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2 *Pacific Conservation Biology*

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4 **Marine and coastal ecosystem-based adaptation in Asia and Oceania: review of**  
5 **approaches and integration with marine spatial planning**

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**SUPPLEMENTARY MATERIAL**

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26 **Supplementary Table 1.** Asia and Oceania countries defined by United Nations Standard  
27 Country Code (including external territories/outlying islands)

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<b>Central Asia</b>
Kazakhstan Kyrgyzstan Tajikistan Turkmenistan Uzbekistan
<b>Eastern Asia</b>
China Democratic People's Republic of Korea Japan Mongolia Republic of Korea
<b>South-eastern Asia</b>

Brunei Darussalam  
Cambodia  
Indonesia  
Lao People's Democratic Republic  
Malaysia  
Myanmar  
Philippines  
Singapore  
Thailand  
Timor-Leste  
Vietnam

**Southern Asia**

Afghanistan  
Bangladesh  
Bhutan  
India  
Iran (Islamic Republic of)  
Maldives  
Nepal  
Pakistan  
Sri Lanka

**Western Asia**

Armenia  
Azerbaijan  
Bahrain  
Cyprus  
Georgia  
Iraq  
Israel  
Jordan  
Kuwait  
Lebanon  
Oman  
Qatar  
Saudi Arabia  
State of Palestine  
Syrian Arab Republic  
Turkey  
United Arab Emirates  
Yemen

**Australia and New Zealand**

Australia  
Australian Outlying Territories and Islands (Christmas Island, Heard Island and McDonald Islands, Norfolk Islands, Cocos (Keeling) Islands)  
New Zealand

**Melanesia**

Fiji  
New Caledonia  
Papua New Guinea  
Solomon Islands  
Vanuatu

**Micronesia**

Guam  
 Kiribati  
 Marshall Islands  
 Micronesia (Federated States of)  
 Nauru  
 Northern Mariana Islands  
 Palau  
 United States Minor Outlying Islands (Baker Island, Howland Island,  
 Jarvis Island, Johnston Atoll, Kingman Reef, Midway Atoll, Palmyra Atoll and  
 Wake Island)

**Polynesia**

American Samoa  
 Cook Islands  
 French Polynesia  
 Niue  
 Pitcairn  
 Samoa  
 Tokelau  
 Tonga  
 Tuvalu  
 Wallis and Futuna Islands

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**Supplementary Table 2.** Marine and Coastal ecosystem-based adaptation project reference table

Project ID#	Title	Peer-reviewed literature reference	Grey literature reference
1	Adaptation to climate change and conservation of biodiversity in the Philippines	-	<a href="http://www.asiapacificadapt.net/projects/adaptation-climate-change-and-conservation-biodiversity-philippines?destination=projects%3Fsearch%3D%26by_the_mes%3D269%26by_project-status%3DAll%26by_regions%3DAll%26by_countries%3DAll">http://www.asiapacificadapt.net/projects/adaptation-climate-change-and-conservation-biodiversity-philippines?destination=projects%3Fsearch%3D%26by_the_mes%3D269%26by_project-status%3DAll%26by_regions%3DAll%26by_countries%3DAll</a>
2	Mangrove ecosystems for climate change adaptation and livelihoods (MESCAL) project	-	<a href="http://www.asiapacificadapt.net/projects/mangrove-ecosystems-climate-change-adaptation-and-livelihoods-mescal-project">http://www.asiapacificadapt.net/projects/mangrove-ecosystems-climate-change-adaptation-and-livelihoods-mescal-project</a>
3	Mangrove conservation and restoration in the Indian Sundarbans	-	(Macintosh et al., 2012)
4	Lessons learned from the programme Let's Plant Mangroves: a case study from villages in Banten and Central Java provinces, Indonesia	-	(Macintosh et al., 2012)
5	Cambodia Coastal Situational Analysis: Building resilience to	-	(Rizvi & Singer, 2011; Rizvi, 2014)

