UNIT 2 TOPICAL CASE STUDIES & TEACHING IDEAS

This resource contains topical news updates and teaching suggestions that may be of use to teachers looking for background information and / or parallel case studies to help them deliver Unit 2 (options 1, 2 and 4 are covered here) of the Edexcel GCE Geography Specification. All information is drawn from newspaper reports filed during July and August 2010 (key sources being the Financial Times and Guardian).

Extreme weather

INCREASING RISKS

- **The world's 'weather crisis' in 2010**

There is mounting evidence that extreme weather hazards in the UK and elsewhere are becoming more frequent and bring higher risk due to climate change. In **2010** alone, the following countries and regions were dramatically affected:

Latin America	Floods and mudslides struck the state of Rio De Janeiro, Brazil after the heaviest rains in forty years. 212 people died in April.
Europe	Southern Poland suffered its worst flooding in decades during May 2010, caused by heavy rains. In contrast, the UK had the driest first six months of the year since 1929.
China	In June, Southeast China, recovering from its worst drought in living memory, was hit by devastating floods. At least 337 people were killed with 90 injured when landslides and flood waters submerged areas in the Gansu province in August.
Pakistan	Pakistan suffered the worst flooding since 1929. Heavy rains on top of the usual monsoon caused unprecedented floods, leaving 1,600 dead and millions homeless.
Russia	August brought the worst drought since records began 130 years ago. Heat, wildfires and dehydration killed an area of crops larger than Hungary. 52 people died and more than 3,000 were displaced.
West Africa	Severe droughts caused food shortages across the Eastern Sahel in West Africa. 10 million people were badly affected across four countries.

Activity

Read the extract below and answer the following question. Explain why an increase in extreme weather events was reported globally in 2010. (10 marks)

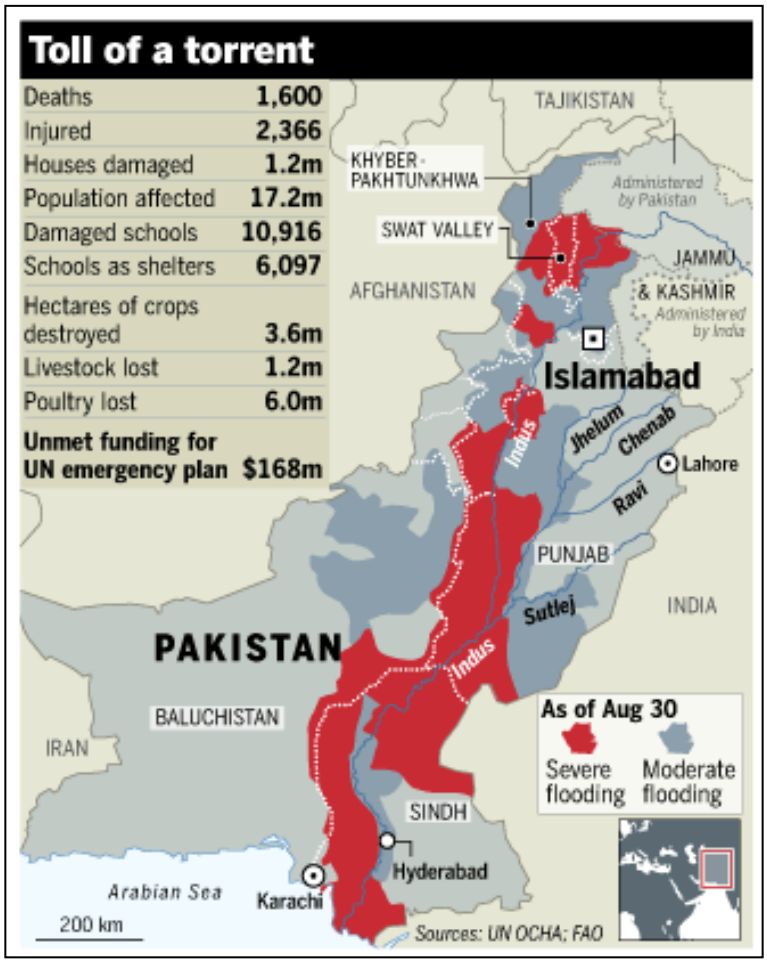
Odds for extreme events are shortening

Over the past week or so, Pakistan has been devastated by its worst floods for generations and Moscow has suffered under a blanket of smog after its hottest day in 130 years of records. What is causing these and other recent extreme weather events and are they linked to climate change?

Because of a rare meteorological pattern we can see a connection between extreme weather across Eurasia. Usually, the flow in the upper troposphere over northern India, the Himalayas and Pakistan is dominated by the monsoon anticyclone which pushes the sub-tropical jet to the north of the Tibetan Plateau.

This prevents mid-latitude weather systems from penetrating very far south, unlike this year, when active weather systems have spread southwards into Pakistan. Here this has combined with the monsoon to produce record rainfall. The record-breaking high temperatures in Moscow, forest fires and damaged crops are another consequence, as was the excessive rain over China when the Three Gorges Dam almost reached capacity a few short weeks ago.

So are we seeing the effects of climate change in these extreme weather events? Analysing the observational data shows clearly that there has been a rise in the number of extremely warm temperatures recorded worldwide and that there have been increases in the number of heavy rainfall events in many regions over land. Evidence, including in India and China, that periods of heavy rain are getting heavier, is entirely consistent with our understanding of the physics of the atmosphere in which warmer air holds more moisture. Our climate change predictions support the emerging trend in observations and show a clear intensification of extreme rainfall events in a warmer world.



It can still be problematic to blame a specific individual extreme weather event on climate change, because there have always been extremes of weather around the world. However, if the likelihood of a particular extreme weather event has changed it is possible to say something. I and colleagues from Oxford University showed, in a paper we published in Nature, that the probability of the hot European temperatures in 2003 had very likely doubled as a result of human influence. While still relatively rare, the odds of such extreme events are rapidly shortening and could become considered the norm by the middle of this century.

