

## **Supplementary Information**

Planned relocation may reduce communities' future exposure to coastal inundation but effect varies with emission scenario and geography

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### **This file includes:**

Supplementary Tables 1 to 5  
Supplementary References

**Supplementary Table 1.** Locations, hazards, dates, origin and destination sites for 17 cases.

| Country   | Specific community or location of origin | Specific community or location of destination | Origin/ Destination site source and description                   | Primary hazard  | Approximate number of households that have relocated or are identified for relocation | Year of initiation | Relocation Status |
|-----------|------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------|--------------------|-------------------|
| Fiji      | Vunidogoloa                              | Kenani                                        | Satellite Imagery Map in Scientific Publication <sup>1</sup>      | Coastal flood   | 26                                                                                    | 2006               | Completed         |
| Fiji      | Denimanu                                 | Away from coast (partial relocation)          | Drawn Map in Scientific Publication <sup>2</sup>                  | Coastal flood   | 19                                                                                    | 2012               | Completed         |
| Colombia  | El Choncho                               | Across channel                                | Satellite Imagery in Scientific Publication <sup>3</sup>          | Coastal erosion | 10                                                                                    | 1998               | Completed         |
| USA       | La Push                                  | New site                                      | Community Movement Project Created Map <sup>4</sup>               | Tsunami         | unclear                                                                               | 2017               | Ongoing           |
| Indonesia | Jakarta                                  | Borneo                                        | ArcGIS StoryMap Figure <sup>5</sup>                               | Sea level rise  | 1,900,000                                                                             | 2022               | Ongoing           |
| Panama    | Gardi Sugdub                             | Ispir Yala                                    | Satellite Imagery Map from News Article <sup>6</sup>              | Coastal erosion | 300                                                                                   | 2010               | Completed         |
| USA       | Isle de Jean Charles                     | The New Isle                                  | Map from Government Website <sup>7</sup>                          | Coastal erosion | 120                                                                                   | 1996               | Completed         |
| USA       | Taholah                                  | New site                                      | Satellite Imagery Map from Community Relocation Plan <sup>8</sup> | Sea level rise  | 300                                                                                   | 2012               | Ongoing           |
| Fiji      | Vunisavisavi                             | Away from coast (partial relocation)          | Community Mapping project C-CAP Map <sup>9</sup>                  | Coastal erosion | 4                                                                                     | 2015               | Completed         |
| Sri Lanka | Talalla                                  | Kananke Watta                                 | Satellite Imagery Map from Grey Literature <sup>10</sup>          | Tsunami         | 18                                                                                    | 2004               | Completed         |
| Maldives  | Kandholhudoo Island                      | Dhuvaafaru                                    | Narrative and Google Earth Satellite Imagery <sup>11</sup>        | Tsunami         | 600                                                                                   | 2004               | Completed         |

|                 |                                     |                     |                                                                                         |                 |     |      |           |
|-----------------|-------------------------------------|---------------------|-----------------------------------------------------------------------------------------|-----------------|-----|------|-----------|
| Fiji            | Narikoso                            | New site            | Imagery and video footage in news article, Google Earth Satellite Imagery <sup>12</sup> | Coastal flood   | 28  | 2011 | Completed |
| Indonesia       | Saney Village                       | New site            | Satellite Imagery Map from Academic Paper <sup>13</sup>                                 | Tsunami         | 57  | 2004 | Completed |
| Brazil          | Enseada da Baleia (Ilha do Cardoso) | Nova Enseada        | Scientific Article, Google Earth Satellite Imagery <sup>14</sup>                        | Coastal erosion | 9   | 2016 | Completed |
| Maldives        | Gemendhoo Island                    | Kudahuvadhoo Island | Government map, Google Earth Satellite Imagery <sup>15</sup>                            | Coastal erosion | 109 | 2004 | Completed |
| Maldives        | Madifushi island                    | Maamigili island    | Narrative and Google Earth Satellite Imagery <sup>16,17</sup>                           | Tsunami         | 36  | 2005 | Completed |
| Solomon Islands | Mondo Village                       | Keigold             | Satellite Imagery Map from Academic Paper <sup>18</sup>                                 | Tsunami         | 80  | 2007 | Completed |

**Supplementary Table 2.** Projected SLR and flood exposure in origin sites. Percentage of each origin site projected to face SLR and flood exposure across scenarios.

