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# DEVELOPMENT COOPERATION IN THE INDO-PACIFIC

COUNTRY REPORT: PAPUA NEW GUINEA



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## About India-U.S. Triangular Development Partnership (TriDeP)

The Asia Foundation is a non-profit international development organization committed to improving lives across a dynamic and developing Asia. With support from USAID/India, the Foundation is implementing the India-U.S. Triangular Development Partnership (TriDeP) in support of U.S. and India's mutual aims in the Indo-Pacific and beyond. TriDeP will establish partnerships with government, civil society, business corporations, think tanks, and academic institutions to advance India's development cooperation footprint in three sectors: Disaster Risk Reduction (DRR), Climate Smart Agriculture (CSA), and Renewable Energy (RE). TriDeP seeks to identify countries in the Indo-Pacific region, beyond the immediate neighborhood of India, where there is a potential demand for partnership with India, and to prioritize its activities based on such identification. TriDeP believes that such identification needs can also be informed by the other development cooperation initiatives in the Indo-Pacific to enable synergies among development cooperation partners as well as complementarities to maximize resource utilization. This will enable TriDeP to focus on sectors and countries where gaps need to be filled, avoiding duplication of effort already underway or planned through other initiatives.

To develop an effective and efficient roadmap for such development cooperation in this context, the Foundation has engaged the Bureau of Research on Industry and Economic Fundamentals (BRIEF) to undertake a mapping exercise of the complementarity of Indian development cooperation with other similar initiatives in selected countries in the Indo-Pacific.

### Disclaimer

*This report is made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the 'India-U.S. Triangular Development Partnership (TriDeP)' program at The Asia Foundation. The opinions expressed here are solely of the authors and do not necessarily reflect the views of USAID or the United States Government, and The Asia Foundation.*

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## List of abbreviations and acronyms

- ◆ ADB- Asian Development Bank
- ◆ AFP- Australian Federal police
- ◆ AIDS- Acquired Immuno Deficiency Syndrome
- ◆ AIFFP- Australian Infrastructure Financing Facility for the Pacific
- ◆ ARoB- Autonomous Region of Bougainville
- ◆ AUSMAT- Australian Medical Assistance Team
- ◆ CEA- Central Electricity Authority
- ◆ CEEW- Council on Energy, Environment and Water
- ◆ CHEC- China Harbour Engineering Co Ltd
- ◆ CRCEG- China Railway Construction Engineering Group
- ◆ CRIG- China Railway International Group Co., Ltd.
- ◆ CSA- Climate Smart Agriculture
- ◆ CSIR- Council of Scientific and Industrial Research Labs
- ◆ CSTEP- Centre for Study of Science, Technology and policy
- ◆ DAC- Development cooperation Committee
- ◆ DAD- Development cooperation Database
- ◆ DFAT- Department of Foreign Affairs and Trade
- ◆ DNPM- Department of National Planning and Monitoring
- ◆ DPE- Department of Petroleum and Energy
- ◆ DRCSC- Development Research Communication and Service Centre
- ◆ DRM- Disaster Risk Management
- ◆ DRR- Disaster Risk Reduction
- ◆ EESL- Energy Efficiency Services Limited
- ◆ ELCOM- Papua New Guinea Electricity Commission
- ◆ FOIP- Free and Open Indo-Pacific
- ◆ FREAGER- Facilitating Renewable Energy & Energy Efficiency Applications for Greenhouse Gas Emission Reduction
- ◆ FTF-ITT- Feed the Future- India Triangular Training
- ◆ GDP- Gross Domestic Product
- ◆ GHG- Greenhouse Gases
- ◆ HIV- Human Immuno Deficiency Virus
- ◆ IBRD- International Bank for Reconstruction and Development
- ◆ ICAR- Indian Council for Agricultural Research
- ◆ ICCC- Independent Consumer and Competition Commission
- ◆ ICRISAT- International Crops Research institute for the Semi-Arid Tropics
- ◆ IDA- International Development Association
- ◆ IISCs- Indian Institute of Science
- ◆ IIT- Indian Institute of Technology
- ◆ IMD- Indian Meteorological Department
- ◆ IMR- Institute of Medical Research
- ◆ INCOIS- Indian National Centre for Oceanic Information Systems
- ◆ IPBC- Independent Public Business Corporation
- ◆ IREDA- Indian Renewable Energy Development Agency Limited
- ◆ ISRO- Indian Space Research Organisation
- ◆ IT- Information Technology
- ◆ ITEC- Indian Technical and Economic Cooperation
- ◆ LDC- Least Developed Country
- ◆ LOC- Lines of Credit
- ◆ M&E- Monitoring and Evaluation
- ◆ MANAGE- National Institute of Agricultural Extension Management
- ◆ MNRE- Ministry of New and Renewable Energy
- ◆ MoNRE- Ministry of Natural Resources and the Environment
- ◆ MoU- Memorandum of Understanding
- ◆ MRD- Ministry of Rural Development
- ◆ NCMRWF- The National Centre for Medium Range Weather Forecasting
- ◆ NDRF- National Disaster Response Force
- ◆ NICRA- National Innovation in Climate Resilient Agriculture
- ◆ NIDM- National Institute of Disaster Management
- ◆ NIRD&PR- National Institute of Rural Development & Panchayati Raj
- ◆ NISE- National institute of Solar Energy
- ◆ NIT- National Institute of Technology
- ◆ NIWE- National Institute of Wind Energy
- ◆ NRSC- National Remote Sensing Centre

- ◆ NSDC- National Skill Development Corporation
- ◆ OCCD- Office of Climate Change and Development
- ◆ ODA- Official Development Assistance
- ◆ PACAM- Pacific American Climate Fund
- ◆ PMU- Project Management Unit
- ◆ PNG- Papua New Guinea
- ◆ PNGDF- Papua New Guinea Defence Force
- ◆ POSOCO- Power System Operation Corporation
- ◆ RE- Renewable Energy
- ◆ ROI- Return on Investment
- ◆ RPNGC- Royal Papua New Guinea Constabulary
- ◆ SAARC- South Asian Association for Regional Cooperation
- ◆ SCGJ- Skill Council for Green Jobs
- ◆ SDGs- Sustainable Development Goals
- ◆ SDMC- SAARC Disaster Management Centre
- ◆ SPS- Sector Program Support
- ◆ SSS-NIBE- Sardar Swaran Singh National Institute of Bio-Energy
- ◆ StaRS- Strategy for Responsible Sustainable Development
- ◆ TERI- The Energy and Resources Institute
- ◆ TSRD- Tagore Society for Rural Development
- ◆ UNDP- United Nations Development Program
- ◆ U.S.- United States
- ◆ USAID- U.S. Agency for International Development

## Scope and Methodology

This report assesses the current status of development cooperation for Papua New Guinea in the identified sectors of Disaster Risk Reduction (DRR), Climate Smart Agriculture (CSA) and Renewable Energy (RE), and sets a background for India for an effective and efficient roadmap for development cooperation through relevant case studies and demand-supply mapping.

### Objective

The report identifies the current development partners (multilateral development banks/ countries) in the identified sectors and maps their activities. It further elaborates the recipient organizations and institutions that are involved in receiving and managing aid, along with an assessment of outcome and sustainability of donor interventions in these sectors. Further, the report identifies the gaps and new initiatives where India can participate and engage through bilateral, multilateral or triangular cooperation. It also assesses the potential expertise of India in each of the identified sectors and charts a way forward entailing adoption of best practices and mitigation of potential challenges based on learnings from past/existing projects in the identified domains. The report intends to discuss and recommend partner countries' preferred cooperation modalities as well as identify innovative financing models that India can incorporate in its development cooperation initiatives.

### Methodology

The report adopts a mixed methods design involving the assessment of relevant qualitative and quantitative information gathered from primary and secondary sources. As a part of the exercise, extensive one-on-one stakeholder interactions with academic experts, relevant representatives of multilateral development banks and donor countries, former bureaucrats and others were undertaken. Apart from multi-stakeholder engagements, the preparation of the report also involved comprehensive secondary research, including rummaging of relevant reports, documents, and datasets available in the secondary domain. Further, thorough assessment of multiple implementation reports, status reports, and M&E reports published by various stakeholders/donors during or post completion of relevant projects were also conducted to gather key insights into various focus areas identified for the study.

### Structure

The report has been structured in a way to systematically capture the major elements regarding development cooperation in Papua New Guinea, principal donors, key modalities, limitations, best practices as well as the potential role of India in the identified sectors among others. The overall report has been divided into five chapters, which entail the following:

**Chapter 1** prepares a background and provides a glimpse of the economic environment in Papua New Guinea to define the context. It further focuses on the local systemic framework within the country for receiving and managing development cooperation.

**Chapter 2** tries to analyze the current status of development cooperation in the identified sectors i.e. DRR, CSA and RE.

