

December 2013

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The *Monitor* provides an update of developments in Pacific economies and explores topical policy issues.

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Highlights

- **Weak global growth is impacting the Pacific largely through lower commodity prices.** Fiscal consolidation in the United States (US) and moderating growth in developing economies has slowed growth in the world economy in 2013. Subdued global demand is keeping international commodity prices low—adversely affecting agriculture, mineral, and forestry export earnings of some Pacific economies. The moderation in growth in the People's Republic of China (PRC) is expected to dampen the outlook for Australia, with possible flow through effects on the Pacific.
- **Strong revenue performance in smaller Pacific economies has continued in 2013, while larger economies have struggled.** For the second consecutive year, fishing license revenues are exceeding budget targets in Kiribati, the Republic of the Marshall Islands (RMI), Nauru, and Tuvalu due to rising rates under a regional vessel day scheme. Tax collections in the Cook Islands, Fiji, and Vanuatu are also higher than expected. In contrast, revenue collections in the large resource exporters of the Pacific are weakening. Revenues from the mineral and petroleum sectors are below budgeted levels in Papua New Guinea (PNG), while declining production in major offshore fields is resulting in lower petroleum revenue in Timor-Leste. In Solomon Islands, revenues from log duties are decreasing due to falling log exports. Implementation of capital expenditure plans in these larger economies has also fallen behind schedule amid capacity and revenue constraints.
- **Fiscal pressures are expected to increase in 2014.** Public investments to support postcyclone recovery are expected to drive up debt levels and slow Samoa's progress toward fiscal consolidation in the near term. Fiscal consolidation efforts in Tonga hinge on the implementation of tight expenditure controls, particularly on the wage bill. As in 2013, PNG is planning to run another large fiscal deficit aimed at countering the effects of a slowdown in economic growth. In Timor-Leste, previous years' large annual fiscal surpluses are seen to diminish in the medium term due to declining petroleum revenues and continued high levels of government expenditure. Fiji may face challenges to keep its fiscal deficit in check amid plans to maintain high levels of capital expenditure and possible pressures from election-year related spending in 2014. Strengthening of public financial management systems, along with broader based structural reforms to stimulate private sector activity, would help ease fiscal pressures in the Pacific over the medium term.
- **Climate change economic impacts and adaptation efforts in the Pacific.** This issue's policy briefs address the economics of climate change and climate change financing challenges in the Pacific. The first brief summarizes projected costs of climate change in the Pacific, based on a recently released Asian Development Bank (ADB) study. The second brief focuses on the expected impact of climate change on agriculture, estimating potential changes in yields of major crops cultivated in the Pacific. The third brief is an external contribution from the World Bank's Pacific Catastrophe Risk Assessment and Financing Initiative, which outlines how risk pooling and insurance can enhance Pacific economies' financial resilience to natural disasters and climate change. The final brief considers mainstreaming of climate change into public financial management systems in the Pacific to facilitate increased development partner support and coordination.

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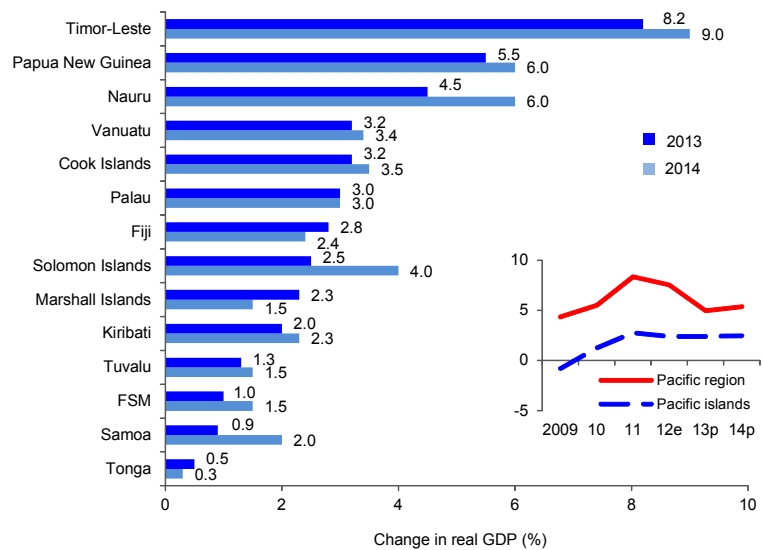
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Abbreviations

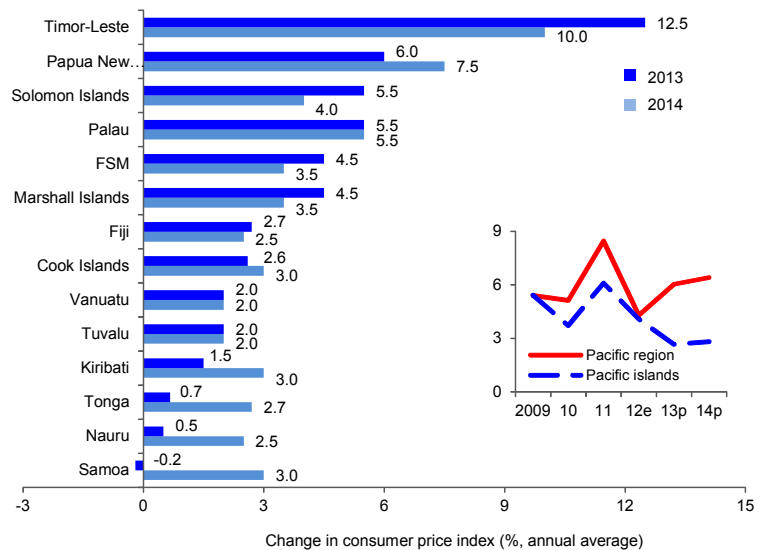
\$	US dollar, unless otherwise stated
A\$	Australian dollar
ADB	Asian Development Bank
F\$	Fiji dollar
fob	free on board
FSM	Federated States of Micronesia
FY	fiscal year
GCM	general circulation model
GDP	gross domestic product
IFPRI	International Food Policy Research Institute
lhs	left-hand scale
LNG	liquefied natural gas
m.a.	moving average
NZ\$	New Zealand dollar
PNG	Papua New Guinea
PRC	People's Republic of China
PCRAFI	Pacific Catastrophe Risk Assessment and Financing Initiative
RERF	Revenue Equalization Reserve Fund
rhs	right-hand scale
RMI	Republic of the Marshall Islands
US	United States
VAT	value-added tax
y-o-y	year-on-year

Asian Development Bank Projections

GDP growth



Inflation



e = estimate, FSM = Federated States of Micronesia, GDP = gross domestic product,
 p = projection

Note: Projections are as of November 2013 and refer to fiscal years. Regional averages of gross domestic product (GDP) growth and inflation are computed using weights derived from levels of gross national income in current US dollars following the World Bank Atlas method. Averages for the Pacific islands exclude Papua New Guinea and Timor-Leste. Timor-Leste GDP is exclusive of the offshore petroleum industry and the contribution of the United Nations.

Source: ADB estimates.

Notes

This *Monitor* uses year-on-year (y-o-y) percentage changes to reduce the impact of seasonality, and 3-month moving averages (m.a.) to reduce the impact of volatility in monthly data.

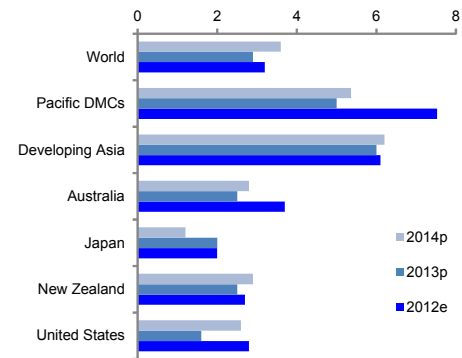
Fiscal years end on 30 June for the Cook Islands, Nauru, Samoa, and Tonga; 30 September in the Marshall Islands, the Federated States of Micronesia, and Palau; and 31 December elsewhere.

International and regional developments

Heightened risks to global growth

- Global growth is projected to decelerate to 2.9% in 2013 (from 3.2% in 2012) before recovering to 3.6% in 2014, according to the International Monetary Fund's 2013 *World Economic Outlook Update* (October 2013). The revised projections, which assume that the immediate fiscal challenges in the US will be addressed in a timely manner, are significantly lower than those made at the start of the year. Much of the downward revision is due to a marked slowdown in major developing economies and its spillover impacts. A few developing economies in Asia are facing challenges related to management of capital outflows, due to uncertainty about the timing of the US Federal Reserve's gradual exit from monetary stimulus measures.
- The outlook for Developing Asia has weakened, largely due to moderating growth in the People's Republic of China (PRC), subdued economic activity in India, and unexpectedly sluggish performances of the three largest Association of Southeast Asian Nations (ASEAN) economies—Indonesia, Malaysia, and Thailand. In the *Asian Development Outlook 2013 Update*, ADB cut its 2013 and 2014 growth projections by about half a percentage point each. Growth in Developing Asia is now projected to remain steady at close to 6% through 2013 and 2014.
- In November, the PRC government announced reforms to expand the role of markets in the economy. These include reform and opening up to competition of state-owned enterprises, interest rate and capital account liberalization, and the entry of private banks. The PRC also plans to reduce industrial overcapacity, particularly in steel, which would likely impact Australia through lower demand for iron ore.
- A marked slowdown of the Australian economy, from 3.7% growth in 2012 to a projected 2.5% in 2013, is due to external (i.e., modest economic growth in PRC) and domestic (i.e., fiscal consolidation and subdued private consumption growth) factors. Inflation is trending higher due to increased housing, health, and education prices. The unemployment rate reached 5.6% in September and is approaching 2009 highs. The lower value of the Australian dollar, low interest rates, and improving business and consumer confidence, are seen as supporting economic growth in the country in the near term.
- The New Zealand economy is seen to grow by 2.7%, on the average, in 2013 and 2014, supported by higher private consumption and earthquake-related construction activity. In an effort to cool down rising house prices and inflation pressures, the Reserve Bank of New Zealand implemented mortgage lending restrictions and signaled that the policy rate may start to rise next year. This policy move and a strong currency would likely put a dent on growth. Unemployment, especially among the Pacific labor force, remains stubbornly high.
- Growth in the US in 2013 is projected at 1.6%, from 2.8% in 2012, supported by recovery in the housing market and improved financial market conditions. Slower growth in 2013 reflects the effects of fiscal consolidation early in the year, which was equivalent to about 2.5% of GDP. There are tentative signs that economic conditions in the Euro area have stabilized. It is expected that, as fiscal consolidation is scaled back in 2014 and investor sentiment improves, the area will grow by 1.0%. A more modest planned fiscal stimulus and an increase in the

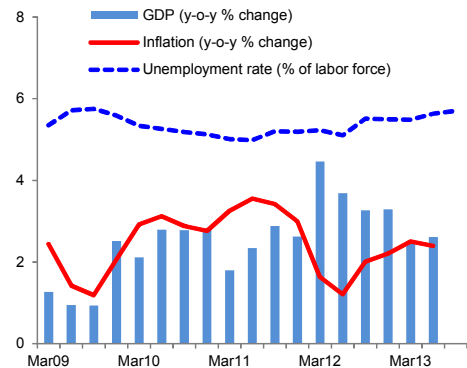
GDP growth
(%, annual)



DMC = developing member country, e = estimate, p = projection

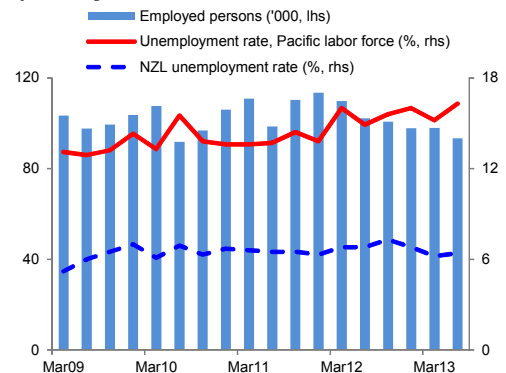
Sources: International Monetary Fund. 2013. *World Economic Outlook Update* (October 2013); ADB. 2013. *Asian Development Outlook Update*; and ADB estimates.

Australia economic indicators
(quarterly)



GDP = gross domestic product, y-o-y = year-on-year
Source: Australian Bureau of Statistics.

Employment of Pacific workers in New Zealand
(quarterly)



lhs = left-hand scale, rhs = right-hand scale
Source: Statistics New Zealand.

International and regional developments

consumption tax to address the high debt burden in Japan will dampen growth to 1.2% in 2014 from 2.0% in 2013.

- Fuel prices increased to a 16-month high in September. Average fuel prices for the first 9 months of the year, however, are still 2.0% lower than in the same period last year. Food prices in January–September 2013 were 7% lower (y-o-y), and average prices of coconut oil and timber also suffered declines. Weakening commodity prices are expected to persist until next year, with expectations of more favorable supply conditions including some degree of stability in the Middle East.

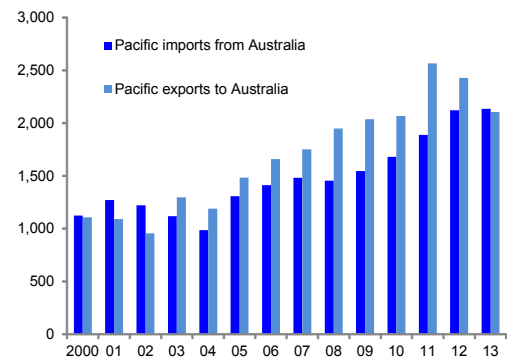
Exports remain weak, but show signs of improvement

- Merchandise exports to Australia from the Pacific fell by 13.4% (y-o-y) in January–August 2013. Papua New Guinea (PNG) continued to account for about 90% of total Pacific exports to the country, but slower economic growth in Australia and lower international prices depressed the value of PNG's petroleum exports. Growth in Pacific imports from Australia was flat during the first 8 months of 2013 compared with a year ago. Thus, the Pacific's balance of trade with respect to Australia worsened from a surplus of A\$307 million in January–August 2012 to a deficit of A\$32 million in the same period of 2013.
- Pacific exports to New Zealand increased by 1.9% in January–August 2013 compared with the same period in 2012. A sharp midyear rise in phosphate exports from Nauru more than offset declines in food exports from Fiji and PNG. With Pacific imports from New Zealand (excluding transshipped goods) rising by 2.5% (y-o-y) in the first 8 months of 2013, the region's trade deficit relative to New Zealand widened to NZ\$592 million from NZ\$577 million during the comparable period in 2012.

Continued growth in tourism to the Pacific

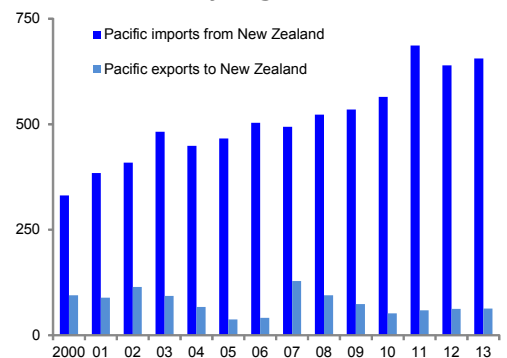
- After a soft start to 2013, tourism to major South Pacific destinations rebounded by midyear. Through the first 8 months of 2013, tourist numbers from major source markets were slightly above levels recorded in the comparable period of 2012.
- Departures from Australia to the South Pacific grew by 1.2% (y-o-y) over the first 8 months of 2013. An early decline in the number of Australians traveling to Fiji was reversed, while Australian tourism to Samoa recovered to around 2012 levels. Alongside the recovery in Fiji, Vanuatu recorded some moderation from its most recent phase of high growth in Australian tourist numbers. Australian departures to the Cook Islands and Tonga, however, declined sharply likely due to the dissipation of the base effects of underwritten Sydney–Rarotonga flights and intensified marketing efforts, respectively.
- New Zealand recorded similar growth of 1.3% (y-o-y) in departures bound for tourist destinations in the South Pacific through August 2013. This was supported by the acceleration in growth of departures from New Zealand to Fiji. Among smaller destinations, the Cook Islands and Samoa saw declining tourist numbers from New Zealand. Conversely, Vanuatu, and to a lesser extent Tonga, recorded significant gains. The rising value of the New Zealand dollar against the Fiji dollar and the Vanuatu vatu is driving greater tourism to these countries. Declines in the Cook Islands and Samoa may possibly reflect market saturation in more established South Pacific destinations on the part of New Zealand tourists.

Pacific trade with Australia
(A\$ million, January–August totals)



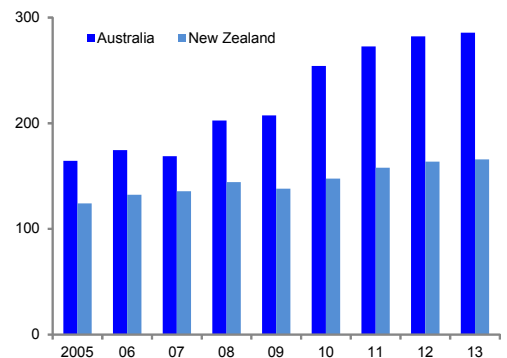
Source: Australian Bureau of Statistics.

Pacific trade with New Zealand
(NZ\$ million, January–August totals)



Source: Statistics New Zealand.

Tourist departures to Pacific destinations
('000, January–August totals)



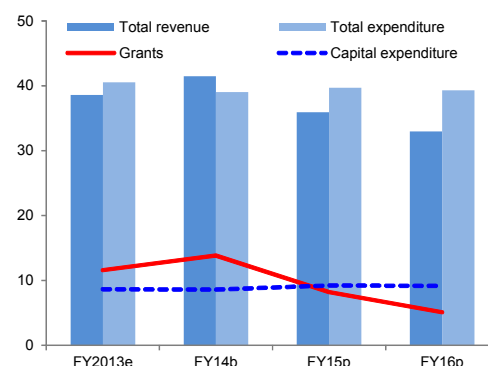
Sources: Australian Bureau of Statistics and Statistics New Zealand.

Lead authors: Christopher Edmonds, Isabel Ferino, Joy Ferre, Joel Hernandez, Rommel Rabanal, and Cara Tinio.

