Geography Stage 6 (Year 12)

Global sustainability sample assessment task

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# About this resource

## Purpose

This sample assessment task is designed to support teaching and learning in the global sustainability learning program. It is an in-class assessment with a time limit of 45 minutes. It includes 3 short answer questions and is worth a total of 30 marks.

**Teacher note**: some students may require reasonable adjustments for the 3 short answer questions depending on the resource.

This resource can also be used as:

* an in-class practise item, with teacher support and direction
* a formative assessment tool
* part of a larger assessment task
* a homework task.

## Target audience

This resource can be used by teachers to support students studying the global sustainability program.

## When and how to use this document

This task is designed to be used in conjunction with the Global sustainability learning program and resource booklet, which can be accessed on the [Planning, programming and assessing geography 11–12](https://education.nsw.gov.au/teaching-and-learning/curriculum/hsie/planning-programming-and-assessing-hsie-11-12/planning-programming-assessing-geography-11-12) webpage.

# Task description

**Type of task:** short answers

**Outcomes:**

* **GE-12-02** analyses geographical processes and influences, at a range of scales, that form and transform places and environments
* **GE-12-04** evaluates responses and management strategies, at a range of scales, for sustainability
* **GE-12-08** applies mathematical ideas and techniques to analyse complex geographical data

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**Weighting: 15%**

The task is an in-class assessment with a time limit of 45 minutes.

The task is worth a total of 25 marks.

## Content

* Sustainability and sustainable development, including the four pillars of sustainability – social, economic, environmental and cultural
* Principles of ecologically sustainable development – precautionary principle, intergenerational principle, conservation of biological diversity and ecological integrity
* Opportunities and challenges in planning for and achieving global sustainability
* Evaluate the sustainability of one global economic activity, using one or more criteria

## Short answer question 1 (8 marks)

Refer to Figure 1 to answer parts (a), (b) and (c).

Figure 1 – data for fish consumption and catch

A world choropleth map displaying fish consumption and catch data by region. The map highlights average per capita fish consumption between 2015 and 2017 (in kilograms per year, live weight equivalent) and catch amounts in millions of tonnes (2018).
Regions are colour-coded based on fish consumption:
Red: over 50 kg per person a year, countries include Korea, Malaysia, Norway, Iceland, Portugal and Greenland.
Dark orange: 30 to 50 kg per person a year, countries include China, Japan, Philippines Indonesia, Spain, Sweden, Finland, Gabon, Guyana and France.
Orange: 20 to 30 kg per person a year, countries include North America, Russia, Australia, Chile, Peru, Thailand, Egypt Italy, Greece, Morocco Angola Oman and Ghana.
Light orange: 10 to 20 kg per person a year, countries include Mexico, Britain Iraq, Iran, Saudi Arabia, Libya, Eastern Europe.
Yellow: 5 to 10 kg per person a year, countries include Central and South America, Central Europe, India, Madagascar and South and West Africa.
White: No data per person a year, countries include Mongolia, Afghanistan Pakistan, Yemen, Ethiopia, Sudan, Kenya, Central Africa and Paraguay.
Blue bars on the map indicate catch amounts in millions of tonnes for different ocean regions:
Notable catch amounts include 20.06 million tonnes in the Northwest Pacific, 13.54 million tonnes in the Western Central Pacific, 10.27 million tonnes in the Southeast Pacific, 9.32 million tonnes in the North Atlantic and 6.77 million tonnes in Eastern Indian Ocean.
Major fish-producing nations are shown with purple bars at the bottom of the map, with values for 2018 catches:
Chile 2.12 million tonnes, Japan 3.1 million tonnes, India 3.62 million tonnes, Peru 12.68 million tonnes, Indonesia 7.15 million tonnes, Russia 6.71 million tonnes, China 12.68 million tonnes, USA 4.84 million tonnes, Norway 2.49 million tonnes, and Vietnam 3.19 million tonnes.
Additional information includes:
FAO regions with catch amounts, including inland waters totalling 12.02 million tonnes.
Source: FAO (Food and Agriculture Organization) data for fish consumption and catch.

