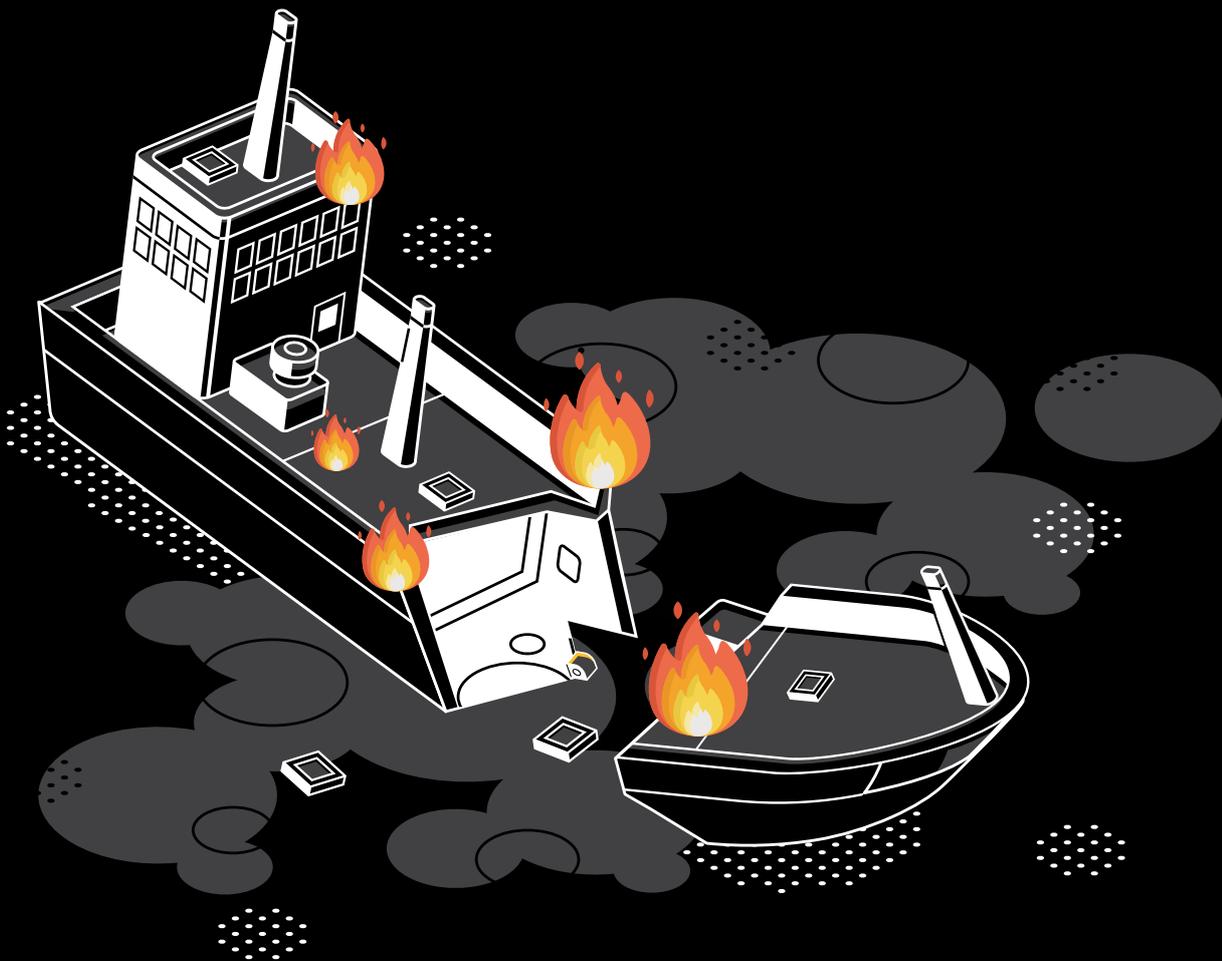




X-Press Pearl Disaster

An Initial Look at Impacts and Responses

Livelihoods affected
amidst environmental crisis



Market Development Facility
September, 2021



Acknowledgements

The Market Development Facility (MDF) acknowledges the Australian Government's support, via the Department of Foreign Affairs and Trade.

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Support from Prof Charitha Pattiaratchi (Professor of Coastal Oceanography, University of Western Australia), Dr Steven Creech (Coordinator, Sri Lanka Blue Swimming Crab Fishery Improvement Project), Muditha Katuwawala (Coordinator, The Pearl Protectors) and Nishan Perera (Marine Biologist and Co-founder Blue Resources Trust) was vital in the development of this study.

