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# Assessing Climate Finance Readiness in the Asia-Pacific Region

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**Abstract:** Readiness is the current mantra in the climate finance discourse and is a key determinant for accessing climate finance. This study develops and applies an analytical 3-dimensional framework to appraise climate finance readiness in selected Asia-Pacific countries. Three dimensions of readiness are identified: (1) *Policies and Institutions*, (2) *Knowledge Management and Learning*, and (3) *Fiscal Policy Environment*. Using the Climate Public Expenditure and Institutional Review as the basis for such framework, the study uncovers a massive readiness gap between countries in the Asian sub-region and those in the Pacific sub-region. The study also found that readiness has a predictable, yet small, impact on the magnitude of climate finance accessed. This suggests that improving readiness alone is not sufficient to unlock climate finance, as access to climate finance is to a larger extent determined by other factors; this is critical to shaping readiness endeavors for the Pacific Small Island Developing States (PSIDS), as well as for donors. This study argues for a re-think in the PSIDS current readiness approach, reducing emphasis on multilateral and private flows and diversifying through practical and uncomplicated bilateral and remittance sources. These two sources of finances have a good track record of consistently mobilizing external finance to PSIDS despite their climate finance readiness status. Broadening readiness efforts towards these two alternative funding sources extends the feasibility of the current readiness approach. The present direction of climate finance readiness offers a continuing access dilemma to many of the PSIDS, especially the poorest and most vulnerable.

**Keywords:** climate finance; readiness; Asia-Pacific; Small Island States; bilateral; remittances; CPEIR; PSIDS; climate change

## 1. Introduction

Access to climate finance remains an on-going negotiation issue within the United Nations Framework Convention on Climate Change (UNFCCC). Precisely determining how much climate finance has been mobilized so far is challenging, as estimates differ depending on definitions and accounting procedures. Donors tend to mobilize a significant portion of their climate finance contributions outside of the UNFCCC financial mechanisms, further complicating their accounting [1]. Reasons for the use of non-UNFCCC sources are manifold, ranging from proximity to donors' interest, to domestic laws and political environment, aid effectiveness, donor visibility, and flexibility [2]. Nevertheless, one thing is certain: climate finance commitments have increased significantly following the adoption of the landmark 2015 Paris Agreement [3].

A global stocktake of climate finance sources indicated that there are more than 50 international public funds, 60 carbon markets, and 6000 private equity funds [4,5], as well as 99 multilateral and bilateral climate funds, currently in operation [6]. Such proliferation of climate finance sources is a

blessing and a curse for poor and small vulnerable countries [7]. The blessing is the increased number of potential funding opportunities available, while the curse is the further fragmentation of an already convoluted climate financing landscape [7]. Consequently, the increase in climate financing sources has triggered a race for *readiness* amongst developing countries as they compete to maximize access to, and leverage from, these varied opportunities.

While no definition of readiness has achieved broad consensus, it is generally understood as the process of enhancing the capabilities of developing countries to receive and spend climate finance wisely, as well as report on its transformative impacts [4,8,9]. Readiness has become a common currency of the global climate finance discourse, because it is regarded as the pre-requisite for access to predictable and quality climate finance [10,11].

There is a growing global effort, specifically through the Green Climate Fund (GCF), to provide readiness support to developing countries, especially the particularly vulnerable countries (within the UNFCCC process, countries classified as Least Developing Countries (LDCs), Small Island Developing States (SIDS), and Africa are recognized as being particularly vulnerable to climate change). This is deemed necessary, because the route to readiness is not only complex but also heavily resource-centric [12]. The objective of *levelling the playing field* is fundamental to the readiness focus of multilateral funds such as the GCF, in order to ensure all developing countries effectively participate in the global climate finance architecture [13]. It is also important to note that the GCF readiness approach, like other multilateral climate funds such as the Adaptation Fund, tends to adopt a narrow scope of readiness by assessing institutions rather than adopt a country-wide perspective. Readiness as per the GCF relates to the preparation of a national accredited entity (NAE) of a developing country to directly access finance from the Fund. To date, 123 readiness projects covering 88 developing countries and costing USD 39.5 million have been approved by the GCF [14].

