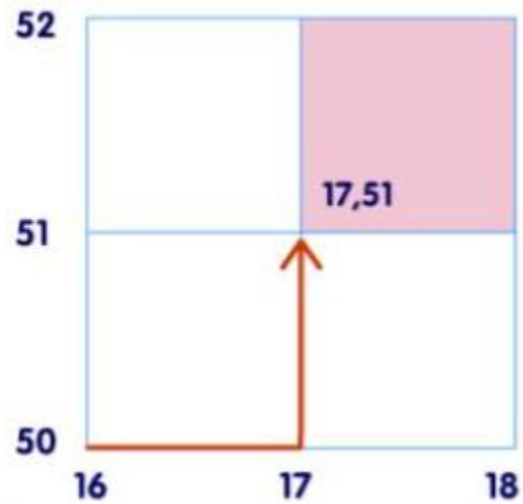


# Summer Assessment Revision for year 9

Y9 Theme: How do we use our planet? Is it sustainable?



**PENSBY**  
HIGH SCHOOL  
Care Respect Inspire

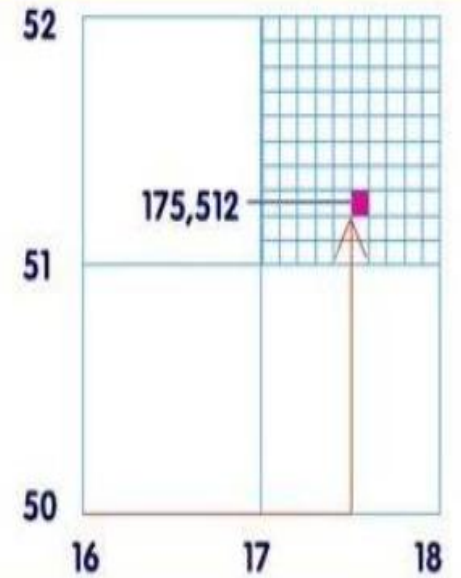


### Four-figure grid references

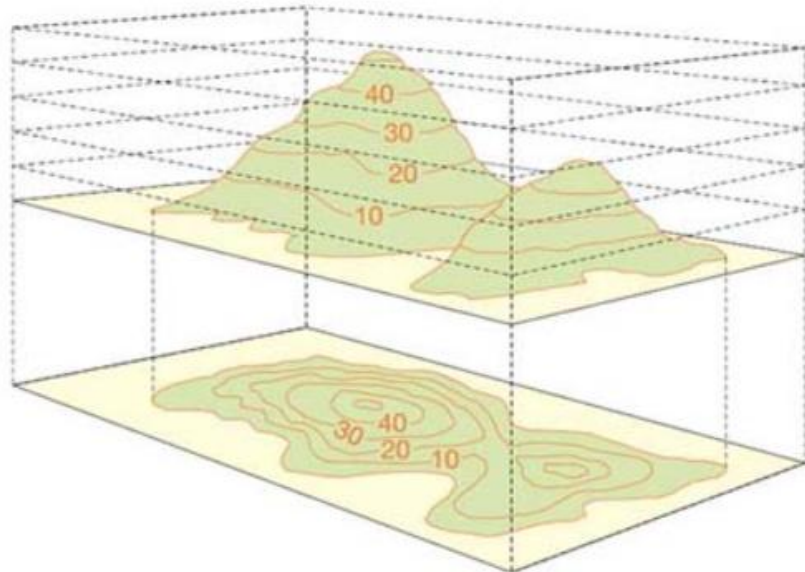
Each square has a grid reference which you get by putting together the numbers of the easting and northing that cross in its bottom left hand corner.

### Six-figure grid references

In your head, you should be able to divide all sides of the square into ten equal sections. By doing this, you can pinpoint locations within the square – these are called six-figure grid references.

