

**CGCC0416**

**Demonstrate knowledge of the causes of climate change**

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| **Level** | 1 |
| **Credit** | 3 |
| **Unit Descriptor** | This unit describes the performance outcomes, skills and knowledge required to identify and explain the main causes of climate change.  |
| **Pre-requisite** | CGHR0116, CGCK0216, CGCV0316 |
| **Co – requisite** | Nil |
| **ELEMENT**1. Demonstrate that the earth’s climate has been constantly changing
2. State some natural causes of climate change.
3. Demonstrate knowledge of the ***natural greenhouse effect*** and its importance for life.
4. Illustrate how human activities in the last 200 years are contributing to the ***enhanced greenhouse effect***
5. Differentiate between the natural and enhanced greenhouse effects.
 | **PERFORMANCE CRITERIA*** 1. Examples are identified of periods in the earth’s history when temperatures were warmer and cooler than those of today.
	2. Changes in world-wide sea levels during the last ***Ice Age*** are demonstrated.
	3. ***Reasons for natural changes in climate*** are identified.
	4. Processes in the natural greenhouse effect are identified.
	5. The major ***greenhouse gases*** that contribute to ***global warming*** are identified.
	6. Ways in which humans are contributing to the increased emissions of greenhouse gases are demonstrated.
	7. The contribution of humans to the enhanced greenhouse effect in the local area is investigated*.*
	8. Ways in which the natural greenhouse effect is different to the enhanced greenhouse effect are clarified.
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| **KEY COMPETENCIES/EMPLOYABILITY SKILLS AND EXAMPLES OF APPLICATION**

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| **Required skills\*** | **Example of application** |
| **Initiative** | Adapting to new situations • developing a strategic long-term vision • being creative • identifying opportunities not obvious to others • translating ideas into action • generating a range of options • initiating innovative solutions* *Initiate and carry out enquiries and independent research into changes in climate during the Earth’s history.*
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| **Communication** | Verbal or non-verbal that includes: • speaking clearly and directly • writing to the needs of the audience • understanding the needs of internal and external parties • persuading effectively • establishing and using networks* *Present information both visually (using hand-drawn illustrations and technology) and verbally to explain climatic conditions during different times in the Earth’s history.*
* *Give a talk to explain the natural greenhouse effect.*
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| **Teamwork** | Working with people of different ages, gender, race, religion or political persuasion • working as an individual and as a member of a team • knowing how to define a role as part of a team • applying teamwork skills to a range of situations* *Undertake fieldwork in small groups to investigate ways in which activities in the local community are contributing towards the enhanced greenhouse effect.*
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| **Information & Communication Technology** | Having a range of basic IT skills • applying IT as a management tool • using IT to organise data • being willing to learn new IT skills • having the occupational health and safety knowledge to apply technology • having the appropriate physical capacity* *Use the internet and print materials to investigate the causes of climate change.*
* *Use computer applications to construct climatic graphs, maps and diagrams.*
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| **Problem solving** | Developing creative, innovative solutions • developing practical solutions • showing independence and initiative in identifying problems solving problems in teams • applying a range of strategies to problem solving • applying problem-solving strategies across a range of areas* *Create a diagram to show the water cycle during a glacial period of the last Ice Age.*
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| **Self-management**  | Having a personal vision and goals • evaluating and monitoring own performance • having knowledge and confidence in own ideas and vision • articulating own ideas and vision • taking responsibility* *Reflect on knowledge and understanding of the causes of climate change, both natural and human-made.*
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| **Planning**  | Managing time and priorities – setting timelines, coordinating tasks • being resourceful • taking initiative and making decisions • establishing clear project goals and deliverables • allocating people and resources to tasks • participating in continuous improvement and planning • developing a vision and a proactive plan to accompany it* *Plan, collect and collate information from observations and oral discussions in order to assess ways in which activities in the local community is contributing towards climate change.*
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| **Learning (gaining new skills and knowledge**) | Managing your own learning using a range of learning options suited to the individual learning style– mentoring, peer support, networking; • having enthusiasm for ongoing learning; • being willing to learn in any setting• being open to new ideas and techniques • being prepared to invest time and effort in learning new skills* *Participate in group discussions to share knowledge and gain new skills and learning on the causes of climate change.*
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| **GESI (Gender Equity and Social Inclusion)** | Valuing and supporting women and disadvantaged persons and equal opportunity for all in workplaces and communities • mentoring younger people • valuing and respecting older people • having respect for different cultural, social, religious and political values* *Ensure that discussions in the communities are inclusive of both male and female perspectives on the causes of climate change.*
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\* as per Provincial Skills Plan**Required knowledge**