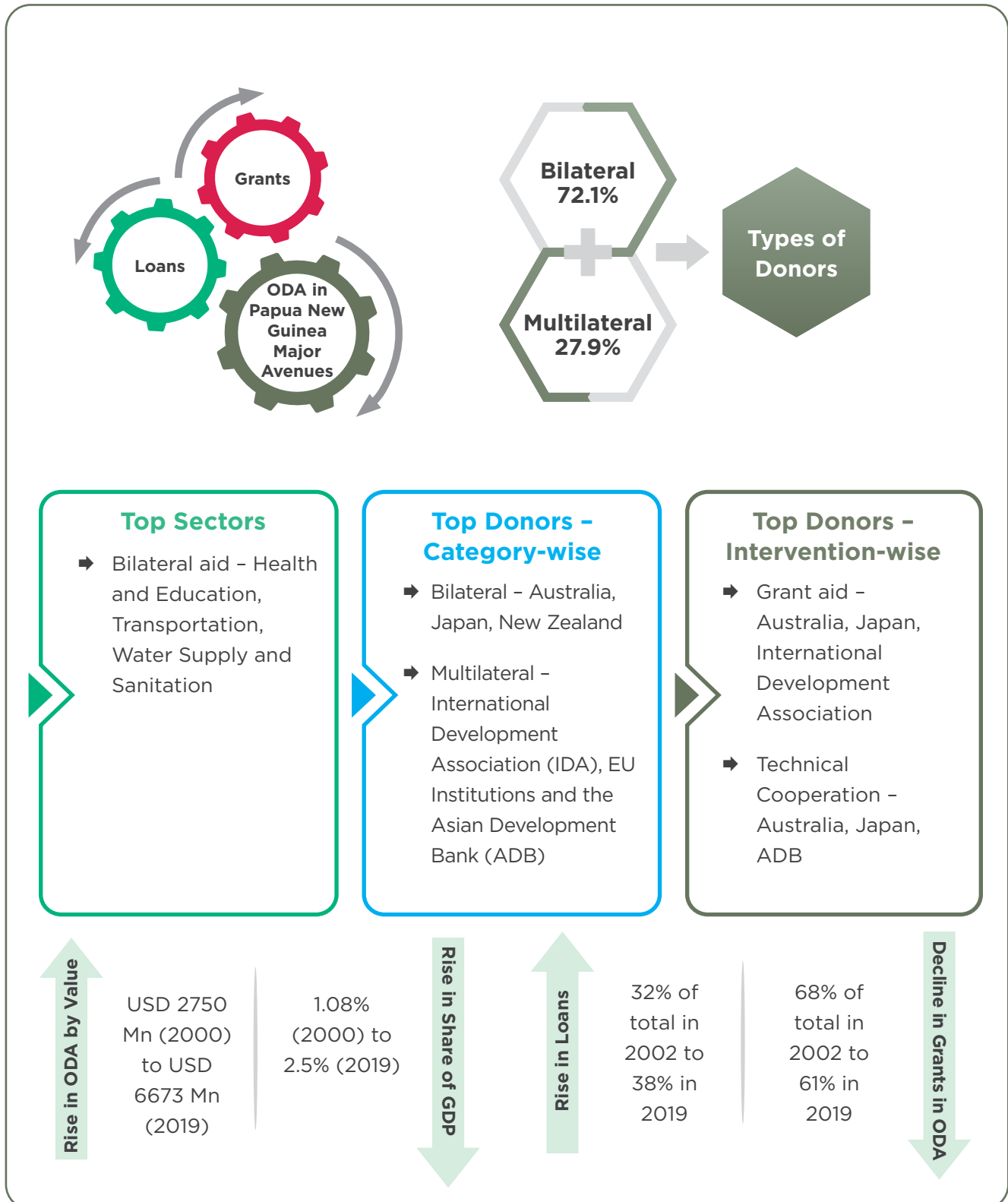
**Chapter 3** identifies the cooperation modalities and tries to explain the intent and objectives of existing donors providing aid assistance to Papua New Guinea.

**Chapter 4** includes a comprehensive analysis of the best practices and challenges for one project identified in each of the selected sectors i.e. DRR, CSA and RE. The chapter further deep dives into the sustainability measures undertaken by the respective donors for each project.

**Chapter 5** discusses the scope of India's involvement as a donor, which has been assessed through detailed demand-supply mapping for Papua New Guinea and India respectively, further identifying the relevant stakeholders for cooperation. The chapter further elaborates the innovative financing models that India can incorporate while engaging in development cooperation with Papua New Guinea.

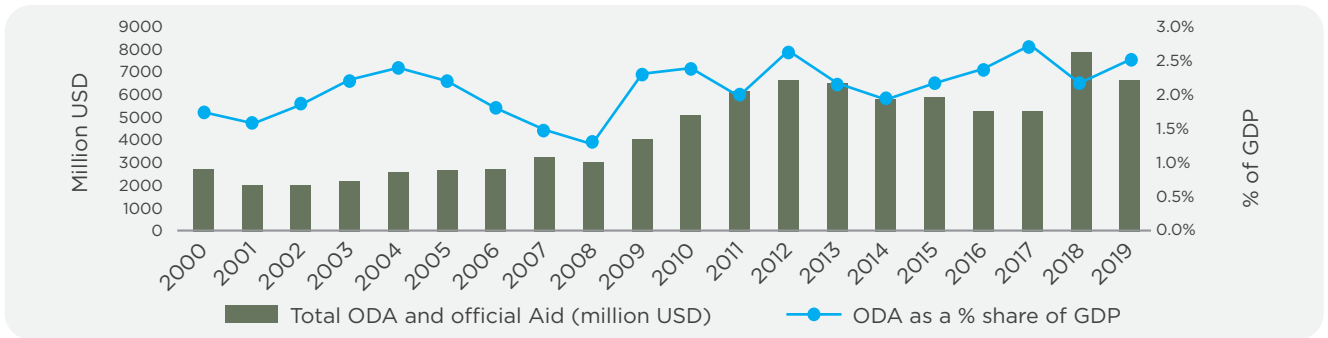
# 1 Overview of Aid and Development Cooperation to Papua New Guinea

Figure 1 - Snapshot: Official Development Assistance (ODA) to Papua New Guinea



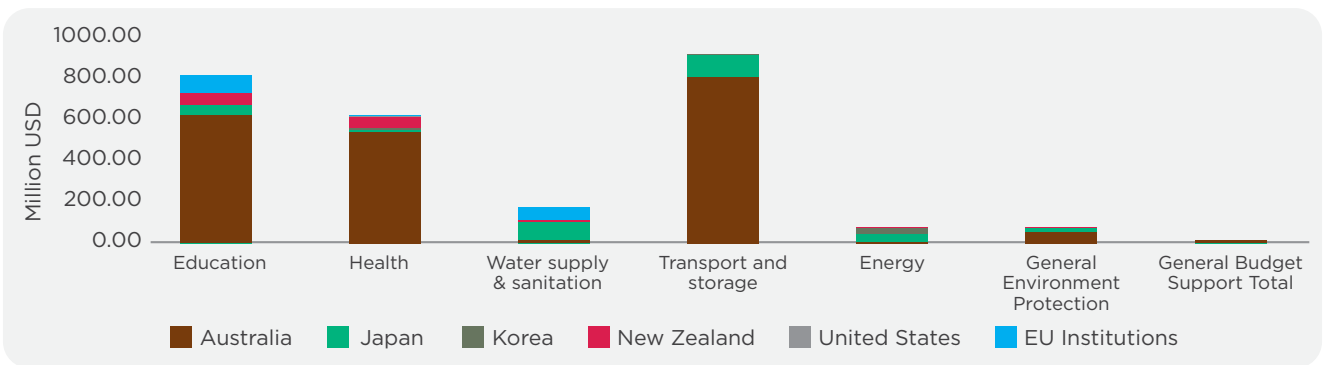


**Figure 2- Total ODA and official aid in Papua New Guinea and share of GDP**



Source: World Bank Database

**Figure 3 - Sector wise disbursement of aid by top six countries, 2007-2019 (in USD million)**



Source: OECD Database

**Figure 4 - Focus Areas: Nature of Issues and Investments so Far**



**Disaster Risk Reduction**

- ◆ **Key Issues** - Climate change and frequent disasters like floods, volcanic eruption, rising sea level cyclones, and typhoons, lack of technical and human capacities for effective data management and risk assessment, limited financing mechanisms, poor disaster preparedness
- ◆ **Principal Donors** - European Commission Humanitarian Office, UNDP, Australia (DFAT), Japan, Global Facility for Disaster Risk Reduction & Recovery trust funds
- ◆ **Broad Areas of Intervention** - Risk identification, priority project identification, restoration projects, resilience, and emergency response



- ◆ **Key Issues** - Heavy rains, only 25% land suitable for cultivation, heavy dependence on agriculture, lack of technical capacities for adaptation to potential risks, poor research capacities to ensure overall development and awareness, limited financing mechanisms
- ◆ **Principal Donors** - The United States Agency for International Development's (USAID), Pacific-American Climate Fund (PACAM), Australia, IDA (World Bank)
- ◆ **Broad Areas of Intervention** - Diversification activities, sustainability program, increasing resilience to climate change, climate change and investment strategy, and food security



