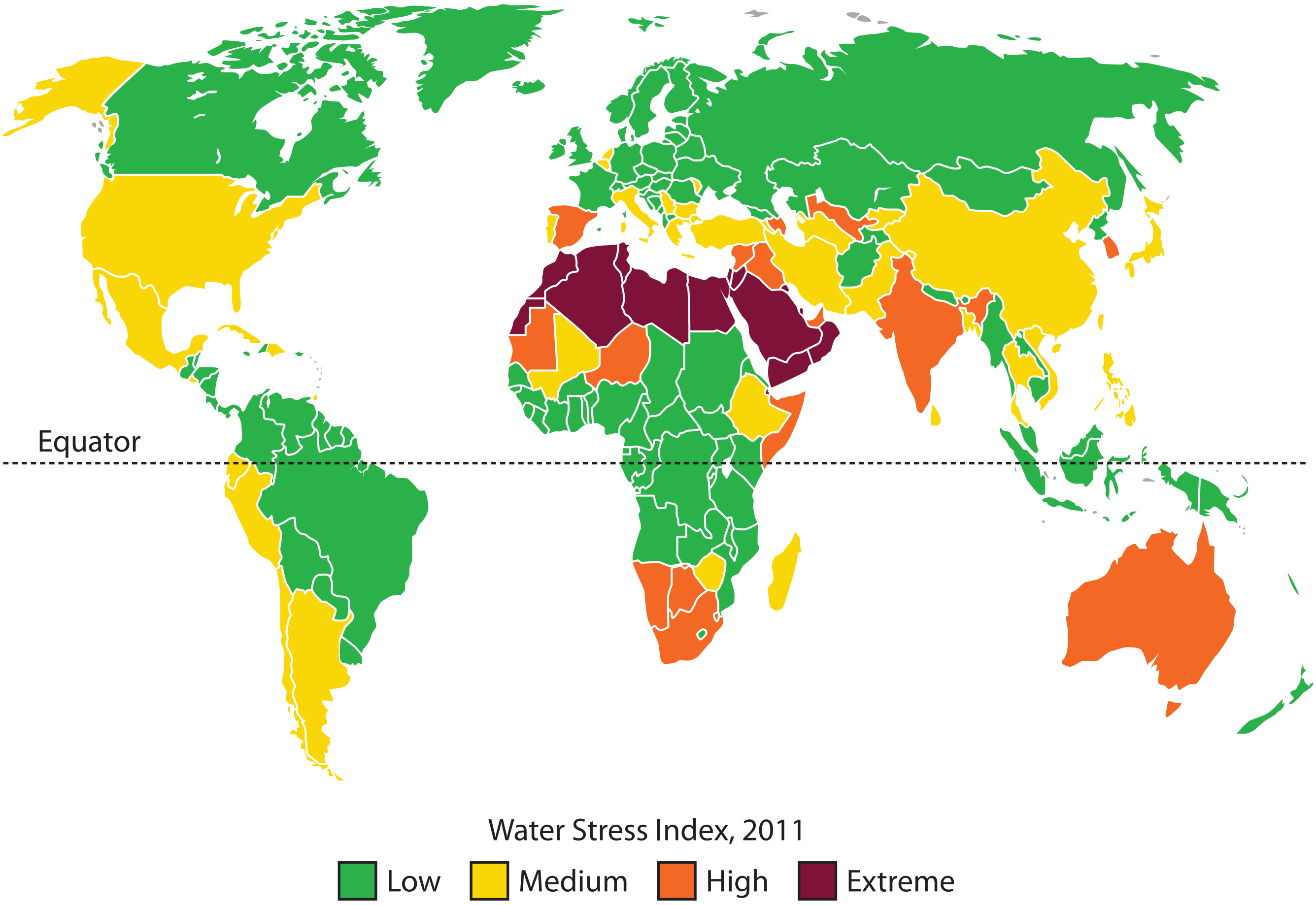


Figure 2 The water stress index, 2011



The water stress index is calculated as the ratio of total water demand (domestic, industrial and agricultural) to supplies from renewable sources (streams, rivers and shallow groundwater)

(Source: adapted from Maplecroft, 2011)