‘[FAO, 2020](https://worldoceanreview.com/en/wor-7/food-from-the-sea/issues-with-fisheries/)’ by [World Ocean Review](https://worldoceanreview.com/en/) 7 – chapter 3 and is licensed under [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/).

1. Which region of the ocean accounts for the highest catch in millions of tonnes of fish for 2020? (1 mark)

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1. Describe the spatial pattern of consumption of fish indicated by this diagram. (2 marks)

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1. Explain how the issue of climate change highlights the importance of ONE principle of ecologically sustainable development in managing agricultural practices sustainably. (5 marks)

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## Short answer question 2 (7 marks)

Refer to Figure 2 to answer parts (a) and (b)

Figure 2 – sustainable development goal 15 explainer

A green and white poster of the United Nations Sustainable Development Goals Explainer.
heading, Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
A fundamental shift in humanity's relationship with nature is essential. Escalating forest losses, land degradation and species extinction pose severe threats to people and the planet. The world is currently facing the largest species extinction event since the dinosaur age. One hundred million hectares of healthy and productive land was degraded every year from twenty fifteen to twenty nineteen, equivalent to two times the size of Greenland. Protected area coverage of key biodiversity areas has stalled since twenty fifteen. The Kunming-Montreal global biodiversity framework provides renewed impetus for conserving terrestrial ecosystems. Four outcome-oriented goals by twenty fifty, twenty-three targets by twenty thirty.

[SDG 15 explainer](https://www.un.org/sustainabledevelopment/sdg-fast-facts/) by [United Nations](https://www.un.org/) is licensed under Copyright © United Nations.

1. Identify ONE appropriate geographical tool or fieldwork technique for assessing the biodiversity of an area, and outline how it could be used in a geographical investigation. (2 marks)

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1. Briefly evaluate how global forums, agreements and cooperation, including the sustainable development goals (SDGs), can address the loss of biodiversity. (5 marks)

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## Short answer question 3 (10 marks)

Refer to Figure 3 and Figure 4 to answer parts (a) to (d)

Figure 3 – Value of agricultural production, 2022

A world Choropleth map titled "Value of agricultural production, 2022" displays the gross production value of the agricultural sector in current US dollars. Different countries are shaded in various colours from yellow to dark blue corresponding to specific value ranges, as indicated in the legend at the bottom:
Dark blue ($2 trillion) represents the highest agricultural production value, specifically for China.
Light blue to green shades indicates countries with production values ranging from $500 billion to $1 trillion, and $100 billion to $500 billion, such as India, the United States, and Brazil.
Yellow to pale green shades represent countries with agricultural production values between $0 and $100 billion, seen across much of Africa, South America, and parts of Europe.
Grey-striped areas indicate countries with "No data," such as parts of Northern Africa and Greenland.
The map is sourced from the Food and Agriculture Organisation of the United Nations (2024) and is licensed by Our World in Data under CC BY.

‘[Value of agricultural production, 2022](https://ourworldindata.org/grapher/value-of-agricultural-production)’ by [Our World in Data](https://ourworldindata.org) is licensed under [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/).

Figure 4 – Agricultural output, 1961 to 2019

A line graph titled "Agricultural output, 1961 to 2019" compares the total agricultural output across different income groups and globally. The y-axis represents total output in constant 2015 US dollars, ranging from $0 to $4 trillion. The x-axis covers years from 1961 to 2019. 
The world total (represented by a red line) shows steady growth from around $1 trillion in 1961 to nearly $4 trillion in 2019.
Upper-middle-income countries (green line) also show consistent growth, reaching close to $1.5 trillion by 2019.
Lower-middle-income countries (orange line) grow more gradually, peaking around $500 billion by 2019.
High-income countries (gold line) exhibit modest growth, stabilizing just over $500 billion.
Low-income countries (blue line) show minimal growth, remaining around $0 throughout the period.
The graph notes that total agricultural output is the sum of crop and livestock products and is adjusted for inflation. Data source: USDA Economic Research Service.