- ◆ **Key Issues** - Low electrification, heavy rainfall, regulatory and financial barrier for renewable energy generation, untapped potential for renewable energy generation, limited planning, resource building, and training, Limited regulatory policies on renewable energy
- ◆ **Principal Donors** - Government of New Zealand, IDRB & IDA (World Bank), ADB, UNDP
- ◆ **Broad Areas of Intervention** - Renewable energy development (hydropower), reducing ghg emission

Source: Disaster Risk Reduction in Papua New Guinea. UNDRR. 2019. BRIEF Research

## 1.1. Disaster Risk Reduction

**Table 1 - Papua New Guinea: Aid Assistance in Disaster Risk Reduction**

Donor	Area	Project	Description
European Commission Humanitarian Office and United Nations Development Programme (UNDP)	Capacity Building	Reducing Risks and Building Community Resilience in Autonomous Region of Bougainville (ARoB) <sup>1</sup>	<ul style="list-style-type: none"> <li>◆ <b>Implementing Agency:</b> National Disaster Centre</li> <li>◆ <b>Closing Year/Status:</b> Active</li> <li>◆ <b>Budget:</b> 540.350,00 Euro</li> <li>◆ The project's objective was to minimize disaster risks and promote community resilience in Bougainville's Autonomous Region</li> </ul>

1. UNDP Document. [https://www.pg.undp.org/content/papua\\_new\\_guinea/en/home/operations/projects/crisis\\_prevention\\_and\\_recovery/reducing-disaster-risks-in-bougainville.html](https://www.pg.undp.org/content/papua_new_guinea/en/home/operations/projects/crisis_prevention_and_recovery/reducing-disaster-risks-in-bougainville.html)

Donor	Area	Project	Description
Global Facility for Disaster Risk Reduction & Recovery trust funds	Technical Assistance	PNG Disaster Risk Management Program <sup>2</sup>	<ul style="list-style-type: none"> <li>◆ <b>Recipient :</b> National Disaster Centre</li> <li>◆ <b>Closing Year/ Status:</b> 2015</li> <li>◆ <b>Modality:</b> Technical Assistance</li> <li>◆ <b>Budget:</b> USD 500,000</li> <li>◆ The project's main goal was to help Papua New Guinea become more resilient to the effects of natural catastrophes and climate change on the agriculture sector by informing sector risk reduction policy frameworks as part of the country's priority actions.</li> </ul>
Japan	Technical Assistance	PNG: Building a More Disaster and Climate Resilient Transport Sector <sup>3</sup>	<ul style="list-style-type: none"> <li>◆ <b>Recipient:</b> Department of Finance</li> <li>◆ <b>Implementing Agencies:</b> Department of Works</li> <li>◆ <b>Closing Year/Status:</b> 2015</li> <li>◆ <b>Modality:</b> Grant</li> <li>◆ <b>Budget:</b> USD 2.93 million</li> <li>◆ The goal of this project was to help PNG become more resilient to natural disasters and climate change in the transportation sector by increasing capacity for hazard risk assessment in the transportation sector.</li> </ul>
International Bank for Reconstruction and Development	Capacity Building	Emergency El Nino Drought Response Project <sup>4</sup>	<ul style="list-style-type: none"> <li>◆ <b>Recipient:</b> Unspecified</li> <li>◆ <b>Closing Year/ Status:</b> 2002</li> <li>◆ <b>Modality:</b> Loan</li> <li>◆ <b>Budget:</b> USD 5.5 million</li> <li>◆ To help rural Papua New Guinea cope better with droughts and other natural disasters, following the 1997 El Nino event, and to enhance the capacity of local governments to handle adverse effects of natural disasters.</li> </ul>

2. UNDP Document. [https://www.pg.undp.org/content/papua\\_new\\_guinea/en/home/operations/projects/crisis\\_prevention\\_and\\_recovery/disaster-risk-management.html](https://www.pg.undp.org/content/papua_new_guinea/en/home/operations/projects/crisis_prevention_and_recovery/disaster-risk-management.html)

3. World Bank Document. <https://projects.worldbank.org/en/projects-operations/project-detail/P129322>

4. World Bank Document. <https://projects.worldbank.org/en/projects-operations/project-detail/P055446>

Donor	Area	Project	Description
Asia Pacific Disaster Response Fund	Emergency response and Capacity Building	Papua New Guinea: Earthquake Emergency Response Project <sup>5</sup>	<ul style="list-style-type: none"> <li>◆ <b>Recipient:</b> Department of Treasury</li> <li>◆ <b>Closing Year/ Status:</b> 2019</li> <li>◆ <b>Modality:</b> Grant</li> <li>◆ <b>Budget:</b> USD 1 million</li> <li>◆ The project consisted of operations related to disaster relief and the provision of life-saving services for communities affected by the earthquake that struck PNG on February 26, 2018, and the country's subsequent aftershocks.</li> </ul>
Australia (DFAT), UNDP	Capacity Building	Strengthening Disaster Risk Management in Papua New Guinea Phase 1 <sup>6</sup>	<ul style="list-style-type: none"> <li>◆ <b>Recipient:</b> Government of PNG</li> <li>◆ <b>Closing Year/ Status:</b> 2019</li> <li>◆ <b>Modality:</b> Unspecified</li> <li>◆ <b>Budget:</b> USD 4.4 million</li> <li>◆ The goal of the project was to minimize catastrophe susceptibility and promote resilience by upgrading disaster preparedness processes and response procedures at the national and subnational levels.</li> </ul>

## 1.2. Climate Smart Agriculture

**Table 2 - Papua New Guinea: Aid Assistance in Climate Smart Agriculture**

Donor	Area	Project	Description
Government of Australia, Climate Smart Fund	Capacity Building	Papua New Guinea: Building Resilience to Climate Change in Papua New Guinea <sup>7</sup>	<ul style="list-style-type: none"> <li>◆ <b>Implementing Agency:</b> Office of Climate Change and Development</li> <li>◆ <b>Closing Year/ Status:</b> Active</li> <li>◆ <b>Modality:</b> Grant</li> <li>◆ <b>Budget:</b> 32.23 million</li> <li>◆ <b>Grant by Strategic Climate Fund:</b> USD 24.25 million</li> <li>◆ <b>Additional Financing by Government of Australia:</b> USD 2.98 million</li> <li>◆ <b>Additional Financing by Strategic Climate Fund:</b> USD 5 million</li> <li>◆ The program's goal is to strengthen PNG's ability to analyse and incorporate climate change risks into its development investment strategy.</li> </ul>

5. ADB Document. <https://www.adb.org/projects/52115-001/main>

6. UNDP Document. [https://www.pg.undp.org/content/papua\\_new\\_guinea/en/home/projects/disaster-risk-management.html](https://www.pg.undp.org/content/papua_new_guinea/en/home/projects/disaster-risk-management.html)

7. ADB Document. <https://www.adb.org/projects/46495-002/main>

Donor	Area	Project	Description
Australia	Capacity Building	Climate Smart Agriculture opportunities for enhanced food production in Papua New Guinea <sup>8</sup>	<ul style="list-style-type: none"> <li>◆ <b>Key partners:</b> Climate Change and Development Authority, CSIRO Agriculture and Food, Department of Agriculture and Livestock, Fresh Produce Development Agency Limited, national Agriculture Research Institute, Phloem 3 Pty Limited, PNG National Weather Service, Sustineo Pty Ltd, University of Goroka</li> <li>◆ <b>Closing Year/Status:</b> Active</li> <li>◆ <b>Budget:</b> AUD 2,615,108</li> <li>◆ The project is supporting the use of seasonal climate information to inform food production decisions in Papua New Guinea (PNG) farming communities, hence improving food security results for rural populations.</li> </ul>
The United States Agency for International Development's (USAID) Pacific-American Climate Fund (PACAM)	Capacity Building	Adaptive, Resilient, and Productive Agriculture in PNG <sup>9</sup>	<ul style="list-style-type: none"> <li>◆ <b>Recipient :</b> ChildFund PNG</li> <li>◆ <b>Closing Year/ Status:</b> Unspecified</li> <li>◆ <b>Modality:</b> Grant</li> <li>◆ <b>Budget:</b> USD 512,045 million</li> <li>◆ The project will strengthen the agricultural resilience and adaptive capacity of 12 agricultural communities in Rigo District, Central Province which were badly affected of the El-Nino to improve food security</li> </ul>
IDA (World Bank)	Capacity Building and Technical Assistance	PNG Agriculture Commercialization and Diversification Project <sup>10</sup>	<ul style="list-style-type: none"> <li>◆ <b>Implementing Agencies:</b> Department of Agriculture and Livestock, Coffee Industry Corporation, Cocoa Board</li> <li>◆ <b>Closing Year/ Status:</b> Active</li> <li>◆ <b>Modality:</b> Loan</li> <li>◆ <b>Budget:</b> USD 40 million</li> <li>◆ To facilitate the development of competitive and diversified agriculture value chains for selected commodities in targeted provinces</li> </ul>