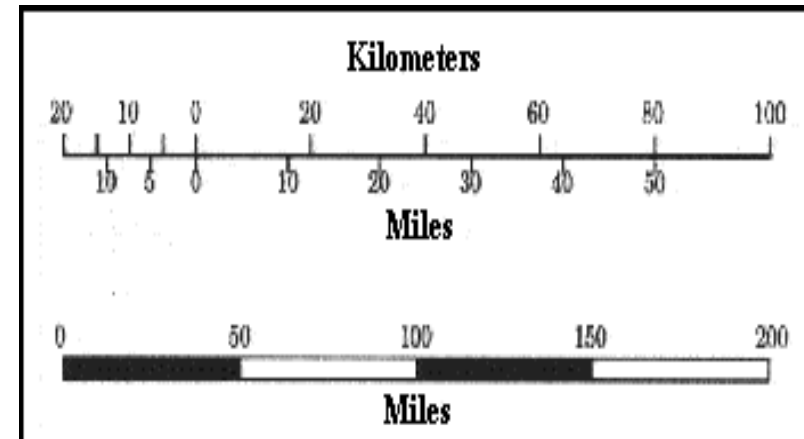
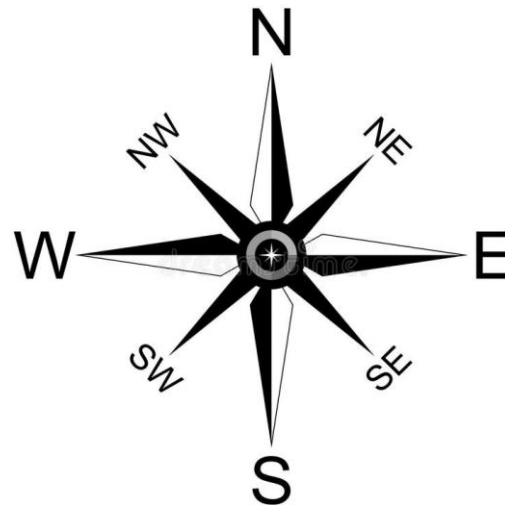


**Contour lines** on maps connect points of equal height to illustrate the three-dimensional shape of the land in two dimensions. Close lines show steep terrain, while spaced-out lines show gentle slopes or flat ground.



## REMEMBER YOUR MAP SKILLS?

**Map scale** is the mathematical relationship between the distance you see on a map and the actual distance on the ground. Think of it like a toy car—it is a perfect, smaller version of the real thing.



# HT1: How is man affecting the coast?

**Swash:** waves carry sediment up the beach.

**Backwash:** sediment carried back down the beach as the waves draw back

**Prevailing wind:** the direction from which the wind usually blows. In the U.K. it is from the south-west.

**Longshore drift:** the movement of sediment along a stretch of the coastline caused by waves approaching at an angle.

**Acidification:** the process where the ocean's pH decreases, becoming more acidic, due to the absorption of carbon dioxide (CO<sub>2</sub>) from the atmosphere.

## How can we manage the coastline?

### Coasts Keywords



### Groynes

**What is it?**  
GROYNES are timber or rock structures built out to sea from the coast. They **trap sediment** being moved by longshore drift. This then widens the beach and so **reduces the energy of the wave**

Creates a wider beach which can be popular with tourists.



Are unnatural and rock groynes in particular can be viewed as unattractive



### DUNE REGENERATION



**What is it?**  
When **marram grass** is replanted to help stabilise the dunes.

This is especially useful where dunes have been damaged by trampling.



Maintains a natural coastline and is popular with people and wildlife.

Can easily be damaged by storms



### Beach Nourishment

**What is it?**  
When sand or shingle is dredged offshore and transported to the beach by barge. It is then dumped on the beach and shaped by bulldozers. This is called **reprofiling**.



The higher and wider beach now offers more protection from wave action.



Blends with the existing beach.

Needs constant maintenance.



### Sea walls

Often has a walkway or promenade for people to walk along.

**What is it?**  
A sea wall is a concrete barrier against the sea, placed at the top of the beach. Modern **sea walls** have a curved face to reflect the waves back to sea.