‘[Agricultural output, 1961 to 2019](https://ourworldindata.org/grapher/agricultural-output-dollars)’ by [Our World in Data](https://ourworldindata.org) is licensed under [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/).

1. Use Figure 3 to describe the spatial patterns of agricultural production value in 2022. (2 marks)

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1. Use Figure 4 to identify which income bracket had the greatest total increase in agricultural output between 1961 and 2019. (1 mark)

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1. In 1970, world agricultural output was valued at $1.39 trillion. In 2019, world agricultural output was valued at $4.20 trillion. Calculate the percentage change increase or decrease in world agricultural production between 1970 and 2019. (2 marks)

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1. With reference to ONE global economic activity you have studied, analyse the sustainability of the global economic activity, using one or more criteria. (5 marks)

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# Marking guidelines and sample responses

Below are the marking guidelines and sample responses to the assessment.

## Short answer question 1 (8 marks)

1. Which region of the ocean accounts for the highest catch in millions of tonnes of fish for 2020? (1 mark)

North-West Pacific

1. Describe the spatial pattern of consumption of fish indicated by this diagram. (2 marks)

Responses could include:

* Asia, specifically China and South-East Asia, North America, Australia and Western Europe and Scandinavian countries.
* The higher income nations of the world.
* Nations with significant ocean borders.
* Nations who also have high fish catch amounts.

1. Explain how the issue of climate change highlights the importance of ONE principle of ecologically sustainable development in managing agricultural practices sustainably. (5 marks)

**Sample answer:**

Climate change highlights the importance of the principle of intergenerational equity in ecologically sustainable development. This principle emphasises the need to manage agricultural practices in a way that ensures future generations have access to the same resources and environmental quality as the current population. For example, increasing global temperatures and changing rainfall patterns are leading to more frequent and severe droughts. In Australia, agriculture is responsible for around 13% of the national greenhouse gas emissions, with the livestock sector contributing significantly to methane emissions. Adopting sustainable farming practices, such as improving soil carbon sequestration and reducing livestock emissions through improved feed practices, not only helps mitigate the immediate impacts of climate change but also ensures that agricultural resources remain practical for future generations. Without sustainable management, according to CSIRO the productivity of key farming regions could decrease by up to 50% by 2050 due to climate impacts, threatening both food security and the livelihoods of future populations.

Table 1 – assessment marking guidelines for short answer question 1

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| Marking guideline descriptors | Mark |
| * Demonstrates a thorough understanding of a principle of ecologically sustainable development and how climate change highlights its importance in managing agricultural practices sustainably * Skilfully integrates facts, statistics or data | **5** |
| * Demonstrates a sound understanding of a principle of ecologically sustainable development and how climate change highlights the importance of managing agricultural practices sustainably * Integrates facts, statistics or data | **4** |
| * Demonstrates a basic understanding of a principle of ecologically sustainable development and/or the need to manage agricultural practices sustainably * References facts, statistics or data | **3** |
| * Demonstrates a limited understanding of ecologically sustainable development or how climate change might impact managing agricultural practices * May reference facts, statistics or data | **2** |
| * Provides some relevant information | **1** |

## Short answer question 2 (7 marks)

1. Identify ONE appropriate geographical tool or fieldwork technique for assessing the biodiversity of an area, and outline how it could be used in a geographical investigation. (2 marks)

* Includes any ONE of: surveys, interviews, weather instruments, vegetation identification charts, compasses, clinometers, photographic devices, GPS, GIS, remote sensing, water and soil testing equipment, drones, quadrants, maps, graphs, statistics, spatial technologies, visual representations (1 mark)
* Gives at least one way this tool could be used in a geographical investigation (1 mark). For example, survey to tally number of species in an area, use GPS to access deforestation in an area.