8. Australian Center for International Agriculture Research. <https://www.aciar.gov.au/project/asem-2017-026>

9. U.S. Embassy. <https://pg.usembassy.gov/united-states-supports-climate-smart-agriculture-papua-new-guinea-march-8-2016/>

10. World Bank Document. <https://projects.worldbank.org/en/projects-operations/project-detail/P166222>

## 1.3. Renewable Energy

**Table 3 - Papua New Guinea: Aid Assistance in Renewable Energy**

Donor	Area	Project	Description
Global Environmental Facility and UNDP	Capacity Building	Facilitating Renewable Energy & Energy Efficiency Applications for Greenhouse Gas Emission Reduction (FREAGER) <sup>11</sup>	<ul style="list-style-type: none"> <li>◆ <b>Implementing Agency:</b> United Nations Development Programme</li> <li>◆ <b>Closing Year/Status:</b> Active</li> <li>◆ <b>Modality:</b> Grant</li> <li>◆ <b>Budget:</b> USD 24,760,00</li> <li>◆ The project's focus area was to enable the application of feasible renewable energy and energy efficiency technologies for achieving Greenhouse Gas (GHG) emission reduction in PNG.</li> </ul>
World Bank (IBRD)	Capacity Building and Technical Assistance	The Yonki Hydroelectric Project <sup>12</sup>	<ul style="list-style-type: none"> <li>◆ <b>Recipient:</b> Papua New Guinea Electricity Commission (ELCOM)</li> <li>◆ <b>Closing Year/ Status:</b> 1992</li> <li>◆ <b>Modality:</b> Loan</li> <li>◆ <b>Budget:</b> USD 117.4 million (USD 28 million by World bank)</li> <li>◆ The Yonki Hydroelectric Project comprised: (i) construction of a 60 m high earth-fill dam on the Ramu River (ii) installation of two additional 15 MW generating units (iii) relocation of a part of the Highlands highway</li> </ul>
World Bank (IDA)	Technical Assistance	PNG Energy Sector Development Project <sup>13</sup>	<ul style="list-style-type: none"> <li>◆ <b>Recipient:</b> Department of National Planning and Monitoring</li> <li>◆ <b>Closing Year/Status:</b> 2019</li> <li>◆ <b>Modality:</b> Loan</li> <li>◆ <b>Budget:</b> USD 8.35 million</li> <li>◆ The Energy Sector Development Project for Papua New Guinea's development aimed to strengthen policy development and strategic framework for renewable energy and rural electrification; and attract investors for long-term hydropower development.</li> </ul>

11. GEF Document. <https://www.thegef.org/project/facilitating-renewable-energy-energy-efficiency-applications-greenhouse-gas-emission>

12. World Bank Document. <https://documents1.worldbank.org/curated/en/674681468063535810/pdf/multi-page.pdf>

13. World Bank Document. <https://projects.worldbank.org/en/projects-operations/project-detail/P101578>

Donor	Area	Project	Description
Asian Development Bank	Capacity Building	Papua New Guinea: Port Moresby Power Grid Development Project <sup>14</sup>	<ul style="list-style-type: none"> <li>◇ <b>Recipient:</b> Independent Public Business Corporation</li> <li>◇ <b>Closing Year/Status:</b> Active</li> <li>◇ <b>Modality:</b> Loan</li> <li>◇ <b>Budget:</b> USD 66.7 million</li> <li>◇ The project will upgrade and extend the transmission and distribution grid, improve substation capacity, and upgrade and rehabilitate two hydropower plants.</li> </ul>
Government of New Zealand and ADB	Capacity Building	Papua New Guinea: Town Electrification Investment Program - Tranche 1	<ul style="list-style-type: none"> <li>◇ <b>Recipient:</b> Energy Division of the Department of Petroleum and Energy</li> <li>◇ <b>Closing Year/Status:</b> 2021</li> <li>◇ <b>Modality:</b> Grant and Loan</li> <li>◇ <b>Budget:</b> Loan through ordinary capital resources - USD 37.9 million</li> <li>◇ <b>Loan by Asian Development Bank:</b> USD 16.4 million</li> <li>◇ <b>Additional grant by Government of New Zealand:</b> USD 4.8 million</li> <li>◇ The investment program supported run-of-river hydro plants in Northern Province and the Autonomous Region of Bougainville.</li> </ul>

14. ADB Document. <https://www.adb.org/projects/43197-013/main>

## 2

# Cooperation Modalities of Donor Interventions and Donor Intent

Aid assistance, ever since the inception of development practices, is given based on three major factors: (i) Humanitarian grounds, (ii) Political consideration, and (iii) Economic interest.

**Table 4 - Donor Intent Examples**

Intent Category	Description	Examples	Projects
Development	Promotes long-term economic development and welfare within the recipient country. Can include tied aid, and projects where the donor is both the funder and the implementer.	<ol style="list-style-type: none"> <li>1. Humanitarian assistance and emergency management</li> <li>2. Capacity building within the recipient country to sustain social programs</li> <li>3. Institution building of recipient government through elections, training, or official government buildings</li> </ol>	<ul style="list-style-type: none"> <li>◇ Emergency El Nino Drought Response Project (<b>Primary Donor</b> - International Bank for Reconstruction and Development)</li> <li>◇ Strengthening Disaster Risk Management in Papua New Guinea Phase 1 (<b>Primary Donor</b> - Australia (DFAT), UNDP)</li> <li>◇ Adaptive, Resilient, and Productive Agriculture in PNG (<b>Primary Donor</b> - The United States Agency for International Development's (USAID) Pacific-American Climate Fund (PACAM))</li> </ul>
Altruistic	Seeks sustained development with long-term interventions	<ol style="list-style-type: none"> <li>1. Altruistic aid is the one that seeks to enhance economic development</li> <li>2. Offered with the pure objective of improving the quality of life. Altruistic aid is usually offered on soft-terms and on long-term basis</li> </ol>	<ul style="list-style-type: none"> <li>◇ PNG Disaster Risk Management Program (<b>Primary Donor</b>- Global Facility for Disaster Risk Reduction &amp; Recovery trust funds)</li> <li>◇ Papua New Guinea: Building resilience to climate change in Papua New Guinea (<b>Primary Donor</b>- Government of Australia, Climate Smart Fund)</li> <li>◇ PNG Energy Sector Development Project (<b>Primary Donor</b>- World Bank (IDA))</li> </ul>

**Other Examples:** *Commercial, Representational, Security-military, Prestige, and Mixed.*

India can be categorized primarily under the 'Representational' category<sup>15</sup>. Overall, PNG has been a large recipient of India's development cooperation initiatives for cultural exchanges through training programmes and capacity building.

15. Based on stakeholder discussions



## Table 5 - India's Role in PNG

### Humanitarian Aid

- ◆ India has been providing humanitarian aid and disaster relief to PNG from time to time.<sup>16</sup>
- ◆ The latest assistance has been in the form of drugs for HIV and AIDS patients in PNG. A consignment of 7.2 million dosages of anti-retro viral drugs received from India, valued at approximately USD 3 million, was handed over to the Government of PNG in November 2016 by the Indian High Commissioner.<sup>17</sup>
- ◆ Computers and peripherals worth USD 760,000 out of the cumulative grant-in-aid under India's Regional Assistance to Pacific Island Countries were provided to the Government of PNG in 2017-18.<sup>18</sup>

### Indian Technical and Economic Cooperation Programme (ITEC)

- ◆ India has also been assisting PNG in their capacity-building efforts through trainings under Indian Technical & Economic Cooperation Programme (ITEC) and Colombo Plan.<sup>19</sup>

### (Memorandum of Understandings (MoUs))

- ◆ The Government of India, under an MOU for Establishment of Centre of Excellence in IT, has set up a Centre of Excellence in Information Technology at the University of Papua New Guinea in Port Moresby. The Centre is to be run, among others, by two IT Experts from India who have been stationed at the Centre for two years. The Centre is scheduled to open in March 2020.<sup>20</sup>

### Grants and Other Financial Assistance

- ◆ The Government of India extended a grant of USD 1 million to the Government of PNG towards earthquake relief in areas, affected by the earthquake that struck PNG in February 2018.<sup>21</sup>
- ◆ The Government of India also extended a financial assistance of USD 1 million to the PNG Government for relief and restoration work in the areas affected by Ulawun volcano which erupted in PNG in June 2019.

## Lines of Credit to PNG

During the visit of the President of India to PNG in 2016, a MoU was signed on an India Line of Credit of USD 100 million for infrastructure development in PNG. The details of the same have been provided below.