Cook Islands

- In FY2013 (ended 30 June), the government recorded an overall fiscal deficit equivalent to 2% of GDP. The deficit was lower than initial budget estimates due to higher-than-expected revenues from visitor arrivals, and because lower fuel prices and higher passenger numbers reduced government underwriting costs on Air New Zealand flights. Excluding grants, the FY2013 deficit was 13.5% of GDP.
- The FY2014 budget projects a surplus of 2% of GDP, largely due to a 25% increase in grant receipts. Excluding grants, the fiscal deficit is projected to narrow to 11.4% in FY2014. An increase in tax revenues of around 7% is expected with the indexing of levies on alcohol, tobacco, and sugared drinks, to maintain their real value; higher departure taxes; and projected gains in direct tax collections from sustained tourism growth and implementation of infrastructure projects in Rarotonga.
- A package of tax reforms is scheduled to be introduced in Parliament by December 2013. The package includes an increase in the value-added tax (VAT) rate from 12.5% to 15.0%, which will be offset by reductions in personal income taxes. Taxation of New Zealand pensions received by Cook Islanders is also included in the reform package.
- As part of its contribution to global and regional efforts against climate change, the Cook Islands is committed to derive 50% of its electricity requirements from renewable sources by 2015.

Fiscal aggregates
(% of GDP)



b = budget, e = estimate, p = projection
Source: Cook Islands 2013/14 Budget Book 1 (Budget Estimates).

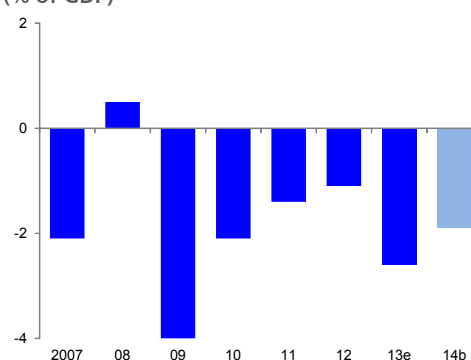
Lead author: Malie Lototele.

Fiji

Budget performance 2013

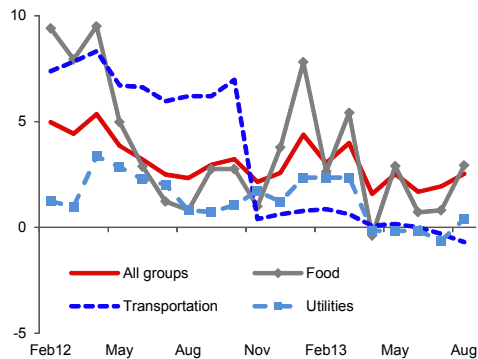
- Government estimates place Fiji's 2013 fiscal deficit at 2.6% of GDP. Reflecting the government's investment plans for public works—mainly road maintenance and upgrading—capital expenditure is expected to reach 32% of total expenditure. The increase in expenditure has been more than offset by improved revenue collection measures. Public debt has declined from 50.9% of GDP at the end of 2012 to 49.3% at the end of 2013. The debt is predominantly owed to domestic entities, while Fiji's external public debt constitutes just 14.5% of GDP. The government maintains a medium-term debt-to-GDP target of 45%.
- To boost consumption and investment this year, the government reduced taxes on personal and corporate incomes. These measures stimulated domestic investment and consumption activity, both of which grew strongly during the year. Consumption expenditure in the first 8 months of 2013 has been upbeat, underpinned by higher net incomes and remittances, and improved labor market conditions. According to the Reserve Bank of Fiji, new lending for consumption purposes more than doubled, and sales of new vehicles increased by 46%, over the period. The best available indicator of consumption activity, net domestic VAT collections, grew by 13.2% in the first half of 2013 compared with the first half of 2012. The reported figure suggests that full-year VAT receipts are on track to increase by 14.4% as projected in the 2013 budget.

Net budget deficit
(% of GDP)

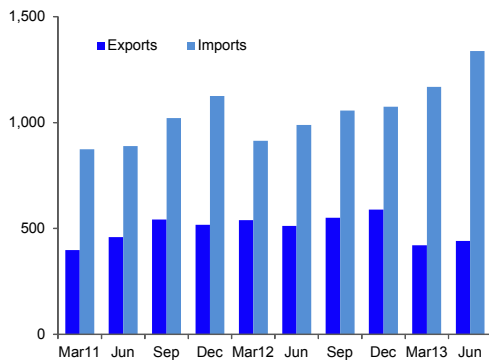


b = budget, e = estimate, GDP = gross domestic product
Source: Fiji Ministry of Finance and National Planning.

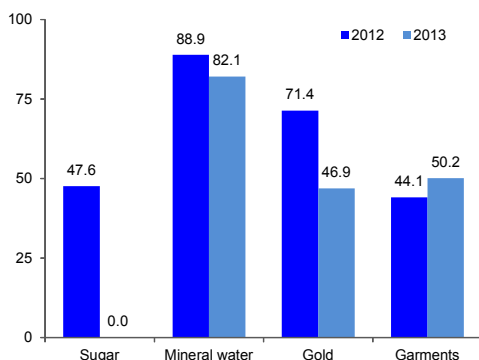
Fiji

Consumer price index, by commodity group
(y-o-y % change, monthly)

Source: Fiji Bureau of Statistics.

Balance of trade
(F\$ million, quarterly)

Source: Fiji Bureau of Statistics.

Principal exports
(F\$ million, January–June totals)

Source: Fiji Bureau of Statistics.

Budget 2014

- The 2014 budget prioritizes expenditures on social development and poverty alleviation programs. The budget for education is increased by 27% (to \$294 million), which will raise spending on education to 19% of the overall budget. For the first time, free primary and secondary education will be available to all students in Fiji. In addition, the government plans to introduce a new loan scheme to assist higher level students to cover the cost of tertiary education.
- Capital expenditure is increased by more than \$158 million in 2014, raising expenditures on capital projects to \$544 million, or 36% of the total budget. Spending on road maintenance and upgrading is projected to take up approximately 46% of capital spending next year.
- The government forecasts that the overall budget deficit will equal 1.9% of GDP in 2014. This will be financed partly through the sale of assets, including partial divestment of selected state-owned enterprises (SOEs) (e.g., Airports Fiji, the Fiji Electricity Authority, and Fiji Ports) and Fiji's overseas mission properties.
- In his budget address, the Prime Minister announced that elections would take place no later than 30 September 2014. Fijians will vote under a new constitution that the President signed into law in September 2013. Combined with rising capital expenditures, election-related spending could lead to challenges in keeping the fiscal deficit in check. However, higher spending could also spur higher growth in 2014.

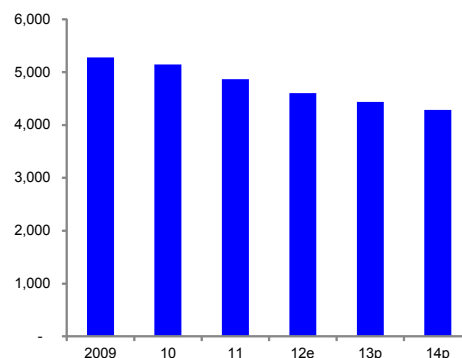
Recent developments

- Inflation in October was 3.3% (y-o-y). Food prices have stabilized after supply disruptions early in the year. Depreciation of the Fijian dollar by 2.6% against the US dollar, and the rising global price of crude oil, caused the cost of imported fuel to soar in the third quarter. The Fiji Commerce Commission's quarterly review reported that prices of fuel and liquefied petroleum gas rose by around 6%, on average, in October.
- Private sector investment increased from 10.3% of GDP in 2012 to 13.2% in 2013 according to the Reserve Bank of Fiji. Total investment is estimated to have reached approximately 28% of GDP—its highest level in more than 20 years. Foreign investment strengthened over the past year. Investment Fiji—the government's marketing and investment promotion arm—registered 192 new applications from foreign investors during the first 9 months of 2013, which represented a 96% increase in the number of applications over the same period in 2012. The estimated value of these projects totals \$544 million. Investment Fiji expects around \$270 million in projects to be implemented by the end of 2013. The gap between the large number of new investment applications and actual investment suggests overseas investors' interest in Fiji is rising, but they may be awaiting 2014 election outcomes before committing resources to projects.
- ADB's Private Sector Development Initiative released its private sector assessment for Fiji in August. Entitled *Re-Invigorating Private Sector Investment*, the report recommends detailed policy reforms and others measures to create a climate for sustained investment into Fiji, including ways the government could simplify investment incentives, strengthen public infrastructure, and improve understanding and enforcement of contract law.

Kiribati

- The 2013 fiscal deficit is now projected to be around 8.0% of GDP, from a budget estimate of 18.2%. This reflects higher revenues from fishing licenses, which are expected to reach A\$60 million (above budget estimates of A\$37 million for the year).
- Although higher fishing license revenues in 2012 and 2013 helped contain the fiscal deficit, these were not sufficient to contribute to the Revenue Equalization Reserve Fund (RERF). Thus, the RERF real per capita balance continued to decline and is now less than half of the 2000 level. The government needs to enhance revenue collections and keep expenditures in check in order to improve RERF dynamics over the long run.
- The 2014 budget is currently being prepared. Total expenditure is expected to be about A\$105 million, or 56% of GDP. This would incorporate higher subsidies to the Public Utilities Board for community services obligations of A\$2.0 million, and a copra subsidy of about A\$5.6 million. With growth of the wage bill likely to be constrained at 1.5%, other expenditures would need to be below A\$44 million. Prioritization is needed to ensure that health, education, and infrastructure spending remain adequate.
- The government has set targets for reducing reliance on imported fuels for electricity generation. By 2025, South Tarawa and Kiritimati plan to use renewable energy to supply 45% and 60%, respectively, of their electricity needs.

Revenue Equalization Reserve Fund
(A\$ per capita, in 2006 prices)



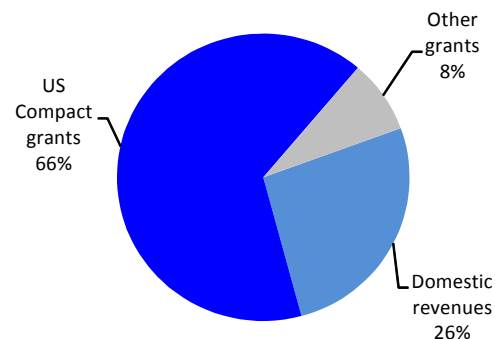
Source: International Monetary Fund. 2013. *Kiribati—Article IV Consultation Staff Report*. June.

Lead author: Malie Lototele.

Marshall Islands

- The IMF estimates that the Republic of the Marshall Islands (RMI) incurred a fiscal deficit equivalent to 0.8% of GDP in FY2013 (ended 30 September), unchanged from the previous fiscal year. In both periods, the deficit was driven by transfers to SOEs.
- The FY2014 budget projects total expenditure to reach \$146.5 million, 1.6% higher than under the FY2013 budget. Grants from the US and other development partners are projected to remain largely flat and continue to fund the bulk of public spending. Domestic revenue collections in FY2014 are projected to be 8.0% higher than budgeted in FY2013, largely due to an expected \$1.0 million increase in fishing license revenues.
- Long-term fiscal sustainability continues to be a concern. Reforms to SOEs, and the tax and social security systems, coupled with curbing public spending, will be key in achieving fiscal sustainability upon the expiration in 2023 of most grants under the RMI's Compact of Free Association with the US.
- The RMI plays a prominent role in generating global awareness about climate change, utilizing international forums to draw attention to the threat posed by rising sea levels to low-lying islands in the Pacific. It recently hosted the 44th Pacific Islands Forum, which gave rise to the Majuro Declaration for Climate Leadership. The RMI has committed to cut emissions by 40% relative to 2009 levels, supply 20% of energy requirements from indigenous renewable resources, and improve energy efficiency in the private, public, and transport sectors, all by 2020.

Sources of revenue and financing for FY2014
(% share)

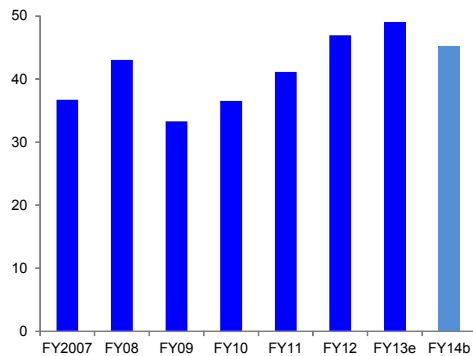


Source: ADB estimates based on the Republic of the Marshall Islands FY2014 budget.

Lead author: Cara Tinio.

Micronesia, Federated States of

National government expenditure
(\$ million, annual)



b = budget, e = estimate

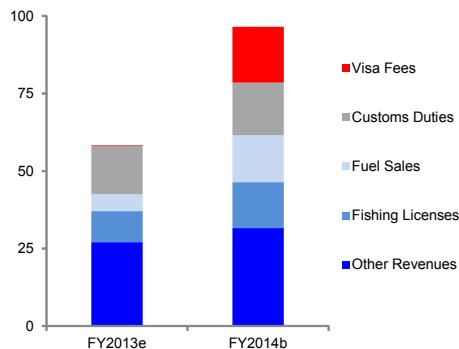
Source: Federated States of Micronesia national government budget documents (various years), from Congress of the Federated States of Micronesia website, www.fsmcongress.fm

Lead author: Rommel Rabanal.

- The original national government budget for FY2013 (ended 30 September) intended to cut expenditures by about 14% from the previous year's level. However, subsequent supplementary measures caused national government expenditures to grow by about 4.6% to \$49.1 million in FY2013.
- The FY2014 national budget plans to cut expenditure by 8% to \$45 million. A new law enacted in September 2013 reduces the national government's share in Compact sector grants from 10% to 5%, while simultaneously raising the shares of all four state governments (i.e., to Chuuk–40%, Pohnpei–27%, Yap–17%, and Kosrae–11%) starting this fiscal year. Compact sector grants are expected to amount to \$81 million in FY2014.
- The 2023 Planning Committee, composed of national and state executives, held its inaugural meeting in April. It is tasked to develop a comprehensive action plan to manage fiscal and broader economic issues related to the expiration of US economic assistance under the current Compact in 2023. Among others, the International Monetary Fund stresses the need for a balanced fiscal adjustment path, built upon realistic macroeconomic assumptions, to underpin efforts to build long-term sustainability and resiliency.
- The national climate change policy outlines measures to promote "carbon-negative" status. These include proper management of natural carbon sinks such as mangroves, biosequestration of carbon, and promotion of renewable energy and energy efficiency.

Nauru

Domestic revenues
(A\$ million)



b = budget, e = estimate

Source: Republic of Nauru budget documents, FY2013–2014.

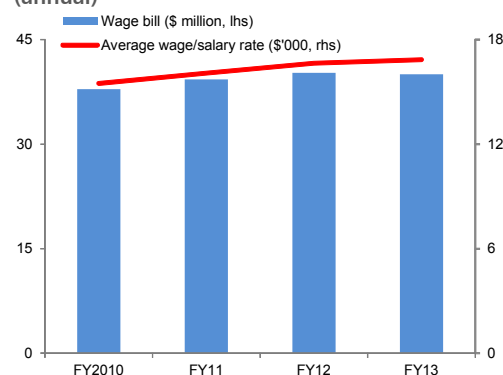
Lead author: Milovan Lucich.

- Growth remains driven by the expansion of the Australian Regional Processing Centre (RPC), which currently accommodates about 800 people. The RPC employs over 600 Nauruans and is now the second largest employer after the government.
- In October, the government announced an agreement with the Bendigo and Adelaide Banks of Australia to establish a community bank in Nauru in early 2014. Nauru has not had a bank or other financial institution since the Bank of Nauru closed in 2002. The government also plans to disburse A\$85–90 million in proceeds from the liquidation of the Nauru Phosphate Royalties Trust to about 4,000 Nauruan landholders. Financial literacy education is necessary to ensure this one off windfall contributes to the long term benefit of the recipients.
- A fiscal surplus of A\$0.4 million was realized for FY2013 (ended 30 June) compared with the budgeted deficit of A\$4.3 million. This was due to higher-than-expected revenues from visa fees and fuel sales associated with economic activity generated by the RPC. Dividends and royalties from phosphate mining are projected to be 30% lower in FY2014. Phosphate exports are projected at 483,000 metric tons in FY2014.
- The FY2014 budget continues recent strong increases in spending, which will exceed A\$96 million. Allocations for repayment of public debt, including pending salaries, and land lease arrears, are projected to increase to A\$19.8 million. As Nauru is unable to borrow, achieving this spending increase is contingent on achieving revenue targets. Visa fee payments are expected to raise A\$18 million, but whether this achieved is dependent on external factors that may be beyond the government's control.

Palau

- In FY2013 (ended 30 September), total government expenditure amounted to about \$70 million. This includes \$5 million in relief efforts in areas affected by Typhoon Bopha, which hit Palau in December 2012. Excluding funds for typhoon relief efforts, government spending actually declined slightly relative to the previous year.
- The FY2014 national budget plans for a 2.7% reduction in expenditures to \$68.4 million. To boost revenue collections, increases in the tobacco tax were approved, raising the tax from \$2.00 to \$3.50 per pack in January 2014 and to \$5.00 by 2015.
- After posting modest growth in the first half of FY2013, visitor arrivals have since fallen sharply. Total arrivals were down by 5.9% over the first 10 months of FY2013 compared with the same period last year. Monthly visitor numbers from Taipei, China have been declining (on a year-on-year basis) since August 2012.
- Along with other Pacific island economies, Palau is at the forefront of an international movement seeking to strengthen climate change mitigation commitments and limit global temperature rises. A study published in October 2013 projects that Palau will be among the first countries to experience temperatures beyond historical ranges (by 2023), leading to dramatic changes in its climate. Palau was hit by Super Typhoon Haiyan on November 8, and preliminary estimates point to damages equal to roughly 2% of GDP.

National government personnel costs (annual)



lhs = left-hand scale, rhs = right-hand scale

Source: Republic of Palau Fiscal Year 2012 Statistical Appendices.

<http://www.pitiviti.org/initiatives/economics/palau.php>

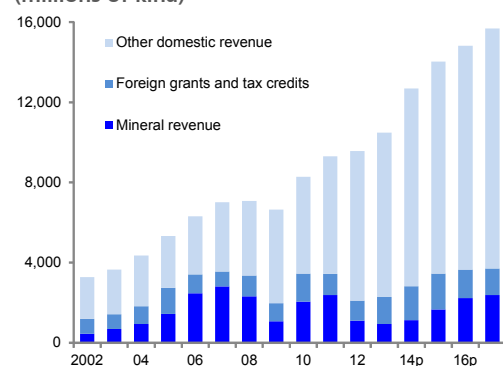
Lead author: Rommel Rabanal.