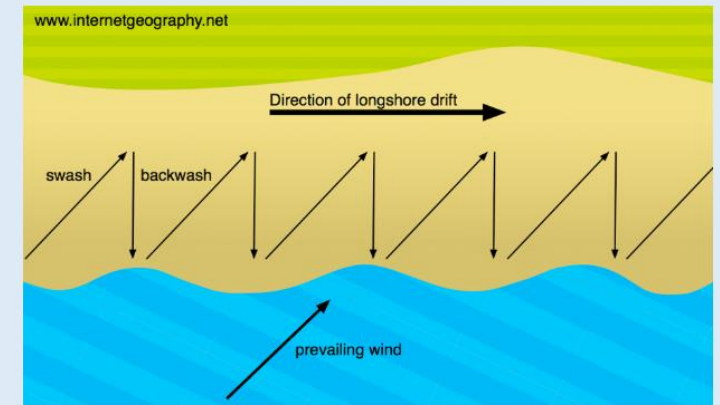
BUT can trap water behind - increasing effects of flooding



## What is Longshore Drift?

Longshore drift is a process of transportation that shifts eroded material along the coastline

1. Waves approach the coastline at an angle
2. Swash carries sediment up the beach at an angle
3. Backwash carries sediment down the beach with gravity at right angles to the beach
4. This creates a zig-zag movement of sediment along the beach



## Solutions to plastic pollution

- Banning microbeads
- Plastic-free shopping, with plans in the UK to have plastic free aisles
- Charging people for plastic bags and encouraging people to re-use bags
- Banning plastic straws and cotton buds
- Using reusable water bottles and coffee cups
- Recycling
- Countries such as Germany, Norway and Sweden have a deposit return scheme, which means you pay a bit more for a drink in a plastic bottle but you get that money back when you return the bottle to be recycled.

# HT2 RIO – a city of two halves



**Rural-Urban migration:**  
*Movement of people from the countryside to the city*

## Location

- Rio is a coastal city situated in the **South East region of Brazil** within the continent of **South America**. It is the second most populated city in the country (**6.5 million**) after Sao Paulo.

## Why is Rio Important?

- Regional importance**- Has the **second largest GDP** in Brazil.
- National importance**- It is home to headquarters of many of Brazil's main companies, particularly banking; it is the wealthiest Brazilian city, adds 7% to Brazil's economy
- International Importance**- Hosted the **2014 World Cup and 2016 Summer Olympics**. **Sugar Loaf Mountain** is one of the Seven Wonders of the World and attracts tourists.

## ...But rapid growth has led to loads of problems

- Over **25%** of the population **live in slums**, E.g. Rocinha
- Slum housing**- made from wood, metal and rubbish which are unstable and can collapse
- Communal toilets**- in Dharavi there is **1 toilet per 500 people**
- Only **30%** of people have access to healthcare
- Poor sanitation**- diseases spread quickly, e.g. typhoid, cholera
- High levels of crime**, violence and drug abuse blight many of the favelas.

Social Challenges

- Huge gap between rich and poor.
- Unemployment rates can be greater than 20%** in the favelas.
- People who work in the informal sector **do not pay taxes** and therefore do not receive insurance or unemployment benefit.
- Around one-third of workers in Rio are in the **informal sector**

Economic Challenges

- 3.1 million tons of waste** is generated in Rio every year. Most is taken to landfill.
- As materials decompose in **landfill sites** they release gas which is harnessed to fuel vehicles and provide a source of energy for electricity.
- High water pollution**- sewage and industrial waste is dumped into rivers
- High **air pollution**- overreliance on using fossil fuels to meet energy demands, increase emissions from vehicle use

Environmental Challenges

## The Favela-Bairro Project helps poor people in Rio's Favelas

Often the **poorest people** in urban areas are the **worst affected** by the problems of urban growth. **Urban planning schemes** can help **reduce** the **impact** of these problems and improve the **quality of life** for the quality of life for the urban poor. An example of an urban planning scheme is the **Favela-Bairro Project** in **Rio**:

- Rio is in SE Brazil. It has some **600 squatter settlements** called favelas. **1/5<sup>th</sup>** of the city's population live in these favelas.
- The Favela-Bairro Project ran from **1995-2008** and involved **250,000 people in 73 favelas**. It led to many social, economic and environmental improvements:

## Social Improvements

- Day Care centres** and after school schemes were started
- Adult education classes** were started to improve the amount of adult literacy rate and improve job prospect.
- Health Centres** were set up to help people affected by drug and alcohol addiction.
- Installation of a **cable car** that took people from the favelas to the city centre. It was free one way from the favela with the idea people could earn money for that day and pay for the return.