Private sector representatives who supported the study include Revan Fernando (Tropic Fishery Private Limited) and Timothy O'Reilly (Taprobane Seafoods).

The report was edited by Buddhi Felixge (Communications Specialist Sri Lanka) and designed by Stella Pongsitanan.

Disclaimer

This report is based on research and responses collected and available in July 2021, as part of MDF's market intelligence gathering exercise on the subject. The information contained in this report is dynamic and may change over time.

Executive Summary

MDF estimates that only **5.6%** of the total fishing households in Sri Lanka, were directly impacted.

Popularity of inland fish varieties such as **Tilapia** over some coastal fish varieties such as Linna, remains consistent four months into the event.

MDF notes that demand for inland fish was already on the rise pre-COVID, with the number of households directly engaged in inland fishing growing at a rate of **9.1%** p.a. over 2016-2019.



Sri Lanka's export seafood volumes remained unaffected as it largely consists of deep sea fish varieties, crabs and prawns.

Prices of export quality deep sea varieties up **60%** in the immediate aftermath, but have normalised since.

Environmental impact remains at large, debris from the fire continue to wash on to shore which MDF expects will have a larger impact on the tourism industry.



The fire and sinking of the X-Press Pearl cargo vessel in May 2021 off the coast of Colombo caused environmental and livelihood impacts, the full extent of which are still being assessed (for a timeline of events see Annex 1). Speaking to Fishing households in August, MDF found that the impact to fish demand (and consequently prices of) was limited to coastal fish varieties caught off the Western Coast. Given the rather localised impact, MDF estimates that only 5.6 per cent of the total fishing households in Sri Lanka were directly impacted.

Nevertheless, fears surrounding fish contamination altered buying patterns drastically. MDF partner conversations confirmed that consumers were switching more to deep sea varieties, imported tinned fish and dry fish from the North. MDF's key finding is increasing popularity of inland varieties such as Tilapia. Supermarkets are actively promoting Tilapia to their customers, driving up the price of a 100g of Tilapia over common coastal fish varieties, such as Linna; this remains the case even four months into the event. MDF notes that demand for inland fish was already on the rise pre-COVID, with the number of households directly engaged in inland fishing growing at a rate of 9.1 per cent p.a. over 2016-2019.¹ MDF expects the new trend to accelerate the net-positive impact on inland fishing households' income.

Sri Lanka's export seafood volumes remained unaffected as it largely consists of deep sea fish varieties, crabs and prawns. Nevertheless, fisheries

export partners told MDF that, immediately following the event, fishers were raising prices for deep sea varieties by upto 60 per cent, to compensate for the livelihood impact to coastal fishing activities. That said, the impact to prices from the X-Press Pearl event have normalised since, as was expected by exporters.

Nevertheless, the environmental impact remains at large. While the coastline clean-up has progressed rapidly, debris from the fire continue to wash on to shore which will affect the tourism industry more. The impact from the chemical spill is yet to be quantified. Latest reports suggest that a potential oil spill is imminent as measures to tow the ship away from the coast is on-going. If an oil spill were to occur, long term impacts will be visible on both the ecosystem and the livelihoods of coastal fishermen.



Photo credit: Sri Lanka Airforce Media/Handout via REUTERS

Impact on West Coast fishing livelihoods were immediate and sharp, while relief measures have been limited

Activities of an estimated **~5,600 one-day fishing boats**² were affected following the Government-imposed no-fishing zone that stretched across the Western Province on 25 May 2021. The ban was implemented at a time when the fishing community was already under stress from COVID-19 related movement restrictions. Fisher families in the Gampaha District (around 9,883) were hardest hit given their proximity to the disaster zone and high dependence on coastal fish sales. Additionally, over 20 dependent industries were impacted by the ban, particularly fish vendors and dry fish processors.³ Outside these areas, impact was limited, as coastal communities in other parts of the island were permitted to continue fishing activities. Multi-day boats fishing in deep sea and international waters were permitted to continue, regardless of proximity to the coast of the Western Province. Given the rather localised impact, MDF estimates that only 5.6 per cent of the total fishing households in Sri Lanka were directly impacted.