Papua New Guinea

Budget performance 2013

- Revenue performance in 2013 was mixed. A strong currency and falling international commodity prices caused lower than expected earnings from export industries. However, this was offset by enhanced tax compliance and higher than expected company profits, bringing total revenue collection broadly in line with budget targets.
- Funding for the four priority development enablers (infrastructure, education, health, and law and order) continued its rapid growth, increasing by 38% over 2012 levels. The share of total funding for these four priorities has risen from 20% of the budget in 2003 to 40% in 2013.
- The 2013 budget has, however, highlighted ongoing challenges with implementation capacity, as public agencies struggle to execute growing budgetary resources.
- The 2013 budget originally allocated \$2.4 billion for the government's annual Public Investment Program. Due to slow implementation, this amount was revised to \$1.6 billion mid-year. As of November 2013, only 52% of the revised allocation (or 35% of the original budget allocation) has been spent.
- Implementation issues have been particularly acute for new major national infrastructure projects, which suffer from weak oversight and are often funded before feasibility and preparatory design studies have been completed.

Government revenue, by source (millions of kina)

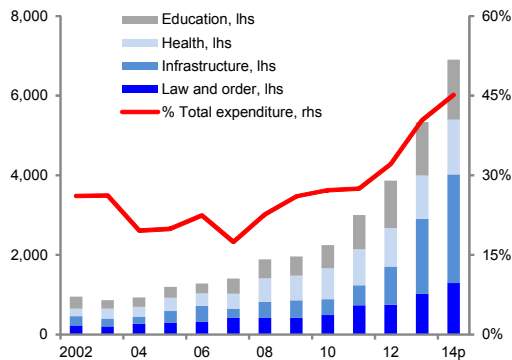


p = projection

Note: Mineral revenue includes all mining and petroleum taxes and dividends accruing to the national government.
Source: National budget documents (various years).

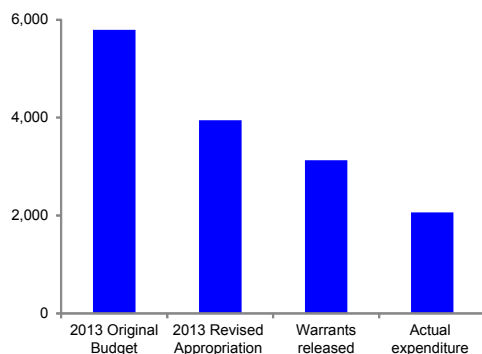
Papua New Guinea

Expenditure by development enabler
(millions of kina)



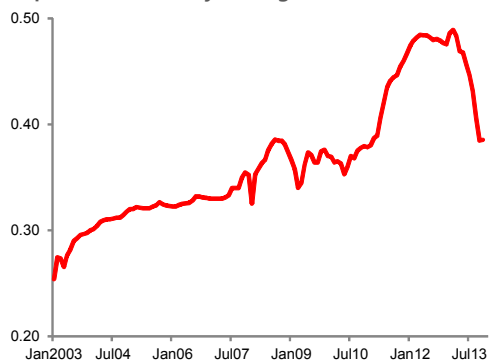
lhs = left-hand scale, p = projection, rhs = right-hand scale
Note: Sector expenditure calculated on an agency basis.
Source: National budget documents (various years).

2013 Public Investment Program implementation
(millions of kina)



Note: Warrant release and actual expenditure figures are as of 1 November 2013.
Source: National budget documents (2014).

Exchange rate
(\$ per kina, monthly average)



Note: \$ figures in the text assume an exchange rate of \$1.00 : 2.45 kina.
Source: Bank of Papua New Guinea.

- Higher disbursement rates were reported for the near-doubled funding allocated to sub-national levels of government in 2013. However, with limited financial or project reporting, details of the specific use of these funds, which comprise 25% of total budget allocations, remain unclear.

Budget 2014

- The 2014 budget projects a fiscal deficit equivalent to 5.9% of GDP. Revenues are expected to be dampened by lower global commodity prices and a slowdown in non-mining growth from 4.7% in 2013 to 1.6% in 2014. Nevertheless, total revenue collections are projected to grow by a record 23% in 2014. Underpinning this growth is an optimistic expectation of further improvements in tax compliance.
- The depreciation of the kina against major currencies such as the Australian dollar and the US dollar during the end of 2013 is also expected to bolster commodity export revenues and development assistance receipts, which are denominated in foreign currency.
- Expenditure priorities in the 2014 budget remain broadly aligned with the priorities established in 2013, focusing on additional funding for infrastructure, education, health, and law and order. The proportion of the budget allocated to these sectors is expected to increase to 45% in 2014.
- In spite of the implementation challenges experienced in 2013, infrastructure is again the major recipient of new funding, with allocations increasing a further 42% in 2014, to \$1.1 billion.
- The 2014 budget proposes a number of measures to improve the effectiveness of government spending. This includes an enhanced project screening and review process; continuation of the move toward a multiyear budgeting process, which was begun in 2013; integration of the previously separate "recurrent" and "development budgets" into a single national budget; further rollout of the integrated financial management system; and some strengthened accountability measures for public servants.

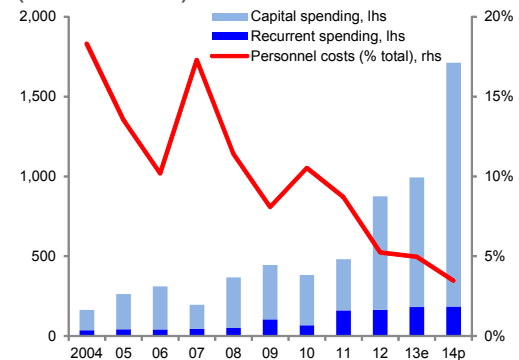
Recent developments

- Increasing resources for priority sectors remains a positive trend for PNG's fiscal policy. However, continued high rates of expenditure growth have reduced fiscal space over recent years.
- Central government debt, which had been reduced to an equivalent of about 22% of GDP in 2011, rebounded to 31% in 2013 and is expected to reach 35% in 2014. Although this level of public debt is in line with the limits established in the Medium Term Fiscal Strategy (2012-2017), a number of additional liabilities raise fiscal pressures.
- The 2014 Budget highlights that unpaid superannuation arrears as well as the financing of the government's equity stake in the PNG Liquefied Natural Gas project brings gross public debt to approximately 56% of GDP. Further, the inclusion of public enterprise debt of about 7.5% of GDP (2010 figure), would bring this figure to 63.5%.
- These liabilities remain at manageable levels under current fiscal assumptions. However, reining in expenditure growth and restoring fiscal buffers will be vital in the coming years to maintain macroeconomic stability.

Papua New Guinea

- Perhaps the most important fiscal priority for 2014 will be improving the implementation capacity of public sector agencies tasked with delivering the government's ambitious public investment plans.
- Central to this challenge will be reducing the government's focus on new capital spending in favor of additional resources for public sector agencies to plan, deliver, and maintain new assets.
- For example, the Department of Works (DoW), as a key executing agency of government's infrastructure plans, received a 60% funding increase in 2014. Yet, more than 97% of this increase in funding is for additional capital projects, with limited allocations for new maintenance and operational activities. In 2014, recurrent (operational) spending will comprise just 11% of DoW expenditure, down from 33% in 2011.
- Further, while capital funding for new projects has increased almost sixfold in the DoW since 2005, wages and salaries expenditure has increased by just 50%. This has brought the ratio of personnel costs to total spending down from almost 20% in 2004 to 3% in 2014.
- The 2014 budget offers welcome improvements in the prioritization of government spending towards key development enablers. However, to maximize the impact of these budget allocations, a larger focus on funding for skilled labor in key service delivery agencies, along with more resources to maintain assets once they are built, will be required.

Department of Works expenditure (millions of kina)



e = estimate, p = projection

Sources: National budget documents (various years), author's calculations.

Lead author: Aaron Batten.

Samoa

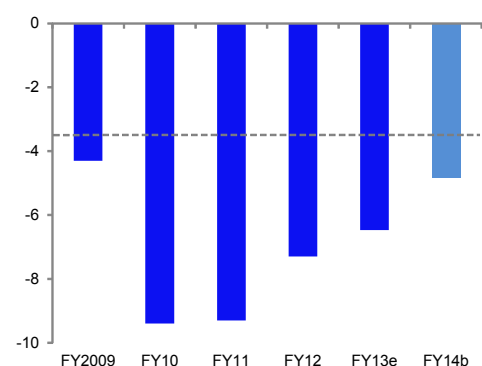
Budget performance FY2013

- The fiscal deficit is estimated to have narrowed from the equivalent of 7.3% of GDP in FY2012 (ended 30 June), to 6.5% in FY2013. While the overall deficit remains above the government's target of 3.5% of GDP, the improvement reflects progress toward medium-term fiscal consolidation begun in FY2010.
- Government revenue increased by an estimated 9.6% in FY2013, boosted by a 14.7% rise in external grants to assist with post-cyclone rehabilitation and reconstruction. Including allocations from the original and supplementary (passed in January) budgets, total government expenditure increased by 6.2% for the year. Current expenditure increased by 3.2%, while development spending rose by 14.2%.

Budget FY2014

- The FY2014 budget remains expansionary to support recovery and rebuilding efforts and to stimulate economic growth. Total expenditure is planned to increase by 6.9%, partly financed by a 44.9% increase in external grants. Samoa has committed to hosting the Small Island Developing States conference in 2014, which will contribute to a 16.9% increase in current expenditure.

Fiscal balance (% of GDP, annual)

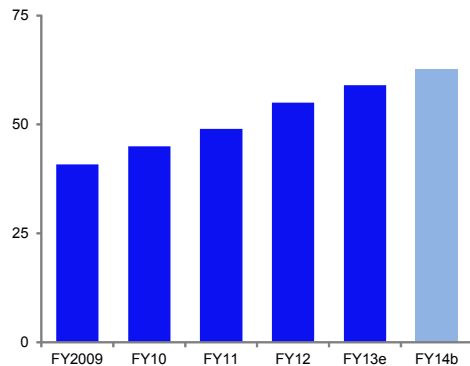


b=budget, e=estimate

Sources: Samoa Ministry of Finance Quarterly Economic Review, Budget Estimates 2013/14, and Asian Development Outlook 2013 Update database.

Samoa

Official external debt
(% of GDP, annual)



b=budget, e=estimate

Source: Ministry of Finance. Fiscal Strategy Statement 2013/14. 30 May 2013.

Lead author: Caroline Currie.

Recent developments

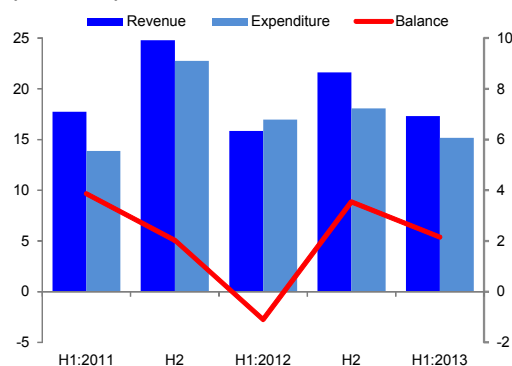
- Tourism arrivals and receipts contracted by 5.9% and 7.0%, respectively, in FY2013. Declines were particularly sharp in the postcyclone period following the temporary closure of many hotels and resorts on Apia.
- Remittance inflows, which are equivalent to about a quarter of GDP, rose by 6.5% in FY2013. Remittances in the first quarter of FY2014 were down by 0.9% (y-o-y), possibly reflecting the high unemployment rate among the Pacific labor force in New Zealand—the main host market for Samoan overseas workers.

Key issues

- A key challenge for Samoa is to bring external debt down to more sustainable levels. A public investment program to support post-cyclone recovery is projected to increase debt levels to about 63% of GDP in FY2014 and over 70% in FY2015, well above the government threshold of 50%. The high level of debt has led the World Bank and the International Monetary Fund to raise Samoa's debt distress classification from moderate to high.
- Samoa's experiences following the series of natural disasters since 2009 highlight the need to invest in measures to improve climate resilience. ADB is supporting efforts to reduce Samoa's vulnerability to natural disasters through measures such as cyclone- and flood-resiliency standards for housing, and development of the Apia Town Plan to avoid construction of new structures in high-risk areas.

Solomon Islands

Budget position
(% of GDP)



GDP = gross domestic product, H=half

Source: Central Bank of Solomon Islands Monetary Policy Statement September 2013.

Budget performance 2013

- Government revenue collections in the first half of 2013 were 14.1% higher compared with the same period in 2012, and equivalent to about 40% of the full year target. Tax collections grew more slowly than expected due to the continued weakness in prices of key commodities and dissipation of the benefits from one-off events (e.g., the British royal visit and hosting of the Festival of Pacific Arts). Goods tax revenues grew by 30.8% year-on-year in the first half of 2013. Revenues from log duties declined by 17.3% due to the fall in log exports.
- In response to the weaker-than-expected revenue collections, the government reduced its capital expenditures. However, recurrent expenditures increased, on the back of higher spending on goods and services. Overall, total expenditures fell by 6.6% year-on-year and a fiscal surplus equivalent to 2.1% of GDP was realized in the first half of 2013.
- Public debt continues to trend lower. At the end of June, this was equivalent to 11.0% of GDP. Contingent liabilities are also low at the equivalent of 0.8% of GDP.

Solomon Islands

Budget 2014

- The 2014 budget is expected to be tabled in Parliament in November. A key challenge for the government is controlling recurrent expenditure amid modest growth in revenues. This is critical in light of pressures to significantly increase spending on government payroll and overseas scholarships.

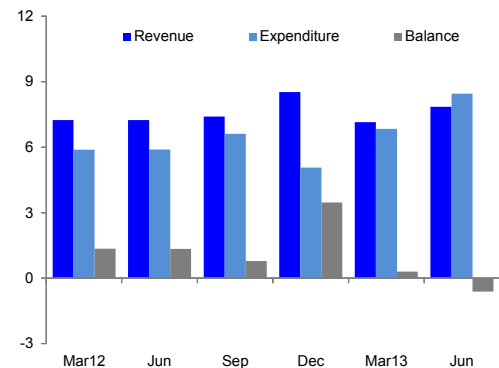
Recent developments

- Export volumes of key commodities were lower in January–September 2013 compared with the same period a year ago. Log exports declined by 8.1%, and gold exports by 21.8%, during this period. In May 2013, log prices hit their lowest level in 3 years while gold prices fell below \$1,300 per ounce in July 2013 for the first time since September 2010. Export volumes of other commodities (i.e., copra, cocoa, and fish) also trended lower, largely due to weak demand overseas.
- Total export earnings fell by 16.7% (y-o-y) in the first half of 2013 due to declines in international commodity prices, while higher food and fuel imports increased the total import bill by 14.0% during the same period. Development partner inflows and foreign direct investments continue to support foreign reserves despite the country's worsening trade deficit. Gross foreign reserves were equivalent to 10.7 months of imports as of the end of September.

Key issues

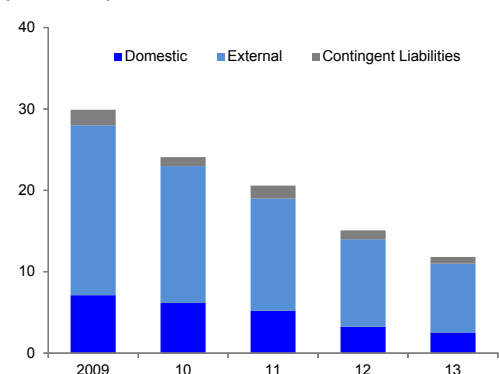
- Tertiary scholarships have emerged as a key budget issue. Funding for scholarships was almost doubled under the 2013 budget supplement, which added \$10 million to the original allocation of \$14 million. Scholarships are typically allocated through a nomination review committee, but it appears that ministerial intervention has been able to sideline the committee, resulting in more scholarships granted than initially budgeted. There also appears to be no linkage between skills gaps and scholarship issuance.
- There has been an overall improvement in public financial management (PFM) systems, as evidenced by a 2013 report on the Public Expenditure and Financial Accountability (PEFA) Assessment. Further, the report comes amid considerable transition, as various PFM reforms are either newly implemented (e.g., financial management information systems), or close to being implemented (e.g., a new Chart of Accounts; a new Public Finance and Audit Act; revised Financial Instructions; and a new Procurement Unit within the Ministry of Finance and Treasury).
- The PEFA report noted issues of (i) budget credibility and transparency, including concerns about the quality of in-year budget reports; (ii) a need for better multiyear planning, revised Customs and Excise penalties, and staffing of internal audit functions; (iii) weak information on tax debts; (iv) non-compliance with procurement rules; (v) use of contingency warrants without prior approval of Parliament, among others. Further, the report observes that line ministries lag in their response to issues raised in audit reports.

Recurrent budget position (% of GDP)



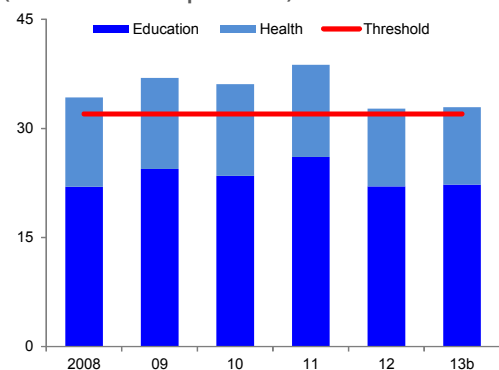
Source: Central Bank of Solomon Islands.

Public debt (% of GDP)



Note: For 2013, data is for the period from January to June.
Source: Central Bank of Solomon Islands.

Social expenditure ratio (% of recurrent expenditure)

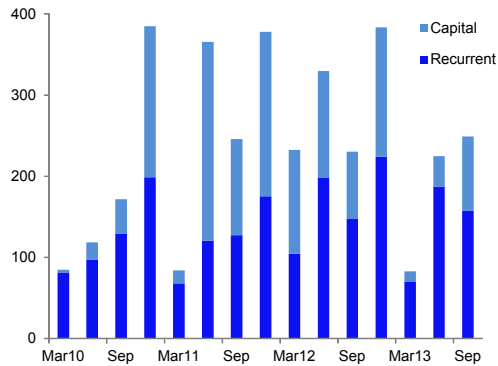


b = budget

Source: Solomon Islands Ministry of Finance and Treasury.