## Economic Improvements

- Residents can now apply to legally **own their own homes**.
- Training Hubs** were started to improve adult skills to enable people to work in more higher skilled formal jobs.
- 100% mortgages** were offered to help fund purchases of their homes.

## Environmental Improvements

- Wooden buildings are being replaced by **brick to reduce fire risk**
- Street widening and paving** were completed, along with installing some sewage facilities into the favela.
- Rubbish Collected** were implemented to reduce the amount of rubbish left in the streets.
- Self-help schemes** have also been supported. Here, local residents are provided with building materials like concrete blocks and cement in order to replace home-made shelters with permanent dwellings. These are often three or four storeys high, and with water, electricity and sewage systems installed.

## Successes

- The quality of life, mobility and employment prospects of the slums' inhabitants have improved.
- The project has been recognised by the **UN** as a **successful model** and has been used in other Brazilian cities.

## Problems

- The budget of **\$1 billion** still isn't enough to cover every favela in Rio
- The newly build infrastructure and housing **isn't been maintained properly** as residents lack the skills and materials for repairs
- Rents rise** where improvements have been made meaning some people can no longer afford to live there.

# HT3 Japan: Is it an island of issues?

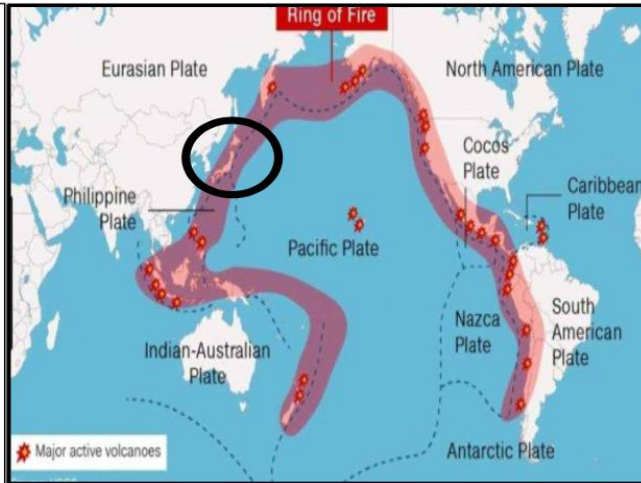
## Different Natural challenges Japan faces

**Tectonic Hazards** = Hazards to do with the movement of the tectonic plates (Earthquakes / Tsunamis / Volcanoes)

**Atmospheric Hazards** = Hazards to do with the movement of air and water in the atmosphere (Typhoons / Hurricanes)

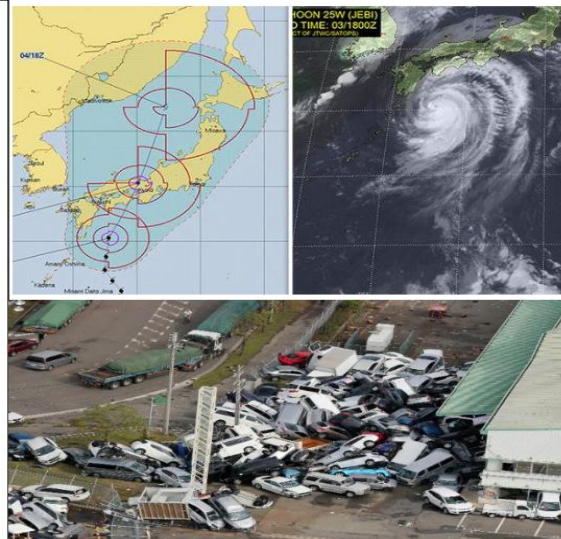
## Why are there so many tectonic hazards?