[illegible]

**Supplementary Table 3. Projected SLR and flood exposure in destination sites.** Percentage of each destination site projected to face SLR and flood exposure across scenarios.

[illegible]

**Supplementary Table 4. Exposure reduction.** Difference between projected SLR and flood exposure in origin and destination sites.

| Case Origin Name | SSP126 2030 | SSP245 2030 | SSP585 2030 | SSP126 2050 | SSP245 2050 | SSP585 2050 | SSP126 2100 | SSP245 2100 | SSP585 2100 | SSP126 2030 + Flood | SSP245 2030 + Flood | SSP585 2030 + Flood | SSP126 2050 + Flood | SSP245 2050 + Flood | SSP585 2050 + Flood | SSP126 2100 + Flood | SSP245 2100 + Flood | SSP585 2100 + Flood |
|------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Isle de Jean     | 97%         | 97%         | 97%         | 99%         | 99%         | 99%         | 73%         | 72%         | 70%         | 75%                 | 75%                 | 75%                 | 72%                 | 72%                 | 72%                 | 45%                 | 43%                 | 40%                 |
| Enseada          | 93%         | 93%         | 93%         | 93%         | 93%         | 93%         | 93%         | 93%         | 100%        | 100%                | 100%                | 100%                | 100%                | 97%                 | 100%                | 97%                 | 97%                 | 97%                 |
| El Choncho       | 88%         | 93%         | 93%         | 93%         | 93%         | 93%         | 93%         | 93%         | 93%         | 83%                 | 83%                 | 83%                 | 82%                 | 82%                 | 81%                 | 81%                 | 81%                 | 76%                 |
| Gemendhoo        | 85%         | 84%         | 84%         | 83%         | 83%         | 83%         | 79%         | 76%         | 69%         | 74%                 | 74%                 | 74%                 | 72%                 | 71%                 | 70%                 | 62%                 | 58%                 | 38%                 |
| Narikoso         | 76%         | 78%         | 78%         | 78%         | 78%         | 78%         | 78%         | 64%         | 64%         | 64%                 | 64%                 | 64%                 | 64%                 | 64%                 | 64%                 | 63%                 | 63%                 | 63%                 |
| Kandholhudhoo    | 75%         | 75%         | 75%         | 74%         | 73%         | 72%         | 64%         | 62%         | 54%         | 61%                 | 61%                 | 60%                 | 57%                 | 56%                 | 54%                 | 48%                 | 43%                 | 34%                 |
| Gardi Sugdub     | 75%         | 75%         | 75%         | 77%         | 79%         | 81%         | 91%         | 97%         | 100%        | 91%                 | 91%                 | 91%                 | 97%                 | 97%                 | 97%                 | 100%                | 100%                | 100%                |
| Talalla          | 30%         | 30%         | 30%         | 30%         | 30%         | 30%         | 30%         | 53%         | 53%         | 30%                 | 30%                 | 30%                 | 53%                 | 53%                 | 53%                 | 53%                 | 53%                 | 53%                 |
| Saney Village    | 17%         | 13%         | 13%         | 14%         | 14%         | 15%         | 17%         | 18%         | 18%         | 18%                 | 18%                 | 18%                 | 18%                 | 18%                 | 18%                 | 22%                 | 23%                 | 24%                 |
| Vunidogoloa      | 14%         | 9%          | 9%          | 9%          | 9%          | 9%          | 9%          | 9%          | 9%          | 9%                  | 9%                  | 9%                  | 18%                 | 9%                  | 22%                 | 37%                 | 41%                 | 60%                 |
| Denimanu         | 12%         | 12%         | 12%         | 12%         | 12%         | 7%          | 11%         | 11%         | 17%         | 13%                 | 13%                 | 13%                 | 16%                 | 16%                 | 16%                 | 25%                 | 32%                 | 40%                 |
| Mondo Village    | 8%          | 8%          | 8%          | 8%          | 8%          | 8%          | 8%          | 8%          | 10%         | 10%                 | 10%                 | 10%                 | 10%                 | 10%                 | 10%                 | 10%                 | 10%                 | 10%                 |
| Vunisavisavi     | 2%          | 2%          | 3%          | 3%          | 2%          | 2%          | 2%          | 13%         | 33%         | 52%                 | 52%                 | 52%                 | 58%                 | 58%                 | 65%                 | 72%                 | 82%                 | 91%                 |
| Taholah          | 0%          | 0%          | 0%          | 0%          | 0%          | 0%          | 0%          | 0%          | 0%          | 38%                 | 38%                 | 38%                 | 42%                 | 42%                 | 43%                 | 51%                 | 54%                 | 59%                 |
| La Push          | 0%          | 0%          | 0%          | 0%          | 0%          | 0%          | 0%          | 1%          | 1%          | 3%                  | 3%                  | 4%                  | 4%                  | 4%                  | 4%                  | 4%                  | 4%                  | 6%                  |
| Jakarta          | 1%          | 1%          | 1%          | 1%          | 1%          | 1%          | 1%          | 1%          | 1%          | 1%                  | 1%                  | 1%                  | 1%                  | 1%                  | 1%                  | 2%                  | 2%                  | 2%                  |
| Madifushi        | -22%        | -22%        | -22%        | -22%        | -22%        | -22%        | -20%        | -18%        | -12%        | -16%                | -16%                | -16%                | -13%                | -12%                | -11%                | -1%                 | 10%                 | 22%                 |

