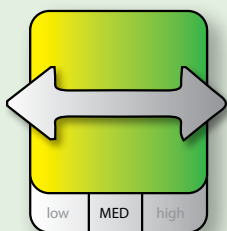


INDICATOR Land under cultivation

**Status**

Fair to good

Trend

Stable

Data confidence

Medium



Palm oil plantation Guadalcanal, Solomon Islands © Stuart Chape

PRESENT STATUS

Agriculture is a foundational industry in Pacific island economies and central to the independence of island communities. Together, agriculture, forestry and fishing provide from 3% to over 25% of the GDP of Pacific island countries, with a regional average of 17% (World Bank 2020), and agriculture accounts for a large share of employment (ADB 2015).

The status of the region's land under cultivation was deemed *fair to good*, based on national estimations in national State of Environment reporting (seven countries) and given the use of over 20% of land for agriculture in over half of the islands.

It is important to note that the share of cropland is neither good nor bad in itself; rather, the perception of quality depends on perspective, where for example an economic perspective could judge whether the share of agricultural land is sufficient for income or livelihood purposes and an environmental perspective could judge whether the share of agricultural or natural land, and the treatment of that land, is sufficient for national biodiversity and environmental targets. The method of agriculture strongly affects the biodiversity within the agricultural area and the impacts on surrounding areas. Generally, a plantation has lower biodiversity than the primary forest or natural ecosystem that it replaced.

The trend in the share of land under cultivation is considered *stable* for the region. The UN Food and Agricultural Organization (FAO) reports no change in the share of agricultural land since 2012 in any Pacific island (FAO 2019). However, for some islands, the most drastic change in farming or land use occurred in the 1980s with changing economies or in the 1990s with the introduction of diseases such as the taro blight in Samoa (Cook Islands 2018; Samoa MNRE 2013).

The share of agricultural land in the total land area grew by 0.3% in Melanesia, declined by 1% in Micronesia, and declined by 1.3% in Polynesia between 2000 and 2017. Among the countries and territories, the change ranged from a 13.7% loss in the Cook Islands (the next largest decline was of 6.7% in Tuvalu) to an increase of 4.2% in Tonga, with a crude average of a 1.3% decline in agricultural land as the share of total land area among countries and territories.

As Pacific populations grow, the same amount of agricultural land might be insufficient to feed the population. This population growth, altered lifestyles, or development pathway decisions might change the reliance of Pacific islands on domestic versus imported food. This nutritional independence is a known factor of fisheries management (see Regional Indicator: [Commercial pelagic fish](#)) and must be a factor in Pacific management of human health and natural environments.

CRITICAL CONNECTIONS

In addition to the impacts on food security, the share of islands under cultivation directly affects our freshwater supply and quality, lagoon water quality, and national carbon accounting.

Many sustainable land-use practices can provide high-value agricultural products, such as shade-grown coffee, vanilla, or cacao, and reduce the input costs for farmers who use regenerative agricultural systems where species nurture each other and the soil for long-term productivity.

Our forests provide food and raw materials for subsistence and cultural traditions, help maintain clean water and the local climate, maintain soil fertility and productivity, and regulate erosion and the amount of sediment reaching coastal waters and affecting coral reef habitats. Plantation forests are a type of cultivation, and changes in forest type are associated with changes in coastal water quality and ocean species abundance.

Climate change is a threat to food security on some Pacific islands, with the productivity of agricultural crops affected by long-term climate and extreme events (for example, ADB 2015). The quality of soils and water for crops is also impacted by climate change and its related stressors, such as sea level rise.

The share of land used for cultivation, hardscaped for development, or managed as a natural ecosystem shapes a country's progress towards SDG 11.3.1: Ratio of land consumption rate to population growth rate.