Figure 3 **Threats to ecosystem processes**

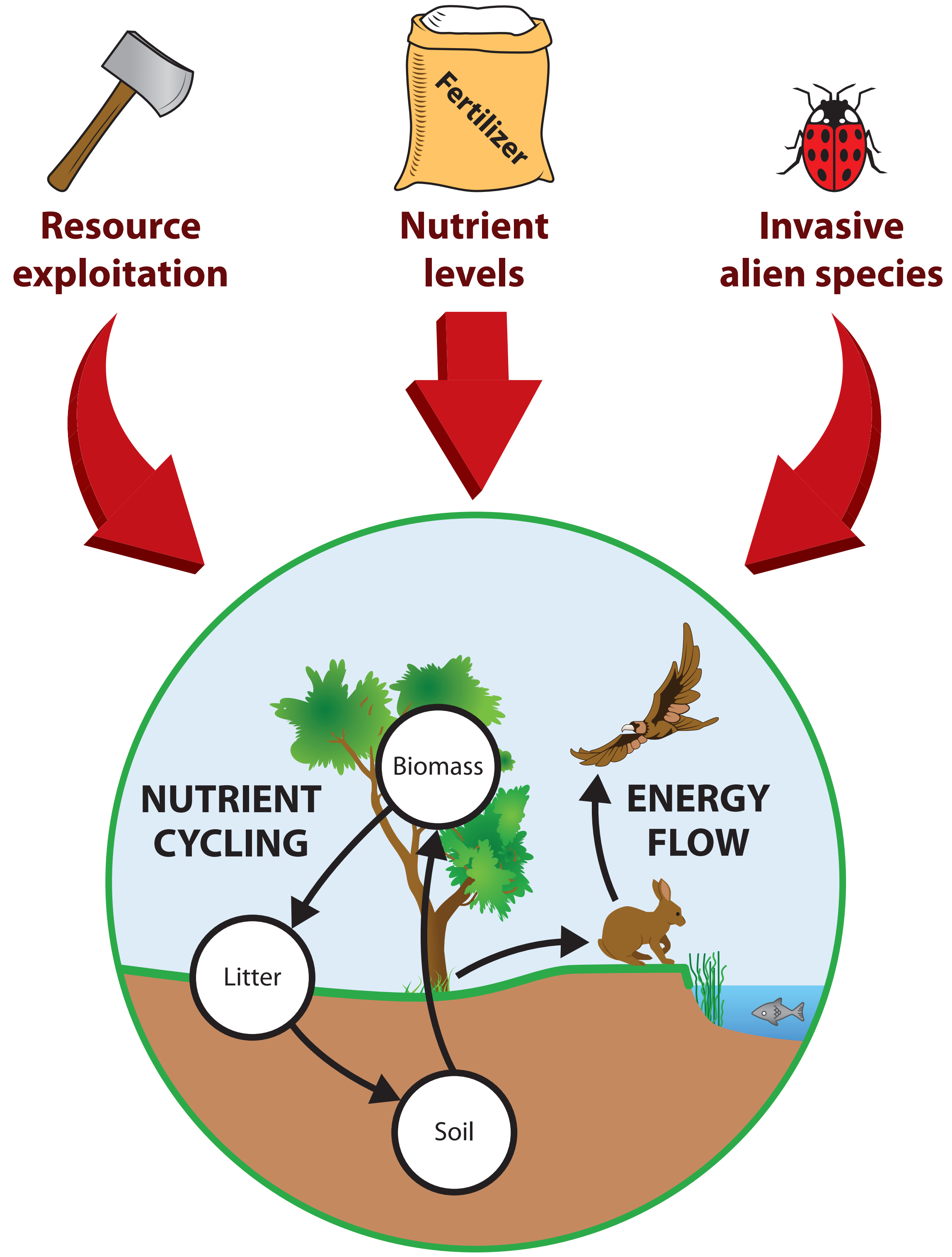
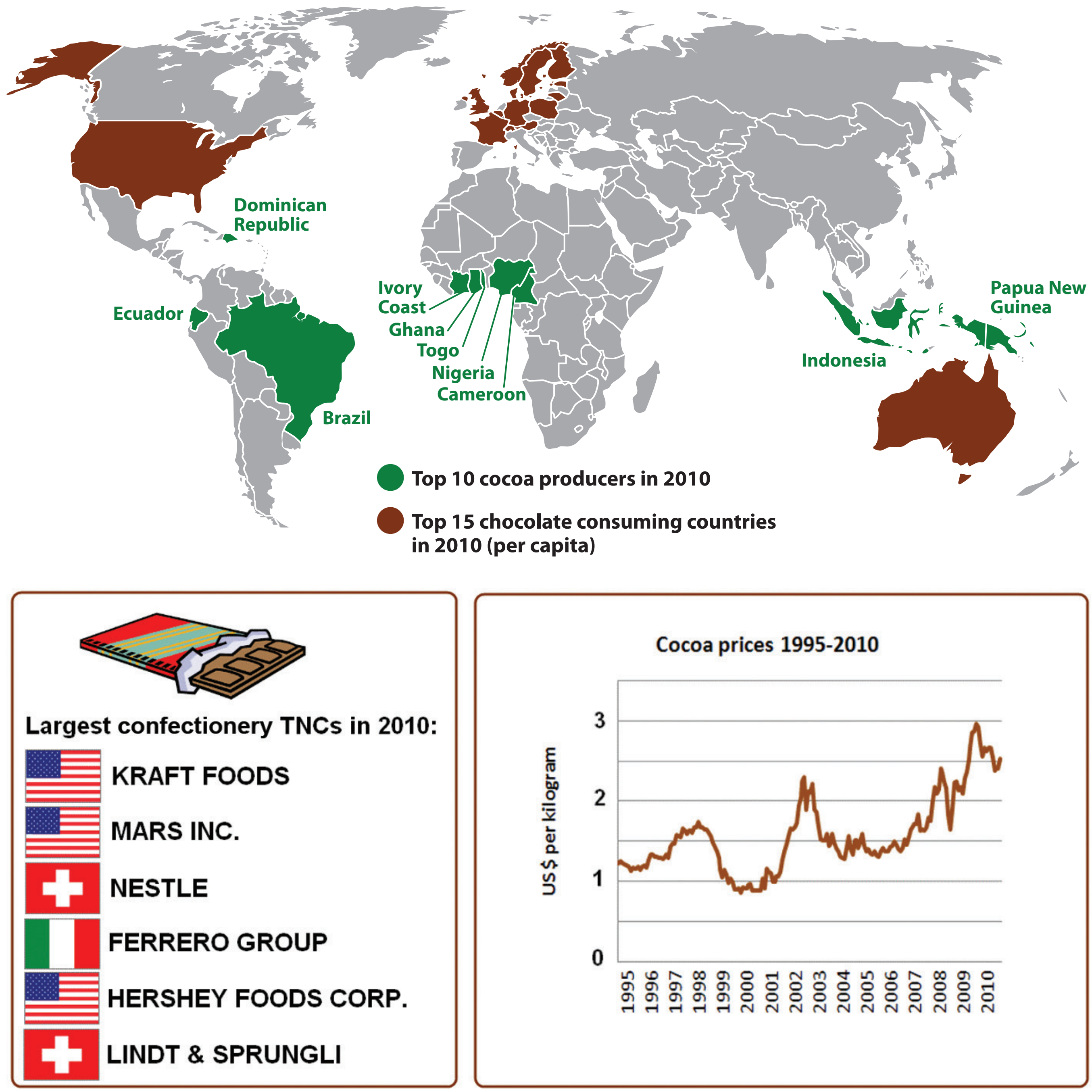