	climate change impacts - Coastal Southeast Asia		
6	Mangrove planting, community participation and integrated management in Soc Trang Province, Viet Nam	-	(Macintosh et al., 2012)
7	Adapting to natural disasters and contributing to climate change mitigation: mangrove community forestry in Viet Nam	-	<a href="https://www.preventionweb.net/files/25381_vietnam.pdf">https://www.preventionweb.net/files/25381_vietnam.pdf</a> (Macintosh et al., 2012)
8	Mangroves and Markets (MAM)	-	<a href="https://www.iucn.org/regions/asia/our-work/regional-projects/mangroves-and-markets-mam">https://www.iucn.org/regions/asia/our-work/regional-projects/mangroves-and-markets-mam</a> (Rizvi, 2014)
9	Nurturing young saplings	-	(MMF, 2012; Rizvi, 2014)
10	Ecosystems for life: A Bangladesh-India Initiative	-	(Rizvi, 2014; IUCN, 2013)
11	Ecosystems Protecting Infrastructure and Communities	-	<a href="https://www.iucn.org/sites/dev/files/content/documents/epic-flye-dec.pdf">https://www.iucn.org/sites/dev/files/content/documents/epic-flye-dec.pdf</a> (Rizvi, 2014)
12	Inspiring Young Rescuers	-	(MMF, 2012; Rizvi, 2014)
13	Manning the Mangroves	-	(MMF, 2012; Rizvi, 2014)
14	Plant and Protect	-	(MMF, 2012; Rizvi, 2014)
15	Livelihood enhancement and diversification in Sri Lanka	-	(Colls et al., 2009; IMM, 2008)
16	Picture Perfect: Echoes of The Tides	-	(MMF, 2012; Rizvi, 2014)
17	AGCA Marine Sanctuary and its effectiveness	-	<a href="https://www.conservation.org/projects/Pages/Using-ecosystem-based-adaptation-to-build-resilience-in-the-Philippines.aspx">https://www.conservation.org/projects/Pages/Using-ecosystem-based-adaptation-to-build-resilience-in-the-Philippines.aspx</a> (Rizvi et al., 2015; Demesa et al., 2013)
18	Community-based large-scale mangrove afforestation in the coastal zone	-	(Rahman, 2014)
19	Sharing experiences from mangrove ecosystems with policy from all over Pakistan	-	(MMF, 2012; Rizvi, 2014)
20	Mangrove preservation and its relation to marine aquaculture, Balochistan	-	(MMF, 2012; Rizvi, 2014)
21	Strategic mainstreaming of ecosystem-based adaptation (EbA) into planning frameworks in Ha Tinh and Quang Binh Province	-	<a href="https://panorama.solutions/en/solution/strategic-mainstreaming-ecosystem-based-adaptation-eba-planning-frameworks-ha-tinh-and">https://panorama.solutions/en/solution/strategic-mainstreaming-ecosystem-based-adaptation-eba-planning-frameworks-ha-tinh-and</a>
22	Coral gardening for climate change adaptation in Vanuatu	-	<a href="https://panorama.solutions/en/solution/coral-gardening-climate-change-adaptation-vanuatu">https://panorama.solutions/en/solution/coral-gardening-climate-change-adaptation-vanuatu</a>
23	Adaptive, community-driven and resilient co-management plan	-	<a href="https://panorama.solutions/en/solution/adaptive-community-driven-and-resilient-co-management-plan">https://panorama.solutions/en/solution/adaptive-community-driven-and-resilient-co-management-plan</a>
24	Strengthening capacities in coastal spatial planning	-	<a href="https://panorama.solutions/en/solution/strengthening-">https://panorama.solutions/en/solution/strengthening-</a>