The average take home income of fishers in the Gampaha District is estimated to be **LKR 4,000/day**.⁴ Relief measures announced by the Government during the 20-day ban included a one-off LKR 5,000 payment per household. While this was announced, MDF was unable to confirm if the payments were made (see Box 1 below for more on the GoSL relief response). Moreover, **Fisheries Corporation intervened to buy unsold catch directly** in the initial stages.⁵



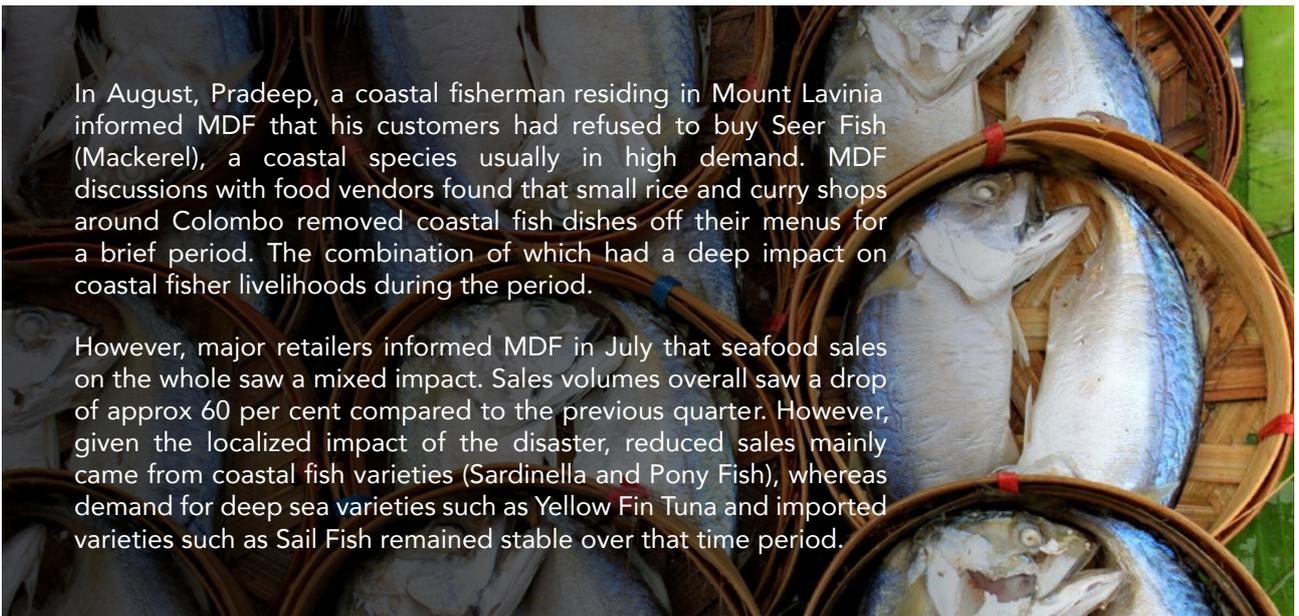


GoSL response to livelihood impacts

In order to provide immediate income relief, the Government initiated a programme to grant an allowance of **LKR 5,000** to affected fishermen, with a Treasury allocation of **LKR 49.5 Mn**. On 14 July 2021, the Minister of Fisheries announced that "After verifying details, a sum of LKR 124 Mn was released to Gampaha (100), Colombo (20), and Kalutara (4) District Secretaries as compensation for fishermen from the interim claim of X-press Pearl. LKR 420 Mn will be paid initially, after verifying details". Further compensation is only likely once Sri Lanka receives a larger part of the damages claim.

Livelihood impact driven by consumer perception; Inland and East Coast fisheries gain

Based on MDF conversations with retailers, the larger and more prolonged impact stemmed from consumer fears on contamination. Retailers and exporters told MDF that the fear was less based on fact and more fueled by the media publicity surrounding the event.



In August, Pradeep, a coastal fisherman residing in Mount Lavinia informed MDF that his customers had refused to buy Seer Fish (Mackerel), a coastal species usually in high demand. MDF discussions with food vendors found that small rice and curry shops around Colombo removed coastal fish dishes off their menus for a brief period. The combination of which had a deep impact on coastal fisher livelihoods during the period.

However, major retailers informed MDF in July that seafood sales on the whole saw a mixed impact. Sales volumes overall saw a drop of approx 60 per cent compared to the previous quarter. However, given the localized impact of the disaster, reduced sales mainly came from coastal fish varieties (Sardinella and Pony Fish), whereas demand for deep sea varieties such as Yellow Fin Tuna and imported varieties such as Sail Fish remained stable over that time period.