Figure 4 The geography of cocoa and chocolate



Largest confectionery TNCs in 2010:

- KRAFT FOODS
- MARS INC.
- NESTLE
- FERRERO GROUP
- HERSHEY FOODS CORP.
- LINDT & SPRUNGLI

Figure 5 Comparing cooking technologies for the developing world

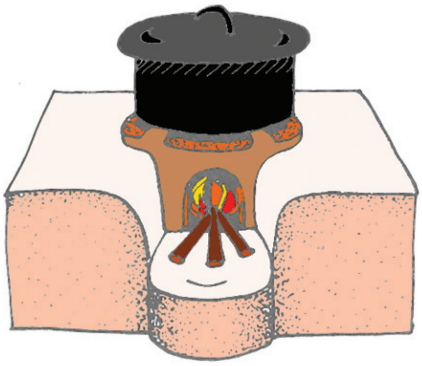
The problem:

Over 2 billion people rely on wood, charcoal, dung and other biomass for cooking fuel.

Their cooking fires and basic stoves are a major health risk.

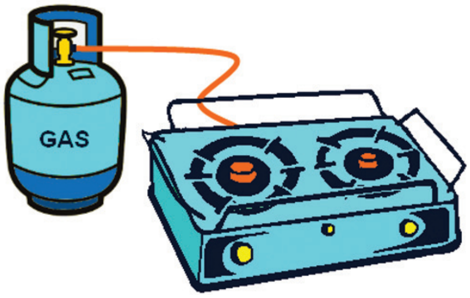
The solution?

Upesi stoves



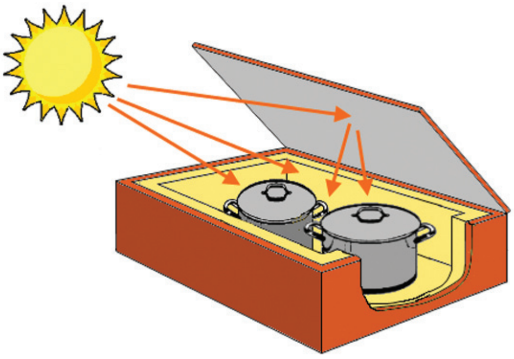
- Made using local labour and materials in Kenya.
- Biomass fuel, e.g. charcoal, fuel wood or dung.
- Some reduction in smoke and lower fuel use compared to open fires.

Gas stoves



- Bottled propane or butane gas.
- Stoves manufactured in the UK and China.
- Gas bottles need to be purchased regularly.
- Smokeless and efficient.

Solar stoves



- Insulated wooden box with reflective lid.
- Uses sun's energy to cook food slowly.
- Requires high levels of bright, direct sunshine.

SECTION B

The following resources relate to Question 6.

SUPERPOWER GEOGRAPHIES

EAST ASIAN NEIGHBOURS

Geopolitical tensions

Surrounding the Yellow and East China Seas in East Asia (Figure 1) are the countries of the People's Republic of China, the Republic of South Korea, Japan and the Democratic People's Republic of Korea (North Korea). These four countries operate very different political systems as shown in Figure 2.

Figure 1: East Asia

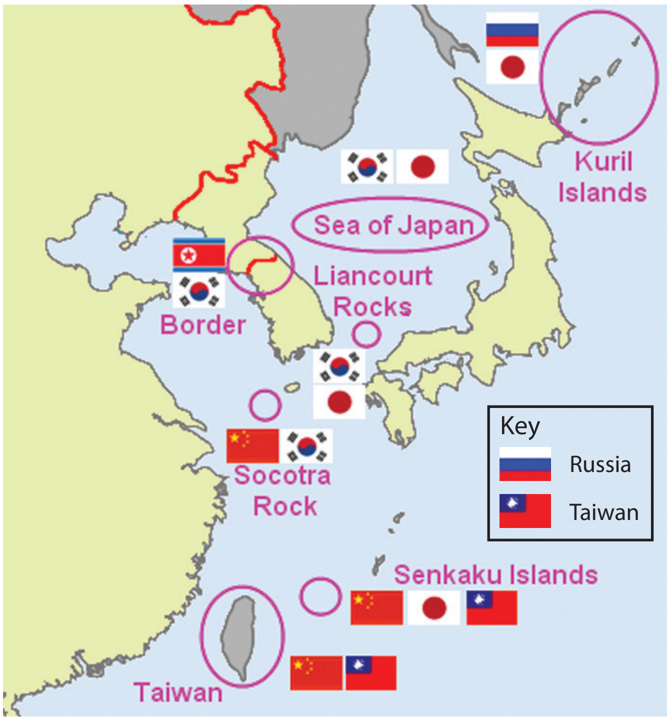
Although close geographical neighbours, the four countries have sometimes experienced tense geopolitical relationships due to recent and ongoing conflicts in the region:

- Resentment in South Korea and China over their occupation by Japan during **WWII** and an ongoing dispute about the versions of history taught in the respective countries.
- The Korean War, 1950–53, was one of several armed conflicts during the **Cold War** which divided the region and the world. Korea remains divided today.
- Japan and South Korea have followed a **capitalist**, free market development model whereas China and North Korea are state-planned **communist** systems.
- There are numerous **border disputes** and unresolved **territorial claims** in the region (Figure 3).