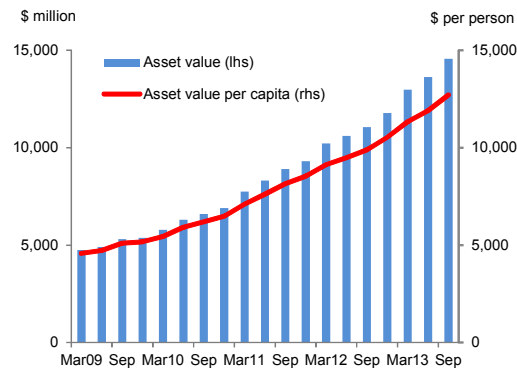
Timor-Leste

Components of total expenditure
(\$ million, quarterly)



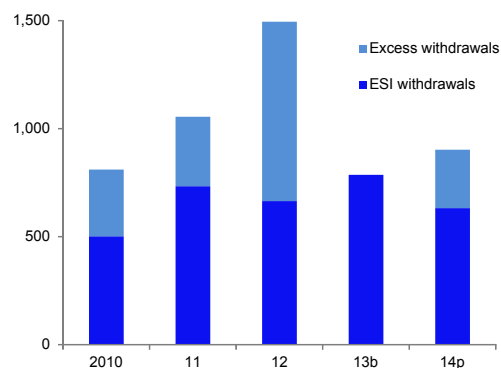
Source: Government of Timor-Leste Transparency Portal.

Petroleum Fund assets
(\$ million, quarterly)



lhs = left-hand scale, rhs = right-hand scale
Source: Timor-Leste Ministry of Finance.

Petroleum Fund withdrawals
(\$ million, annual)



b=budget, ESI=estimated sustainable income, p=projection
Source: Timor-Leste Ministry of Finance.

Budget performance 2013

- Government expenditures are largely funded from offshore petroleum production revenues are the main driver of nonpetroleum GDP growth. Expenditures fell by 29.7% year-on-year in the first 3 quarters of 2013. The decline was most pronounced in capital expenditures—down by 58.6%. Spending ramped up in the third quarter, but year-to-date capital expenditure was less than 20% of the \$806.5 million planned for 2013. Recurrent expenditure fell by only 7.8% year-on-year in the first 3 quarters of 2013. Increases in salaries and wages were offset by declines in public transfers and purchases of goods and services. Lower transfers are likely to depress private consumption and reduce social safety nets amid rising consumer prices.
- The value of Timor-Leste's Petroleum Fund reached \$14.6 billion as of September 2013, \$2.8 billion higher than at the end of 2012. Receipts from oil royalties and taxes in the first 3 quarters of 2013 increased by 15.9% (y-o-y), while net investment income grew 61.1% (y-o-y). A total withdrawal of \$180 million was made from the Petroleum Fund during the same period.

Budget 2014

- The 2014 national budget plans for a 9.4% reduction in total expenditures compared with 2013 allocations. The bulk of the decline is projected to be in government-funded capital expenditures, which are scheduled to revert to 2011–2012 levels of about \$500 million from the budgeted amount of over \$800 million in 2013.
- However, recurrent expenditures are budgeted to increase by a total of 11.1%. The wage bill is projected to rise by 4.0%, while purchases of goods and services are seen to increase by 7.7%. Following a sharp decline in 2013, public transfers are set to rise by 22.3% in 2014 to finance the expansion of social welfare programs for certain individuals (e.g., veterans, elderly, single mothers) and for disaster relief.
- Total revenues are projected to decline by 41.3% in 2014 as income from offshore petroleum operations is seen to fall by almost 50% to \$1.4 billion. Petroleum revenue is expected to decline in the medium term as production in the Bayu-Undan and Kitan oil fields appear to have peaked in 2012.
- The 2014 budget plans for a \$270.6 million withdrawal from the Petroleum Fund, which is above the government's own estimated sustainable withdrawal from the fund of \$632.3 million. The government also intends to use cash reserves of \$379.9 million accumulated from previous years' unexpended budgets to support 2014 expenditures. Financing through borrowing remains low at \$51.0 million in 2014, but plans to increase annual debt financing to an average of \$138.3 million over the next 3 years.
- Although petroleum revenues continue to support fiscal surpluses, the size of the surplus is projected to shrink to 6.2% of GDP in 2014. This follows fiscal surpluses of 178.4% in 2012 and 77.7% in 2013.

Recent developments

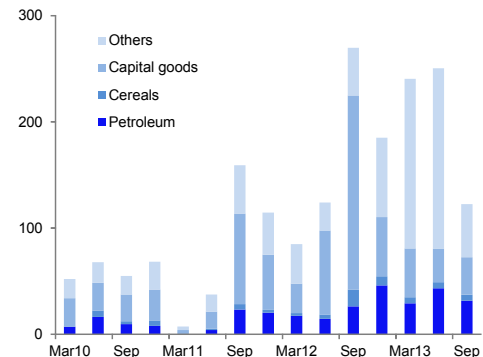
- The economy continues to grow but is showing signs of slowing down. Coming from 25.8% year-on-year growth in January, growth in money supply slowed to 4.0% by September. Private

Timor-Leste

sector credit continues to trend higher, reaching a new high of \$165.6 million at the end of June, but the pace declined to a 2-year low. Credit to individuals rose by 13.1% while credit to commercial and financial companies grew by 25.2%. Lending to agricultural producers registered double-digit growth, which suggests expanded investment in coffee farms.

- The value of merchandise imports increased by 28.2% year-on-year in the first 3 quarters of the year due to high purchases of petroleum products. The value of imported cereal and capital goods fell by 21.2% and 61.2%, respectively, in the same period.
- Vehicle registrations in the first half of 2013 were 25.8% higher than a year earlier. This was largely due to a greater number of motorcycle registrations, as registration of passenger cars was down by 11.8%. Sales of electricity were 7.8% higher over the same period, following the completion of the national electrification program.
- In spite of falling international food and fuel prices, annual inflation remains high at 12.6% in the first 3 quarters of 2013. Food prices increased by 16.1%, driven by significantly higher rice prices. Inflationary pressures are likely to moderate as public expenditure is running below budget, and economic growth appears to be slowing. The completion of the national electrification project in 2012 also appears likely to ease infrastructure bottlenecks, which drove recent high inflation. However, these factors may be partly offset by higher inflation in Indonesia, Timor-Leste's major trading partner.

Imports, by category (\$ million, quarterly)



Source: Timor-Leste National Statistics Directorate.

Lead authors: Christopher Edmonds and Joel Hernandez.

Tonga

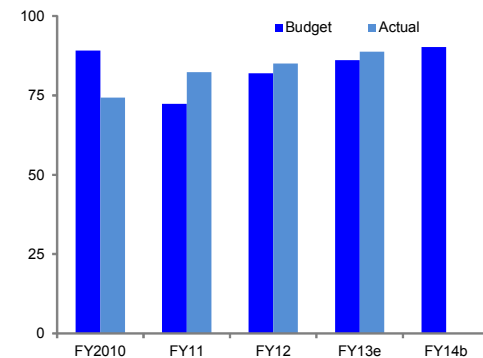
Budget performance FY2013

- In FY2013 (ended 30 June), the fiscal deficit was equivalent to 1.0% of GDP compared with a budgeted fiscal surplus of 0.1%. This was due to a supplementary budget allocation to fund land purchases for airport development and lower-than-expected external grants. The deficit was partly contained by reductions and under-spending in recurrent expenditure.
- Government revenues were in line with projections. Good performance in tax revenue collections offset shortfalls in nontax revenue. Income tax collections were 38% above target while revenues from consumption and trade taxes were on par with budget projections.
- With external grants falling short of expectations, the government adopted stringent expenditure control measures. These kept total government expenditure at around 6.3% below the budgeted level.

Budget FY2014

- A fiscal surplus equivalent to 1.8% of GDP is projected for FY2014, with domestic revenue seen to increase by 2.4% and budget support from development partners in support of the government's Joint Policy Reform Matrix rising by 202.5%. The increase of 12.2% in total expenditure is concentrated in debt repayments and the establishment of several business development grant programs.
- Restraint in salary expenditure is maintained, with 2.6% growth in the wage bill, lower than projected inflation of 3.5% in FY2014. Wage bill growth is also lower than growth in overall

Revenue performance (\$ million, annual)

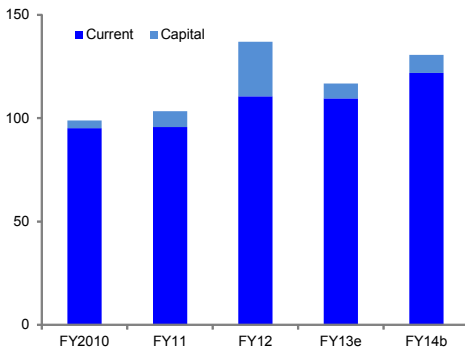


b=budget, e=estimate

Source: Tonga Budget Statement 2013-14.

Tonga

Government expenditure
(\$ million, annual)



b=budget, e=estimate

Source: Tonga Budget Statement 2013-14.

Lead author: Saia Faletau.

government expenditure. This reflects progress toward the goal of reducing the wage bill to 45% of total expenditure (currently around 50%). The size of the public workforce is being tightly controlled. New civil service appointments require joint approval of the Ministry of Finance and the Public Service Commission.

Recent developments

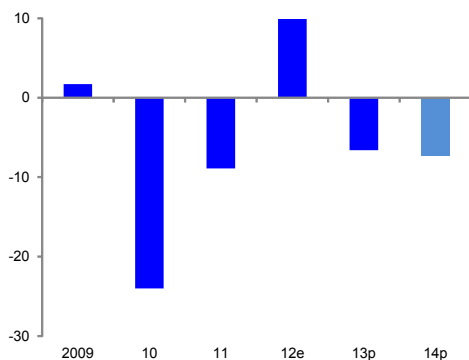
- Private sector credit continues to decline. Lending to businesses fell by 16.1% in June 2013 (y-o-y). The government has initiated discussions with multilateral development partners to establish a risk-sharing facility for commercial banks lending to businesses.
- Visitor arrivals have increased in recent months due to growth in the expatriate Tongan market. Following 4 years of decline, remittances rebounded, growing by 5.5% in FY2013.

Key issues

- The government has accelerated SOE reform with assistance from multilateral partners, privatizing the International Dateline Hotel, expanding the commercial role of Tonga Development Bank, and restructuring Tonga Telecommunications Company.
- Total public debt in FY2013 remains around 43% of GDP. More than 90% of total debt is owed to external creditors (much of which is denominated in Chinese Yuan). Government debt servicing commitments have moderated following rescheduling of repayments of the Export-Import Bank of China loans.

Tuvalu

Fiscal balance
(% of GDP, annual)



e=estimate, p=projection

Source: International Monetary Fund. 2013. Staff Visit to Tuvalu: Concluding Statement of the IMF mission.

Lead author: Malie Lototele.

- Government revenue in the first 9 months of 2013 is 89.8% of budget estimates. There has been a substantial rise in external grants, particularly from Australia, New Zealand, and ADB, and in nontax revenues. The latter is due to higher fishing license fees, improved fishing conditions, enhanced capacity in the fisheries department, and lower value of the Australian dollar.
- There is potential for a further increase in tax revenue this year as an ongoing audit of SOEs has identified tax arrears. These amount to around A\$1 million, or equivalent to 16% of tax revenue.
- Current expenditures for the first 9 months of the year were 69.6% of total budget estimates. However, expenditure on the Tuvalu Medical Treatment Medical Scheme over the same period was 95.6% of budget estimates. This is expected to increase further despite earlier plans to curtail spending on this scheme.
- In preparation for the 2014 budget, the government assessed the specific needs of each ministry to identify their priorities. These were then presented at a meeting with development partners to help facilitate coordination and targeting of assistance. The 2014 budget is expected to be compiled by December.
- In line with its policy to generate 100% of its power from renewable sources by 2020, the government secured the equivalent of \$2.6 million from the European Union and \$8.3 million from New Zealand for solar energy projects on six of the seven outer islands. The government is seeking an additional \$3.3 million to finance similar projects in the outer island of Vaitupu.

Vanuatu

Budget performance 2013

- The 2013 budget was not passed due to the change in government in March 2013. Government revenues increased by 10% (y-o-y) in the first half of 2013 due to higher collections of VAT and import duties. The 15.4% rise in VAT collections reflects improved compliance and collections of arrears, while the 8.0% increase in import duties despite lower tariff rates suggests greater import volumes due to strong private demand. This is supported by higher food and fuel imports during the period.
- Recurrent expenditures fell by 6.7% year-on-year in January–June 2013 due to expenditure controls. Purchases of goods and services and spending on social benefits declined, though these were partly offset by increased compensation for employees, subsidies and transfers, and interest payments. Capital expenditures in the first half of the year were equivalent to 43.7% of total capital expenditure in 2012, partly due to continuing declines in grants from development partners. After 3 consecutive years of fiscal deficits, Vanuatu appears on track to generate a small surplus in 2013, supported by a fiscal surplus equivalent to 0.3% of GDP realized in the first half.
- After domestic borrowing surged by 33% in 2012, it stabilized at about \$60 million in June 2013. Overall public debt, at 21.6% of GDP by the end of 2012, remains low. Contingent liabilities are estimated at 13.8% of GDP.

Budget 2014

- Finalization of the 2014 budget may be delayed. However, the IMF projects a substantial increase in capital expenditure, from 0.6% of GDP in 2013 to 3.2% in 2014. The bulk of the increase will come in the form of development partner-supported investment projects such as the construction of new wharf and investments in inter-island shipping. Domestic revenue collections are also seen to pick up with improved compliance.

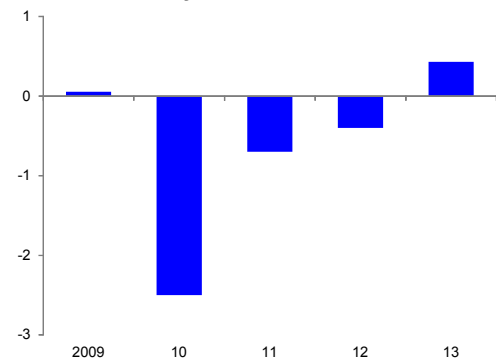
Recent developments

- Tourist arrivals increased by 2.1% (y-o-y) in the first half of 2013, significantly lower than the 16.3% growth recorded in the comparable period in 2012. Visitor arrivals from New Zealand increased by 15.1%, while there was minimal change in Australian arrivals.

Key issues

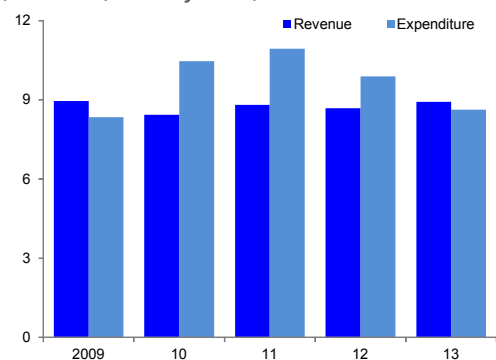
- In July 2013, the government signed a \$350 million (equivalent to about 40% of GDP) contract with Vanuatu Trade Development, a Singapore-based company, to upgrade Vanuatu's airports and operate the concession for the next 50 years. As part of the contract, the government will issue promissory notes guaranteeing repayment should the government breach the agreement at any time.
- The controversy over the awarding of the concession prompted an unsuccessful high court challenge from the opposition. This highlights the importance of transparency and due process in the formulation of public–private partnerships.

Budget balance
(% of GDP, January–June)



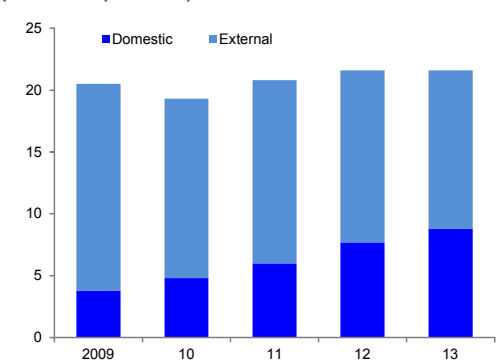
Sources: Ministry of Finance and Economic Management and Reserve Bank of Vanuatu.

Recurrent budget position
(% of GDP, January–June)



Sources: Ministry of Finance and Economic Management and Reserve Bank of Vanuatu.

Public debt
(% of GDP, annual)



Source: International Monetary Fund. 2013. *Vanuatu-Article IV Consultation Staff Report*. June.

Economics of climate change in the Pacific

Climate change has emerged as a significant global challenge. Sharp increases in average temperatures worldwide, melting polar ice caps, rising sea levels, and more frequent and extreme weather events are likely to result in adverse environmental, social, and economic impacts. The Pacific, in particular, is already experiencing the effects of climate change: for instance, rising sea levels have been observed in the atoll economies of Kiribati, the Republic of the Marshall Islands (RMI), and Tuvalu, among others. Sea levels in Kiribati are reportedly rising at about 2.9 mm per year, significantly above the observed global average of 1–2 mm per year. This is contributing to overcrowding in the main islands, as lower-lying outer islands are slowly being inundated or losing their freshwater supply.

While the region has always been highly vulnerable to natural disasters the most direct damage from climate change can be seen through the increasing occurrence of intense rainfall events. Extreme climate events lead to damage and loss of property including public infrastructure (e.g., roads and bridges, school and hospital facilities, and power generation and transmission lines) and productive sectors (e.g., agriculture and tourism). These events also lead to lower economic growth, higher inflation (particularly in the short run), and deterioration of fiscal and current account balances. They also result in employment and personal income losses and, in some cases, increased poverty incidence. In early 2005, five cyclones (four of which were classified as Category 5 severe tropical cyclones) hit the Cook Islands in 5 weeks. In 2008, Severe Tropical Cyclone Gene was estimated to have caused \$32 million worth of damage in Fiji, mainly to roads and power infrastructure. Tropical depressions also caused severe flooding in Fiji in 2009 and 2012, damaging the sugar and tourism sectors. Most recently, Severe Tropical Cyclone Evan hit the South Pacific in December 2012, causing damages valued at over \$100 million in Fiji. Its impact was even more severe and widespread in Samoa, where total damage was estimated to be over \$200 million—equivalent to about 30% of the country's GDP. It was the worst cyclone to hit the country in 20 years. It is estimated that the Samoan economy will continue to feel the negative effects of Cyclone Evan until 2015.