The MDF team witnessed that tinned Mackerel shelves in supermarkets were empty during the disaster. The same was witnessed for dry fish in the initial days, although dropped to below normal levels soon after, on fears of contaminated fish entering the dry market. That said, MDF discussions with fisher associations in the North at the time confirmed that, demand for dry fish produced in the North of Sri Lanka was unaffected.

Retailers also told MDF that certain East Coast fish varieties such as Salaya (Goldstrip Sardinella) recorded higher than average prices due to a combination of low supply and high demand for fish sourced from the East Coast. MDF also noticed a temporary shift from fish consumption to a more crustacean-based diet (prawns and crabs) among middle-income households of the Western Province.





MDF observed that consumers are switching from Western Coast fish varieties to inland varieties, driving demand for Tilapia. MDF expects this to have a net-positive impact on inland fishing households. Supermarkets are actively promoting Tilapia to their customers, driving up the price of a 100g of Tilapia over common coastal fish varieties, such as Linna. MDF notes that demand for inland fish was already increasing in popularity pre-COVID, with the number of households directly engaged in inland fishing growing at a rate of 9.1 per cent p.a. over 2016-2019.⁶ Four months on, the consumer demand for inland fish remains unchanged.

Impact on consumer demand for the wider seafood market was mixed and short lived

Retailers noted that consumers (especially in the Western Province) have a general understanding of the source of fish varieties and adjusted consumption patterns accordingly. Major retailers told MDF that the demand across the Puttalam to Galle belt witnessed the highest impact, while consumption patterns around Trincomalee, Dambulla and Matale areas had not changed, as supplies for these areas came from Trincomalee.

Major retailers also noted that customer basket values and sizes are seeing a general impact regardless, due to the current nationwide economic downturn. Therefore, some portion of demand changes should be attributed to that.

While there were acute short-term impacts on domestic seafood demand and supply, MDF observes that conditions have regained normalcy, as predicted by interviewed businesses.

Impact on exporters was limited due to heavy reliance on deep sea catch

As two-thirds of Sri Lanka's seafood exports are deep sea fish varieties like Yellow Fin Tuna and Sword Fish, with the remainder consisting of crabs and prawns (largely sourced from the North or from aqua farms), **exports were largely unaffected by the disaster**. Exporters told MDF that supply chains remained uninterrupted throughout the period, as fishing restrictions did not apply to deep sea fishers, even in the Western Province. However, **MDF discussions with exporter Tropic Fishery revealed that "landing prices of export quality seafood had spiked 40-60 per cent, as fishermen attempt to compensate for lost coastal fishing income"**. Export buyers in Europe were said to have absorbed the price increase. However, other export markets saw impact on profit margins. Exporters noted that negative media reports stemming from the disaster did not affect orders as they engaged in proper dissemination of information to end-customers (exporters felt that the latter already had good ecological knowledge to understand the ground conditions). We also add that, the price impact from the disaster was short lived and has normalised since.

Impact on fish stocks and the marine ecosystem

Environmental impacts appear stark, but there are mixed views on long-term effects. Although some experts believe the destruction is unprecedented, others believe the impact may not be as severe as initially assumed. Lack of data (pre and post event) has contributed to varying opinions, and the full environmental impact on Sri Lankan marine environment will only become fully apparent over time.

Two factors make impacts to the marine environment of the chemical spill limited. Firstly, the small volume of nitric acid compared to the volume of the ocean⁷ (a view confirmed by Prof Charitha Pattiaratchi⁸). Secondly, the Southwest monsoon prevalent during the incident that accelerated the dilution of chemicals (confirmed by Nishan Perera⁹).



The most significant environmental impact is from the spread of nurdles

The nurdle spill related to this disaster is the largest on record globally, as per Muditha Katuwalawa.¹⁰ He asserts that the event is the worst nurdle spill to be recorded in terms of impact, since it occurred in the open ocean, unlike the spill in Hong Kong which was limited to the bay area.

Nurdles: Low density polyethylene plastic pellets. Nurdles are small plastic pellets that are melted down and used in the manufacture of a wide range of end-products.