However, given the multiple sources of climate finance that exist to date [1] and the growing emphasis on the role of private finance in funding climate related activities [15–17], readiness needs to be viewed as a nationwide phenomenon rather than a mere institutional issue. This because donors are now stressing the importance of countries facilitating an attractive enabling/investment environment so that private finance can catalyze public climate finance [18]. This processes of ‘creating an attractive investment environment’ is understood by many as the ‘readying phase’, as it involves activities that make a country better positioned to attract international and domestic private sector investments in climate compatible projects [19,20]. Activities under this readiness approach include strengthening of regulatory frameworks, institution building, capacity building, and provision of incentives to attract private sector investments towards climate change initiatives [11,20].

Holistically understanding the progress of readiness across countries is quite difficult due to the sparsity of existing readiness literature and the varying foci of readiness support. However, more important is the absence of a universal appraisal framework on which readiness progress can be evaluated and tracked.

The absence of such a readiness appraisal framework is driven by the nascent and evolving understanding of the climate finance readiness concept [21,22]. This complexity is evident in the numerous working definitions of readiness in the existing literature, and in the plethora of readiness-related activities being implemented by donors in developing countries [22]. Moreover, most readiness studies tend to focus on readiness challenges and how to redress such issues [22]. Minimal research is focused on how to evaluate readiness progress at a more strategic level or compare and contrast readiness progress between countries in order to identify opportunities for inter-country learning and collaboration.

This paper attempts to bridge this knowledge gap by developing a consistent and coherent readiness framework, founded on existing literature and driven by empirical analysis. Such a framework could contribute to improving how donors approach readiness by providing further guidance on readiness-related investments in the long term, more effective targeting of areas that need strengthening in national policy, effective longitudinal monitoring of readiness progress, and a

better understanding of the magnitude of risks posed by climate change in relation to a country's abilities [23]. This framework adds a critical element that has been largely absent in existing readiness initiatives: a set of criteria/indicators by which countries could evaluate and appraise their readiness progress. Four main questions guided this study: (1) *What components of a readiness framework can consistently appraise the readiness progress of developing countries?* (2) *What indicators appropriately capture such readiness components?* (3) *How would countries fare in evaluation using such a framework?* and (4) *Does countries' readiness progress significantly influence the amount of climate finance accessed?* Such an appraisal framework for readiness is purposeful, as it can promote targeted south-south cooperation through cross-country comparison and knowledge exchange. To operationalize and validate the readiness appraisal framework, 12 Asia-Pacific countries were studied.

The structure of the paper is as follows: Section 2 briefly outlines the case study countries, while the methods used and their respective results are explained in Section 3. The discussions are elaborated in Section 4. Section 5 highlights the limitations of the study with the conclusion provided in Section 6.

## 2. Overview of the Asia-Pacific Region

Excluding Australia, New Zealand, Japan, and South Korea, the Asia-Pacific region is comprised of more than 40 developing countries, home to more than half of the global population and the largest number of the world's poor [24]. The Asia-Pacific region is considered to be particularly vulnerable to the impacts of climate change relative to any other region in the world [25]. The region is also the largest recipient, and spender, of climate related finance, although finance flows unevenly among countries [26]. Greenhouse gas (GHG) emissions are increasing in the region, especially in large Asian countries due to rapid population growth [26]. Mitigation finance, which accounts for 67% of the total climate finance in the region, is mainly channelled to a few large and populous countries [26].

The bias towards mitigation underscores the ineffectiveness of the international climate financing architecture at addressing the pressing needs of Pacific Small Island Developing States (PSIDS), which are uniquely vulnerable and whose GHG emissions are minimal. The PSIDS consist of 15 countries from the Pacific sub-region for whom accessing climate finance is a continuous challenge [27–29]. Unlike their larger Asian neighbors, the PSIDS prioritizes adaptation due to their geographical location and topography. Securing quality adaptation finance is difficult, as its return is humanitarian in nature when compared to the commercial returns of mitigation initiatives. It has been estimated that the PSIDS accounts for 4–6% of the total climate finance in the Asia-Pacific region, with bilateral sources being the primary mobilization channel [26,27,29].

