

A tale of two islands

Bali and Sumba are two of the 17,000 islands that make up Indonesia. While Bali is one of the wealthiest islands in Indonesia and a popular tourist destination, Sumba is one of the poorest and more remote islands. While there is great inequality between poor and rich nations, there is also great inequality within nations – including Australia and Indonesia.

Indicators	Bali	Sumba
Population	3,800,000	656,000
Population density (per square kilometre)	670	61
Life expectancy (years)	70.6	61.9
Children underweight for their age (%)	18	37
Living on less than \$1.25 per day (%)	4	32

With its ample mix of fertile soil, heat and rainfall, Bali's principal biome is tropical forest. However, it is a densely populated island and the natural forest has been logged to provide agriculture and settlement for its people. Rice and tourism are the two major industries and sources of employment and income in Bali.

However, with increased income from the tourism and building industries, more and more Balinese farmers are tempted to sell their rice fields. Employment in tourism is also becoming more popular with young Balinese.

With its poorer soil and drier conditions, Sumba is largely savanna grassland. The majority of its people are subsistence farmers living in isolated villages only reached by dirt road. Many villages have no electricity, telephones or transport apart from horses. Also, the traditional social system separates people into powerful priests and kings (maramba) and slaves (ata). The maramba own land, run businesses and hold government positions, while the ata are not free to own land or large livestock.

Like many islands of Indonesia, Bali and Sumba have been heavily deforested and biodiversity has been reduced. This loss of trees and biodiversity impacts soil fertility, erosion, temperatures, rainfall and food production. Food security is an important issue on both islands.

Map of Bali



Map of Sumba



In the past 80 years, forest cover on Sumba has reduced from 60 percent to approximately _____ percent. Forest cover on Bali is approximately _____ percent.



Rainforests of Bali



Savanna grasslands of Sumba

Climate charts

Sumba – Waingapu 9° 39' S 120° 16' E 10 metres above sea level

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Precipitation (mm)	131	36	53	202	54	2	61	1	94	127	100	228	
Temperature	31	32	32	32	32	31	31	31	33	33	33	32	

Bali – Denpasar 8° 39' S 115° 13' E 41 metres above sea level

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Precipitation (mm)	348	287	213	94	76	71	51	23	41	91	154	292	
Temperature	30	30	31	31	30	29	28	28	29	30	31	30	

For you to do

- Look at the maps of Sumba and Bali and complete the cloze exercise at the bottom of p.12.
- Calculate the annual total rainfall or precipitation for Waingapu (Sumba) and Denpasar (Bali).
- Graph the precipitation and temperature data for Waingapu and Denpasar on the climate graphs at worldvision.com.au/schoolresources.
- What is the evidence for inequality between Bali and Sumba? Suggest reasons why there is inequality between these two Indonesian islands.
- Suggest ways that climate impacts the lives of people in Sumba and Bali. What other social, environmental and economic factors impact on their lives?

Bali – rice and forests

Bali is one of the wealthiest islands of Indonesia and a favourite tourist destination for Australians. It has a population of 3.8 million and tourism and rice production are the major sources of income and employment. It is the most densely populated island in Indonesia with 670 people per square kilometre (km^2). It has volcanic, fertile soil and high rainfall that is most suitable for agriculture. Indonesia is the third largest rice producer in the world.

Terraced rice paddy fields are a common sight across Bali. Approximately 84 percent of total rice area in Indonesia is irrigated and rice is grown year-round, with some farmers being able to cultivate three crops within a given 12-month period.



Since the 11th century, Balinese rice farmers have used a unique water management strategy. All peasants whose fields are fed by the same water course belong to a *subak* or irrigation cooperative. The farmers meet together to make decisions about the construction, maintenance and distribution of their water system. This strategy is essential to effective rice cultivation on Bali, where water travels through valleys and across terraces on its journey from mountains to the sea. It is a strategy that reflects a Hindu philosophy where temples and rituals seek to promote a harmonious relationship between the people and their environment. This is an important traditional approach for the challenge of supporting a dense population on a rugged volcanic island.

Bali has about 1,200 *subak* cooperatives and in 2012, UNESCO recognised *subak* farms as World Heritage sites.

However, rice production on Bali is threatened by the steady growth of tourist areas and increasing urbanisation. The lure of working in the building or tourist industry, combined with high land prices, tempt more and more farmers to sell their rice fields. Young Balinese are moving away from rice cultivation and productive arable land is lost as tourist developments are built. Tourism also demands more of the water supply and this is also a risk factor for the future of Bali's rice production.

Sumba – corn and savanna grassland

Sumba is one of the poorest islands in Indonesia. It has a population of 656,000 and a population density of 61 per km^2 . Most live as subsistence farmers in poor rural areas without electricity or sanitation.

It is hot with low rainfall. The dry season lasts nine months and drought is a constant threat. To make matters worse, annual burning of grassland and deforestation means that only 6-10 percent of the island is now covered in forest. Like parts of northern Australia, it is savannah grassland. The soil suffers from erosion, and during the short rainy season, topsoil is washed away and the ground fails to absorb water.