Figure 2: Political systems

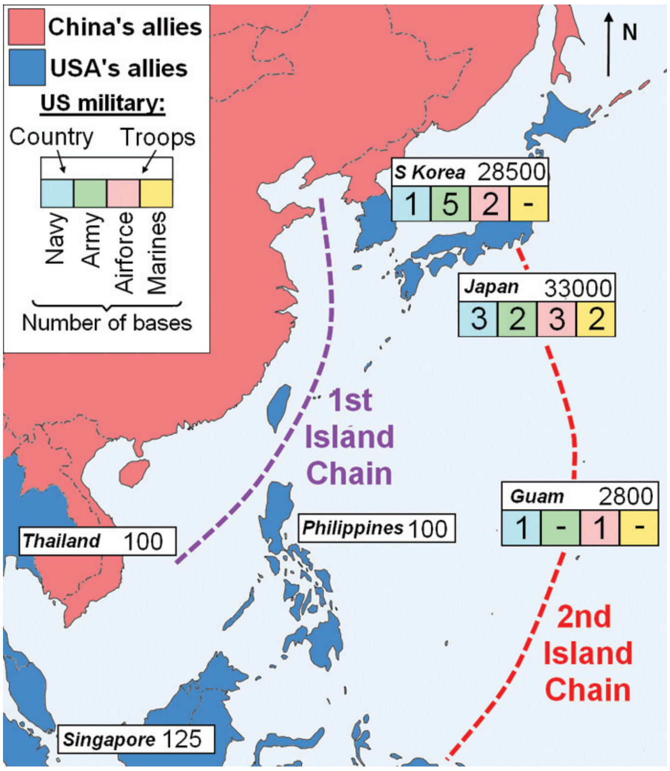
Country	Head of State, 2011	Political system
Japan	Emperor Akihito	Constitutional monarchy. Elected parliament.
China	President Hu Jintao	One-party communist state. Strictly limited political freedoms.
North Korea	Supreme Leader Kim Jong-il	One-party communist dictatorship, with a hereditary leadership and absence of political freedoms.
South Korea	President Lee Myung-bak	Presidential Republic. Free elections since 1987.

Figure 3: Selected disputed territories and claimants



Geopolitics in the region are influenced by the presence of a large number of **US** military bases (Figure 4) and the **expansionist** policies of China. US military presence has its origins in the Cold War and the policy of containing Chinese and Russian communist influence. The USA's **7th Fleet** is based at Yokosuka in Japan.

Figure 4: USA military presence in the region



China is said to be expanding its military sphere of influence in the region. One aspect of this is the construction of a **blue water navy**, including aircraft carriers, which will be able to operate beyond China's coastal waters (the '1st Island Chain') and into the seas and oceans of the wider region. This has been referred to as the '**2nd Island Chain policy**' (Figure 4) and would move the Chinese Navy into areas considered to be the sphere of the USA since the end of WWII. Armed forces in the region are very varied as shown in Figure 5. Military hardware may, in the case of some countries, be old and even obsolete. In addition to the forces shown, several of the countries have very large numbers of reserve troops. In the case of both North and South Korea there are 8 million reservists. Some countries in the region possess nuclear weapons:

- China may have around 400 active nuclear warheads and has **ICBMs** with a range of up to 15,000km. It is probable that it has, or is developing, submarine launch capacity.
- North Korea appears to have tested nuclear weapons in 2006 and 2009 but is thought not to have an effective launch capability yet.
- Both Russia and the USA have active warheads numbering in the 1000s, with the capability for submarine and land-based launch.

Figure 5: Military strength compared

2010 estimates	**China**	**Japan**	**North Korea**	**South Korea**
Active troops	2.3 million	0.2 million	1.1 million	0.7 million
Tanks	8500	900	4200	2700
Fighter jets	1110	370	900	650
Submarines	70	16	70	25
Destroyers	26	13	20	6

Profiling the neighbours

Figure 6 gives some comparative development data for the four countries.