1. Briefly evaluate how global forums, agreements and cooperation, including the sustainable development goals (SDGs), can reverse the loss of biodiversity. (5 marks)

**Sample answer:**

Global forums, agreements, and international cooperation, such as the Sustainable Development Goals (SDGs), help reverse biodiversity loss by setting targets and coordinating global efforts. SDG goal 15, ‘Life on Land’ aims to halt biodiversity loss by 2030. The Convention on Biological Diversity established the Aichi Targets, target 11 aims to protect 17% of land. As of 2023, 16.8% of global land is currently protected according to United Nation (UN) data from 2023.

In Costa Rica, reforestation initiatives supported by international forums like the UN’s REDD doubled its forest cover from 26% in 1983 to over 52% in 2022 (World Bank, 2022). This highlights how cooperation can drive biodiversity recovery. Additionally, global agreements such as the Paris Agreement, which seeks to limit warming to 1.5°C, reduce climate impacts on ecosystems, further supporting biodiversity conservation.

In summary, international cooperation and agreements, through SDG 15 and related efforts, have led to increased protection of biodiversity, as seen in protected area growth and Costa Rica’s success in reforestation.

Table 2 – assessment marking guidelines for short answer question 2

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| Marking guideline descriptors | Mark range |
| * Provides an evaluation of how global forums, agreements and cooperation can assist in reversing biodiversity loss * Integrates reference to the stimulus and/or includes statistics or data | **5** |
| * Provides an explanation of how global forums, agreements and cooperation can assist in reversing biodiversity loss * Integrates reference to the stimulus and/or includes statistics or data | **4** |
| * Describes how global forums, agreements and cooperation can assist in reversing biodiversity loss * References the stimulus and/or includes statistics or data | **3** |
| * Identifies how global forums, agreements and cooperation can assist in reversing biodiversity loss * May reference the stimulus and/or includes statistics or data | **2** |
| * Makes general statements about global forums, agreements or biodiversity loss | **1** |

## Short answer question 3 (10 marks)

1. Use Figure 3 to describe the spatial patterns of agricultural production value in 2022. (2 marks)

The value of agricultural production in China and India was more than $1 trillion in 2022 while Africa was less than 50 billion. The spatial distribution of agricultural production is uneven.

1. Use Figure 4 to identify which group of countries had the greatest increase in agricultural output between 1961 and 2019. (1 mark)

Upper middle income.

1. In 1970, world agricultural output was valued at $1.39 trillion. In 2019, world agricultural output was valued at $4.20 trillion. Calculate the percentage change increase or decrease in world agricultural production between 1970 and 2019. (2 marks)

* To calculate the percentage increase, first find the increase by subtracting the original number from the new number (. Then calculate the percentage increase by dividing the Increase by the original number and multiplying the answer by 100 ( ).

**Solution:**

1. With reference to ONE global economic activity you have studied, evaluate the sustainability of the global economic activity. (5 marks)

* A global economic activity can be any one of – agriculture, energy production, fishing, forestry, manufacturing, mining, tourism
* The criteria can be any one of the 4 pillars of sustainability – social, economic, environmental, cultural or other measures such as OECD criteria of relevance, coherence, effectiveness, efficiency, impact, sustainability

**Sample answer:**

The sustainability of the global dairy industry can be evaluated using environmental and social criteria. Environmentally, dairy production accounts for approximately 4% of global greenhouse gas emissions, primarily from methane released by cows. For example, in New Zealand, dairy farming has led to significant water pollution issues, with 60% of monitored rivers unsafe for swimming due to nitrogen runoff. Efforts like regenerative farming and methane-reducing feed additives are emerging but are not yet widespread. Socially, the industry supports rural economies, providing 240 million jobs worldwide, particularly in developing countries. However, low wages and unsafe conditions for workers in regions like Southeast Asia highlight social sustainability issues. Thus, while the dairy industry has economic and social benefits, its environmental impact poses major sustainability challenges.