While the climate finance mobilized to the Asian countries and the PSIDS vary greatly in form, quantity, and modalities, most of these finances are still delivered outside national budgetary systems through short-term projects. Developing countries have been highly critical of the ineffectiveness of this modality, claiming it as burdensome and insufficient to cover the cost of climate change efforts [30]. Developing countries have also argued that the modality of short-term projects has further hampered their capacity-building efforts and institution-building capabilities [31,32]. Other notable criticisms of using such a funding modality are that projects are not strongly nation-driven, are often biased towards donor needs and interests, and are generally unsustainable [32].

There is increasing mobilization of readiness support in the region to enhance and scale up countries' abilities to effectively access climate finance [14]. As a first step to ensuring country ownership of climate change projects, Asia-Pacific countries are increasingly mobilizing domestic finance through national budgetary systems [33]. Such exercise has been argued to strengthen the capacity of the national systems to act as a vehicle of channelling and delivering international climate finance in-country [33]; this has been also the primary focus of many readiness programs in Asia-Pacific [14].

### 3. Methods and Results

A three-phase approach was adopted to carry out this study. The first and the second phases involve the conceptualization of a readiness appraisal framework. The Climate Public Expenditure and Institutional Review (CPEIR) provided the foundation for developing a consistent appraisal framework. These reports are publically available on the UNDP Governance of Climate Change Finance website. The CPEIR country reports share common principles and present findings using a common structure. Unlike other existing reporting platform, the CPEIR is closely related to the issue of readiness, as it is specially designed to assess the existing national systems and processes of a country to access and manage climate finance. The CPEIR also represents an extensive assessment of the national enabling environment by international experts, which is synonymous with readiness in literature [22,34]. The CPEIRs are primarily prepared by independent actors in partnership with national governments. CPEIRs in Asia were undertaken by the UNDP, while those of the PSIDS were conducted by the Pacific Island Forum Secretariat (PIFS), a leading intergovernmental organization in the Pacific. The involvement of these external parties in the CPEIR development process implies a degree of reliability and confidence in the information. In total, 12 developing countries from the Asia-Pacific have completed a CPEIR or an equivalent, 6 of which are PSIDS. The third and final phase of the study presented here then links the readiness scores of countries (phase 2 results) to the total climate finance accessed to determine if a significant relationship exists between the two.

The research technique and method employed in this study closely mirrored that of [35], who conducted an appraisal on the preparedness level of 12 PSIDS for renewable energy investments. The data used in their analysis were derived primarily from the national reports prepared by the International Renewable Energy Agency (IRENA) for each of the 12 PSIDS. The publication of [35]'s work in a top-tiered energy policy journal provides merit that the method applied in this study is acceptable, despite a limited sample size and scope of information used.

#### 3.1. Phase 1—Determining a Common Scale

The main aim of the first phase was to develop a common scale for comparing countries' readiness progress. As a first step, the CPEIR was exhaustively analyzed, and the *problems* explicitly mentioned in these reports were extracted. These *problems* served as the basis for a common scale on which a consistent comparison of the CPEIRs was undertaken. In total, 200 explicitly mentioned readiness-related *problems* were extracted from the 12 reports ( $N = 12$ ). An extensive thematic analysis was then conducted, which yielded 48 common overarching *problems* that were classified into 7 broad themes (Appendix A: Table A1). Countries were then assessed against these 48 *problems*, employing a binary coding technique to indicate its presence (1) or absence (0). The rationale for using the binary coding technique instead of a weighting system that articulates the magnitude of the *problems* is due to the limited degree of information in the CPEIRs.