For some other types of extreme weather there is a need for more research. For example, circulation changes could mean that some extreme weather events become less, not more likely under climate change. Better understanding of which extreme weather events are part of normal variations rather than of a developing pattern of climate change effects will help societies adapt to the challenges of ongoing climate change. Next week in Colorado, experts from the UK and US forecasting centres at the Met Office and NOAA will meet to consider how we can provide better information on the causes of extreme weather in near-real time.

Alongside continued efforts to advance our forecasting systems we are improving our monitoring of the climate to put extreme weather into a long-term context. Precise local information on the evolving climate and how it fits into the longer-term picture remains insufficient in many of the most vulnerable parts of the world. This is a challenge that will begin to be addressed next month, when scientists from around the world meet at the Met Office to start to develop a new observational record to help identify changing trends in extremes. There is no time to waste if we are going to equip societies to better cope with the severity of weather in a changing climate. *Peter Stott (head of climate monitoring and attribution at the Met Office)*

Article source: Guardian, 10 August 2010[1] *Image source: Financial Times*[2]

Crowded coasts

COMPETITION FOR COASTS

■ The credit crunch 'staycation' boosts coastal tourism [3]

The UK **staycation** gained enormous popularity in the summers of 2009 and 2010. The economic effects of the global credit crunch on 2008 left many people with lighter wallets; and a weak pound left thousands of people unable to afford a holiday abroad in Europe or elsewhere. This trend has provided a much needed boost to the British domestic holiday industry especially in some coastal areas.

- Overseas trips abroad by UK residents dropped by 15% in 2009
- The weak pound made 'cheap and cheerful' EU travel packages suddenly seem like a thing of the past for many
- The Icelandic volcanic ash cloud in Spring 2010 - and strikes by UK airlines - further discouraged British residents from travelling overseas
- Some UK residents may have wanted to relive the coastal holidays of their own childhoods thanks to nostalgia
- A weak pound also made the UK coast more attractive to foreign holiday-makers: a record £16.6 billion was the amount spent by foreign tourists in the UK in 2009. Holidays to the UK by overseas residents totalled 11.4 million in 2009, of whom 3.8 million visitors came from France
- It is predicted that once there is more money in the economy there will be a return to international holidays –and UK coastal towns may lose tourism again

COASTAL MANAGEMENT

■ Managing pollution on Scotland's Brodick beach using CBA [4]

Brodick beach is an important tourist resort in Scotland's Isle of Arran. Recently, the local council had to conduct a **cost-benefit analysis** in order to solve a major coastal pollution problem.

Brodick is the largest settlement on Arran. It is the main car ferry harbour and has the largest supermarket along with some of the best places to eat or visit. Sadly, in 2010 Brodick had to close its main beach.

During a Spring high tide, waste materials from a former landfill site close to the beach were exposed by storm wave erosion. Swift action was taken leading to the beach being closed from March onwards. North Ayrshire Council sought advice from coastal and engineering consultants who recommended that the beach be closed immediately as members of the public could be at risk from broken glass and asbestos from the old landfill. Four possible solutions to the problem were proposed:

1. *Using sand to cover the exposed edge of the landfill site*
   - This would maintain the natural appearance but would need to be replaced regularly
2. *Placing heavy rock armour over the landfill site*
   - It was a good proposed way to protect the site but was considered to be a potential eyesore
3. *Removing the landfill material so it could be destroyed*
   - But it was felt that this would cause major traffic disruption and be too expensive
4. *Positioning large geo-textile in front of the eroded area (each bag holding up to 2 tons of sand)*
   - These containers provide long-term stability for the problem and have a low ecological impact

The fourth solution was finally chosen as the one to implement based on costs and benefits. The geo-textile bags will have a low visual impact on the beauty spot and local Arran sand from further round the coast can be used to fill the containers. The total cost for this option was expected to be £150,000 (cheaper than some of the other proposals).

Activity (1) Research more about Brodick Beach

Use Google Earth to examine the beach site and situation. A good starting point is: 55°34'44.55"N (lat) 5° 9'3.95"W (lon)

Activity (2) Summarise the case study

Present the four options in a table with columns for costs and benefits.

Rebranding places

REBRANDING STRATEGIES

■ Golf resort aims to drive Highland regeneration [5]

One of the poorest but most beautiful parts of Scotland recently became home to a multi-million pound luxury golf resort as part of a re-branding scheme. Machrihanish Dunes Golf Club opened in 2009 and will, it is hoped, bring a regenerative boost to the socially deprived southern end of the Mull of Kintyre.

This area spent most of the last century dealing with economic decline. During the 19th century the key settlement of Campbeltown was a local growth pole – it had more than 30 distilleries and was known as the "whisky capital" of Scotland. It housed 30 distilleries and in 1900 had the highest income per capita of any place in Scotland. However, the industries of traditional whisky-making, fishing and shipbuilding started to decline in the post-war **post-productive** period. High levels of unemployment have afflicted the region ever since.

Campbeltown is now in the midst of a major regeneration programme. Its older buildings are being restored and the marina enlarged. Two hotels in the area are also being refurbished. The new golf course was the idea of local community members but the majority of the project is owned by a **key player** who is an American property developer called David Southworth.

Golf tourism is worth about £220 million annually to Scotland. The opening of the Machrihanish golf course brings many benefits to this area and the hope is that it will contribute to long-term sustainable economic growth.

Activity (2) Research this case study

Take a look into the need for rebranding in Campbeltown and the strategies adopted. You could start your investigation at: http://www.campbeltown.org.uk/campbeltown-history.html

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