Photo credit: Sri Lanka Airforce Media/Handout via REUTERS

The impact of the nurdles are widely visible across Negombo and the Southern Coast of the country, owing to the onset of the Southwest monsoon, which concentrated the nurdle spill immediately to the shores closest to the incident. The nurdles which accumulated close to the disaster site moved along the Western Coast and have been reported as far North as the Gulf of Mannar (Annex 2) and across the Southern coastal belt up to Trincomalee on the East Coast (as of 15 September 2021). Oceanswell¹¹ has traced the nurdles across the country using a citizen science initiative (Annex 2). MDF beneficiary reports from the areas confirm these claims.

The impact of nurdles on coral reefs are unlikely, as they float on the ocean surface. Dr Steven Creech, MDF partner and Coordinator of the Sri Lanka Blue Swimming Crab (BSC) Fishery Improvement Project (FIP)¹² confirms that the wild crab stocks (located 150km and 250km north of the vessel) have not been affected by the disaster.¹³

The effect of nurdles on coastal fauna have not yet been quantified. Experts confirmed that the country's coastline will be affected by the nurdles for decades to come, as two-thirds of the nurdles are still in the ocean. This could lead to a recurring impact for tourism, as resurfacing news of nurdle sightings on beaches can reduce demand for coastline properties and related tourism livelihoods.

Sri Lanka has reportedly made an interim claim for damages of US\$ 40 Mn, of which US\$ 3.6 Mn (LKR 720 Mn) has already been received. Around US\$ 2.1 Mn (LKR 420 Mn) has been allocated as compensation for fishing communities. However, it is yet to be confirmed if fishermen received any proceeds received from the insurance claim.



Annex 1

Timeline of MV X-press Pearl disaster events and the Marine Environment Protection Authority (MEPA) response

20 May 2021

MEPA conducted an emergency meeting with the Incident Management Team (IMT) and activated the National Oil Spill Contingency Plan (NOSCOP) for oil leak in case of oil and/or chemicals entering the ocean.

24 May 2021

The Hon. Minister of Ports and Shipping conducted a meeting on the latest updates on the MV X-Press Pearl.

The fire onboard the MV X-Press Pearl was contained to a manageable level.

21 May 2021

Senior officials of MEPA inspected the anchored location of the MV X-Press Pearl on a preliminary environmental impact assessment.

Sri Lanka Ports Authority (SLPA), Sri Lanka Navy and the Sri Lanka Air Force jointly conducted a discussion to put out the fire on MV X-Press Pearl.

MEPA officially informed the Captain, the parent company, the insurance company and the Sri Lanka agents of ship/ insurance company of the MV X-Press Pearl to avert the fire, prevent any possible oil/ chemical pollution and to tow the vessel away from our waters if the situation goes beyond control.

25 May 2021

At 2.00am a large explosion ignites a massive fire onboard the MV X-Press Pearl.

11 June 2021

MEPA identified **9 locations** and **13 KM beach length** was cleaned.

Marine ecology specialists from MEPA and NARA (National Aquatic Resource, Research and Development Agency), National Building Research Organization, University of Moratuwa, University of Colombo, University of Ruhuna, University of Kelaniya, University of Jayawardenapura and selected specialists to conduct research on the marine impact arising from the MV X-Press Pearl disaster. This is ongoing. The dead marine life that was washed up on the Western Province coastline has been handed over to NARA and The Department of Wildlife to determine the cause of death.

26 May 2021 to date

42,000 bags of debris were collected from 138 beach cleanups.

01 June 2021

MEPA orders the MV X-Press Pearl to be towed out to deep sea.

26 May 2021

MEPA together with the IMT organization prepares an emergency action plan in response to a high threat oil and chemical spill and disseminate to related agencies for relevant action.

The burnt-out material from the containers which had fallen into the sea had washed to the beaches of Uswetakeliyawa and Negombo. The plastic pellets had washed up as far as Matara to the South and Puttalam to the North of the MV X-Press Pearl.

MEPA with the assistance of Sri Lanka Tri-Forces and other state entities commenced the cleanup process at selected **39 locations**. MEPA commences daily survey and water sampling to measure pollution level. The process is ongoing to date.

10 June 2021 to date

MEPA has collected approximately **1,075 tons** of waste stored in **43 containers**.



02 June 2021

The ship while being towed to deep sea subsequently sinks **9.5 nautical miles** off the coast of Colombo.

MEPA revised oil spill action plan considering the new data that changed the computer simulation model due to updated metrological and oceanographic data.