			<a href="#">capacities-coastal-spatial-planning</a>
25	Reforestation and rehabilitation of sandy coastal protection forest along with short-term livelihoods development for local community	-	<a href="https://panorama.solutions/en/solution/reforestation-and-rehabilitation-sandy-coastal-protection-forest-along-short-term">https://panorama.solutions/en/solution/reforestation-and-rehabilitation-sandy-coastal-protection-forest-along-short-term</a>
26*	MPAs as part of solution towards a resilient eco-city – Cham Islands Marine Reserve	-	<a href="https://panorama.solutions/en/solution/mpas-part-solution-towards-resilient-eco-city">https://panorama.solutions/en/solution/mpas-part-solution-towards-resilient-eco-city</a> , (Brown, 2013)
27	Mangrove rehabilitation and income diversification	-	<a href="https://panorama.solutions/en/solutions/mangrove-rehabilitation-and-income-diversification">https://panorama.solutions/en/solutions/mangrove-rehabilitation-and-income-diversification</a>
28*	Community-initiated Trao Reef Locally Managed Marine Area	-	<a href="https://panorama.solutions/en/solution/community-initiated-trao-reef-locally-managed-marine-area">https://panorama.solutions/en/solution/community-initiated-trao-reef-locally-managed-marine-area</a>
29	Ecosystem-based coastal protection through floodplain restoration	-	<a href="https://panorama.solutions/en/solution/ecosystem-based-coastal-protection-through-floodplain-restoration">https://panorama.solutions/en/solution/ecosystem-based-coastal-protection-through-floodplain-restoration</a>
30	Community-based mangrove conservation and rehabilitation	-	<a href="https://panorama.solutions/en/solutions/community-based-mangrove-conservation-and-rehabilitation">https://panorama.solutions/en/solutions/community-based-mangrove-conservation-and-rehabilitation</a>
31	Integrated Mangrove Fishery Farming System (IMFFS)	-	<a href="https://panorama.solutions/en/solutions/integrated-mangrove-fishery-farming-system-imffs">https://panorama.solutions/en/solutions/integrated-mangrove-fishery-farming-system-imffs</a> (Macintosh et al., 2012), <a href="https://www.weadapt.org/placemarks/maps/view/893">https://www.weadapt.org/placemarks/maps/view/893</a>
32	Building with nature for safe, prosperous and adaptive coastlines in Indonesia	-	<a href="https://panorama.solutions/en/solution/building-nature-safe-prosperous-and-adaptive-coastlines-indonesia">https://panorama.solutions/en/solution/building-nature-safe-prosperous-and-adaptive-coastlines-indonesia</a> , <a href="https://www.weadapt.org/placemarks/maps/view/1179">https://www.weadapt.org/placemarks/maps/view/1179</a>
33	Kiribati: Enhancing national food security in the context of climate change	-	<a href="https://www.adaptation-undp.org/projects/kiribati-enhancing-national-food-security-context-climate-change">https://www.adaptation-undp.org/projects/kiribati-enhancing-national-food-security-context-climate-change</a>
34	Enhancing adaptive capacity of communities in Papua New Guinea	-	<a href="https://www.adaptation-undp.org/projects/af-papua-new-guinea">https://www.adaptation-undp.org/projects/af-papua-new-guinea</a>
35	Community-based ecosystems approach to fisheries management (CEAFM) in the face of climate change	-	<a href="http://web.unep.org/coastal-eba/content/community-based-ecosystems-approach-fisheries-management-ceafm-face-climate-change">http://web.unep.org/coastal-eba/content/community-based-ecosystems-approach-fisheries-management-ceafm-face-climate-change</a> (SPC & GIZ, 2013)
36	Community-based Mangrove Reforestation and Disaster Preparedness Programme, Viet Nam	(McCarthy, 2012)	<a href="http://web.unep.org/coastal-eba/content/community-based-mangrove-reforestation-and-disaster-preparedness">http://web.unep.org/coastal-eba/content/community-based-mangrove-reforestation-and-disaster-preparedness</a>

			<a href="#">programme-viet-nam</a> (Bolte, 2011)
37	Community-based habitat restoration: The Green Coast Project	-	<a href="http://web.unep.org/coastal-eba/content/community-based-habitat-restoration-green-coast-project">http://web.unep.org/coastal-eba/content/community-based-habitat-restoration-green-coast-project</a> (Colls et al., 2009), <a href="https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23209&amp;ListUrl=/sites/NWPStaging/Lists/MainDB">https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23209&amp;ListUrl=/sites/NWPStaging/Lists/MainDB</a>
38	Coral gardening in Cuvu mina, Fiji	-	<a href="https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23484&amp;ListUrl=/sites/NWPStaging/Lists/MainDB">https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23484&amp;ListUrl=/sites/NWPStaging/Lists/MainDB</a> (Bowden-Kerby, 2003)
39	Cage aquaculture in Bangladesh	-	<a href="https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23340&amp;ListUrl=/sites/NWPStaging/Lists/MainDB">https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23340&amp;ListUrl=/sites/NWPStaging/Lists/MainDB</a> (Roy & Zahidul Hossen, 2005)
40	Mangrove reforestation in Southern Thailand	-	<a href="https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23467&amp;ListUrl=/sites/NWPStaging/Lists/MainDB">https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23467&amp;ListUrl=/sites/NWPStaging/Lists/MainDB</a>
41	Khazans in Goa, India	-	<a href="https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23472&amp;ListUrl=/sites/NWPStaging/Lists/MainDB">https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23472&amp;ListUrl=/sites/NWPStaging/Lists/MainDB</a>
42	Capacity development on integration of science and local knowledge for climate change impacts and vulnerability assessments	-	<a href="https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=25532&amp;ListUrl=/sites/NWPStaging/Lists/MainDB">https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=25532&amp;ListUrl=/sites/NWPStaging/Lists/MainDB</a>
43	Integrated aqua farming in inundated coastal areas of Odisha towards alternative livelihood and climate adaptive community conservation program	-	<a href="https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=28654&amp;ListUrl=/sites/NWPStaging/Lists/MainDB">https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=28654&amp;ListUrl=/sites/NWPStaging/Lists/MainDB</a>
44	Ecosystem-based adaptation in marine, terrestrial and coastal regions as a means of improving livelihoods and conserving biodiversity in the face of climate change	-	<a href="https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23182&amp;ListUrl=/sites/NWPStaging/Lists/MainDB">https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23182&amp;ListUrl=/sites/NWPStaging/Lists/MainDB</a>
45	Enhancing flood resilience in urban and coastal areas in Thua Thien Hue Province	-	<a href="https://www.weadapt.org/placemarks/maps/view/35396">https://www.weadapt.org/placemarks/maps/view/35396</a>
46	Safeguarding a coastal community with silvofishery	-	<a href="https://www.weadapt.org/placemarks/maps/view/54006">https://www.weadapt.org/placemarks/maps/view/54006</a>
47	Mangrove plantations and climate change adaptation in Bangladesh	(Chow, 2018)	-
48	Reducing the climate vulnerability of coastal communities in Samoa	(Barbier, 2014; Daly et al., 2010)	-
49	Weighing up the opportunity costs of land use change in Puttalam Lagoon, Sri Lanka	(Emerton et al., 2016)	-