The shallow, infertile soil and heavy dependence on rain-fed agriculture make agriculture difficult. There is an over dependence on corn and cassava as the main crops and locusts have also been a threat.



Village housing on Sumba. Homes do not have access to water or sanitation. Cooking is done over a fire. Can you see the source for electricity in this house?

For you to do

1. What are the food security threats for Bali? What are the food security threats facing the people of Sumba?
2. Look at the maps, climate graphs, text and images on p.12-15. Use the Venn diagram at worldvision.com.au/schoolresources to show the similarities and differences between Sumba and Bali.
3. Read the text on p.12-15. Identify the different food security problems facing Sumba and complete the mind map at worldvision.com.au/schoolresources.

Food security strategies

Over the years, the communities on Sumba have explored a range of strategies to address their food security. In 1998, the El Nino weather pattern led to serious malnutrition and hunger. In response, World Vision and AusAID conducted a "food for work" program. Families were provided with corn and rice in exchange for working on community development projects.

Over the next 10 years, World Vision provided agriculture training, and seeds and tools to improve food production. This led to some success but with ongoing lack of rain and poor soil quality, work is now focusing on more long-term natural resource management.

For sustainable food security, the communities are now looking to plan for the future and use natural resources wisely and effectively. Communities now talk about "forests for our children".

Community leader Yunus with cassava intercropped with teak and mahogany. Here the cassava leaves are picked and provide food that is high in both protein and vitamins. Other crops planted among the trees include peanuts, soy and green beans.

The communities are now using agroforestry to help absorb water, improve soil fertility, and increase both their food security and their income. It is a risk management strategy in the face of climate change. This involves planting both trees and food crops together to create a more diverse, profitable, healthy and sustainable land-use system. Some of the teak and mahogany trees planted can be harvested after seven years to ensure an income for children to attend school. Others can be harvested after 10 years and more again after 25 years.

Another important strategy to address the problems of deforestation and burning is pruning and managing the regrowth of existing trees. Using local tools such as machetes and knives, farmers prune branches from existing tree stumps. The cut off branches are used for firewood and one central stem on the plant is left to grow straight up. The plant puts its remaining energy into this solitary trunk which enables the plant to grow more rapidly. The regrowth of vegetation strategy can be seen on the ABC Lateline program, Reforestation project adds hope to food crisis (4 minutes 55 sec). Viewable at: www.abc.net.au/lateline/content/2012/s3542254.htm

World Vision Indonesia works with community members in 44 villages on Sumba – to plant crops and preserve trees. More than 1,000 families have been encouraged to plant more than 30,000 trees across 30 hectares of land.



Community members worked hard to clear stones from the land and build stone fences. Communities have produced agreements to stop burning land, to fence and keep livestock out, and prune tree regrowth. This is important to protect the trees and crops from fire or cattle. Community members are seen here with their fence and agroforestry plantation in the distance.



After one year, the community's agroforestry plot shows rows of healthy teak and mahogany trees. These valuable tree species are planted to create a timber market and income to ensure that children are able to attend school. For example, some of the teak will be harvested after seven years and one hectare is expected to produce income of \$375. As the trees grow larger, a second harvest after 10 years will produce an income of \$810 per hectare and those harvested after 25 years are expected to produce an income of \$4,851.



Income from the timber grown is saved in a school bank account. Withdrawals can only be made for education or school purposes. This sign shows the cooperation of local organisations in this project (from left to right): the East Sumba local government, World Vision Indonesia, Bank NTT, a local Child Protection Agency.

Sign translation: **"Great parents save money for their children."**

Mrs Agustina Kariri Hara Farmer from Praibakul Village: "As well as meeting our everyday needs, with every harvest of bean, corn and vegetables, I always set some money aside for the children's saving account."



Another community strategy on the island includes the production and sale of traditional ikat weaving. Farmers' wives have now joined together to supplement their family income, so in times of drought and food scarcity, they will be able to buy food. Established in 2000, the group won the 2012 Food Security and Sustainability award for Indonesia. The weaving is produced from hand-spun cotton which is then dyed with indigo plants and kombu tree leaves.

For you to do

1. Read p.14-16 and explain why food security is an important issue for people on Sumba. Create a mind map showing strategies to improve food security on Sumba.
2. What is meant by the terms "agroforestry" and "intercropping"? How do they help address the needs of the people on Sumba?
3. Why is ikat weaving an important venture?

Reflection and action

I was surprised to find out...	
The most interesting thing I learnt was...	
I would like to know more about...	
I don't understand...	
One thing I would like to do now is...	

Edward de Bono's thinking hats

Use de Bono's six thinking hats to explore Australia's engagement with Asia: Indonesia. This includes the DVD chapter and written resources.



White hat: What are some of the facts you learnt as a result of looking at this topic?



Red hat: How do you feel as a result of looking at this topic? Hopeful, angry, depressed, thankful, disappointed, something else?



Black hat: What were some of the negative aspects to this topic?



Yellow hat: What are some of the positive, encouraging or hopeful aspects of this topic?



Green hat: What are some ideas or possible actions that could address an issue in this topic?



Blue hat: What is the "big picture idea" behind this topic? What have you learnt about Australia's engagement with Indonesia?