Table 3 – assessment marking guidelines for short answer question 3

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| Marking guideline descriptors | Mark |
| * Makes clear reference to a global economic activity * Provides a detailed evaluation of the sustainability of the global economic activity | **5** |
| * Makes reference to a global economic activity * Provides an evaluation of the sustainability of the global economic activity | **4** |
| * Identifies a global economic activity * Attempts to make an evaluation of the sustainability of the global economic activity | **3** |
| * May identify a global economic activity * Describes sustainable practices in an economic activity | **2** |
| * Provides some relevant information | **1** |

# Support and alignment

**Resource evaluation and support**: all curriculum resources are prepared through a rigorous process. Resources are periodically reviewed as part of our ongoing evaluation plan to ensure currency, relevance and effectiveness. For additional support or advice, or to provide feedback, contact the HSIE Curriculum team by emailing [hsie@det.nsw.edu.au](mailto:hsie@det.nsw.edu.au)

**Differentiation:** further advice to support Aboriginal and Torres Strait Islander students, EALD students, students with a disability and/or additional needs and High Potential and gifted students can be found on the [Planning programming and assessing 7–12](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12) webpage. This includes the [Inclusion and differentiation 7–10 advice](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12/inclusion-and-differentiation-advice-7-10) webpage.

**Assessment**: further advice to support formative assessment is available on the [Planning programming and assessing 7–12](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12) webpage. This includes the [Classroom assessment advice 7–10](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12/classroom-assessment-advice-7-10-). For summative assessment tasks, the [assessment task advice 7–10](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12/assessment-task-advice-7-10) webpage is available.

**Explicit teaching:** further advice to support explicit teaching is available on the [Explicit teaching](https://education.nsw.gov.au/teaching-and-learning/curriculum/explicit-teaching) webpage. This includes the CESE [Explicit teaching – Driving learning and engagement](https://education.nsw.gov.au/about-us/education-data-and-research/cese/publications/research-reports/what-works-best-2020-update/explicit-teaching-driving-learning-and-engagement) webpage.

**Consulted with**: Curriculum and Reform, and Explicit Teaching.

**Alignment to system priorities and/or needs**: [School Excellence Policy](https://education.nsw.gov.au/policy-library/policies/pd-2016-0468), [Our Plan for NSW Public Education](https://education.nsw.gov.au/about-us/strategies-and-reports/plan-for-nsw-public-education).

**Alignment to the School Excellence Framework**: this resource supports the [School Excellence Framework](https://education.nsw.gov.au/policy-library/policies/pd-2016-0468) elements of curriculum (curriculum provision) and effective classroom practice (lesson planning, explicit teaching).

**Alignment to Australian Professional Teaching Standards**: this resource supports teachers to address [Australian Professional Teaching Standards](https://educationstandards.nsw.edu.au/wps/portal/nesa/teacher-accreditation/meeting-requirements/the-standards/proficient-teacher), 2.2.2, 2.3.2, 5.1.2, 5.3.2.

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# References

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WOR (World Ocean Review) (2021) ‘[Food from the sea](https://worldoceanreview.com/en/wor-7/food-from-the-sea/issues-with-fisheries/)’, *The Ocean, Guarantor of Life – Sustainable Use, Effective Protection*, Maribus, accessed 20 September 2024.

United Nations (2023) ‘[15: Life on land](https://www.un.org/sustainabledevelopment/sdg-fast-facts/)’ Sustainable development goals, United Nations, accessed 20 September 2024.

Ritchie H, Rosado P and Roser M (2023) ‘[Agricultural Production](https://ourworldindata.org/agricultural-production)’, *Our World in Data*, accessed 20 September 2024.

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