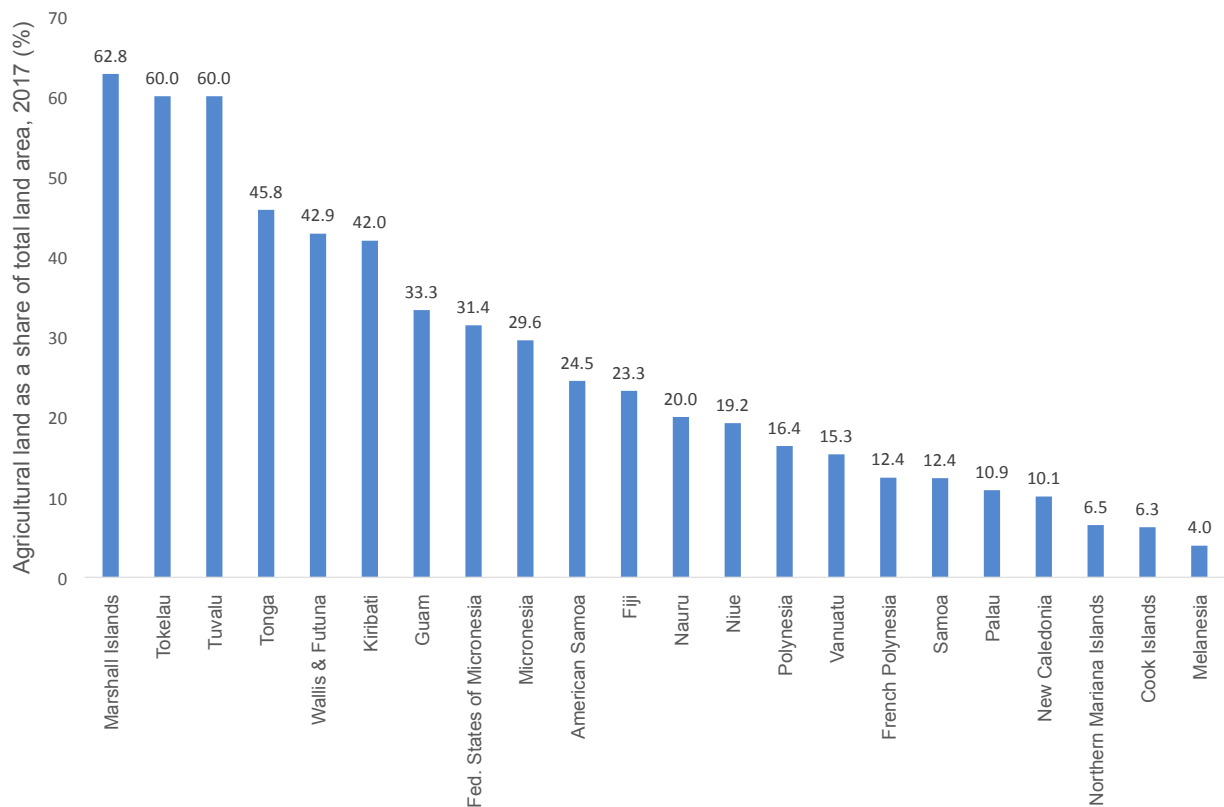


FIGURE 6.1: Agricultural land as a share of total land area in Pacific island countries and territories, 2017 or closest year (%). The share of agricultural land is often highest for the most land-limited countries, such as the atoll nations. Source: FAO (2019)

PRESSURES AND OPPORTUNITIES

Land in the Pacific islands is heavily modified, with the first navigators and settlers bringing plants and animals with them (e.g. Spriggs 2010). For example, only 1.6% of the forest in Oceania (including Australia and New Zealand) is primary forest (FAO 2020; see Regional Indicator: [Native forest cover](#)).

The biggest land-use change in terms of loss of forest cover for agriculture on Pacific islands happened between 1975 and 1990, and the trend has been more stable since. As development proceeds and populations grow, the land use is continuing to change at a rapid pace in many islands with lesser focus on conversion to agricultural land but a greater focus on conversion to hardscaped or ‘developed’ land.

New tools and technologies, such as remote sensing, could help Pacific people measure and monitor land-use changes over time. Freely available satellite imagery, like Copernicus Sentinel data, allows for detection mapping of land-use change. Various companies and organisations in the region can provide or support this service. Although the share of agricultural land is stable, the uses, quality, and habitats on other land areas in the Pacific islands are changing in step with changing Pacific societies.

Even the status of a given share of agricultural land can vary given differences in soil quality and other factors relating to geological conditions and agricultural management techniques. In their national State of Environment reporting, Pacific islands are beginning to consider other factors such as the share of cultivation in newly converted or ecologically sensitive areas, the type and quantity of agricultural chemicals used (which can involve hazardous residues, see Regional Indicator: [Hazardous waste](#)), the use of crop

rotation or fallow periods, and the practice of burning to clear land as factors that can affect long-term sustainability of agriculture alongside biodiversity goals.

Island geography places unique challenges to sustainable agriculture. The unique biodiversity in the islands is threatened by invasive species, many of which were introduced deliberately or accidentally through agriculture (see Regional Indicators: [Invasive species](#)). The tropical sun is a particular challenge to soil nutrients under some agricultural practices, such as tilling and exposed soil between crop rows, because the essential ingredients for plant growth can break down under direct sunlight.