#### 3.2. Phase 2—Determining the Readiness Dimensions & Indicators

To establish a more parsimonious framework of readiness, the 48 problems were reduced to a smaller number of readiness dimensions in this second phase of the analysis. Reduction of the 48 problems to a small number of key axes of variation in readiness removes confounding issues of covariation/overlap between problems and provides a more tractable framework for analysis and interpretation. Principal Component Analysis (PCA) is a well-established ordination technique that objectively converts a set of observations of possibly associated variables (*problems*, in this case) into a set of values of uncorrelated variables called principal components (readiness dimensions). Thus, a PCA was conducted to analyze the 48 *problems* for the 12 target countries (Phase 1 outcome) and establish a small number of uncorrelated dimensions of readiness.

Sixty percent of the variation in the *problem data* was explained by the first three axes (PCA1 = 31%, PCA2 = 19%, and PCA3 = 10%). A conservative approach was used to determine which *problem*

categories were aligned to the PCA axes, by only considering factor loadings of  $>0.5$ , as those that are contributing in a meaningful way to an axis. Thus, loadings in PCA1 were deemed to be more closely associated with *Institutions and Policies* (I & P), while PCA2 was more aligned with *Knowledge Management and Learning* (KM & L), and PCA3 related more to the *Fiscal Policy Environment* (FPE). These 3 PCA axes formed the core dimension of the study's conceptual readiness framework.

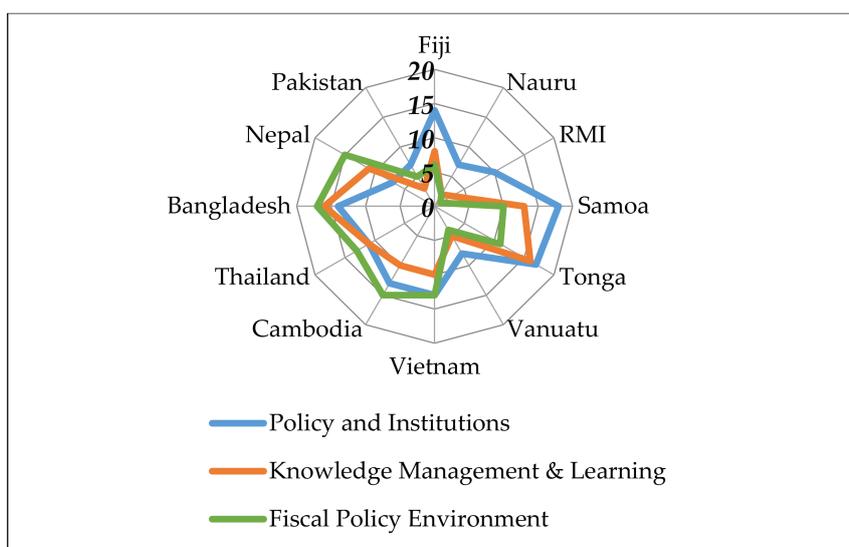
Once the PCA axes were determined, potential progressive readiness indicators were then formulated with guidance from existing literature [4,21–23,36–41]. Countries were then scored against these axes (dimensions) using the same binary technique as in Phase 1 in an attempt to capture their readiness progress across the PCA-generated readiness dimensions. Sixty progressive indicators (20 for each dimension) were formulated as an indicative measure of readiness progress (Table 1). Countries' performance on the framework was then compared and contrasted by aggregating their progressive readiness indicator scores. The countries' scores on each readiness dimension are as tabulated in (Figure 1).