50	Mangrove forest rehabilitation and community resilience building in the coastal regions of Myanmar	(Hale et al. 2009; Takeuchi et al., 2016)	-
51	Natural resource management in mitigating climate impacts: the example of mangrove restoration in Vietnam	(Tri et al., 1998; Vicarelli et al., 2016)	-
52	Bringing social and cultural considerations into environmental management for vulnerable coastal communities: Responses to environmental change in Xuan Thuy National Park, Nam Dinh Province, Vietnam	(Mabon et al., 2018)	-
53	Using REDD+ Policy to Facilitate Climate Adaptation at the Local Level: Synergies and Challenges in Vietnam	(McElwee et al., 2017)	-
54	Adaptation actions identified through the application of the LEAP tool	(Wongbusaraku m et al., 2015)	-
55	Exploring program theory to enhance monitoring and evaluation in ecosystem-based adaptation projects	(McKinnon & Hole, 2015)	-
56	Stakeholder perceptions of ecosystem service declines in Milne Bay, Papua New Guinea: Is human population a more critical driver than climate change?	(Butler et al., 2014)	-
57	Ecosystem resilience and community values: Implications to Ecosystem-based adaptation	(Uy et al., 2012; Uy & Shaw, 2013)	-
58	Predicted impact of sea-level rise at Vellar-Coleroon estuarine region of Tamil Nadu coast in India: Mainstreaming adaptation as a coastal zone management option	(Khan et al., 2012)	-
59	The Fiji CCA Project	(Dumaru, 2010; Doswald et al., 2014)	
60	Community-based small-scale mangrove restoration	(Vicarelli et al., 2016)	(Rahman, 2014)
61	Planning for integrated coastal management in Mekong Delta	{Schmitt et al., 2013)	<a href="https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=25701&amp;ListUrl=/sites/NWPStaging/Lists/MainDB">https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=25701&amp;ListUrl=/sites/NWPStaging/Lists/MainDB</a>
62*	Adaptive comanagement in Kubulau Marine Protected Area Network, Fiji	(Mercer et al., 2012; Weeks & Jupiter, 2013)	(Jupiter et al., 2010; Andrade et al., 2011)
63	Mangrove restoration in the Village of Kolovai	(Mercer et al., 2014; Mavrogenis & Kelman, 2013)	-
64	Mangrove planting in Fonuatani and Lapaha villages	(Mercer et al., 2014)	(Mavrogenis & Kelman 2013)