16. Ministry of External Affairs. [http://www.mea.gov.in/Portal/ForeignRelation/Brief-PNG-Bilateral-January\\_2020pdf.pdf](http://www.mea.gov.in/Portal/ForeignRelation/Brief-PNG-Bilateral-January_2020pdf.pdf)

17. Ibid.

18. Ibid.

19. Ibid.

20. Ministry of External Affairs. [http://www.mea.gov.in/Portal/ForeignRelation/Brief-PNG-Bilateral-January\\_2020pdf.pdf](http://www.mea.gov.in/Portal/ForeignRelation/Brief-PNG-Bilateral-January_2020pdf.pdf)

21. Ibid.

**Table 6 - Lines of Credit: Government of India to Government of PNG**

S. No.	Purpose	Year of Approval	Date of Signing of LOC (by the Recipient with EXIM Bank)	Amount of Credit (USD Million)
1	◇ Development of road and infrastructure sectors	2016-17	January 17, 2019	100
<b>Total</b>				<b>100</b>

Source: Export-Import Bank of India (EXIM Bank)

## 2.1. China's role in PNG

**Figure 5 - China as a donor in PNG**

### China's role as a donor in PNG

1. China's growing interest in PNG has followed with increasing investment projects and granting soft loan, no strings attached policy since 2018. Thereby, competing with Australia who is a top donor in the country.
2. China has provided training in handicrafts to Papua New Guinea based on local context and conditions.<sup>22</sup>
3. China has also invested in the planning and investment of urban infrastructure in Papua New Guinea such as urban roads to ease the traffic flow.<sup>23</sup>
4. China assisted in the construction of police command centre and grievance redressal hotline to improve their administrative efficiency and increase the role of digitisation and IT in governance.<sup>24</sup>
5. China has also assisted in strengthening the mechanisms for bilateral human resource development and cooperation based on their needs and context.<sup>25</sup>
6. China has provided assistance to PNG in the field of sports as well. China sent coaches in PNG to train their athletes in Table Tennis.<sup>26</sup>
7. China implemented a malaria prevention and control programme in Papua New Guinea in collaboration with Australia, and assisted the government in establishing a network of provincial-level malaria laboratories, increasing its skills in routine malaria diagnosis and monitoring.<sup>27</sup>
8. China has also donated COVID-19 vaccines to PNG in 2021.<sup>28</sup>

22. China White Paper. 2021. [http://english.www.gov.cn/archive/whitepaper/202101/10/content\\_WS5ffa6bbbc6d0f72576943922.html](http://english.www.gov.cn/archive/whitepaper/202101/10/content_WS5ffa6bbbc6d0f72576943922.html)

23. Ibid.

24. Ibid.

25. Ibid.

26. Ibid.

27. Ibid.

28. Embassy of People's Republic of China in Papua New Guinea. <https://www.mfa.gov.cn/ce/cepg//eng/zbgx/t1886421.htm>

**Table 7 - A glimpse of China's Development Cooperation in PNG**

Project	Sector	Description
<p>China Development Bank provides USD 260 million loan for 50MW Edevu Hydropower Plant Project</p>	<p>Energy</p>	<ul style="list-style-type: none"> <li>◆ <b>Span/Status:</b> Active</li> <li>◆ <b>Budget:</b> USD 260 million</li> <li>◆ <b>Modality:</b> Loan</li> <li>◆ <b>Implementing Agency:</b> AG Investment Ltd., China Railway Construction Engineering Group (CRCEG), Hunan Hongyu Engineering Group Co., Ltd, SMEC</li> <li>◆ The purpose of the project is to construct a 50MW hydropower plant near the village of Edevu within Kairuku-Hiri District in Central PNG. Hunan Hong Yu Engineering Group Ltd., China Railway Construction Engineering Group, AG Investment Limited and SMEC are the contractors responsible for project design and implementation. The project was originally expected to commence on April 7, 2015 and reach completion on April 30, 2016, but it is now expected to be completed in June 2022.</li> </ul>
<p>China Eximbank provides USD 77 million loan for Keltiga Junction to Kagamuga Airport Section of the Highland Highway Reconstruction and Upgrade Project</p>	<p>Transport and Storage</p>	<ul style="list-style-type: none"> <li>◆ <b>Span:</b> 2017-2021</li> <li>◆ <b>Budget:</b> USD 77 million</li> <li>◆ <b>Modality:</b> Loan</li> <li>◆ <b>Implementing Agencies:</b> China Harbour Engineering Co., Ltd.</li> <li>◆ China Eximbank and the Government of Papua New Guinea signed a preferential loan framework agreement for the Keltiga Junction to Kagamuga Airport Section of the Highland Highway Reconstruction and Upgrade Project. The borrowing terms of the loan are unknown. However, it is known that the borrower was to use the proceeds of the loan to finance a commercial contract worth K265 million (USD 77 million) with China Harbour Engineering Co., Ltd. (CHEC) which was signed in August 2016. Construction began in September 2017 and the project was issued a Final Acceptance Certificate (TOC) on or around March 24, 2021.</li> </ul>

Project	Sector	Description
<p>China Eximbank pledges USD 32 million loan for Goroka City Water Supply System Project</p>	<p>Water Supply and Sanitation</p>	<ul style="list-style-type: none"> <li>◆ <b>Span/Status:</b> In Pipeline</li> <li>◆ <b>Budget:</b> USD 32 million</li> <li>◆ <b>Modality:</b> Loan</li> <li>◆ <b>Implementing Agencies:</b> China Railway Fifth Engineering Group Co., Ltd</li> <li>◆ On November 20, 2017, the Export-Import Bank of China signed a MoU to loan USD 32 million for the Goroka City Water Supply System Project in the Eastern Highlands Province, Papua New Guinea. China Railway Fifth Engineering Group Co. Ltd. is the contractor for the project. According to the 2018 Budget Report, no Chinese financing has been committed for the Goroka Town Water Supply System. Once completed, the project will provide clean water for the whole province.</li> </ul>
<p>China Eximbank signs MoU for USD 330 million loan for Papua New Guinea-China Integrated Agriculture Park</p>	<p>Agriculture, Forestry, Fishing</p>	<ul style="list-style-type: none"> <li>◆ <b>Span/Status:</b> Active</li> <li>◆ <b>Budget:</b> USD 330 million</li> <li>◆ <b>Modality:</b> Loan</li> <li>◆ <b>Implementing Agencies:</b> China Railway International Group Co., Ltd. (CRIG)</li> <li>◆ The project will see the construction of two duty-free integrated agriculture industrial parks in Eastern Highlands (150 hectares) and Western Highlands (130ha). PNG government consultations with the governments of Eastern Highlands and Western Highlands, the Department of Agriculture and Livestock, and the developer, China Railway International, commenced in January 2018. A local land transfer agreement to China Railway International to develop the two industrial parks has been signed. After this step is completed, the project will move onto a feasibility study and then construction. In June 2020, the project was put on hold, as the Department of Agriculture was not properly informed of the land transfer. No official financing agreement has been signed.</li> </ul>

**Source:** AidData. <https://www.aiddata.org/data/aiddatas-global-chinese-development-finance-dataset-version-2-0>

## 2.2. Australia as a donor in PNG

**Table 8 - Australian Development Initiatives in Papua New Guinea**

### Snapshot: Australian Development Initiatives in Papua New Guinea

#### Highlights

- ◆ Australia is the largest development partner of Papua New Guinea (PNG)
- ◆ Australia is PNG's main partner in economic and security issues
- ◆ Australia is PNG's most active supporter in handling the COVID-19 crisis
- ◆ Australia is working in partnership with PNG towards the implementation of the PNG-Australia Comprehensive Strategic and Economic Partnership
- ◆ PNG is receiving notable support from Australia in handling existing challenges - which are getting aggravated by the COVID-19 crisis and global shutdown - including debt, augmented strain on already fragile health systems, adverse impact of exports and revenues.