Pacific economies will continue to be affected by the impacts of climate change. Food production, freshwater supply, coastal and marine resources, infrastructure, and human health are increasingly at risk, with corresponding adverse impacts on the region's development prospects. ADB's Strategy 2020 identifies climate change as a priority concern, driving ADB to work to build knowledge and increase general understanding of possible climate change impacts and risks, as well as enhance its

developing member countries' (DMCs) capacities to integrate climate change concerns in their policy and decision making.

This policy brief draws on a forthcoming report by the Economics and Research Department and the Pacific Department of ADB on the economics of climate change in the Pacific, summarizing the report's projections of economic costs of climate change on specific sectors and countries in the region, estimating resource requirements to finance adaptation strategies in the coming decades, and discussing the policy implications of climate change for Pacific governments.

Methodology

Projections of climate change impacts and their resulting economic costs are based on a modeling approach involving (i) dynamic downscaling of a regional climate model to analyze future climate conditions at the country level, (ii) physical and sectoral impact assessments for sea level rises, rainfall, agriculture and fisheries, tourism, coral reefs, and human health, and (iii) economic assessment of vulnerable sectors and potential future losses. A downscaled regional climate model was applied to six Pacific DMCs: Fiji, Papua New Guinea (PNG), Samoa, Solomon Islands, Timor-Leste, and Vanuatu.

The analysis considers a medium emission scenario (the "A1B scenario" of the Intergovernmental Panel on Climate Change Special Report on Emission Scenarios (SRES)) to project future local climate conditions and impacts on sea-level rise, rainfall, and agriculture. This scenario assumes rapid world economic growth, global population that peaks at about 9 billion by 2050, a rapid introduction of new and more efficient technologies, and a balanced use of fossil fuel and alternative sources of energy. A high-emission scenario (SRES A2 scenario) is also used to project economic impacts on specific sectors and countries to fully gauge the potential costs of climate change across the Pacific. This more pessimistic scenario assumes slow world economic growth, high population growth, and a more gradual technological shift towards more efficient energy sources.

Projected climate extremes and impacts

In the Pacific, average annual mean temperatures are projected to increase, although there is high variation across countries. Temperatures are projected to rise by 2.0°C by 2070 in Fiji and Samoa, and by more than 2.5°C in PNG, Solomon Islands, Timor-Leste, and Vanuatu relative to the 1990 level. The frequency of

Economics of climate change in the Pacific

El Niño and La Niña weather patterns in the Pacific is also seen to increase by more than 40%, increasing the likelihood of more severe droughts and intense rainfall.

By 2100, rises in sea level across the Pacific are projected to be significantly higher than the anticipated global average increase of 0.21–0.48 m. At high estimates, sea levels could rise by as much as 1.74m in Solomon Islands and 0.92m in Kiribati. Coastal areas, where densely populated communities, business centers, and major infrastructure such as seaports and airports tend to be located, will be at greater risk of flooding or inundation.

Erratic weather, higher temperatures that slow down crop growth in tropical climates, and saltwater intrusion are the main channels through which climate change would impact agricultural production. Yields of Pacific staple foods and commercial crops are projected to decline significantly over the long term due to climate change. For example, sweet potato cultivation is projected to decline by as much as 59% in PNG and by 15% in Solomon Islands by 2050. Over the same period, sugarcane yield in Fiji is seen to fall by 9%, while maize yields could decrease by as much as 10% in Timor-Leste and by as much as 14% in Vanuatu. Such declines will adversely affect the future earning potential of farmers and farming communities in the Pacific.

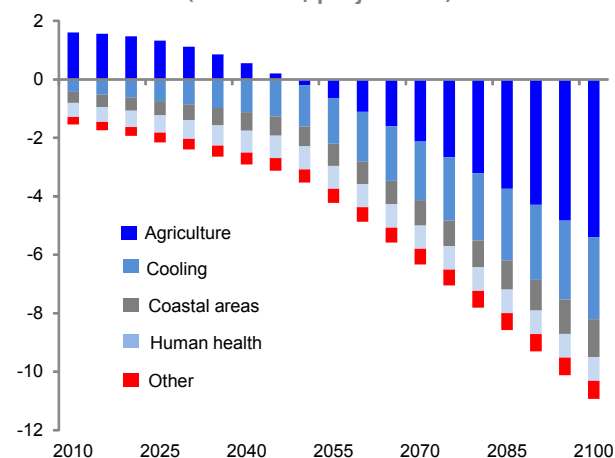
Most low-lying islands and atolls depend on groundwater or rain capture for freshwater. Climate change can reduce the availability of drinking water in these areas through saltwater intrusion of groundwater sources due to rising sea levels, and through more erratic rainfall patterns. In many areas of the Pacific, surface water supply is already insufficient to meet residential, agricultural, and industry/service sector demand. With climate change and rising demand for water, even areas of Fiji, Timor-Leste, and Vanuatu with current water surpluses are expected to suffer water shortages.

Climate change costs in the Pacific

Based on estimates of climate change impacts at a low geographic scale, the research developed an integrated economic assessment model to measure the potential costs attributable to climate change. The model projects climate change impacts at the sector level and identifies the most economically vulnerable sectors based on potential future losses.

Under a high-emission scenario with slow growth and technological change (the A2 scenario), costs to the Pacific region attributed to climate change are projected to rise from 0.2% of its annual GDP in 2015 to 3.5% in 2050, and to as much as 10.9% by 2100.

Figure 1: Climate change impact in the Pacific, by sector (% of GDP, projections)



Source: ADB. 2013. The Economics of Climate Change in the Pacific.

Agriculture is seen to be the sector likely to be hit hardest by climate change. Relatively mild increases in temperature could benefit crop yields in coming years, with highest net gains (equivalent to 1.6% of Pacific GDP) projected in 2015. However, these gains are expected to dissipate when temperatures rise by over 2°C by 2050. Afterward, the agricultural sector is seen to realize increasing net economic losses, which could reach an equivalent of 5.4% of Pacific GDP by 2100.

Energy demand for air conditioning in residential and commercial buildings is expected to rise rapidly in the Pacific due to temperature rises. By 2100, the additional energy costs are projected to reach around 2.8% of the region's GDP—the second-largest projected sectoral impact of climate change in the Pacific. This will adversely impact both the trade and fiscal balances of many Pacific countries for whom expenditures on imported energy represent a significant share of total imports and total government expenditures.

Economics of climate change in the Pacific

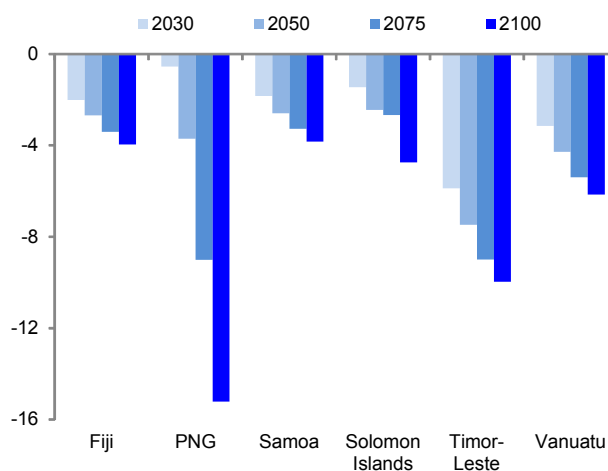
An additional economic cost that emerges from rising sea levels takes the form of losses of dry- and wetlands and resulting forced migration. Sea level rise is expected to lead to significant loss of land, and costs of displacement and relocation from climate-induced migration are expected to rise sharply toward 2100 as low-lying coastal areas become inundated. Total economic losses arising from these are projected to rise from 0.4% of annual Pacific GDP in 2015 to 0.7% in 2050, to 1.3% by 2100.

Climate change can also adversely affect human health. The incidence of respiratory disorders from increased air pollutants brought by a warmer and more erratic climate, as well as mold from water damage in the aftermath of more frequent floods, is seen to increase significantly. The risk of malaria is also expected to spread as warmer temperatures and increased precipitation expand breeding areas for disease-bearing mosquitoes. More severe tropical storms will also lead to increased fatalities and injuries from the storms themselves. Mortality and morbidity costs, measured by the value of forgone income and additional expenditure for treatment, are projected total losses equivalent to 0.5% of Pacific GDP in 2015. This will increase to about 0.8% of GDP annually by 2050.

Tourism to the Pacific will also likely be affected by climate change. For example, with warmer climates in the northern hemisphere, the Pacific may become a less attractive option for tourists from Europe and North America, particularly given international travel costs. Thus, potential tourism revenues could decline by over 30% by 2100. When the potentially large thermal stress-induced decline in the Pacific's coral reef cover—one of the region's main tourist attractions—is considered, projected losses could be substantially greater.

At the country level, PNG is projected to experience the largest economic losses in the Pacific. Absent adaptation and mitigation measures, the annual economic burden of climate change is expected to rise sharply, from an equivalent of 0.6% of PNG's GDP in 2030 to 15.2% by 2100. Losses are also projected to be high in Timor-Leste, increasing from 5.9% of the country's annual GDP to 10.0% during the comparable period. By 2100, substantial adverse impacts amounting to 6.2% of GDP in Vanuatu, 4.7% of GDP in Solomon Islands, 4.0% of GDP in Fiji, and 3.8% of GDP in Samoa are projected.

Figure 2: Climate change costs in the Pacific, by country (% of GDP, projections)



GDP = gross domestic product, PNG = Papua New Guinea
Source: ADB. 2013. The Economics of Climate Change in the Pacific.

Economics of adaptation in the Pacific

Given the size of potential losses, climate change adaptation measures will be crucial moving forward. Such measures could include policies and initiatives to enhance the capacity of businesses and households to adapt to anticipated changes stemming from climate change, and climate proofing in key sectors to move toward climate-resilient development.

On average, adaptation to a high-emission scenario could require substantial funding. The research estimates that financing equivalent to 0.97% of annual Pacific GDP, or \$284.3 million per year, will be needed up to 2050. The funding requirements are expected to rise as climate changes become more severe, and could reach as much as 1.52% of the region's annual GDP (or about \$446.7 million) over this period with uncertainties involved, under the study's high-emission scenario.

According to the research, estimated adjustment will depend crucially on global progress in reducing greenhouse gas emissions. Should the global economy manage to stabilize carbon dioxide concentration under 450 parts per million, the investment requirement is seen to drop by about half, with accompanying reductions in climate variability and risk as well as in uncertainty about adaptation needs. Without any successful global mitigation efforts, however, funding requirements for full preparation for low-probability but high-impact climate events will likely rise substantially.

Economics of climate change in the Pacific

Policy implications

Along with significant investment requirements, a forward-looking strategy is also necessary for the Pacific to adapt to climate change and sustain long-term economic growth. A key component of such a strategy is integrating climate change objectives and agendas into existing national or multisector programs and policies in order to help reduce vulnerabilities and promote sustainable development. Adaptation planning is also needed to identify feasible cost-effective adaptation options. Early climate action and preparedness plans, developed through a risk-based approach, will be among the most economical and cost-effective means of disaster risk management. The quality of climate risk assessments, and resulting plans and policy responses, will depend on Pacific DMCs' capacity to develop and use relevant climate information.

Climate-proofing infrastructure will raise initial investment costs, but will also enhance sustainability and generate returns to investment in the long run. This is because the value of savings from potential costs of repairing damage to non-climate-proofed infrastructure is seen to be greater than the additional investment. Greater access to climate finance and technical assistance will facilitate essential investments and technical support to operationalize climate change-calibrated development plans aimed at building climate resistance while sustaining economic growth. Finally, a general shift toward a more resource-efficient and environmentally sustainable mode of economic development would contribute to mitigation of climate change impacts over the long term.

Lead authors: Robin Boumphrey, Christopher Edmonds, Isabel Ferino, Joel Hernandez, Rommel Rabanal, and Cara Tinio.

This article summarizes results from a just released ADB study "The Economics of Climate Change in the Pacific," a collaborative output of ADB's Economic Research Department and the Pacific Department. The authors gratefully acknowledge the inputs and guidance of Robert Guild and Cyn-Young Park in the preparation of this brief.

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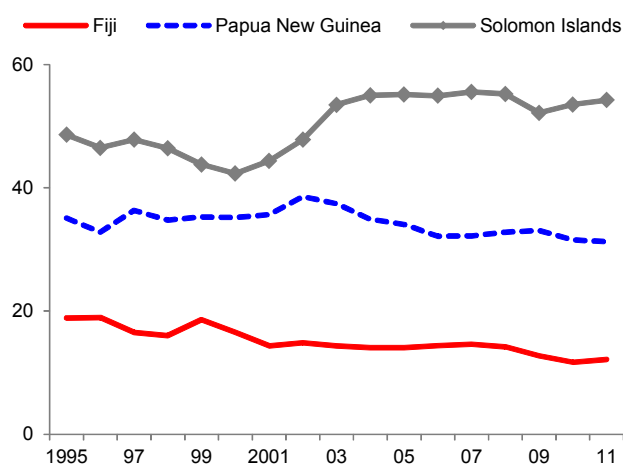
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Climate change impacts on Pacific agriculture

Internationally accepted projections of the long-term effects of climate change indicate that most countries in the Pacific will suffer large-scale negative impacts. If true, climate change is likely to impact agriculture in particular. Elevated air and sea-surface temperatures, increasingly unpredictable rainfall patterns, rising sea levels, and intensification of extreme weather events, such as tropical cyclones and El Niño-related droughts, will require agricultural producers to adopt production techniques with less certain outcomes. The economic and social consequences of these changes in the Pacific economies are potentially large as, on average, two-thirds of the region's population depends on agriculture for their livelihoods.

Figure 3. Agriculture share in GDP
(%, 1995–2011)



GDP = gross domestic product

Note: In shares of nominal (Fiji and Papua New Guinea) or real GDP (Solomon Islands) at factor cost.

Source: ADB. 2013. Key Indicators for Asia and the Pacific 2013. August.

Some of these negative impacts on agricultural output can already be observed in the region. This makes it

imperative that Pacific economies adopt policies to incentivize resilience to climate change. While climate change impacts will likely occur over decades, increasing resilience will require structural adjustment and changing production techniques that are challenging and take time to implement. Policy makers need to adopt policies to enable efficient adjustment to impacts of climate change on agricultural producers, economic livelihoods, and food security. To guide these adjustments, forecasts of changes in climatic variables on the output of staple crops in Pacific economies are essential. Such information can enable policy makers to put in place policies that would assist producers and consumers in adapting to changing circumstances.

This brief summarizes estimated changes in yields of staple crops in selected Pacific economies as a result of forecasted climate change. It then considers policy options for fostering adjustment while mitigating adverse impacts on agricultural producers and consumers. It draws extensively from the study *Climate Change, Food Security, and Sound Economic Livelihood in Pacific Island Countries*, undertaken by the International Food Policy Research Institute (IFPRI) under the auspices of ADB's regional technical assistance project "Strengthening the Capacity of the Pacific Developing Member Countries to Respond to Climate Change."

Estimating climate change impacts

The study used a number of computer-based models and tools to assess the economic costs of climate change on 3 countries (i.e., Fiji, Papua New Guinea (PNG), and Solomon Islands). The models estimated quantitative impacts on the yield and output of staple foods, including beneficial impacts of climate adaptation on staple crops widely consumed in the three countries studied.

Table 1: Output of major crops
(2008–2010 average values)

Major Crop	Fiji		Papua New Guinea			Solomon Islands		
	Output (tons)	Share (%)	Major Crop	Output (tons)	Share (%)	Major Crop	Output (tons)	Share (%)
Sugarcane	2,053,667	87.1	Banana	1,149,486	27.0	Coconuts	412,800	63.2
Coconuts	156,700	6.6	Coconuts	992,667	23.3	Sweet potatoes	87,134	13.3
Taro (cocoyam)	68,052	2.9	Sweet potatoes	531,755	12.5	Taro (cocoyam)	48,086	7.4
Cassava	49,932	2.1	Palm oil	481,000	11.3	Palm oil	40,333	6.2
Rice, paddy	10,305	0.4	Yams	650,985	8.2	Yams	36,215	5.5
Bananas	4,978	0.2	Taro (cocoyam)	302,515	7.1	Palm kernels	10,000	1.5
Papayas	4,855	0.2	Maize, green	226,152	5.3	Vegetables	6,510	1.0
Yams	4,031	0.2	Palm kernels	112,000	2.6	Cocoa beans	4,712	0.7
Pineapple	3,490	0.2	Coffee, green	63,040	1.5	Pulses	4,000	0.6
Ginger	2,609	0.1	Cocoa beans	53,100	1.3	Rice, paddy	3,819	0.6
Total	2,358,619	100.0		4,262,700	100.0		653,610	100.0

tons = metric tons, totals may not add up precisely due to rounding.

Source: Food and Agriculture Organization of the United Nations. 2012. FAO Statistical Database (accessed 12 June 2011). Rome, Italy.
<http://faostat.fao.org/default.aspx?lang=en>

Climate change impacts on Pacific agriculture

The initial step in the IFPRI study was to estimate baseline (year 2000) yields and levels of output for several staple crops: cassava, maize, rice, sugarcane, sweet potato, and taro. The study draws from existing global climate change models, specifically general circulation models (GCMs), which are numerical models representing physical processes in the atmosphere, ocean, and land surface, and represent the most advanced tools currently available for simulating the response of the global climate system to increasing greenhouse gas concentrations. In particular, the study used four internationally respected GCMs (i.e., the models developed by the Australian Commonwealth Scientific and Industrial Research Organisation, the French Centre National de Recherche Météorologiques, the Japanese Model for Interdisciplinary Research on Climate, and the European Centre Hamburg) to estimate a range of possible future climate profiles.