- Japan is located around many different tectonic plates that are constantly moving so earthquakes are common. It is known as a 'Hazard Hotspot'
- Japan is on the coast and so often experiences Tsunamis (giant waves caused by underwater earthquakes)
- Japan is also found inside the 'Ring of Fire'. This is a chain of active volcanoes surrounding the Pacific Ocean where Japan can be found.



## What is a Typhoon and how often do they hit Japan?

- A typhoon is a powerful circular storm
- It is created over warm tropical oceans
- It often brings high winds and heavy rain.
- Japan's typhoon season typically runs from May to October, but August and September are known as the deadliest months.
- On average there are around 7 or 8 typhoons per year that pass over the southernmost islands, and about 3 hit the Japanese main islands, especially Kyushu and Shikoku.
- Typhoon Jebi (2018) was Japan's worst typhoon in 60 years!
- It affected all of Japan's 4 islands



## Different human challenges Japan faces

### 3. Ageing Population

- As time goes on, more people are living for longer and this is causing a lot of strain on Japan.
- The number of retired elderly people living in Japan has become much higher than the number of people at working age (20-60 years old) or young people (0-19 years old).
- This has negatively affected Japan's economy as there are not enough fit and healthy workers.
- There are serious concerns about Japan's future as not enough children are being born to become future workers.
- Some of the elderly are struggling to take care of themselves and some are committing crimes in order to go to prison where they know they will be looked after (free food / fitness / healthcare / warm & dry / make friends).



### 4. Lack of space

- Japan is 70% mountains, meaning that only 30% of its land is flat enough to build towns and cities on.
- This has caused cities like Tokyo to become very overpopulated (38 million people living there) and is now known as a megacity. As well as this, there are many more people in surrounding areas coming to work and a large number of tourists each year so every inch of space is important.
- Due to the high number of people in Tokyo this has caused many disadvantages such as increased pollution, travel issues due to traffic and a lack of space for the people there.
- To help solve the challenge of a lack of space, 3 key ideas are being carried out in cities like Tokyo.

- Building up not out** - One room capsule hotel towers / car vending machines / underground bicycle storage / houses designed to fit in any space available / houses with built in car parking spaces / vending machines instead of shops / use columbarium to store urns instead of cemeteries / indoor gardening to grow crops instead of using land.

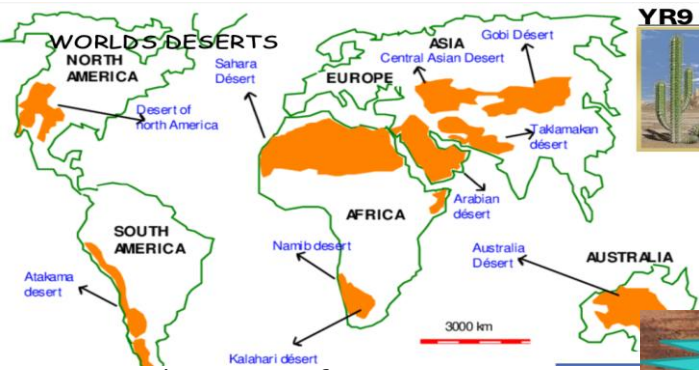


- No gardens** - Japanese homes in the cities do not have a front or back garden as it's a waste of space that can be used for other purposes. People place potted plants outside their doors to have a garden-like space.

- Creating land (Land Reclamation)** - Piling up waste/poor soil on top of each other in the ocean and then compacting it down so that it's flat, new land can be created. This can then be built on. An example of this being used is the Tokyo Haneda Airport.