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|  | * Knowledge and experience of local climate, climatic variations and factors that influence climate change (e.g. deforestation, volcanic eruptions, burning of fossil fuels)
* First-hand knowledge of a local village or community.
* Knowledge of local traditional wisdom and cultural practices.
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| **RANGE STATEMENT**

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| The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. **Bold italicised** wording, if used in the performance criteria, is detailed below.  |

**Enhanced greenhouse effect** refers to:* the way in which the natural greenhouse effect is increased by human activities that lead to increased concentrations of carbon dioxide and methane in the atmosphere. Because of this increased concentration of greenhouse gases, more heat is trapped in the atmosphere and does not escape so quickly into space. This leads to **global warming**.

**Global warming:** See under “enhanced greenhouse effect”.**Greenhouse gases (GHGs)** are:* gases present in the atmosphere that can absorb the outgoing heat radiation and send it back to the earth. Examples are carbon dioxide, methane, nitrous oxide and water vapour.

**Ice Age** refers to:* a period of time extending from approximately 2 million years ago to 18,000 years ago when there were alternating periods of lower and warmer temperatures. During the colder or “glacial” periods, ice sheets covered large parts of the land surface and sea levels fell. During the warmer, or “interglacial” periods, temperatures were similar to those of today; the ice sheets retreated and sea levels rose again.

 **Natural greenhouse effect** refers to:* the way that our atmosphere allows incoming energy from the sun to reach the earth’s surface, but traps some of the outgoing energy from the earth, so keeping the planet warm enough to support life. The greenhouse gases keep the average temperature at 15oC. Without the natural greenhouse effect, the average global temperature would be -18oC.

 **Reasons for natural changes in climate** may include:* volcanic eruptions, changes in solar radiation, variations in the earth’s orbit and the influence of meteorites.
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| **EVIDENCE GUIDE**The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.Critical aspects for assessment and evidence required to demonstrate competency in this unitEvidence of the following knowledge, skills and attributes is essential:* Understanding of the features climate change and its causes.
* Communication skills to develop individual and community awareness of the causes of climate change.
* Application of concepts of climate change to the local environment, for example by finding out ways in which human activities are contributing to the enhanced greenhouse effect.
* Ability to interpret and construct diagrams, graphs and simple maps.
 | **Context of Assessment** * Assessment of underpinning knowledge and communication of ideas can be done in the classroom through observation and discussion.
* Assessment of awareness talks on the causes of climate change in Vanuatu can be done in the field or in the classroom.

**Resource Implications**Assessment process and resources must ensure:* Physical access to communities to observe communications and/or collection of information and data
* Checklists for the learner and assessor to guide community activities, communications and observations
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| **Assessment Methods**Assessment methods must be chosen to ensure that knowledge of the causes of climate change can be practically demonstrated. Methods must include assessment of knowledge as well as assessment of practical skills, and may be done in conjunction with assessment of other units of competency. Allowance should be made for participants with disabilities. Some of the following examples are appropriate:* Direct oral questioning combined with third party workplace or community reports of knowledge and performance by the learner
* Direct observation during community contact (may be undertaken during field visits and/or using technology such as phone/video)
* Review of any written documentation evidencing knowledge and skills (maps, workbook activities)
* Oral and/or written reflections by learners
* Written holistic/summative assessment.
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