65	Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF)	(Wongbusarakul et al., 2015)	-
66	Community mangrove restoration and sustainable use of natural resources	(Chong, 2014)	<a href="https://unfccc.int/resource/docs/napa/khm01.pdf">https://unfccc.int/resource/docs/napa/khm01.pdf</a>
67	Vulnerability assessment and adaptation programme for climate change in the coastal zone of Cambodia considering livelihood improvement and ecosystems	(Doswald et al., 2014)	<a href="https://www.thegef.org/sites/default/files/project_documents/3890_2017_TE_UNEP_Cambodia_CC_MSP_UNEPSPCC_Cambodia_VAAP.pdf">https://www.thegef.org/sites/default/files/project_documents/3890_2017_TE_UNEP_Cambodia_CC_MSP_UNEPSPCC_Cambodia_VAAP.pdf</a>
68	Climate resilient coastal protection and management	(Doswald et al., 2014)	<a href="https://www.thegef.org/sites/default/files/project_documents/9-19-2011%2520%2520ID4536%2520%25201-GEF%25205%2520PIF%2520-%2520INDIA%2520Climate%2520Resilient%2520Coastal%2520Mgt%2520-14%2520Sept%25202011%2520final%2520rev3_0.pdf">https://www.thegef.org/sites/default/files/project_documents/9-19-2011%2520%2520ID4536%2520%25201-GEF%25205%2520PIF%2520-%2520INDIA%2520Climate%2520Resilient%2520Coastal%2520Mgt%2520-14%2520Sept%25202011%2520final%2520rev3_0.pdf</a>
69	Programme of action for adaptation to climate change	(Doswald et al., 2014)	<a href="https://www.thegef.org/sites/default/files/project_documents/sam01_0.pdf">https://www.thegef.org/sites/default/files/project_documents/sam01_0.pdf</a>
70	Strengthening the capacity of vulnerable coastal communities to address the risk of climate change and extreme weather events	(Doswald et al., 2014)	<a href="https://www.thegef.org/sites/default/files/project_documents/3299_UNDP_TE_SCCF%2520PIMS%25203771_2014%2520Mar%2520final.pdf">https://www.thegef.org/sites/default/files/project_documents/3299_UNDP_TE_SCCF%2520PIMS%25203771_2014%2520Mar%2520final.pdf</a>
71	Paddock to Reef Program	(Grantham et al., 2011)	-
72	Increasing resilience of coastal areas and community settlements to climate change	(Doswald et al., 2014)	<a href="https://www.thegef.org/sites/default/files/project_documents/NAPA%2520Terminal%2520Evaluation%2520-%2520Final%2520Report%2520.pdf">https://www.thegef.org/sites/default/files/project_documents/NAPA%2520Terminal%2520Evaluation%2520-%2520Final%2520Report%2520.pdf</a>
73	Integrated coastal zone management	(Doswald et al., 2014)	<a href="https://www.thegef.org/project/integrated-coastal-zone-management">https://www.thegef.org/project/integrated-coastal-zone-management</a>
74	Community-based adaptation: Samoa	(Hale et al., 2009)	<a href="https://www.adaptation-undp.org/projects/spa-community-based-adaptation-samoa">https://www.adaptation-undp.org/projects/spa-community-based-adaptation-samoa</a>
75	Community-based risk screening – adaptation and livelihoods across the Vatu-i-Ra seascape	(Grantham et al. 2011)	-
76	Reomaanlok in Namdrik – Coastal and Marine Action Committee	(Grantham et al. 2011)	-
77*	Kimbe Bay: design of a resilient network of marine protected areas	(Green et al., 2009; Hale et al. 2009; Weeks et al., 2014)	<a href="https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23204&amp;ListUrl=/sites/NWPStaging/Lists/MainDB">https://www4.unfccc.int/sites/nwpstaging/pages/item.aspx?ListItemId=23204&amp;ListUrl=/sites/NWPStaging/Lists/MainDB</a> (Colls et al., 2009)



78	Unlocking ecosystem-based adaptation opportunities in coastal Bangladesh	(Ahammad et al., 2013)	(Macintosh et al., 2012), <a href="https://www.adaptation-undp.org/projects/ldcf-cba-bangladesh">https://www.adaptation-undp.org/projects/ldcf-cba-bangladesh</a>
79*	Lauru Ridges to Reef Protected Area Network	(Game et al., 2011; Grantham et al. 2011; Weeks et al., 2014)	<a href="http://web.unep.org/coastal-eba/lauru-ridges-to-reef">http://web.unep.org/coastal-eba/lauru-ridges-to-reef</a> , (Lacovino et al., 2013)

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\* indicates an integrated marine spatial planning and ecosystem-based adaptation marine protected area implementation case study

#### 40 **Supplementary Table 2 References**

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53 [resilience-southeastasia.org/wp-content/uploads/2016/05/Mangrove-Impact-Report-](http://www.rcrc-resilience-southeastasia.org/wp-content/uploads/2016/05/Mangrove-Impact-Report-Final-low-April-2011.pdf)  
54 [Final-low-April-2011.pdf](http://www.rcrc-resilience-southeastasia.org/wp-content/uploads/2016/05/Mangrove-Impact-Report-Final-low-April-2011.pdf).
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