# HT4 What threatens hot environments?



**Desertification** is the process of land turning into desert as the quality of the soil declines over time.

## Review

- Why are trees being removed in the Sahel? **fuelwood**
- What 'E' happens to the soil due to the removal of trees? **erosion**
- Too many animals living off the land leads to what 'O'? **overgrazing** **monoculture**
- What 'M' is the cultivation of only one crop? **monoculture**
- What 'N' are removed from the soil with overcultivation? **nutrients** **overpopulation**
- What 'O' means too many people are using the land? **overpopulation**
- What is thought to be causing the unreliable rainfall in the Sahel? **Climate change**
- What desert is the Sahel on the edge of? **Sahara**

## How is Las Vegas responding to a potential water crisis?



Restrictions on how big pools can be



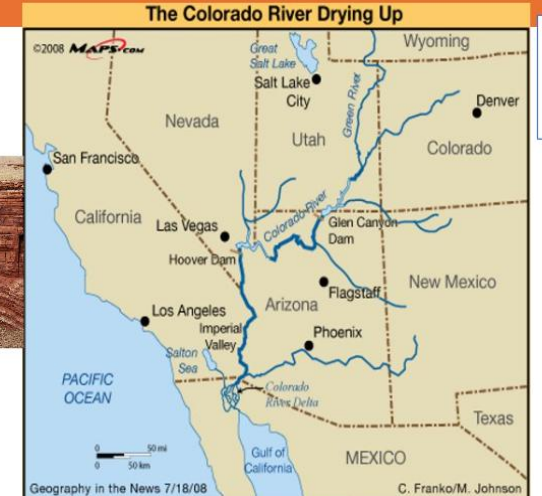
Any other ideas?



Drip irrigation



The Colorado River is huge, travelling 2,300 km and brings meltwater from the Rocky Mountains into the Western Desert.



Tasks:

- Describe the location of Las Vegas.
- Why is such a big city able to thrive in this desert?

## What are the pros and cons of using the Colorado river for water supply?

Cities such as Las Vegas and San Diego are supplied with water.	The Colorado river now flows at the same rate throughout the year.	Sandbank habitats are now smaller leading to less biodiversity.
Lake Mead is in danger of running dry due to overuse meaning millions lack water security.	Irrigation enables 1.5 million acres of land to be farmed with fruit and vegetable crops, as well as livestock grazing.	Colorado River is regulated, preventing the catastrophic seasonal flooding that historically devastated downstream farms and communities.
1.4 million acres of irrigated land produce about 15% of the USA's crops. It makes \$1.5billion a year.	The dam traps sediment that naturally flowed downstream; this "siltation" reduces reservoir capacity over time and requires farmers downstream to buy expensive fertilizers to replace lost natural nutrients	Generates approximately 4 billion kilowatt-hours of hydroelectric power annually, enough to serve roughly 1.3 million people in Nevada, Arizona, and California.

PROS

CONS

## How is the risk of desertification reduced?

### 1. Tree Planting



Tree roots help to stabilise the soil and provide leaf litter which adds nutrients to the soil.

The African Union's **Great Green Wall initiative** is to plant trees all the way across the Sahel.



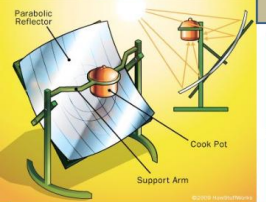
Generates jobs  
Brings about political cooperation

climate change threatens the survival of the trees.

### 2. Use of appropriate technology

The removal of trees for firewood is one of the biggest causes of desertification. Finding alternative ways of cooking is important.

**Appropriate technology** involves using **cheap, sustainable and easily accessible materials** that are **easy for local people to maintain**.

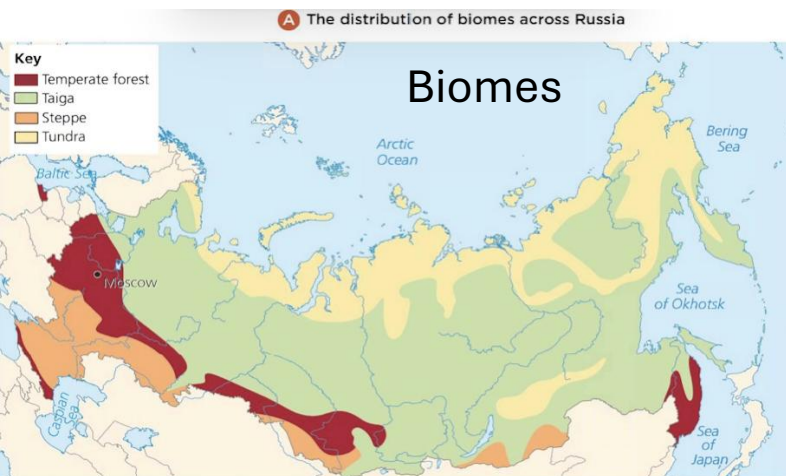


Solar cookers – use the sun's heat to cook with.