Figure 6: Development data

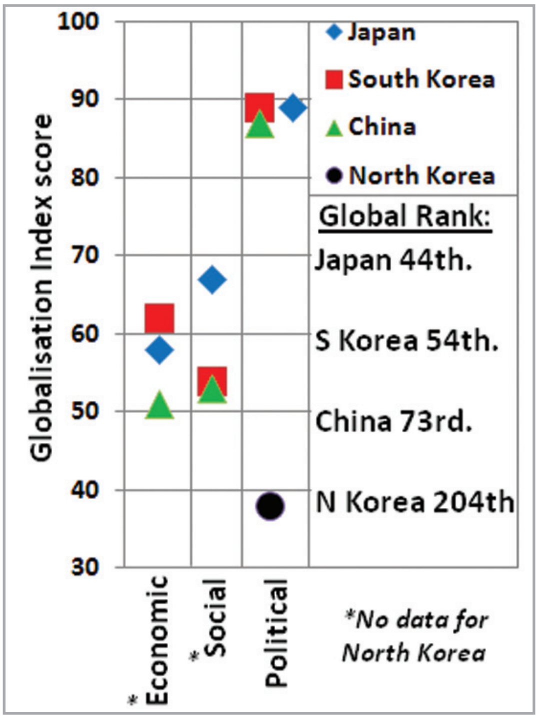
2010 / 2011 Data. *1995 data.	**China**	**Japan**	**North Korea**	**South Korea**
Population (millions)	1336	126.5	24.5	48.7
HDI	0.66	0.88	0.76*	0.88
Urban population (%)	47	67	60	83
Infant mortality rate (–/1000)	16	3	27	4
Literacy (%)	92	99	99	98
Life expectancy (years)	75	82	69	79
GDP per capita (PPP US $)	7600	34000	1800	30000
Labour force in agriculture (%)	38	4	35	7

Japan's **economic miracle** began around 1960 and continued for 3 decades with annual economic growth rates of between 5% and 10%. Since 1990 the Japanese economy has stalled and has barely grown at all. In Japan the 1990s are often referred to as the '**lost decade**'. South Korea was one of the original '**Asian Tiger**' countries whose economy was transformed by industrialisation in the 1980s and 1990s. China has seen phenomenal economic success since 2000 and in 2010 overtook Japan as the world's second largest economy. Many of East Asia's companies have become major TNCs (Figure 7) although North Korea has no globally-known brands.

Figure 7: Top 3 TNCs by brand equity 2010

South Korea	Japan	China
Samsung	Toyota	China Mobile
Hyundai	Canon	ICBC
LG	Honda	Bank of China

Figure 8: Globalisation Index



The 4 countries have different degrees of globalisation (Figure 8) with Japan ranking as the 44th most globalised country according to one index. Figure 9 shows one measure of educational excellence comparing university quality within the region and beyond.

Figure 9: 2010 HEEACT rankings

HEEACT 2010 World University Rankings	Number in the global top 500	Country's highest ranking university
USA	159	Harvard 1st
UK	38	Oxford 10th
Japan	28	Tokyo 14th
China	16	Tsinghua 117th
South Korea	10	Seoul 67th

In terms of research and development into new technologies the four countries submit patent applications through WIPO (Figure 10) and some countries are well known for their hi-tech industries.

Figure 10: Patent applications, 2009 (WIPO)

China	Japan	North Korea	South Korea
7,906	29,807	–	8,049

The four countries play some role in international decision making (Figure 11). The international community has spent much time on the **Six-Party Talks** which aim to persuade North Korea to give up its nuclear ambitions. These talks stalled in 2009. The sinking of the South Korean naval ship *Cheonan* in 2010, possibly by a North Korean torpedo, further soured diplomatic relations.

Figure 11: Membership of selected international organisations

	China	Japan	North Korea	South Korea
WTO	✓	✓	✗	✓
UN Security Council (permanent member)	✓	✗	✗	✗
G20 member	✓	✓	✗	✓
UN ICCPR ratified	✗	✓	✓	✓

The **East Asian Games** have been held every four years since 1993. Nine countries participate, although North Korea has only attended 3 of the 5 games. China tops the cumulative gold medal league with 492, followed by Japan with 241, South Korea with 173 and North Korea with 22.