Based on these climate profiles, crop yields and output levels to the year 2050 were projected assuming that baseline crop production practices continued. The agricultural output model used by the study integrated a number of existing computer models and tools to generate the forecasts: (i) a crop allocation model (specifically, the Spatial Production Allocation Model); (ii) a soil and water assessment tool, which originated from the erosion productivity impact calculator model; (iii) a crop modeling tool using the Decision Support System for Agrotechnology Transfer; (iv) International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT) developed by IFPRI to project annual food supply, demand, and security to the year 2050; and (v) the Dynamic Research Evaluation for

Management (DREAM) model, also developed by IFPRI. Daily weather data (including maximum and minimum temperature, solar radiation, and precipitation), a land use model incorporating the physical and chemical characteristics of the soil in the field, and crop management data (including details on crops and crop varieties cultivated, and application of agricultural inputs such as fertilizer and irrigation) were used to estimate changes in future crop yields. This allowed for estimation of likely changes in the selected crops' total annual output due to climate change. Price elasticities for each crop estimated in the IMPACT model were applied to calculate likely changes in market price expected to occur because of the climate change-driven declines in crop yield. The results from this analysis were then incorporated into the DREAM model to estimate the economic costs of climate change.

Due to the ecological complexity of fisheries in Pacific economies and data constraints, among other factors, efforts to model climate change impacts on Pacific fisheries were unsuccessful. Accordingly, the IFPRI study relied on a heuristic rather than quantitative analysis, combined with a critical synthesis of existing analyses, to project climate change impacts on fisheries in the region.

The study compared two time periods, 2000 and 2050, in accord with the relatively long time frame of climate change. This required the integrated model to be run repeatedly; each run represented a particular permutation of variables relevant to climate change and adaptation to it in the three study countries. Model results yielded several scenarios of interest to policy makers in the study countries and elsewhere in the Pacific.

Table 2: Projected changes in temperature and rainfall (2000–2050)

GCM	Temperature	Rainfall
Fiji		
CNRM	Much hotter	Little change in wet season; drier dry season
CSIRO	Slightly hotter	Wetter wet season; drier dry season
ECHAM	Hotter	A little drier wet season; a lot drier dry season
MIROC	Hotter	Substantially drier in both wet and dry seasons
Papua New Guinea		
CNRM	Much hotter	Little change in wet season; drier dry season, although changes are moderate
CSIRO	Slightly hotter	Wetter
ECHAM	Much hotter	Islands much drier; mainland has moderate changes, although dry season is drier
MIROC	Hotter	Drier mainland, but wetter islands
Solomon Islands		
CNRM	Much hotter	Southern parts are drier overall, but wetter during the wettest three months; little change elsewhere
CSIRO	Slightly hotter	Wetter overall; wetter during the wet season and drier during the dry season
ECHAM	Hotter	Overall drier in southern parts and during the driest three months, but wetter there during the wettest three months; the northern parts are projected to undergo little change overall, but are much drier during the wettest three months and during the driest three months
MIROC	Hotter	Northern parts are projected to become moderately drier overall and during the wettest three months; southern parts are projected to become much drier overall, in the wettest three months, and in the driest three months

CNRM = Centre National de Recherches Météorologiques (National Center for Meteorological Research), CSIRO = Commonwealth Scientific and Industrial Research Organisation, ECHAM = European Center Hamburg, CGM = general circulation model, MIROC = Model for Interdisciplinary Research on Climate.

Source: IFPRI (2013) based on general circulation model data (Jones, J.W., P. K. Thornton, and Jens Heinke. 2009. *Generating Characteristic Daily Weather Data Using Downscaled Climate Model Data from the IPCC's Fourth Assessment*, International Livestock Research Institute, Nairobi, Kenya).

Climate change impacts on Pacific agriculture

Findings

The projections of the effect of climate change generated from the four GCMs differed widely in terms of predicted temperature rises and impacts on rainfall. The major differences in year 2050 climate profiles forecast for the Pacific region by the 4 GCMs were as follows: (i) the Australian Commonwealth Scientific and Industrial Research Organisation model forecasts a relatively modest increase in temperature by 2050, and a slightly wetter future; (ii) the French Centre National de Recherche Météorologiques model predicts a steeper increase in temperature; (iii) the Japanese Model for Interdisciplinary Research on Climate predicts a much drier future; and (iv) the European Centre Hamburg model forecasts a year 2050 climate profile for the Pacific that falls within the range of the other three models in an intermediate manner.

Without adaptation to climate change, the largest impact of climate change on Pacific agriculture would be seen in sugarcane production in Fiji, according to three of the four GCMs analyzed. Declines in sugar production and their impact on Fiji's agricultural income were the largest for all the crops and countries included in the study, and greatly exceed losses reported for other crops and countries. The Commonwealth Scientific and Industrial Research Organisation model projects that, given its forecasts for moderate temperature and precipitation increases, rainfed sugarcane yields would actually rise in most areas of Fiji—implying climate change could be beneficial to sugarcane agriculture in Fiji.

Table 3: Percentage change in yields relative to 2008: Fiji (2008–2050)

Division	Province	Business as Usual		
		Rice	Taro	Sugarcane
Central	Naitasiri	7.72	(2.52)	(3.82)
	Namosi	8.52	(3.54)	(0.92)
	Rewa	6.69	(3.71)	(4.10)
	Serua	5.41	(5.00)	(0.56)
	Tailevu	5.92	(2.56)	(3.22)
Western	Ba	(2.06)	(10.91)	(6.53)
	Nadroga	(3.60)	(13.16)	(3.95)
	Ra	(1.04)	(2.50)	(3.32)
Northern	Bua	(8.70)	(1.42)	(6.10)
	Cakaudrove	(4.75)	(7.75)	(3.38)
Eastern	Macuata	(5.18)	(11.30)	(3.93)
	Kadavu	(0.44)	(9.90)	(3.85)
	Lomaiviti	1.39	(3.23)	(3.65)

Source: International Food Policy Research Institute Decision Support System for Agrotechnology Transfer simulations.

Climate change impacts on production of other crops vary more widely across the three countries studied. For cassava in Fiji, yields are projected to decline by as much as one-third by 2050 compared with their current levels, but planting improved cultivars adapted to climate change would cut these projected losses significantly. Climate change is also projected to result

taro, the negative impact on yields is more pronounced for producers using high levels of fertilizer.

Table 4: Percentage change in crop yields projected by 2050

Crop	PNG		Solomon Islands	
	Worst Case	Best Case	Worst Case	Best Case
Cassava				
Irrigated	(27.8)	(18.8)	(26.7)	(20.3)
Rainfed	(30.8)	(18.3)	(27.8)	(20.1)
Groundnuts, rainfed	(6.7)	(1.8)	--	--
Maize				
Irrigated	(0.1)	1.5	(5.0)	(0.3)
Rainfed	1.3	5.3	(8.4)	(1.3)
Rice				
Irrigated	2.4	6.2	0.7	8.2
Rainfed	0.1	3.8	(16.2)	1.8
Sorghum, rainfed	(7.3)	(4.2)	(12.0)	(4.2)
Soybeans, rainfed	(7.8)	(3.6)	(11.1)	(3.5)
Sweet potatoes, rainfed	(7.4)	(4.5)	(15.0)	0.3
Sugarcane, rainfed	(3.6)	1.9	(12.9)	0.0
Taro				
Irrigated	(4.2)	(2.2)	(7.2)	(4.7)
Rainfed	(9.6)	(4.4)	(18.6)	(5.5)
Wheat				
Irrigated	(28.5)	(20.2)	(60.0)	(25.3)
Rainfed	(45.5)	(21.0)	(37.3)	(24.4)

Note: Relative to 2000, with low fertilizer application. Cultivars and planting months were those that gave the highest yields for the indicated year. Sorghum, soybeans, sugarcane, and sweet potatoes have similar yields in rainfed and irrigated fields, so results for the irrigated crops were excluded from this table.

Source: IFPRI estimates using results from Decision Support System for Agrotechnology Transfer.

For sugarcane in PNG, forecasted declines in yields due to climate change are relatively small and could be overcome through planting improved sugarcane varieties (which could boost yields by 5.5%). Under the most likely scenario, yield losses in rainfed taro in PNG from climate change are projected to be 13%, and 11% for sweet potatoes, by 2050 assuming no adaptation. Adjustments to crop varieties cultivated cut these losses by nearly half under some simulations.

In most areas of the Solomon Islands, climate change impacts on yields projected for rice, sweet potato, and—in most cases—taro, were greater among producers using high levels of fertilizer. However, crop yields under high fertilizer use are still significantly higher than under low fertilizer use.

For all three countries studied, the projected losses from climate change in the selected crops are significant. Estimated losses in sugarcane production in Fiji were the largest by far, amounting to \$375 million over 43 years (2008 to 2050). This is equal to nearly \$9 million annually, or about 1% of the annual value of sugarcane production. The projected decline in the financial value of sweet potato output, between 2008 and 2050, totaled \$132 million in PNG, and nearly \$10 million in Solomon Islands. Losses in the value of taro and cassava production in Fiji are forecasted to total about \$34 million and \$24 million, respectively.

The magnitude of these losses can be better appreciated by comparing them with the gross value of production

Climate change impacts on Pacific agriculture

for each of the crops. For Fiji, by 2050, the average annual climate change-related economic losses are estimated to be 7% of annual sugarcane crop revenues, 34% of annual taro crop revenues, and 120% of annual cassava crop revenues. Producers and consumers share equally the expected costs of the crops losses under study—producers because of declines in output and revenue, and consumers because of increased market prices.

Table 5: Aggregate change in the value of crop yields (\$'000, 2008-2050)

Commodity	Fiji	PNG	Solomon Islands
Rice	(1,739)	40	(1,164)
Taro	(34,344)
Sugarcane	(375,386)
Cassava	(24,560)
Sweet potatoes	..	(132,351)	(9,795)

..= no reliably estimated significant change.

Source: International Food Policy Research Institute Dynamic Research Evaluation for Management simulations.

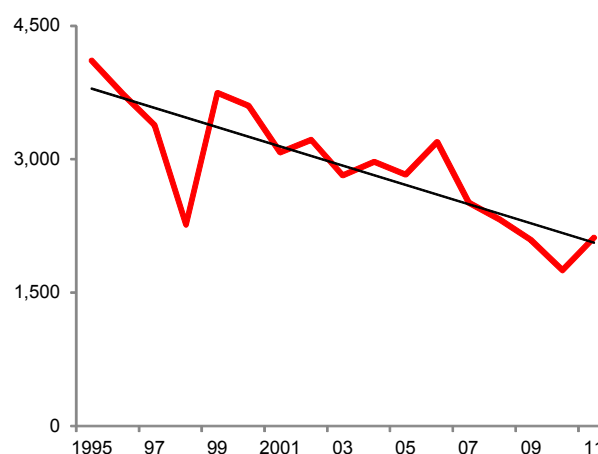
Perhaps the major finding of the study is that, even under the most pessimistic scenario, the impact of climate change on agriculture in three of the major economies in the Pacific is likely to be quite small even if producers do not adapt to changes in the environment. Historical data from the past 25 years show that sugarcane producers have had to accommodate annual variations in output averaging 19%—with the maximum increase of 95% in 1984 and the maximum decrease of -46% in 1983. In comparison, a 1% annual decline due to climate change is quite modest.

Policy implications

Given divergence in the predictions about the likely impact of climate change in the Pacific, perhaps the most important implication for agricultural policy is that it should be flexible and seek to minimize constraints to the movement of resources from the production of one crop to another. Efforts to maintain production of specific crops or support the incomes of producers through direct or indirect subsidies should be avoided. Instead, policy responses should focus on providing agricultural producers with the knowledge and access to inputs needed to adapt their farming practices to changing environmental conditions. Freeing up access to land would help to mitigate the effects of land lost due to global sea level rise or increased problems with saltwater intrusion made more acute by climate change. A dynamic and competitive business environment will help ensure the changing agricultural inputs needed to adjust land use are available. The effects of climate change on producers may add to the pressures for reform of land tenure systems that have long stalled in most economies in the region.

Historical data shows a clear downward trend in sugarcane production in Fiji over the past 25 years, and this has strengthened in recent years. Considering the long term trend, and the annual variation in output observed, the impact of climate change is expected to be relatively small. Although the impact of climate change on agriculture is likely to be small relative to other variables, it will add to uncertainties faced by producers for whom the operating environment will be changing. In facilitating adjustment, governments do have an important role to play in providing extension services to help farmers in understanding the requirements for growing alternative crops.

Figure 4: Sugarcane production in Fiji ('000 metric tons)



Source: Fiji Bureau of Statistics.

There is scope for increased regional cooperation to encourage the development and use of high-yielding cultivars resilient to multiple types of climate shocks, and further use of improved crop production practices, fertilizer, and irrigation. Adapting new agricultural technologies developed in wealthier countries with similar environments to those found in the Pacific represents another clear area where there is potential for regional cooperation to assist Pacific economies in adapting their agricultural sectors to climate change.

Lead authors: Robin Boumphrey and Christopher Edmonds.

The article is based upon a more in-depth research study by IFPRI commissioned by the ADB.

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Jones, J.W., P. K. Thornton, and Jens Heinke. 2009. Generating Characteristic Daily Weather Data Using Downscaled Climate Model Data from the IPCC's Fourth Assessment, International Livestock Research Institute, Nairobi, Kenya.

Regional disaster risk assessment and pooling

Background

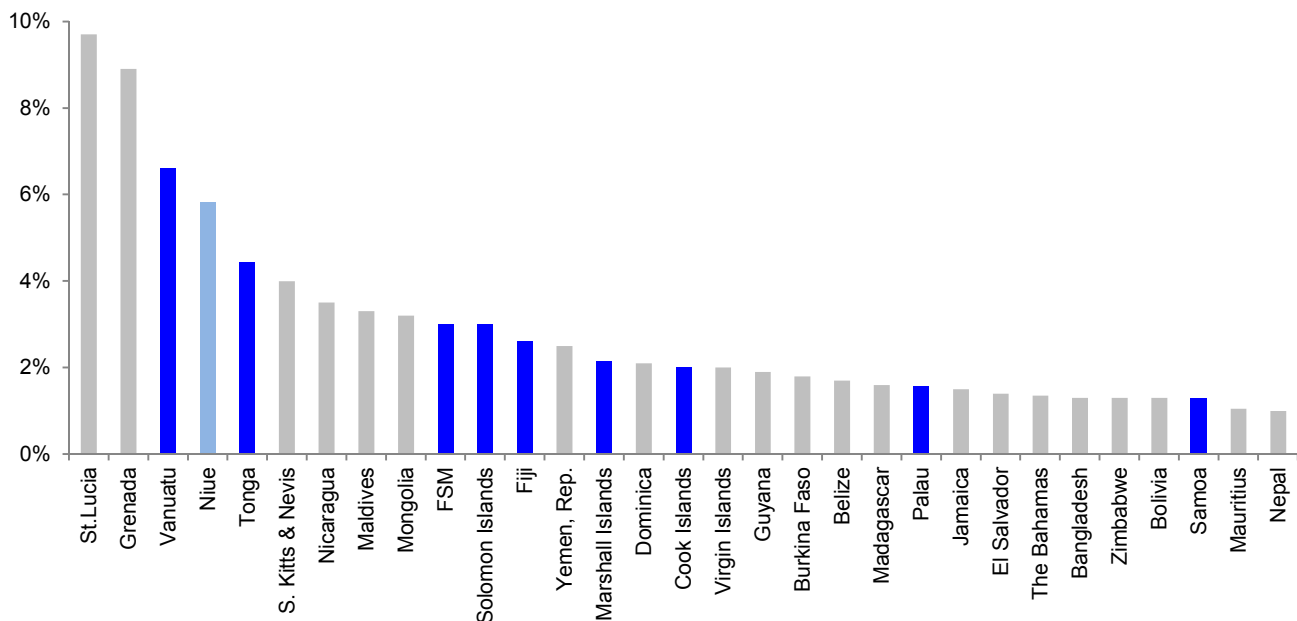
Pacific economies are highly exposed to adverse natural events (e.g., tropical cyclones, earthquakes, volcanic eruptions, and tsunamis), which can result in disasters affecting their economic, human, and physical environment and impact their long-term development. Since 1950, extreme natural events have affected more than 9.2 million people in the Pacific region and caused damage in excess of \$3.2 billion, with tropical cyclones being the major cause of this loss and damage (World Bank 2011). In the past year alone, the Pacific has experienced several disasters: two severe floods in Fiji, Tropical Cyclone Evan that affected both Samoa and Fiji, and a magnitude 8.0 earthquake and subsequent tsunami in Solomon Islands. Ten Pacific economies are featured in the list of the top 30 countries most vulnerable to natural disasters (Figure 5). Combined with the onset of climate change, the occurrence of these events may increase in the future.

Most Pacific economies have limited options for securing funding for post-disaster emergency response without compromising their long-term fiscal balance. This is because they are constrained by their size, borrowing capacity, and limited access to international insurance

markets. For example, the small size of Pacific economies limits geographic diversification of risk, that is, subsidizing affected regions using revenues from unaffected regions is impossible. High transaction costs also result from the inability to spread risk over a large territory. In the absence of easy access to debt and well-functioning insurance markets, a large proportion of the economic losses stemming from adverse natural events are borne by governments and households.

As a result, with the absence of contingency reserves and access to short-term loan funds, Pacific economies have limited budget flexibility post-disaster and rely heavily on donor assistance. Studies by the Applied Geosciences and Technology Division (SOPAC) of the Secretariat of the Pacific Community look at the fiscal impact of past disasters in selected Pacific economies, demonstrate the financial constraints in post-disaster budget reallocation, and build a case for establishing national reserves (SOPAC 2011a, b, c, d and 2012a, b). While international assistance will always play a valuable role, over-dependence on this as a source of financing carries limitations: international aid can be uncertain, which inhibits contingency planning, and can be slow to materialize.

Figure 5: Estimated average annual losses from natural disasters, as percentage of national GDP (2008–2010 average values)



Note: The global data are based on trended historical reported losses from the Centre for Research on the Epidemiology of Disasters (CREED) database (World Bank, 2010. *Natural Hazards, UnNatural Disasters*. Washington, DC), whereas Pacific data are based on modeled "loss" based on the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) models.

Sources: World Bank, 2010. *Natural Hazards, UnNatural Disasters*. Washington, DC; and World Bank, 2011. Pacific Catastrophe Risk Financing Initiative: Catastrophe Risk Assessment and Options for Regional Risk Financing. Phase 1 Report. Washington, DC.