Toyola stove – often distributed by charities. Uses less wood.

# HT5 Why is Russia so divided?



## Biomes

**A** The Caucasus Mountains. The highest peak is Mt Elbrus, an extinct volcano. This is the highest point in Russia.



## Physical landscape



**B** The east part of Russia on the Kamchatka Peninsula is a volcanic region. 70 volcanoes form the 'spine' of the peninsula.



**C** The West Siberian plain which is a huge lowland area which is frozen in winter and a marshland in summer. It is the largest plain on earth.



**D** Russia has the longest continuous coastline of any country in the world. It stretches over 37 000 km.



**A** The population density of Russia

Norilsk, Russia, is a heavily industrialized, isolated Arctic city known as one of the world's most polluted places, primarily driven by massive nickel mining.

## 1. TUNDRA

Location: Far north

Opportunities: Reindeer herding/small-scale fishing  
Challenges: Melting permafrost  
Extreme weather: Polar vortex

Plants: Mosses/lichens  
Animals: Arctic fox/snowy owl

## 2. TAIGA

Location: stretches across most of Russia

Opportunities: ecotourism/timber  
Challenges: wildfires  
Extreme weather: 2010 Russian heatwave

Plants: pine/spruce/fir trees  
Animals: brown bears/ Siberian tigers

## Should Europe continue to import gas from Russia or not?

**An environmentalist**  
"Importing gas from Russia just promotes the continued use of fossil fuels. We need to be focussing on developing our infrastructure to use renewables such as wind and solar as our main source of energy."

**Owner of a Bulgarian fertiliser factory**  
"I am worried that the gas shut off we experienced in 2009 could happen again. My factory lost money because we couldn't operate, I had to let some of my employees go and my family didn't have any heating for a week. There was nothing the government could do."

**German energy expert**  
"We depend on Russian gas supplies. It is a relatively cheap source of energy and it powers our industries efficiently. We have already invested in the infrastructure; the pipes bring the gas to where we need it in Germany."

**EU leader**  
Selling gas is one of the main ways Russia makes money. Even now, Europe pays Russia over €15 billion a year for gas. This money goes straight into a "war chest" that pays for the tanks, missiles, and soldiers attacking Ukraine.

**A Serbian factory owner**  
"We already have a good gas supply being imported from Russia. Developing renewables is just too expensive and unreliable."

**UK Minister for Business, Energy, and Industrial Strategy**  
"We have our own gas reserves; fracking would help us to access our shale gas. This way we would be much less energy dependent. It would also create jobs and support industry."

**Resident near a fracking site**  
"Fracking has been a disaster for our local area, we are really worried that our groundwater could become contaminated. We even had earthquakes last year."



Temperatures are consistently below -21°C in the winter with very little daylight.

60% of Russia's GDP comes from exporting natural resources

In the winter, the only way to access some areas is via air or dangerous ice roads.

The tundra is so remote that there is plenty of space for industrial development

175,000 live in nearby Norilsk; industrial development provides job opportunities.

Industrial waste can be a problem in such remote areas disposing of chemicals and waste-water safely can be difficult.

Opportunities and challenges

## 3. TEMPERATE FOREST

Location: western Russia

Opportunities: agriculture/ forestry/ urban devel.  
Challenges: deforestation  
Extreme weather: heavy rain - flooding

Plants: oak/birch/maple trees  
Animals: deer/foxes/lynxes

## 4. STEPPE

Location: southern Russia

Opportunities: farming  
Challenges: droughts/ desertification  
Extreme weather: 2010 severe drought

Plants: grasses/wildflowers  
Animals: antelope/eagles