**Supplementary Table 5.** Assessment summaries

| Case                   | Assessment title and source                                                                                          | Future time horizons considered           | Emissions scenarios considered | Hazard dynamics considered                               | Adaptation and relocation site selection options considered                                                                                                                                                                                                                                                                                                                    | Relocation alternatives and site selection criteria included in assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Enseada, Brazil</i> | Laudo Técnico de avaliação da área de reassentamento da comunidade de Enseada da Baleia, November 2016 <sup>19</sup> | None                                      | None                           | Coastal erosion                                          | <ul style="list-style-type: none"> <li>- No adaptation intervention</li> <li>- Multiple relocation sites considered: <ul style="list-style-type: none"> <li>1) Prainha,</li> <li>2) Casa Preta</li> </ul> </li> </ul>                                                                                                                                                          | <ul style="list-style-type: none"> <li>- <i>Geological security</i> (“attested by the [technical] working group and by the residents’ own experience”)</li> <li>- <i>Geomorphological considerations</i> (e.g., elevation, presence of mangroves)</li> <li>- <i>Socio-anthropological and economic considerations</i> (e.g, continuity of ways of life, including for cultural purposes, fishing, community activities and tourist reception)</li> <li>- <i>Practical and political considerations</i> (e.g., availability of space, relations with host community)</li> </ul>                                                                                                             |
| <i>Narikoso, Fiji</i>  | Narikoso Relocation Project Cost-benefit analysis update note, January 2016 <sup>20</sup>                            | Evaluation period of 50 years (2016-2066) | None                           | Coastal floods (1/100 year and 1/50 year extreme events) | <ul style="list-style-type: none"> <li>- No adaptation intervention</li> <li>- Protect in place (build a sea wall)</li> <li>- Relocation of different populations: the entire village, only the ‘red zone’, only the ‘front line’</li> <li>- Multiple relocation sites considered: <ul style="list-style-type: none"> <li>1) Site A,</li> <li>2) Site B</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>- “<i>Direct relocation costs</i> (Clearing and preparing sites, Building houses, Identifying new water source, Constructing new water supply)</li> <li>-<i>Direct relocation benefits</i> (Avoided loss of subsistence production, Avoided loss of cash incomes, Avoided damage from coastal inundation, Avoided damage from extreme event)</li> <li>- <i>Environmental costs</i> (Removal of mangroves, Removal of coastal plants, Clearing of land)</li> <li>- <i>Social costs</i> (Moving to smaller houses, Loss of ease-of-access for older generation, Removal of incentives to improve situation without government assistance)”</li> </ul> |

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