China and Japan: looking forward

Since 1990 the Chinese economy has grown strongly whereas the Japanese one has stagnated (Figure 12). While many in China have been getting wealthier, incomes in Japan have remained static since 1990.

Figure 12: Chinese and Japanese GDP growth

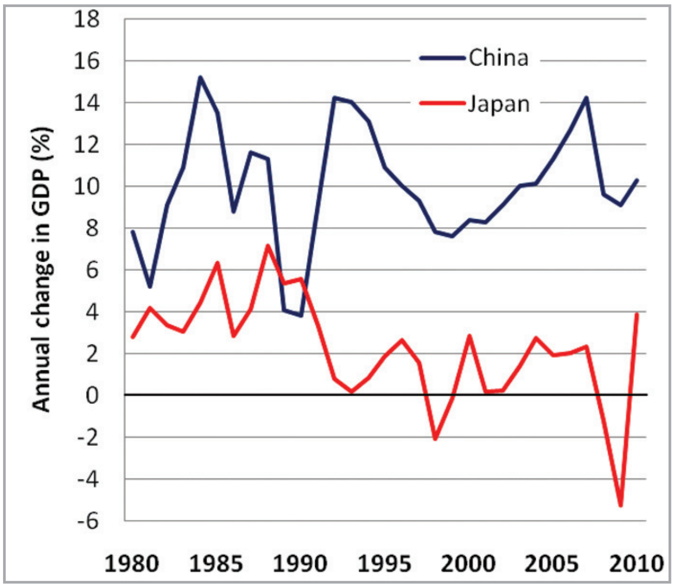


Figure 13 compares population, resource use and food in the two countries.

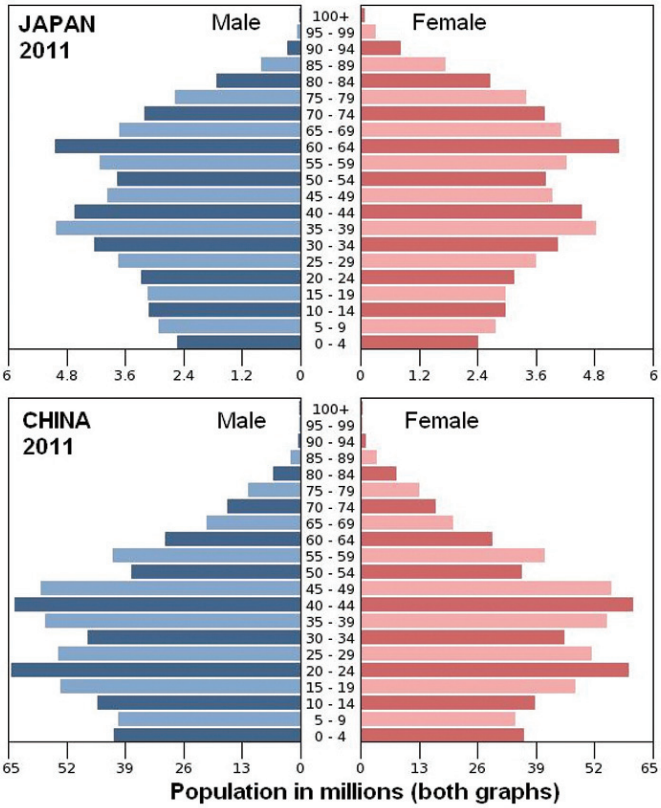
Figure 13: Food supply in China and Japan

<table>
<tr><td colspan="3"><i>2010/11 data unless stated</i></td><td>China</td><td>Japan</td></tr>
<tr><td colspan="3">Population growth rate / yr</td><td>0.5%</td><td>–0.3%</td></tr>
<tr><td colspan="3">Population density (people / km^2)</td><td>139</td><td>337</td></tr>
<tr><td colspan="3">Arable land as % of all land</td><td>15%</td><td>12%</td></tr>
<tr><td colspan="3">Total renewable water (m^3/person/year) 2008</td><td>2112</td><td>3378</td></tr>
<tr><td colspan="3">Total renewable water (m^3/person/year) 2050</td><td>1900</td><td>3900</td></tr>
<tr><td rowspan="2"><i>FAO data</i></td><td colspan="2">Daily calorie intake per person</td><td colspan="2">Daily protein intake (g / person)</td></tr>
<tr><td>1999–01</td><td>2005–7</td><td>1999–01</td><td>2005–7</td></tr>
<tr><td>China</td><td>2,906</td><td>2,974</td><td>86</td><td>89</td></tr>
<tr><td>Japan</td><td>2,874</td><td>2,806</td><td>95</td><td>92</td></tr>
</table>

- In **China**, 10% of the population was undernourished in 2007 (130 million people).
- In **Japan**, most people have enough to eat, but the country imports 60% of its food.

