Vaccine wastage in Solomon Islands: implications for Australian aid

Solomon Islands Prime Minister Manasseh Sogavare receiving the AstraZeneca vaccine
Photo Credit: UNICEF Pacific/Facebook

by Jackson Grange

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As at 10 May 2021, there were around 13,000 confirmed cases of COVID-19 in Papua New Guinea (PNG). The ongoing crisis has prompted Australia to send AstraZeneca (AZ) vaccines and a team of 17 medical specialists to the beleaguered state.

The crisis is also provoking a response from its eastward neighbour: the Solomon Islands.

In a February media release, the Solomon Islands government announced the theme of its 2021 budget, committing to a balance between containment of COVID-19 and economic revitalisation. Consequently, the government is looking to acquire vaccines as soon as possible. This dominated headlines when, in addition to 24,000 AZ doses received from COVAX, the Solomon Islands acquired over 50,000 Sinopharm doses from China. Over 3,000 AZ doses have been administered in Honiara, while the government awaits approval from the World Health Organization (WHO) for the Sinopharm doses.

However, the situation in PNG is shifting the attention of the Solomon Islands Government westward, in the form of the Western Border COVID-19 Response Plan. The plan calls for mass vaccinations in areas of Western Province close to the ocean border.

Yet, Honiara should not underestimate the challenges of a vaccine rollout across the archipelago, particularly in Western Province where 85% of the population is rural.

One challenge is vaccine hesitancy, identified alongside misinformation by PNG's Health Minister Jelta Wong as the major challenges facing PNG's rollout. At the end of April, only 2,900 of the 8,000 AZ doses Australia delivered to PNG had been administered.

Another concern is vaccine wastage – a costly challenge for developing countries, comprising hazards of expiry, heat exposure, breakage, and missing inventory. Vaccine wastage is so far underexamined in discussions and what I'm going to focus on here.

Case study of Western Province

On 22 April, the Solomon Islands announced a vaccine rollout in the west, where movements across the border with Bougainville remain a concern despite a ban on border crossings. Vaccines from Honiara will begin touching down on airstrips in the towns of Gizo and Munda before being sent to the Shortland islands, closest to the border.

Western Province has two provincial hospitals: Gizo and Helena Goldie. Gizo hospital is the most appealing hub for vaccine storage and distribution. It is the second-largest hospital in the country, with reliable electricity and water supply. A COVID-19 isolation ward was also opened there last year.

Operating a vaccine campaign from Gizo will push the limits of hospital manpower. The 2016 RAWCS report found that of the 86 practising doctors in the Solomon Islands, only 13 work across the 12 provincial-level hospitals in the country. With staffing already stretched, this raises the risk of vaccine vials becoming missing inventory or expiring due to slower processing. Every moment is critical, as many COVID-19 vaccines last only 5 days in hospital refrigerators.

Most vaccine wastage is likely to occur during outreach programs, when vaccines are disseminated to rural health facilities. This will involve Area Health Centres, Rural Health Clinics and Nurse Aid Posts. According to the latest RAWCS report, there were 59 such locations in Western Province.

Regrettably, many of these services are unprepared for handling vaccines, which are required to be stored at 2-8 degrees Celsius to prevent freezing or heat exposure. These are significant hazards due to the inadequacy of local cold chain capabilities. A 2015 health review found that only 65% of local health facilities had vaccine refrigerators. Staffing is also an issue, with committee visits to sites in Western Province observing that most facilities were manned only by secondary health care nurses. This increases the chance of wastage due to inadequate training and experience.

These factors suggest significant vaccine wastage is likely. So how can these observations be translated into a forecast of the national wastage rate? Useful data is difficult to compile. Only 19 out of 72 GAVI countries have analysable wastage data for past vaccine campaigns.

Instead, I shall propose several scenarios of varying wastage and evaluate the costs.

A survey of historic vaccine campaigns in Africa and Asia found wastage rates ranging from 4% to 44%, with a mean of 10%. However, 10% is likely optimistic in this case. In the past, GAVI has encouraged developing countries to try to reduce vaccine wastage to 25% in the first year of vaccine campaigns. A worst-case scenario of 44% is just as likely in the unfavourable conditions for service delivery in the Solomon Islands.

Thus, we have three wastage rates: 10%, 25% and 44%.

Costs of vaccine wastage

According to the last national census, the Solomon Islands population was 721,455. However, only 359,690 are eligible for the vaccine (total registered voters over 18).

If the Solomon Islands distributes all 108,000 AZ doses allocated to it by COVAX alongside 50,000 two-jab Sinopharm doses (once approved), there are still 280,690 eligible citizens to vaccinate. It is this stage of the rollout which we will test, with wastage scenarios as follows. The differential is significant.

	Baseline (no wastage)	Scenario A (10% wastage)	Scenario B (25% wastage)	Scenario C (44% wastage)
AZ doses needed	561,380	617,518	701,725	808,387
In-country cost	US$791,546	US$870,700	US$989,432	US$1,139,826

Note: The AZ vaccine requires two doses to immunise one citizen.

Scenario C demands the acquisition of 250,000 doses above the baseline, at an additional cost of US$350,000 based on the GAVI in-country cost estimate of US$1.41 per AZ dose. This estimate omits other expenses exacerbated by higher vaccine wastage, such as the costs of purchasing vaccines from abroad or the costs of handling medical waste.

While Australia has committed $500 million over three years to achieve full immunisation coverage in the Pacific and Southeast Asia, it must also assist in mitigating vaccine wastage to support such investments in the Pacific recovery.

For instance, Australia should evaluate how vaccine hesitancy could impact wastage rates and implement relevant policy responses into its support for Pacific countries. Considering endemic vaccine hesitancy in PNG, Solomon Islands Prime Minister Manasseh Sogavare has already criticised frontline workers who failed to

show up for the vaccine in Honiara.

If Australia is to help the Pacific reach 20% immunisation by the end of June 2021, with an initial focus on PNG and Solomon Islands, it needs to do more than supply CSL Melbourne vaccines. It needs to help counter hazards posed by vaccine hesitancy and wastage. Lessons learned in PNG and implemented in the Solomon Islands will pay dividends for Australia across the Pacific.

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Link:
https://devpolicy.org/vaccine-wastage-in-the-solomon-islands-implications-for-australian-aid-20210514-2/