#### Summary of ODA

Total ODA, 2019-20 (Budget Estimate)	Total ODA, 2021-22 (Budget Estimate)	Bilateral Allocation, 2021-22 (Budget Estimate)
USD 618.9 million	USD 587.8 million	USD 479.2 million

#### Major Pillars

Health Security	Stability	Economic Recovery
<ul style="list-style-type: none"> <li>◆ Administering health programs including COVID-19 preparedness and mitigation</li> <li>◆ Strengthening local systems</li> <li>◆ Supporting essential services</li> <li>◆ Providing ground support and assisting in strengthening government systems</li> <li>◆ Addressing women's health</li> </ul>	<ul style="list-style-type: none"> <li>◆ Strengthening security cooperation</li> <li>◆ Fostering capacity building of key institutions i.e., PNGDF, RPNGC</li> <li>◆ Promoting social cohesion</li> <li>◆ Facilitating education, social protection, disability, food security, health, DRR</li> </ul>	<ul style="list-style-type: none"> <li>◆ Assisting PNG's COVID-19 response and recovery</li> <li>◆ Assisting PNG in uninterrupted delivery of core government services, such as healthcare and education</li> <li>◆ Augmenting support to the informal sector</li> <li>◆ Facilitating job creation</li> </ul>

#### Notable Achievements

- ◆ Australia is in the process of implementing - by working closely with PNG - the PNG-Australia Comprehensive Strategic and Economic Partnership in order to address the COVID-19 crisis
- ◆ The PNG COVID-19 Development Response Plan (CRP) has been framed, which sets out the modus operandi of Australia's assistance to PNG in responding to and recovering from COVID-19 shocks over the next two years

- 
- ◆ Australia has already provided extensive support for COVID-19 preparation and response, including the deployment of Australian Medical Assistance Teams (AUSMAT) to provide on the ground support
  - ◆ The Defence Cooperation Program in PNG is providing the Australian Defence Force's largest international response to COVID-19, providing holistic support to the PNGDF
  - ◆ The Australian Federal Police (AFP), through the Policing Partnership, continues to support RPNGC
  - ◆ Australia supports the Bougainville Peace Agreement to promote stability and social cohesion
  - ◆ Australia is working through the Australian Infrastructure Financing Facility for the Pacific (AIFFP) to draw in financing for strategic and large-scale quality infrastructure projects, particularly in electrification
- 

**Source:** Department of Foreign Affairs and Trade, Australian Government

# 3

## Key Challenges and Best Practices: Sectoral Case Studies

The figure below provides a glimpse of the best practices and challenges identified in the case studies of donor interventions in the domains of Disaster Risk Reduction (DRR), Climate Smart Agriculture (CSA) and Renewable Energy (RE).

**Figure 6 - Case Studies: Key Takeaways**

Area Disaster Risk Reduction	Area Climate Smart Agriculture	Area Renewable Energy
<p><b>Project</b></p> <p>Reducing Risks and Building Community Resilience in Autonomous Region of Bougainville (ARoB)</p>	<p><b>Project</b></p> <p>Papua New Guinea: Building Resilience to Climate Change in Papua New Guinea</p>	<p><b>Project</b></p> <p>Facilitating Renewable Energy &amp; Energy Efficiency Applications for Greenhouse Gas Emission Reduction (FREAGER)</p>
<p><b>Donor(s)</b></p> <p>European Commission Humanitarian Office &amp; UNDP</p>	<p><b>Donor(s)</b></p> <p>Climate smart fund and Government of Australia</p>	<p><b>Donor(s)</b></p> <p>Global Environmental Facility and UNDP</p>
<p><b>Best Practices</b></p> <ul style="list-style-type: none"> <li>◆ Ownership &amp; sustainability</li> <li>◆ Inclusive project management activities</li> <li>◆ Engaging community while preparing disaster management plans</li> <li>◆ Capacity building at local level</li> <li>◆ Meticulously designed monitoring and evaluation</li> <li>◆ Managing interests of women and people with disability</li> </ul>	<p><b>Best Practices</b></p> <ul style="list-style-type: none"> <li>◆ Employment generation</li> <li>◆ Training for capacity enhancement</li> <li>◆ Community engagement</li> <li>◆ Managing interests of women</li> <li>◆ Improved communication network</li> <li>◆ Strengthening coordination and implementation management</li> <li>◆ Formation of separate Project Management Unit (PMU)</li> <li>◆ Anti-corruption policy</li> </ul>	<p><b>Best Practices</b></p> <ul style="list-style-type: none"> <li>◆ Efficient stakeholder engagement to improve the project's efficacy</li> <li>◆ Community participation to assess environmental and social impacts</li> <li>◆ Managing interests of women</li> <li>◆ Promoting and pursuing South-South and Triangular cooperation</li> <li>◆ Robust monitoring and evaluation plan</li> </ul>

### Major Challenges

- ◆ Implementation delays
- ◆ Limited capacity at district and community levels
- ◆ Operational challenges
- ◆ Uncertainty around sustainability of project

### Major Challenges

- ◆ Governance and financial management issues
- ◆ Risk of return associated with project delay
- ◆ Design complexity
- ◆ Lack of awareness among villagers

### Major Challenges

- ◆ Poor pre-requisites at national and municipal level
- ◆ Information and awareness barrier
- ◆ Lack of government support
- ◆ Poor coordination

## Ensuring Sustainability of 'Reducing Risks and Building Community Resilience in Autonomous Region of Bougainville (ARoB)' project

The stakeholders appeared to be unsure about the project's long-term viability outside of UNDP/DG ECHO sponsorship and involvement. Maintaining project activities without the help of local partners (PGN, Red Cross) and direct beneficiaries (five flood-prone communities) has proven difficult. UNDP/DG ECHO assistance was beyond the local stakeholder's capacity, and financing was cited as a major stumbling block. District officials perceived that to achieve the same level of outcomes without UNDP support may not be possible. It seemed that most of the stakeholders were not fully aware when the project ended as well as the means to sustain it beyond UNDP/ DG ECHO support.

## Ensuring Sustainability of 'Building Resilience to Climate Change in Papua New Guinea' project

In projects like building resilience to disasters, sustainability is the key since the onus will lie on the community stakeholders in the end to adopt and get trained in practices that will best reflect the change in crop patterns and agriculture practices due to climate change. This particular project tried to achieve sustainability in a number of ways:

- ◆ As a counterpart contribution, the beneficiary community should employ local materials in installation facilities whenever possible to improve ownership of the facilities and so contribute in achieving sustainability.
- ◆ Ownership and sustainability will be promoted by the beneficiary contribution for (Smart Grant Fund) SGF-funded subprojects (20 percent in kind contribution).

Local communities had the choice to identify and adopt solutions based on their needs and priorities. The local communities were responsible for identifying investment priorities.



## **Ensuring Sustainability of ‘Facilitating Renewable Energy & Energy Efficiency Applications for Greenhouse Gas Emission Reduction (FREAGER)’ project**

The project is designed and objectives defined in such a way that it will ensure sustainability of the project even if project closes. Sustainability will be ensured in several ways:

- ◆ Replication of the project work and scale up project results. That is, replication keeps (and grows) the project results after it is finished.
- ◆ Another part of ensuring sustainability that both the demonstration and replication systems have a long life and are properly maintained once the project is completed. In this regard, the project design strives to ensure that stakeholders have a strong sense of ownership of the systems and that measures are put in place to ensure long-term success.
- ◆ Financial stability is ensured through continuous source of cash inflow. Power purchase agreement and billing system would be developed to ensure that the RE system have the financial ability to pay for the repair work and pay for operators to run the system.

# 4 Scope of India's involvement in Development Cooperation in Papua New Guinea: Mapping Demand and Supply

## 4.1. Opportunities for India



### Disaster Risk Reduction

- ◆ **Data collection/analysis** - In the areas under focus, the need for optimum data capturing (including complete digitization at all levels), data consistency, analysis and structured output to ensure detailed risk assessment and preparedness is evident. India has proven experience in this area and can therefore assist PNG in improving its information management systems.
- ◆ **Advisory** - India can provide advisory services - including benchmarking and impact evaluation of various interventions/projects - to PNG to facilitate augmented risk assessment, planning, project execution and government coordination/support.
- ◆ **Capacity building** - India can be a major partner to PNG in implementing capacity building measures in key areas such as infrastructure augmentation/modernisation, programme implementation, operational efficiency, technology transfer, technical assistance, training, research and development, and community-based development. India has implemented successful models to enable holistic improvements in these areas, which PNG can benefit from. India can also assist PNG in improving the outreach of capacity building measures to district and community levels.
- ◆ **Improved financial management** - India can facilitate private participation (including private investments) in PNG, to foster holistic development in the areas under focus (including sustainability of associated projects). India can also facilitate the streamlining of procurement policies and processes.



### Climate Smart Agriculture

- ◆ **Regulatory reforms** - India can facilitate considerably in streamlining regulatory aspects in the focus areas. It can assist in identifying regulatory bottlenecks, procedural delays (and reasons thereof), documentation issues (including usage of hard copies), gaps in inter-departmental coordination, and compliance issues. and subsequently, exercising effective reform measures to iron out such issues.
- ◆ **Advisory** - India can provide advisory services - including benchmarking and impact evaluation of various interventions/projects - to PNG to facilitate augmented risk assessment, planning, project execution and government coordination/support.
- ◆ **Capacity building** - India can be a major partner to PNG in implementing capacity building measures in key areas such as infrastructure augmentation/

modernization, program implementation, operational efficiency, technology transfer, technical assistance, training, research and development, and community-based development. India has implemented successful models to enable holistic improvements in these areas, which PNG can benefit from. India can also assist PNG in improving the outreach of capacity building measures to district and community levels.

- ◆ **Improved financial management** – India can facilitate private participation (including private investments) in PNG, to foster holistic development in the areas under focus (including sustainability of associated projects). India can also facilitate the streamlining of procurement policies and processes.

- ◆ **Monitoring and Evaluation** – To ensure sustainable impact of projects/interventions, it is imperative to develop and implement efficient monitoring mechanisms. India can assist in the creation of effective monitoring mechanisms entailing consistent assessment of progress of key interventions, measurement of interim outcomes, analysis of operational aspects, identification of issues (and respective stakeholders) and implementation of reform initiatives at the PNG project level as well as overall systemic developments. This would augment effectiveness of projects and reduce delays in implementation.