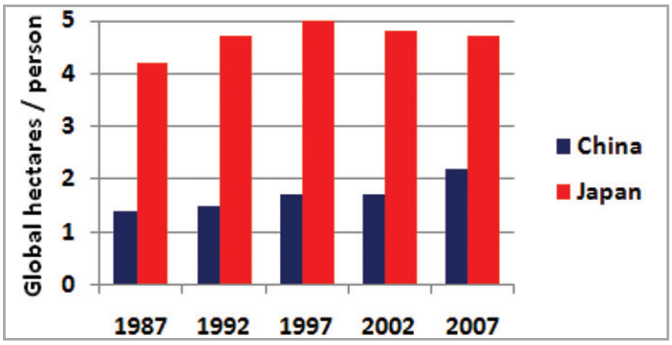
As Figure 14 shows, the **population structures** of the two countries are very different although in both nations questions have been raised about the **sustainability** of population in the long term.

Figure 14: Population pyramids



Both China and Japan are major **energy consumers**. In 2009 Japan imported 177 million tonnes of oil and China imported over 200 million tonnes. Most of China's coal supply is domestic, but Japan relies on imports. Japan imported 86 billion cubic metres of gas in 2009. Figure 15 shows trends in per capita ecological footprints since 1987.

Figure 15: Trends in per capita ecological footprints



In 2007 the global average footprint was 2.7 global hectares, 6.1 in High Income Countries and 2.0 in Middle Income Countries.

Figure 16: Shanghai is one of China's rapidly growing megacities

In 2010 Shanghai had a population of 23 million, up from 16 million in 2000.

Views on East Asia

View 1
"North Korea is a failed state that cannot produce enough to provide for the livelihood of its people. It is a dictatorial gulag state that suppresses political freedom and human rights that have a universal value."
The Korea Times, 2008

View 2
"The challenges China faces in becoming the next superpower are truly daunting. Even as its economic output is expected to exceed $5 trillion in 2010, per capita income in China will remain under $4000, roughly one-tenth of the level of the United States and Japan. More than half of the Chinese population still live in villages, most without access to safe drinking water, basic healthcare, or decent education."
The-diplomat.com

View 3
"In the future, the Pentagon believes that the People's Liberation Army (PLA) could extend further into the Pacific, using its fleet to control shipping lines and oil concessions. The 'pace and scale' of the PLA's modernisation has been 'broad and sweeping', the Pentagon said."
Daily Telegraph, 2011

View 4
"The Senkaku Islands themselves offer two important strategic advantages. First, sovereignty over the island chain carries with it exploration rights for several oil fields located nearby. According to Chinese estimates, these energy reserves could contain up to 17.5 trillion cubic feet of natural gas as well as 20 million barrels of oil. Secondly, and more importantly for China's long-term security planning, sovereignty over the Senkaku Islands pushes a country's Exclusive Economic Zone (EEZ) outwards, thus allowing for an expanded maritime perimeter."
Inteldaily website, 2010

View 5
"If China's economy expands at 8% a year in the decades ahead, its income per person will reach the current US level in 2031. If at that point China's resource consumption per person were the same as that in the US today, its 1.45 billion people would consume the equivalent of two-thirds of the current world grain harvest. China's paper consumption would be double the world's current production. Say goodbye to the world's forests."
The Guardian, 2006

Websites for further research:

http://www.eastasiaforum.org/
A website about economics and politics in the region.

http://www.foreignpolicy.com/
An online magazine concerned with geopolitics.

http://data.worldbank.org/
Comprehensive global development data base from the World Bank.

http://wwf.panda.org/
Detailed information on ecological footprints and other environmental issues.

https://www.cia.gov/library/publications/the-world-factbook/
Website of the CIA which can be used to compare country data.

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