Regional disaster risk assessment and pooling

Pacific Catastrophe Risk Assessment and Financing Initiative

The Pacific Catastrophe Risk Assessment and Financing Initiative began upon a request of Pacific economies at the 2006 World Bank and International Monetary Fund annual meetings. PCRAFI is an innovative program that builds on the principle of regional cooperation and provides the Pacific economies with disaster risk modeling and assessment tools for enhanced disaster risk management. The program also seeks to improve the financial resilience of Pacific economies against natural disasters and the effects of climate change. The PCRAFI builds on close collaboration among the World Bank, the Secretariat of the Pacific Community, and the Asian Development Bank. Financial support is provided by the Global Facility for Disaster Reduction and Recovery; the African, Caribbean, and Pacific-European Union; and the Government of Japan. Technical inputs to the PCRAFI were provided by GNS Science, Geoscience Australia, and AIR Worldwide. The Pacific economies involved in PCRAFI are the Cook Islands, Fiji, Kiribati, the Republic of the Marshall Islands (RMI), the Federated States of Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu, and Vanuatu.

The PCRAFI established the Pacific Risk Information System, which contains detailed, country-specific information on assets, populations, hazards, and risks. For example, the building exposure database includes a comprehensive inventory and maps of residential, commercial, public, and industrial buildings in the 15 Pacific economies. The system provides disaster managers and first responders with tools and information on areas and population affected, the likely severity of the event in terms of potential fatalities and injuries, and the damage to buildings, infrastructure, and crops.

Figure 6: Pacific Risk Information System



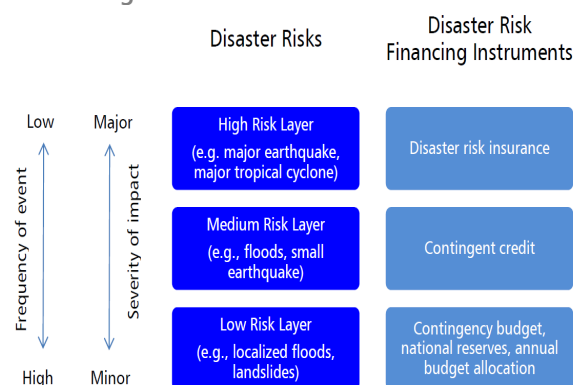
Source: Pacific Catastrophe Risk Assessment and Financing Initiative.

Pacific Disaster Risk Financing and Insurance Program

The World Bank and the Secretariat of the Pacific Community, with grant funding from the Government of Japan, have implemented the Pacific Disaster Risk Financing and Insurance Program. It is the first of a series of disaster risk management applications to be developed by PCRAFI. It seeks to help the Pacific economies increase their financial resilience and capacity to respond to natural disasters without compromising their fiscal balance. Access to liquidity in the aftermath of a disaster is essential for the governments to ensure timely and effective post-disaster response.

The Pacific Disaster Risk Financing and Insurance Program is built upon a three-tiered approach to risk financing which seeks access to sufficient resources, efficient allocation of these resources, and macroeconomic stability (Figure 7).

Figure 7: Three-tiered disaster risk



Source: World Bank. 2011. Pacific Catastrophe Risk Financing Initiative: Catastrophe Risk Assessment and Options for Regional Risk Financing. Phase 1 Report. Washington, DC.

The first tier involves developing an internal layer of protection against natural disasters to prevent the diversion of funds from development projects. This uses tools such as a contingency budget and national reserves. The aim is to finance response to small but recurrent disasters.

The second tier is aimed at less frequent but more severe events. This includes contingent credit and other liquidity mechanisms, which can mobilize additional funds quickly following an event.

The third tier is disaster risk insurance and focuses on rapidly providing additional financial resources to governments in the immediate aftermath of a major natural disaster.

Regional disaster risk assessment and pooling

The components of the program include technical assistance and a market-based catastrophe risk insurance pilot scheme.

Technical assistance on the public financial management of natural disasters

The technical assistance aims to provide the Pacific economies with opportunities to build capacity in public financial management procedures for post-disaster budget mobilization and execution. It focuses on three core aspects: (i) the development of a public financial management strategy for natural disasters, recognizing the need for ex-ante and ex-post financial tools; (ii) a post-disaster budget execution process to ensure that funds can be accessed and disbursed easily and effectively; and (iii) the insurance of critical public infrastructure to reduce funding requirements for recovery and reconstruction.

Pacific Catastrophe Risk Insurance Pilot

The Pacific Catastrophe Risk Insurance Pilot seeks to (i) assess whether there is demand from the Pacific economies to use catastrophe risk insurance as a means to access immediate budget support after a disaster, (ii) determine whether the private insurance sector would be willing to supply these products at a competitive price, and (iii) demonstrate that rapid insurance payments can help the affected countries increase their budget flexibility and improve post-disaster recovery.

The pilot is designed to provide limited but rapid budget support following a major disaster (e.g., earthquakes, tsunamis, and tropical cyclones). It is designed to help Pacific economies mitigate the short-term cash flow problems that small developing economies face after major natural disasters.

The pilot is not designed to cover all disaster losses, but rather to cover Pacific economies against major disasters that can disrupt the provision of core public services. Other financial instruments, such as national reserves and contingent credit, are more appropriate to cover more frequent but less severe events.

In recent years, the Pacific experienced major natural disasters that present strong cases for a disaster risk financing and insurance program. For example, in 2010 in the aftermath of Tropical Cyclone (TC) Pat in the Cook Islands, the initial damage assessment was delayed because of a lack of funds. Vanuatu had to reallocate a significant amount of the national budget following TC Vania in 2010. Similarly, Fiji and Samoa had to reallocate budgetary funds in 2012 and 2013 in the wake of TC Evan. The Santa Cruz earthquake in Solomon Islands in

January 2013 drained the annual budget for the national disaster management office and used the majority of the national contingency budget.

This pilot covers emergency losses, but not the loss of assets. Unlike a more conventional insurance scheme, where a payout would be assessed against actual incurred costs, this scheme will pay out on a modeled emergency loss. The advantage of this is that it results in a much faster payout. The modeled emergency loss is defined as a proportion of ground-up losses or direct physical damage on assets. The model calculates ground-up losses by estimating damage to buildings, infrastructure, and cash crops. Modeled emergency losses are approximately 23% of ground-up losses in the case of a tropical cyclone, and about 16% in the case of an earthquake or tsunami.

The pilot program is the first-ever scheme in the Pacific to use parametric triggers linking immediate post-disaster insurance payouts to specific hazard events. Traditional insurance settlements require assessments of individual losses on the ground, while payout disbursements under the pilot are triggered by specific physical parameters for the disaster (e.g., wind speed and earthquake ground motion) taken from the Joint Typhoon Warning Center and US Geological Services.

The second season of the Pacific Catastrophe Risk Insurance pilot will be effective for the period November 2013–October 2014. The pilot has been expanded from five to six economies following a request during the Forum Economic Ministers Meeting in July 2013 (PIFS 2013). The countries in the risk pool are the Cook Islands, the RMI, Samoa, Solomon Islands, Tonga, and Vanuatu. A seamless transition from season one to season two should ensure that the coverage is uninterrupted from the launch of the pilot in January 2013. The aggregate coverage has increased from \$45 million to \$67 million for the second season. For many Pacific economies, the maximum payout is worth more than double the contingency budget.

The pilot has demonstrated that the international reinsurance market is willing to provide catastrophe risk insurance to the Pacific economies at very competitive prices. The country specific catastrophe risk insurance policies have been placed on the international reinsurance market as a single portfolio to take advantage of regional risk diversification benefits and regional economies of scale. The single portfolio is more attractive to the private insurance sector because it is less risky than the country-specific catastrophe risk insurance policies taken separately,

Regional disaster risk assessment and pooling

creating significant regional risk diversification benefits that lead to lower premiums. It is estimated that each participating Pacific economy has obtained a 50% reduction in premium, a result of the single portfolio versus a single country approach.

In the second season, all of the economies made contributions towards their premiums. The Cook Islands their premium paid in full, and the Government of Japan provided further subsidies to help cover the premiums of the remaining economies.

Lessons learned

The pilot program demonstrated that the international reinsurance market is willing to provide catastrophe risk insurance to the Pacific economies at competitive prices, as long as the program follows market standards. Another lesson is that regional cooperation among countries allows them to reduce their insurance premium by more than half. Finally, there is a need to complement insurance with other financial instruments (e.g., national reserves, contingent credit, insurance of key public assets), in addition to postdisaster donor assistance, to increase the Pacific economies' financial resilience to natural disasters.

Lead authors: Michael Bonte and Samantha Cook, Disaster Risk Financing and Insurance Program, the World Bank.

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Marshalling climate change finance through public financial management

Show us the money

International climate change negotiations generated promises that the developed world would direct billions of dollars to support climate change adaptation and mitigation in affected developing countries. The funds are flowing (Table 6), and it has been estimated that over a 10 year period the Pacific developing member countries (DMCs) have received around 2% of this total (\$2.7 billion). Yet, in arguably one of the worst affected regions—the Pacific islands—there is seemingly little that the islanders can point to in the way of positive change.

Why? There are three main reasons:

(i) *Responsibility for climate change financing.* Responding to climate change needs has been the realm of environment ministries. Yet climate change mitigation and adaptation needs and actions cut across many areas—agriculture, coastal marine ecosystems, community services, energy, health, and water resource management, to name a few. Responsibility for these areas are spread across numerous ministries and far removed from the mandate of environment ministers. With limited capacity in Pacific DMC bureaucracies, these cross cutting climate change response needs that often have not been adequately addressed or coordinated.

(ii) *Lack of human and technical capacity.* Applications to various global funds is considered relatively complex, and ability to access funds is constrained by lack of skilled human resources in the Pacific DMCs. This also constrains project implementation. Even organizations such as ADB find these processes complex. For example, guiding applications through Global Environment Fund processes can take 6 months to 1 year and may not always coincide with ADB's internal project approval processes.

(iii) *Off-budget financing.* Some climate change response plans and activities have been financed off-budget and through in-kind support. Such activities are not well captured by Pacific DMC systems and so are not widely known.

How can the situation be turned around?

For the Pacific DMC Finance Ministers, the answer seems obvious. They are seeking to take control of climate change financing with the objective of attracting more funds to achieve greater on-the-ground adaptation and mitigation investments and capacity building. In 2012, Governors of the ADB's Pacific DMCs—predominantly Ministers of Finance—established a Ministerial Taskforce, with funding assistance from ADB. The Taskforce seeks to explore ways to facilitate access to climate change financing, and ensure better alignment with Pacific DMCs' priority program needs in national and regional development planning and implementation. This article draws on work done for this group.

At the regional level, and even internationally, Finance Ministers have for some years now been vocal in their support for the provision of climate change financing through budget support. Budget support is particularly attractive as it promotes country ownership, use of country systems, and improved donor harmonization.

Climate response trust funds have been another suggested option. The Pacific already has considerable experience in the use of trust funds for a variety of purposes, which can inform the design and implementation of climate change response trust funds. In Tonga, ADB is looking to support a small trust fund to finance community-level climate change adaptation projects. The performance of this will be of wider interest to the region.

Making budget support work

While this sounds promising in theory—indeed, ADB has already provided budget support (known as policy-based operations) to seven of its Pacific DMCs, including Tuvalu—there are some very strong prerequisites if budget support is to be effective.

First, budget support requires a sound budget process. This includes quarterly or semiannual

Table 6: Climate change finance: Public funds (2010–2011)

Source	Mitigation (\$, billion)	% of total	Adaptation (\$, billion)	% of Total
Donor bilateral aid	14.9–18.2	19%-22%	1.0–4.4	8%-28%
Climate funds	1.1	1%	0.4	3%
National finance institutions	37.5	46%	5.2	37%
Multilateral finance institutions	18.3	22%	2.9	21%
Bilateral finance institutions	8.6	10%	2.7	19%
Philanthropic	0.1	<1%	0.1	<1%
Total	82.1	100%	14.0	100%

Note: Total takes midpoint of range for donor bilateral aid. Range arose due to different tagging of climate change finance from various sources. Source: B. Buchner et al. 2012. *The Landscape of Climate Finance 2012*. Climate Policy Initiative. Venice.

Marshalling climate change finance

Table 7: ADB loans and grants to Pacific countries supporting climate change adaptation and mitigation (2011-2013)

Country	Project Name	ADB (\$ million)		Cofinancing (\$ million)		Total (\$ million)
		OCR	ADF	Amount	Source	
KIR	South Tarawa Sanitation Improvement Sector Project	0.0	7.6	14.0	AUS	21.5
FSM	Yap Renewable Energy Development Project	4.7	4.4			9.0
PNG	Bridge Replacement for Improved Rural Access Project	40.0	50.0			90.0
PNG	Port Moresby Power Grid Development Project	51.7	15.0			66.7
SAM	Renewable Energy Project and Power Sector Rehabilitation Project	0.0	18.2	1.0	CEF	19.2
TIM	Road Network Upgrading (Sector) Project	40.0	10.0			50.0
TON	Nuku'alofa Urban Development Sector Project	0.0	6.1	6.4	AUS	12.5
TON	Outer Island Renewable Energy Project	0.0	2.0	4.5	AUS	6.5
TON	Climate Resilience Sector Project			19.3	SCF	19.3
VAN	Interisland Shipping Support Project	0.0	10.8	12.6	NZAID	23.4
VAN	Port Vila Urban Development Project	0.0	5.0	31.0	AUS	36.0
TOTAL		136.4	129.0	88.7		354.1

ADF = Asian Development Fund (loans and grants), AUS = Australia, CEF = Clean Energy Fund, NZAID = New Zealand Aid Programme, OCR = ordinary capital resources, SCF = Strategic Climate Fund

Source: ADB's loan, technical assistance, grant and equity approvals database.

reporting on implementation progress, and end-of-year assessment of outturn in comparison to budgets. Regular assessments of public financial management processes (e.g., through conduct of public expenditure and financial accountability assessments and development and implementation of action plans to address identified weaknesses) is critical.

Second, budget support requires the budget to set out a credible expenditure plan that the country must then have the capacity to implement. This is where issues such as the shares of capital investment, operating expenditure, salaries, and debt repayment in total expenditure will be scrutinized as this relates to the sustainability of the budget.

Third, budget support providers and recipients need to have a shared understanding of its development impact. This impact could be ensuring the continuance of essential basic services, conduct of needed capital investments, or implementation of specific policy and legislative reforms. Some partners, such as the European Union, provide sector budget support and in this instance, sector-level reforms would be expected to be financed through the budget.

Putting a climate change face to budget support

For additional resources to be attracted for "climate change budget support," development partners would expect that the budget includes activities that clearly built capacity to adapt to climate change, or investments to mitigate climate change. At present, most Pacific DMCs lack budget systems that would allow such activities to be readily identified.

From a sound public financial management viewpoint, a positive step would be the development of rolling public investment or capital expenditure plans (many Pacific DMCs have these) that clearly identify climate change-related investments and the financing requirements for these investments. In effect, such plans would serve to mainstream climate change. If these plans can be clearly linked to the budget, through financing of priority

activities on an annual basis, development partners would be able to either fund specific climate change adaptation investments through a standard project modality or provide budget support to finance the implementation of such activities.

A cautionary note

While global funding for climate change adaptation and mitigation could reach billions of dollars, not all—indeed, perhaps not even most—is new and additional financing. Rather, the large total is coming from repackaging of already planned and promised assistance. There are several areas of traditional development assistance that serve double duty as climate change responses—for example, climate-appropriate roads and bridges, water supply and storage systems, and agricultural extension.

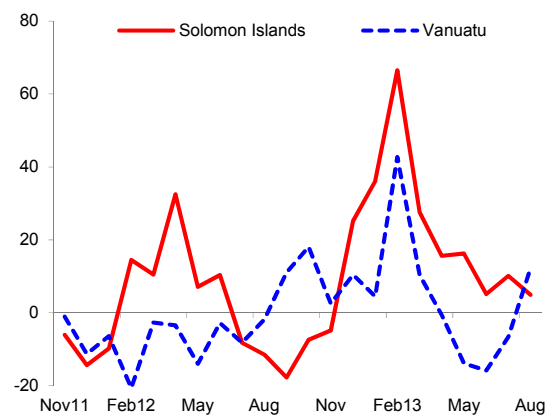
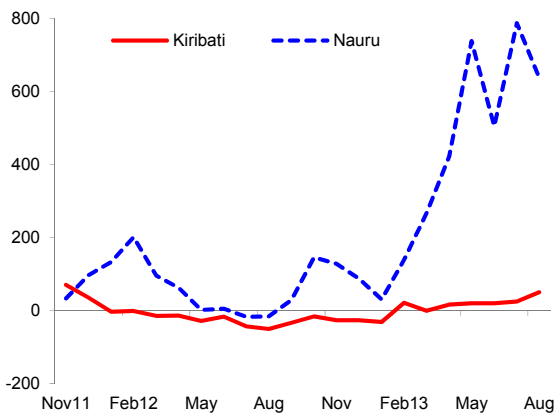
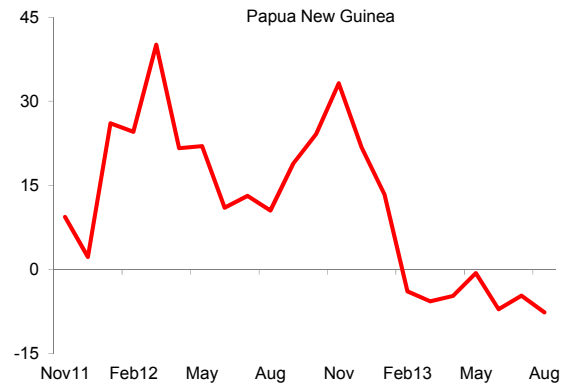
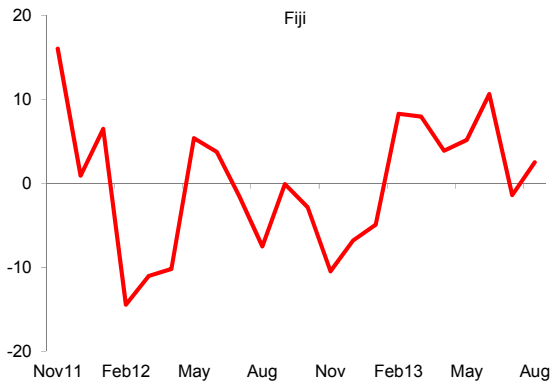
While development partners are making every effort to access new funding sources, in many cases mitigation activities (e.g., renewable energy projects) are financed through country aid allocations. In cases of adaptation, while some additional funding may be obtained for climate proofing, much of the cost of the heightened design standards to cope with increased climate variability is again absorbed by the aid allocation. In a tighter global economic environment, this can be seen as an inevitable outcome, but it is important that climate change expenditure be better tracked in national budget systems—irrespective of the source of the funds.