- ◆ **Advisory** – India can provide advisory services including benchmarking and impact evaluation of various interventions/projects to PNG to facilitate augmented risk assessment, planning, project execution and government coordination/support.

- ◆ **Capacity building** – India can be a major partner to PNG in implementing capacity building measures in key areas such as infrastructure augmentation/modernisation, programme implementation, operational efficiency, technology transfer, technical assistance, training, research and development, and community-based development. India has implemented successful models to enable holistic improvements in these areas, which PNG can benefit from. India can also assist PNG in improving the outreach of capacity building measures to district and community levels.

- ◆ **Regulatory reforms** – India can facilitate considerably in streamlining regulatory aspects in the focus areas. It can assist in identifying regulatory bottlenecks, procedural delays (and reasons thereof), documentation issues (including usage of hard copies), gaps in inter-departmental coordination, and compliance issues and subsequently, exercising effective reform measures to iron out such issues.



**Renewable  
Energy**

## 4.2. Disaster Risk Reduction

**Table 9 – Private and Public Stakeholder mapping for Disaster Risk Reduction**

Cooperation Sectors	Indian Stakeholders	PNG Stakeholders
Technical assistance for DRR	Government Stakeholders	<ul style="list-style-type: none"> <li>• National Executive Council</li> <li>• National Disaster Center</li> <li>• Provincial Disaster Committees</li> <li>• Climate Change Development Authority</li> <li>• Conservation and Environment Protection Authority</li> <li>• National Weather Service</li> <li>• University of Papua New Guinea</li> <li>• Department of Works</li> <li>• International Organisation for Migration</li> <li>• Department of Lands and Physical Planning</li> <li>• PNG National Weather Service</li> </ul>
	<ul style="list-style-type: none"> <li>• Indian Meteorological Department (IMD)</li> <li>• The National Centre for Medium Range Weather Forecasting (NCMRWF)</li> <li>• Indian National Centre for Oceanic Information Systems (INCOIS)</li> <li>• National Remote Sensing Centre (NRSC)</li> <li>• Indian Space Research Organization (ISRO)</li> </ul>	
	<p><b>Private Stakeholders, NGOs and Educational Institutes</b></p> <ul style="list-style-type: none"> <li>• Oxfam India</li> <li>• World Wide Fund for Nature (WWF), India</li> </ul>	
Legislative, planning & policy framework for improved governance	<ul style="list-style-type: none"> <li>• National Disaster Management Authority (NDMA)</li> </ul>	
Developing early warning systems and emergency response	<ul style="list-style-type: none"> <li>• IIT Delhi</li> <li>• National Disaster Response Force (NDRF)</li> <li>• National Fire Service College</li> <li>• National Civil Defense College</li> </ul>	
Capacity Building	Government Stakeholders	
	<ul style="list-style-type: none"> <li>• National Institute of Disaster Management (NIDM)</li> <li>• Centre for Disaster Management at Lal Bahadur Shastri National Academy of Administration (LBSNAA)</li> <li>• Centres for Disaster Management in the State Administrative Training Institutes</li> <li>• SAARC Disaster Management Centre (SDMC)</li> </ul>	
	<p><b>Private Stakeholders, NGOs and Educational Institutes</b></p> <ul style="list-style-type: none"> <li>• Development Research Communication and Service Centre (DRCSC)</li> <li>• Bharat Seva Ashram Sangh</li> <li>• Tagore Society for Rural Development (TSRD)</li> </ul>	

### 4.3. Climate Smart Agriculture

**Table 10 - Private and Public Stakeholder Mapping for Climate Smart Agriculture**

Cooperation Sectors	Indian Stakeholders	PNG Stakeholders
Technical assistance and training	<b>Government Stakeholders</b>	<ul style="list-style-type: none"> <li>Office of Climate Change and Development (OCCD)</li> <li>Department of Treasury</li> <li>Department of Finance and Planning</li> <li>Office of Rural Development and Implementation</li> <li>Department of Transport</li> <li>Provincial/District Government authorities</li> <li>Department of national Planning and Monitoring</li> <li>Department of Lands and Physical Planning</li> <li>Climate Change Development Authority</li> <li>Conservation and Environment Protection Authority</li> <li>National Weather Service</li> <li>CSIRO Agriculture and Food</li> <li>Department of Agriculture and Livestock</li> <li>Fresh Produce Development Agency Limited</li> <li>National Agriculture Research Institute</li> <li>Phloem 3 Pty Limited</li> <li>PNG National Weather Service</li> <li>Sustineo Pty Ltd</li> <li>University of Goroka</li> </ul>
	<ul style="list-style-type: none"> <li>National Innovation in Climate Resilient Agriculture (NICRA)</li> <li>National Institute of Rural Development &amp; Panchayati Raj (NIRD&amp;PR)</li> </ul>	
	<b>Private Stakeholders, NGOs and Educational Institutes</b>	
Capacity Building	<b>Government Stakeholders</b>	<ul style="list-style-type: none"> <li>Centre for Sustainable Agriculture</li> <li>Agri Innovation Hub (AgriHub)</li> <li>National Institute of Agricultural Extension Management (MANAGE)</li> </ul>
	<ul style="list-style-type: none"> <li>National Innovation in Climate Resilient Agriculture (NICRA)</li> <li>Indian Council for Agricultural Research (ICAR)</li> <li>Ministry of Rural Development (MRD)</li> </ul>	
	<b>Private Stakeholders, NGOs and Educational Institutes</b>	
Policy and Regulatory	<b>Government Stakeholders</b>	<ul style="list-style-type: none"> <li>The Energy and Resources Institute (TERI)</li> <li>Centre for Sustainable Agriculture</li> </ul>
	<ul style="list-style-type: none"> <li>National Institute of Rural Development &amp; Panchayati Raj (NIRD&amp;PR)</li> <li>Ministry of Rural Development (MRD)</li> </ul>	
	<b>Private Stakeholders, NGOs and Educational Institutes</b>	
Services and Business Models	<ul style="list-style-type: none"> <li>International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)</li> <li>CropIn</li> <li>Agri Innovation Hub (AgriHub)</li> </ul>	

## 4.4. Renewable Energy

**Table 11 - Private and Public Stakeholder Mapping for Renewable Energy**

Cooperation Sectors	Indian Stakeholders	PNG Stakeholders
Technical assistance and training	<b>Government Stakeholders</b>	<ul style="list-style-type: none"> <li>• Department of Petroleum and Energy (DPE) – Energy Division</li> <li>• Independent Public Business Corporation (IPBC)</li> <li>• Independent Consumer and Competition Commission (ICCC)</li> <li>• PNG Power Limited</li> <li>• Western Province Power Limited</li> </ul>
	<ul style="list-style-type: none"> <li>• Ministry of New and Renewable Energy (MNRE)</li> <li>• Centre for Study of Science, Technology and policy (CSTEP)</li> <li>• Power System Operation Corporation (POSOCO)</li> <li>• Central Electricity Authority (CEA)</li> <li>• National institute of Solar Energy (NISE)</li> </ul>	
	<b>Private Stakeholders, NGOs and Educational Institutes</b>	
Capacity Building	<ul style="list-style-type: none"> <li>• The Energy and Research Institute (TERI)</li> <li>• Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE)</li> <li>• National Institute of Wind Energy (NIWE)</li> <li>• Energy Efficiency Services Limited (EESL)</li> <li>• Council on Energy, Environment and Water (CEEW)</li> </ul>	
	<b>Government Stakeholders</b>	
Research and Advisory	<ul style="list-style-type: none"> <li>• Private &amp; public sector companies, research institutes, educational institutes (IITs, IISc, Universities, NITs),</li> <li>• Indian Renewable Energy Development Agency Limited (IREDA)</li> <li>• National Skill Development Corporation (NSDC)</li> <li>• Skill Council for Green Jobs (SCGJ)</li> <li>• Indian Space Research Organisation (ISRO)</li> </ul>	
	<ul style="list-style-type: none"> <li>• Indian Institutes of Technology (IITs)</li> <li>• Indian Institute of Science (IISc)</li> <li>• National Institutes of Technology (NITs)</li> <li>• Skill Council of Green Jobs (SCGJ)</li> <li>• Barefoot College</li> <li>• Council of Scientific and Industrial Research (CSIR) Labs</li> </ul>	

## 4.5. Financing Models and Ensuring Sustainability of India's Assistance beyond the TriDeP cycle

Financing models form an essential component of development cooperation. Investments made through the channels of a well designed and developed financing model can prove to be better and effective in terms of sustainability. Financing model can be of various types ranging from debt-financing, equity financing, financing via public sources.