**Table 1.** Readiness Themes and Progressive Indicators.

Readiness Dimension	Proposed Indicator
<b>Institutions and Policies</b>	1. A national entity has been accredited by the GCF or the Adaptation Fund.
	2. A coordination mechanism for development partners/donors for climate change related funding, dialogue, and programming exists.
	3. A coordination mechanism between other conventions relevant to Climate Change (CC) exists.
	4. A national strategy or plan to implement national climate change priorities exists.
	5. CC priorities are mentioned explicitly in the national climate policy.
	6. There is routine political engagement at national and provincial levels.
	7. There is a national strategy on how to meet the risks and opportunities of CC.
	8. There is a legal framework with incentives and compliance mechanisms that reflect CC priorities.
	9. The core functions and roles of national institutions relating to CC are explicitly mentioned.
	10. Collaboration with non-traditional stakeholders exists.
	11. CC related acts and policies have been passed and endorsed by parliament.
	12. A national climate change committee has been set-up.
	13. There is a formal mechanism whereby all relevant stakeholders meet to discuss a range of climate change issues.
	14. Climate change focal points have been established at national, subnational, and community levels.
	15. National guidelines, which advise planning authorities on how to integrate climate change in their planning process, have been established.
	16. A specialized climate change department has been set up.
	17. The climate change department is adequately funded and staffed.
	18. Long-term program and project planning mechanisms that can respond to the risks and opportunities of CC have been established.
	19. Frameworks to manage planning of CC programming at the national level exist.
	20. Frameworks to manage planning of CC programming at the provincial level exist.
<b>Knowledge Management and Learning</b>	1. CC knowledge is generated and codified at national and local levels.
	2. CC knowledge is shared and accessible through appropriate media/platforms.
	3. Local governments and stakeholders have access to national and/or regional sources of expertise on CC.
	4. Global and regional learning have been adapted to the national context.
	5. Global, regional, or national 'good practices' have been contextualized to address community context.

Table 1. Cont.

Readiness Dimension	Proposed Indicator	
<b>Knowledge Management and Learning</b>	6. Government collaboration with research institutions to identify, apply, and institutionalize CC knowledge.	
	7. National and local technical capacities to analyze CC issues and plan, implement, monitor, and evaluate CC programs have been identified and strengthened.	
	8. Routine public awareness programs have been undertaken.	
	9. CC information can be accessed by the communities.	
	10. Environment-related education programs have been implemented at community level.	
	11. Local knowledge has been ‘scaled up’ at provincial and national level.	
	12. Specialized training is conducted in partnership with regional and multinational development partners.	
	13. Knowledge tools have been established in key ministries to link climate change in national budgeting planning cycles.	
	14. A standardized methodology and key performance indicators to evaluate adaptation/mitigation program’s effectiveness exists at the national level.	
	15. Budgetary allocation for human resources to manage national climate change programs has been made.	
	16. A national strategy is in place to guide capacity building in CC.	
	17. Existing planning process takes into consideration available evidence on CC and lessons learned from past CC programming.	
	18. Risk management, CC modeling, and CC scenarios inform planning at the national level.	
	19. Risk management, CC modeling, and CC scenarios inform planning at the local level.	
	20. A central data management system has been established at national level to track, store, and monitor climate change projects at national level and community level.	
	<b>Fiscal Policy Environment</b>	1. Have routinely accessed climate finance from variety of sources.
		2. An assessment estimating the total national climate financing needs has been undertaken.
		3. CC policies have been costed.
		4. A national climate fund has been established.
		5. PFM performance scores favorably in PFM assessments reports.
6. Long-term financial commitments for CC-related investments have been made by government.		
7. A national climate financing policy has been developed with international development partners.		
8. Special market conditions have been created to incentivize private sector to invest in CC-related investments.		
9. Constant budgetary support from donors for CC activities has been received.		
10. A pipeline of national priority climate change projects exists.		
11. Innovative financing options have been developed to respond to the challenges of CC.		
12. There is sufficient financial resource mobilization for CC projects aligned to national priorities.		
13. A functioning financial management and reporting systems are in place for CC financing.		
14. Partnerships have been established between public and the private sector for CC programming.		
15. MRV system for domestic climate finance exists.		
16. MRV system for international climate finance exists.		
17. Government budget allocation at the local level reflects CC priorities.		
18. Non-traditional stakeholders including CSOs and private sector participate in CC program planning, implementation, and M & E.		
19. Key fiscal information can be easily accessed by the public.		
20. National audit reports are scrutinized by legislative bodies.		