27 May 2021

MEPA with the assistance of the Sri Lanka Coastguard erects a boom (floating barrier/buoy) at locations where the Negombo lagoon is open to the sea.



Annex 2

Nurdle tracking in Sri Lanka (based on citizen reporting)



Source: Oceanswell, 15 September 2021.

Annex 3

Impact on the environment

The increased number of turtle strandings reported across the island is speculated to be **linked to the chemical spill¹⁴**. **MEPA confirms the same¹⁵**.

As of 30 July 2021



417
turtles



48
dolphins



8
whales

were stranded along the western coast of the country¹⁶

According to the latest 'Beach Clean-up Update' (25 June 2021) published by MEPA¹⁷, the clean-up has been focused on 250 locations, ranging from Mannar on the North Western Coast to Kirinda on the Southern Coast. Nearly 51,000 bags of debris have been collected.

Due to concerns of bunker oil leakage from the containers, that have now sunk to the ocean floor, the authorities are reportedly collecting water samples daily, to check for potential oil leaks. In addition to the emergency environmental response, assessment of the medium-term impacts are currently underway by marine ecology specialists from MEPA, the National

Aquatic Resources Research and Development Agency (NARA) and other state agencies as well as national universities.

A panel of legal professionals and five expert group committees have been set up under the Ministry of Justice to assess the environmental and economic damage done to various sectors, and their interim reports are completed (but not made public). They are also helping to formulate GoSL's claim for damages caused to the environment (especially marine ecology), fisheries, and other economic activities including tourism.



Footnotes

1. <https://www.fisheriesdept.gov.lk/web/images/Statistics/FISHERIES-STATISTICS--2020-.pdf>
2. <https://economynext.com/si-lanka-halts-coastal-fishing-over-x-press-pearl-pollution-hitting-5600-boats-82536/>
3. <https://www.news.lk/news/political-current-affairs/item/32432-fishing-community-affected-by-mv-x-press-pearl-shipwreck-to-receive-rs-5000-allowance-from-tuesday>
4. <https://ceylontoday.lk/news/fishermen-feel-the-heat-of-x-press-pearl-catastrophe>
5. http://www.colombopage.com/archive_21A/Jun13_1623558935CH.php
<https://www.cbsl.gov.lk/en/statistics/economic-indicators/price-report>
6. <https://www.fisheriesdept.gov.lk/web/images/Statistics/FISHERIES-STATISTICS--2020-.pdf>
7. The cargo manifesto of the sunken ship indicates that it carried 1486 containers of which 81 containers contained hazardous material (including nitric acid and sodium hydroxide)
8. Ocean Graduate School and the University of Western Australia
9. Co-founder, Blue Resources Trust
10. Coordinator, The Pearl Protectors - Youth-led Marine Conservation Organisation
11. Marine research organisation based in Sri Lanka
12. MDF supports the SL BSC FIP through Pelagikos Private Limited.
13. Blue Swimming Crabs are highly unlikely to passively ingest nurdles floating on the surface, compared to pelagic / surface swimming Finfish species whose gills could easily become clogged if billions of small plastic particles are in the water column.
14. Sri Lanka: Hundreds of sea animals washed ashore after ship disaster - BBC News
15. Daily Mirror - Sri Lanka Latest Breaking News and Headlines - Print Edition Death of turtles caused by X-Press Pearl - AG
16. Ada Derana alerts: Death of turtles caused by X-Press Pearl, AG's Department.
17. Nurdles and Debris Cleanup Update <https://mepa.gov.lk/nurdles-and-debris-cleanup-update/>



- Fiji: Garden City Business Park, Grantham Road, Suva, Fiji
- Timor-Leste: 2nd Street, Palm Business & Trade Centre, Surik Mas, Dili
- Pakistan: 22-N, Block N, Phase 2, Johar Town, Lahore, Punjab, Pakistan
- Sri Lanka: No. 349, 6/1, Lee Hedges Tower, Galle Road, Colombo 03, Sri Lanka
- Papua New Guinea: Level 10, MRDC Haus, Musgrave St, Port Moresby, Papua New Guinea

This publication has been funded by the Australian Government through the Department of Foreign Affairs and Trade. The views expressed in this publication are the author's alone and are not necessarily the views of the Australian Government.

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MDF is funded by the Australian government. It is implemented by Palladium, in partnership with Swisscontact