Household-scale to national-scale practices can jointly address soil fertility and waste management on islands through the re-use of natural materials in food and yard wastes (see Regional Indicators: [Household and municipal waste generation and capture](#)). Nearly half of all landfilled waste in Pacific islands is green waste (food and yard residues) that could form nutritious compost as a natural fertilizer, avoiding methane release from anaerobic degradation in landfill conditions (SPREP 2016; see Regional Indicator: [Greenhouse gas emissions](#)).

The genetic diversity of many Pacific food crops is maintained in the Centre for Pacific Crops and Trees, the only regional genebank. Innovation and preservation of cultivars that are suited to island conditions and resilient to climate change will be essential for future Pacific agriculture.

The Palau Policy to Strengthen Resilience in Agriculture and Aquaculture (Kitalong et al. 2015) set a goal for local production of food to meet 50% of Palau’s needs by 2020.

REGIONAL RESPONSE RECOMMENDATIONS

Active management plans, harmonised across sectoral goals, can increase the sustainability of island ecosystems and agriculture. In addition to cultivated land, countries can consider measuring other land uses over repeated time increments. Quantifying the designated land use as well as the surface conditions (natural/permeable with or without native or other vegetation, hardscaped, built upon, and so on) will help identify changes in ecosystem structure and services over time.

Pacific islands are encouraged to:

- Monitor land under cultivation, including investments in monitoring of land use over time using available technologies;
- Plan to manage arable land for food security, social and cultural functions, carbon capture, as well as soil and water conservation;
- Enforce protection from illegal or unsustainable land-use practices. Given transboundary pressures such as those from invasive species and wind- or water-transported pollutants, necessary protections extend beyond simple declaration of boundaries; and
- Partner for restoration of land arability and of priority ecosystems, ensuring development partners understand and share the prioritization of native species and long-term soil health.



Sugar cane fields in the dry season, Nadi, Fiji. © Stuart Chape

INDICATOR IN ACTION

SDGs 2.4, 6.6, 11.3, 15.1, 15.5, 15.7, 15c · UN Convention to Combat Desertification · Convention on Biological Diversity 7, 10, 12 · Noumea Convention · Regional Environment Objective 2.2 · Pacific Islands Framework for Nature Conservation Objectives 4, 5

FOR MORE INFORMATION

ADB (2015) Climate Change, Food Security, and Socioeconomic Livelihood in Pacific Islands. Authors: Rosegrant MW, Valmonte-Santos RA, Thomas T, You L and Chiang CA. Asian Development Bank and International Food Policy Research Institute. ISSN: 978-92-9257-116-0

Cook Islands (2018) State of Environment Report: Land under Cultivation.

FAO (2020) Global Forest Resources Assessment 2020. (www.fao.org/forest-resources-assessment/en/) Rome: United Nations Food and Agricultural Organization.

FAO (2019) FAOSTAT Agri-environmental Indicators, Land Use. Available at <http://www.fao.org/faostat/en/#data/EL>

Samoa MNRE (2013) Samoa's State of the Environment (SOE) Report 2013. Apia: Ministry of Natural Resources & Environment, Government of Samoa.

SPREP (2016) *Cleaner Pacific 2025: Pacific Regional Waste and Pollution Management Strategy 2016–2025*. Apia, Samoa: SPREP.

Spriggs M (2010) Geomorphic and archaeological consequences of human arrival and agricultural expansion on Pacific islands: A reconsideration after 30 years of debate. Chapter 13 in: Haberle SG, Stevenson J, Prebble M (eds) *Altered Ecologies: Fire, climate and human influence on terrestrial landscapes*. ANU Press, p 239–252 <https://www.jstor.org/stable/j.ctt24h8rj.15>

World Bank (2020) World Bank's World Development Indicators, accessed August 2020. See: <https://data.worldbank.org/>

Indicator 6 of 31 in *State of Environment and Conservation in the Pacific Islands: 2020 Regional Report*



The Secretariat of the Pacific Regional Environment Programme (SPREP) supports 14 countries and 7 territories in the Pacific to better manage the environment. SPREP member countries and members of the Pacific Roundtable on Nature Conservation (PIRT) have contributed valuable input to the production of this indicator. www.sprep.org

National and regional environment datasets supporting the analysis above can be accessed through the Pacific Environment Portal. pacific-data.sprep.org

For protected areas information, please see the Pacific Islands Protected Area Portal. pipap.sprep.org