**Paper 1: Living with the physical environment**

**Section B: The living world**

**Ecosystems**

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| * An **ecosystem** is * Ecosystems can be any size. eg | | | |
| Ecosystems depend on inputs | Important interrelationships link together the biotic and abiotic parts of the ecosystem:   * Physical linkages – * Chemical linkages – | | **Biotic** –  **Abiotic** – |
| The **grazing food web** comprises:   * **Plants** or **primary producers**: * **Herbivores** or **primary consumers**: * **Carnivores** or **secondary consumers**: * **Top carnivores**: * These are known as the **apex predator**.   Depending on the amount of energy transfers in an ecosystem there may be primary, secondary, tertiary, quaternary (and so it continues) consumers. These represent the **trophic levels**. At each trophic level the biomass will get \_\_\_\_\_\_. | | The **detrital food web** comprises **decomposers**   * **Bacteria** and **fungi** * **Detritivores** are larger organisms that speed up decay by feeding on dead material (detritus); these include earthworms, maggots, woodlice and carrion crow. These are referred to as **scavengers**.   The detrital food web is linked to the grazing food web. | |
| Ecosystems are incredibly **vulnerable to change**. Ecosystems can adapt to slow natural changes but rapid changes can have serious impacts.  **Invasive species**  **Agricultural fertilisers** | | **Biomes** are  **Climate affects biome distribution**. Climate and therefore biome distribution is affected by the following factors:  1.  2.  3.  4. | |
| **Food chain** –  **Food web** –  **Nutrient cycle** – | | | |

**Tropical Rainforests**

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| **Location of tropical rainforests**: | | Largest rainforests | | | | | Why are levels of biodiversity high? |
| **Climate of tropical rainforests**: | | | | | Tropical rainforest **nutrient cycling** is rapid. Explain how this works. | | |
| The **four layers** (stratification) of the rainforest include:   * . | | | | |
| **Plant adaptations in a tropical rainforest** cope with heavy rainfall & competition for sunlight::   * **Emergents** - * **Drip tips -** * **Epiphytes** - * **Lianas** - * **Smooth bark** * **Buttress roots** – | | | | | | | |
| **Causes of deforestation in Malaysia, South East Asia**.  Deforestation is the cutting down of trees often on a very large scale. The motivating factor for this is often monetary profit:   * **Logging** – * **Energy development** – * **Mineral extraction** – * **Commercial farming** – * **Population pressures** – * **Subsistence farming** – * **Road building** – | | | | **Impacts of deforestation in Malaysia**:   * **Soil erosion** – * **Loss of biodiversity** - * **Contribution to climate change** - * **Decline of indigenous tribes -** * **River pollution**:. | | | |
| **Economic gains from deforestation**: | | | | | | **Economic losses from deforestation**: | |
| **Deforestation rates:**   * An area of tropical rainforest the size of China has been lost due to deforestation. * Every 2 seconds an area of tropical rainforest the size of football field is destroyed. | **The case of Brazil**:   * Historically Brazil has had rapid rates of deforestation. * Much of the clearance was to create large cattle ranches. * Fortunately since 2004 the rate of deforestation has fallen by 80% and is now at the lowest levels on record (although deforestation still occurs). Reasons for this reduction include:   + . | | | | | | |
| **Reasons to protect the tropical rainforest**:   * **Biodiversity** – * **Medicine** – * **Resources** – * **Water** – * **Indigenous tribes** – * **Oxygen** – * **Climate** – * **Climate change** –   . | | | **Sustainable management strategies**:  The **aim** of sustainable management is:   1. Protect the rainforests for future generations. 2. To allow the use of valuable rainforest resources in a manner that does not harm the environment.   **Strategies** for sustainable management occur at **three different levels** – local, national & international.  The strategies can take two main forms:   1. Logging is allowed in a sustainable manner. 2. Areas are protected with no logging/clearance allowed   Sustainable management methods include:   * **Selective logging & replanting** – * **Ecotourism** – * **Conservation & education** – * **International agreements –** | | | | |

**Hot Deserts**

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| **Hot desert characteristics**: | | **Hot desert soils**: | | **Plant adaptation to hot deserts**: | | |
| **Desert animal adaptations:**  **Camel adaptations:** | | | | | **Thar Desert:** | |
| **Thar Desert development opportunities:**   * **Mineral extraction** * **Energy** * **Farming** * **Tourism provides jobs for the locals** | | | **Challenges for development in the Thar Desert:**   * **Extreme heat of over 50°C in the summer.** * **Water supply** * **Accessibility** | | | |
| **Indira Gandhi Canal** | | | |
| **Desertification** is the process by which fertile land becomes desert, typically as a result of drought, deforestation, or inappropriate agriculture.   * Land on the edges of an existing desert is most vulnerable as these are ecologically fragile. * Causes can be classed as natural or human:   + Natural – drought.   + Human – * Once the land/soil is exposed to the weather it will be eroded by the wind & rain. * One billion people live in areas at risk from desertification. * Can affect rich & poor countries alike. In Europe Spain is vulnerable to desertification. | | | | | | **Commercial farming** using too much irrigation can lead to **salinisation.** |
| **Reducing desertification in hot deserts** | | | | | | |
| **Reforestation** |  | | | | | |
| **Earth dams** |  | | | | | |
| **Magic stones** |  | | | | | |
| **Coppicing** |  | | | | | |
| **Terracing** |  | | | | | |
| **Crop rotation** |  | | | | | |
| **Animal husbandry** |  | | | | | |
| **Earth bunds** |  | | | | | |
| **Shelter belts** |  | | | | | |
| **Irrigation** |  | | | | | |
| **GM Crops** |  | | | | | |
| **National Parks** |  | | | | | |