Lead author: Emma Veve.

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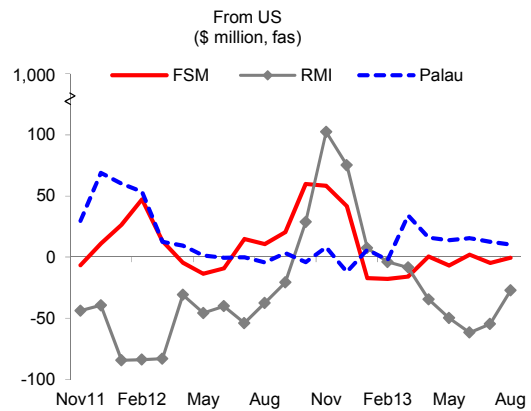
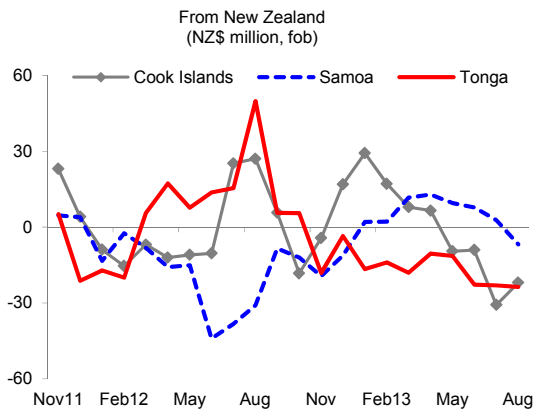
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Nonfuel merchandise exports from Australia
(A\$; y-o-y % change, 3-month m.a.)



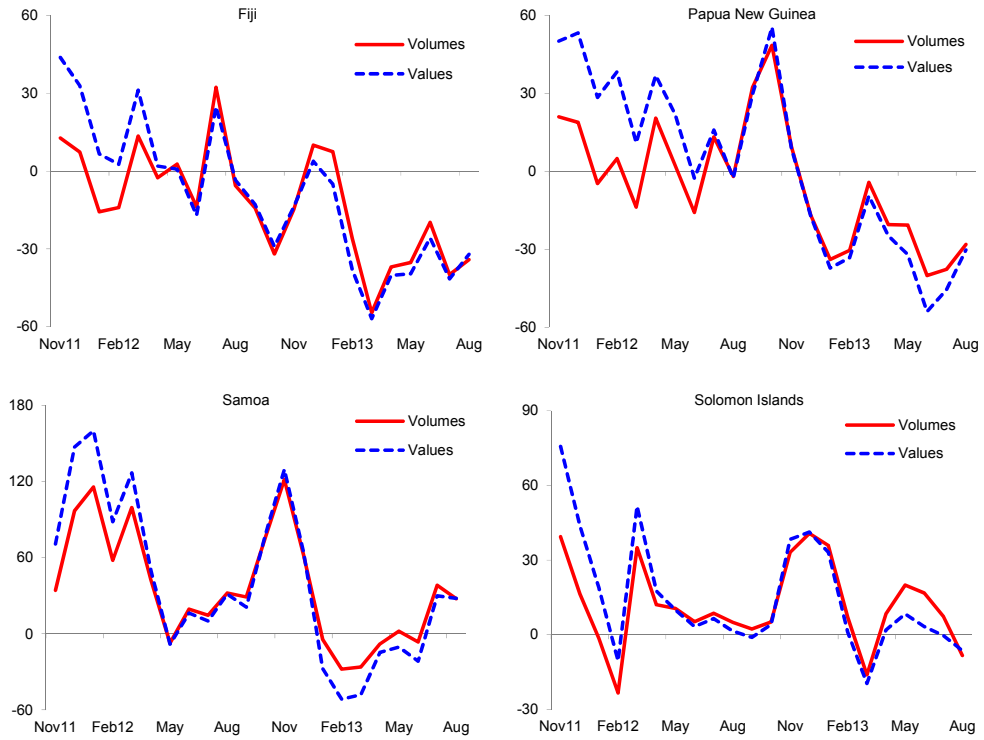
A\$ = Australian dollars, m.a. = moving average, y-o-y = year on year
Source: Australian Bureau of Statistics.

Nonfuel merchandise exports from New Zealand and the United States
(y-o-y % change, 3-month m.a.)

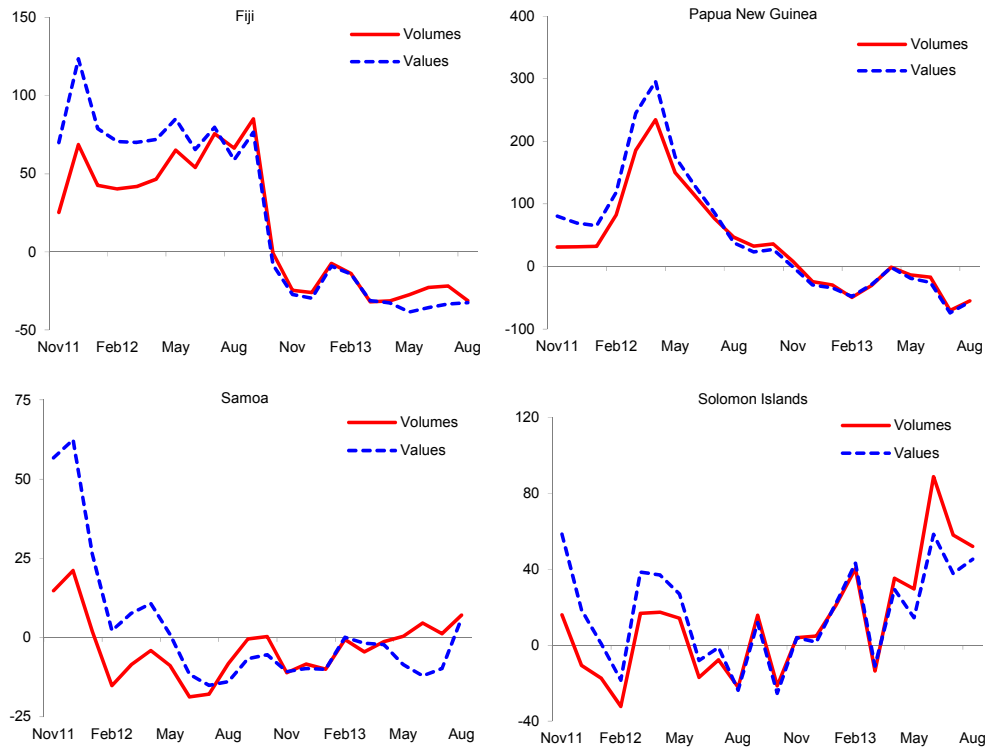


FSM = Federated States of Micronesia, fas = free alongside, fob = free on board, m.a. = moving average, NZ\$ = New Zealand dollar, RMI = Republic of the Marshall Islands, US = United States, y-o-y = year on year
Sources: Statistics New Zealand and US Census Bureau.

Diesel exports from Singapore
(y-o-y % change, 3-month m.a.)

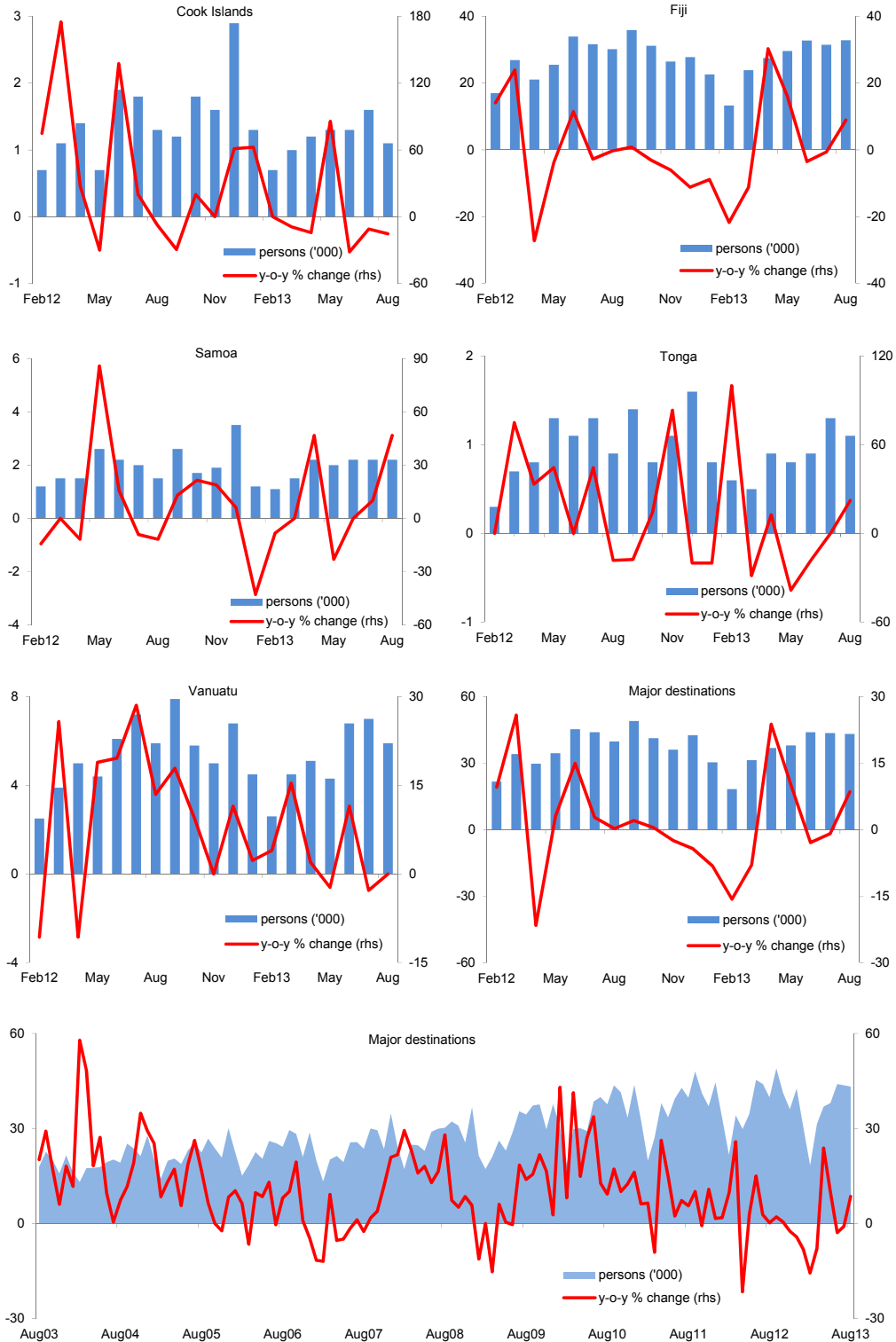


Gasoline exports from Singapore
(y-o-y % change, 3-month m.a.)



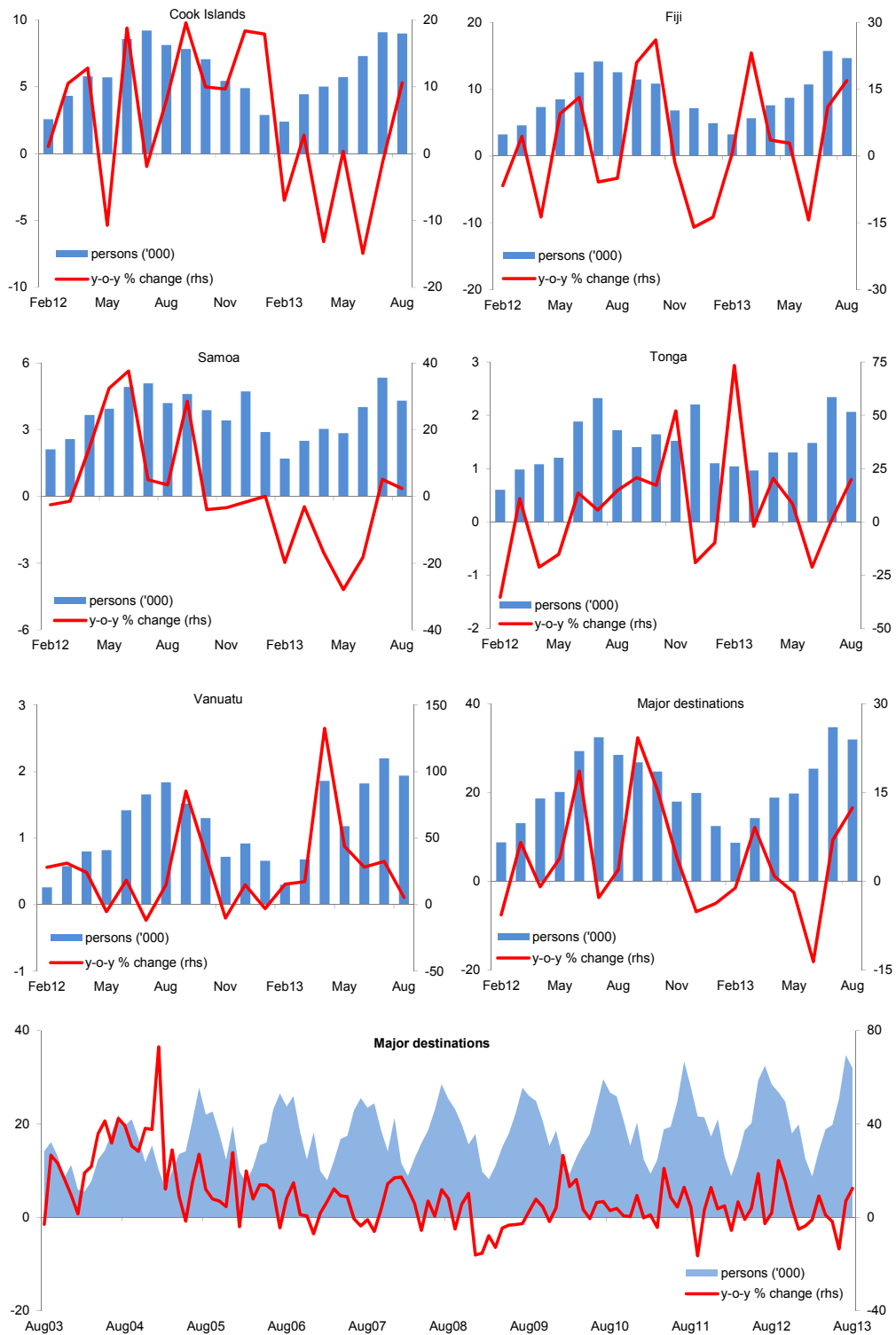
m.a. = moving average, y-o-y = year on year
Source: International Enterprise Singapore.

Departures from Australia to the Pacific (monthly)



rhs = right-hand scale, y-o-y = year on year
 Source: Australian Bureau of Statistics.

Departures from New Zealand to the Pacific (monthly)



rhs = right-hand scale, y-o-y = year on year
 Source: Statistics New Zealand.

Latest Economic Updates

	GDP Growth	Inflation	Credit Growth ^a	Trade Balance	Import Cover	Fiscal Balance
	(%, 2013p)	(%, 2013p)	(%)	(% of GDP)	(months)	(% of GDP)
Cook Islands	3.2	2.6	-5.2 (Dec-Q 2012)	0.0 (FY2012e)	—	-2.0 (FY2013e)
Fiji	2.0	2.0	11.3 (Mar 2013)	-9.7 (Mar Q 2013)	4.9 (Oct 2013)	-2.6 (2013f)
Kiribati	2.0	1.5	—	-56.6 (2013p)	—	-8.0 (2013f)
Marshall Islands	2.3	4.5	-1.33 (FY2012e)	-37.7 (FY2012e)	—	-0.8 (FY2013e)
FSM	1.0	4.5	-0.9 (FY2011e)	-40.7 (FY2012e)	—	1.2 (FY2012e)
Nauru	4.5	0.5	—	—	—	0.5 (FY2013e)
Palau	3.0	5.5	—	-50.6 (FY2012e)	—	-3.2 (FY2012e)
PNG	5.5	6.5	12.4 (Mar 2013)	5.7 (Mar 2013)	14.1 (Sep 2013)	-7.1 (FY2013e)
Samoa	0.9	-0.2	-2.2 (Aug 2013)	-14.1 (Jun Q 2013)	5.4 (Aug 2013)	-6.5 (FY2013e)
Solomon Islands	2.5	5.5	5.7 (Dec 2012)	-2.2 (Jan-June 2013)	10.7 (Sep 2013)	-2.1 (Jan-June 2013)
Timor-Leste ^b	8.5	12.5	10.3 (June 2013)	-41.5 (Jan-Sep 2013)	—	77.3 (2013f)
Tonga	0.5	0.7	-16.1 (June 2013)	-25.2 (FY2013e)	9.2 (June 2013)	-1.0 (FY2013e)
Tuvalu	1.3	2.0	—	-17.9 (2013p)	6.7 (2011e)	6.8 (Jan-Sep 2013)
Vanuatu	3.2	2.0	4.3 (Mar 2013)	-5.9 (Jan-Feb 2013)	6.7 (June 2013)	0.3 (Jan-June 2013)

— = not available, e = estimate, GDP = gross domestic product, FSM = Federated States of Micronesia, PNG = Papua New Guinea, p = projection, Q = quarter

^a Credit growth refers to growth in total loans and advances to the private sector.

^b Timor-Leste GDP is exclusive of the offshore petroleum industry and the contribution of the United Nations.

Notes: Period of latest data shown in parentheses; import cover for PNG is months of nonmining and oil imports.

Sources: ADB. 2013. *Asian Development Outlook 2013 Update*. Manila; and statistical releases of the region's central banks, finance ministries and treasuries, and statistical bureaus.

Key data sources:

Data used in the *Pacific Economic Monitor* are in the ADB PacMonitor database, which is available in spreadsheet form at www.adb.org/pacmonitor.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.7 billion people who live on less than \$2 a day, with 828 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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