### Disaster Risk Reduction

India, as part of development cooperation can incorporate the following procedural steps of disaster risk financing to develop a sustainable and effective framework for disbursing aid in the recipient country.<sup>29</sup>

- ◆ Identifying the risk exposure (business risk, market risk, money or interest rate risk, project risk and foreign exchange risk) and the risk bearing capacity in the recipient country in order to assess the financial vulnerabilities and gaps in the economy and the institutional setup.
- ◆ Analyzing the availability, adequacy, and efficiency of risk financing via various public and private stakeholders in the recipient nation and map with India's scope and limitations in providing aid in disaster risk financing.
- ◆ Devising appropriate institutional arrangements in the identified sectors where donor intervention is deemed necessary.

Some examples of financing models that India can follow include the Blended Finance model to attract private investors and Debt Financing Model to ensure low risk and increased sustainability.<sup>30</sup>



### Climate Smart Agriculture

India, as part of development cooperation can incorporate the following procedural steps for Climate Resilient Financing in Agriculture in order to develop a sustainable and effective framework for disbursing aid in the recipient country.<sup>31</sup>

- ◆ Designing innovative procedures to attract additional resources from public and private sources which can be channelized towards climate smart investments in agriculture.
- ◆ However, additional resources cannot prove to be effective until the weak linkages between the farmers and financial institutions in the recipient country are addressed. This can be attained through better policies and regulations to mobilize finance to farmers, capacity building of financial institutions in the recipient countries and reducing transaction costs.

29. Disaster Risk Financing: A global Survey of Practices and Challenges. OECD. 2015. <https://www.oecd.org/daf/fin/insurance/OECD-Disaster-Risk-Financing-a-global-survey-of-practices-and-challenges.pdf>

30. Financing options for renewable energy and energy efficiency. Sustainable Energy Regulation and Policymaking for Africa. <http://africa-toolkit.reep.org/modules/Module19.pdf>

31. Making Climate Finance Work in Agriculture. World Bank Group. <https://documents1.worldbank.org/curated/en/986961467721999165/pdf/ACS19080-REVISED-OUO-9-Making-Climate-Finance-Work-in-Agriculture-Final-Version.pdf>

- ◆ Strengthening capacities of the main stakeholders (lenders and the borrowers) through capacity building and human resource development.

Some examples of financing models that India can follow include financing via public sources, since it is the most common model while deploying climate funds and has the advantage of being able to offer more appealing terms than markets.<sup>32</sup>

India, as part of development cooperation in renewable energy can incorporate the following procedural steps to develop a sustainable and effective framework for disbursing aid in the recipient country.

- ◆ Identifying the risks (business risk, market risk, money or interest rate risk, project risk and foreign exchange risk) from the project and develop methods to manage them.
- ◆ Once the risk is assessed, it can be transferred and priced in the balance sheet of the respective institution/organization that is best suited to address it through contractually binding agreements.
- ◆ Post risk assessment, a thorough analysis of Return on Investment (ROI) can be undertaken to ensure the viability of the development cooperation.

Some examples of financing models that India can follow includes the market led model because it includes little or no Government backing and incorporates more private players in the project



The aforementioned initiatives under TriDeP can lay the foundation for holistic improvements - in terms of information management, risk assessment, project implementation, capacity building, development of hard/soft infrastructure, and regulatory improvements among others - the impact of which would potentially be experienced beyond the TriDeP life cycle.

32. Financing options for renewable energy and energy efficiency. Sustainable Energy Regulation and Policymaking for Africa. <http://africa-toolkit.reeep.org/modules/Module19.pdf>



## 4.6. India-U.S.-PNG Triangular Cooperation: The Way Forward

### Triangular Cooperation in the selected Areas

#### India as an Emerging Donor in PNG

- ◆ **Disaster Risk Reduction**
  - ◆ Facilitating capacity building for data management at all levels
  - ◆ Fostering budgetary support
  - ◆ Providing technological assistance (e.g., early warning systems)
- ◆ **Climate Smart Agriculture**
  - ◆ Facilitating technical improvements (e.g., meteorological stations)
  - ◆ Assisting in financial aspects
  - ◆ Facilitating research on climate change, crop varieties, and business models
  - ◆ Fostering regulatory improvements
- ◆ **Renewable Energy**
  - ◆ Aiding regulatory/policy improvements
  - ◆ Fostering research, training and technical capacity building
  - ◆ Creating necessary knowledge base and awareness levels

#### PNG as a Partner Country (Recipient)

- ◆ **Disaster Risk Reduction**
  - ◆ Development of technical and human capacities for effective data management and risk assessment
  - ◆ Improved financing mechanisms
  - ◆ Improved disaster preparedness
- ◆ **Climate Smart Agriculture**
  - ◆ Augmented technical capacities for adaptation to potential risks
  - ◆ Acquisition of necessary finance
  - ◆ Improved research capacities to ensure overall development and awareness
  - ◆ Improved governance mechanisms
- ◆ **Renewable Energy**
  - ◆ Improved policies with focus on renewable energy
  - ◆ Augmented planning, resource building, and training
  - ◆ Improved knowledge/awareness levels

In the backdrop of strong India-U.S. and India-PNG relationships, there is potential for meaningful synergies between India, U.S. and PNG in the three areas under focus i.e. Disaster Risk Reduction (DRR), Climate Smart Agriculture (CSA) and Renewable Energy (RE). India has prior experience in developing/implementing necessary preparedness, expertise, technological solutions, regulations, and awareness among others in these areas, which it can share with PNG to foster mutual development. Overall support can be gathered from the U.S., given India's experience of triangular cooperation initiatives with the U.S. in areas such as agriculture. Some of the key aspects of the potential triangular cooperation have been described below:

- i) **Synergies in DRR** – India can assist PNG in developing a robust data management framework – involving effective data collection at all stages/levels, information assessment and monitoring mechanisms – by facilitating necessary augmentation of technical as well as human capacities. It can also assist PNG in overcoming budgetary restrictions including the facilitation of private investments in disaster preparedness and mitigation. India can also provide technical assistance in the form of early warning systems as well as necessary capacity building – at the implementation and operational levels – to ensure optimum disaster preparedness.

- ii) Synergies in CSA** – India can facilitate necessary capacity building – for instance, the development of meteorological stations – in strengthen PNG’s response to potential risks posed by climate change and changes in weather patterns. India can also assist PNG in gathering necessary finances for CSA activities including through private participation. It can also assist PNG in the creation of a robust framework for research and awareness generation to mitigate the adverse impacts of climate change on agriculture. It can also share its experience creating climate resistance crop variants as well as effective business models. Further, India can help PNG in strengthening its governance framework through the augmentation of institutional capacity to mitigate the effects of climate change.
  
- iii) Synergies in RE** – India can facilitate policy level improvements in PNG to foster necessary growth of renewable energy in the country. It can share its experience to assist in improving fiscal policies, augmenting funding initiatives (including introduction of private investments), fostering and cost reductions. India can also facilitate improvements in research capacity, training/skill development, and operational aspects to ensure systemic developments and removal of technical barriers. Further, to facilitate the development of renewable energy in PNG, India can assist in the development of necessary knowledge base and public awareness (including in the rural areas) through necessary research, evaluation of past projects and effective dissemination of relevant information at all levels.
  
- iv) Role of the U.S.** – The U.S. can provide relevant guidance in key areas such as climate change and energy security. Skill development and job-led growth have been key cogs in the machinery of development cooperation provided by the U.S.. It can sufficiently bolster human resource development initiatives in all the three areas under consideration. India can considerably benefit from the technological solutions at the disposal of the U.S. in its quest to foster technological advancements in the select areas. It can also share its experience in terms of potential bottlenecks in development cooperation in the focus areas. Further, U.S. as the traditional donor, can help facilitate meaningful collaborations, tie-ups and consultations for overall technical development as well as awareness generation among key stakeholders. It can also provide necessary fillip to social aspects such as empowerment of women.
  
- v) Role of Third Parties** – During the course of development initiatives, external finance may be gathered from ADB, and The World Bank. The role of private players including private investors would be imperative to achieve the proposed developmental goals. Experience sharing by other Quad countries i.e., Japan and Australia can also be key to achieving desired results. Finally, the role of research organisations and academic bodies would be crucial to foster sustainable growth initiatives in the selected areas.

Based on stakeholder engagement, Indian interventions can focus on technology transfer, capacity building and small pilot projects. To ensure sustainability of either of these interventions, triangulation of development cooperation (partnership with other development donors) will be crucial. According to direct interactions with stakeholders from multilateral development banks, and bilateral donor agencies, the increased geopolitical and economic interests of the Quad nations (U.S., Japan, India,

and Australia) for a Free and Open Indo-Pacific (FOIP) can encourage countries like U.S., Australia and Japan to participate in development cooperation and become a reliable partner for India's Development cooperation in Papua New Guinea. Also, engaging in Quad dialogue will provide an opportunity to increase India's role in the Indo-Pacific region through strengthened capacity and credible Memorandum of Understanding between the nations. The combined efforts of Quad as a donor in Indo-Pacific are indeed more efficient and effective than each of the Quad nations individually partaking in foreign aid in Papua New Guinea.<sup>33</sup>

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33. Based on stakeholder interaction

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