**Figure 1.** Indicative readiness progress of countries in the Asia-Pacific Region as per the study's framework.

### 3.3. Phase 3—Linking Countries' Readiness Progress to Climate Finance Accessed

The purpose of this phase is to determine if there is a statistically significant relationship between the countries' readiness scores as per the framework (Phase 2 results) and the total climate finance accessed. A simple multivariate model was formulated to evaluate such relationship. The model derived is as follows:

$$CF_c = \beta_0 + \beta_1 RE_1 + \beta_2 GDPpc_2 + \beta_3 P_3 + \beta_4 G_4 + \varepsilon$$

in which  $CF$  is the dependent variable and denotes the average climate finance accessed by countries ( $c$ ) in 2016 as per the Organisation for Economic Co-operation and Development (OECD) database. This study does not distinguish between mitigation and adaptation when assessing  $CF$ . Thus, specific variables such as vulnerability and country status (i.e., SIDS or LDC) that influence access to adaptation finance [42], or carbon emission intensity and carbon sinks for mitigation finance [43,44], were not included in the model. This study's main aim is to assess whether readiness per se significantly influences access to climate finance. The average figure is used, as the OECD provides a lower and an upper estimate of  $CF$  received by  $c$  in 2016 (Appendix A: Table A2). The OECD database, despite its limitations [1,42], represents an attempt to provide comprehensive and detailed information on the amount of climate finance provided by OECD countries. In determining the portion of aid dedicated to climate change, donors voluntarily tag their contributions using climate markers that have been developed by the OECD (i.e., mitigation and adaptation markers). The climate markers do not provide the exact amount of climate finance provided; however, they can provide an approximation of the climate finance amount directed to developing countries, as well as provide a common standard and reporting rules for donors, allowing for comparability at the international level. The OECD database includes bilateral contributions, multilateral contributions, and, in some instances, contributions by non-OECD countries. Non-OECD countries voluntarily report their contributions in the OECD database. The OECD database has been the most commonly used database for studies examining climate finance issues [1,42–45].

The predictor variable of *emphasis* of the model is  $RE$ —the aggregate readiness score of countries as per the study's framework  $\beta$ —represents the beta value that measures how strong of an influence each variable has on the dependent variable, while  $\varepsilon$  represents the residual or the error term. The 2016 gross domestic product per capita ( $GDPpc$ ) of  $c$ , their respective aggregate population ( $P$ ), and the quality of their governance ( $G$ ) act as the control variables for the model;  $P$ ,  $GDPpc$ , and  $G$  were derived from

2016 World Bank database. Akin to other studies [42,43], this study calculated  $G$  using the average scores of  $c$  across the six indicators of the quality of governance provided by the World Bank. There is a need to control for the potential confounding effects of  $GDPpc$ ,  $P$ , and  $G$ , as literature have identified these three common factors as having significant relationship with  $CF$  flows to countries [42–44,46,47].  $P$  and  $G$  have been argued to be positively related to  $CF$ , meaning high  $P$  and  $G$  will result in high  $CF$  flows [42–44], while  $GDPpc$  has a negative relationship with  $CF$ , indicating that poorer countries tend to receive more  $CF$ , all else being equal [42,46]. A hierarchical multivariate regression (enter method) using the SPSS software was employed to run the model.

In computing the results, SPSS produces the outcomes of the multivariate regression in two models (Appendix B: Tables A3–A5). Model 1 presents the outcomes if only the control variables  $P$ ,  $GDPpc$ , and  $G$  are considered. Model 2, which is the model of emphasis in this study, presents the extended version of the outcomes after accounting for the control variables. A summary of the study's model key outcomes is illustrated below (Table 2).

**Table 2.** Summary of Model 2 Key Statistical Outcomes.

Statistic	Value	Significant Level
<i>Adjusted R square</i>	0.922	$p < 0.05$
<i>F</i>	33.53	$p < 0.001$
<i>Beta:</i>		
<i>Population</i>	0.596	$p < 0.05$
<i>GDP per capita</i>	−0.271	$p < 0.05$
<i>Governance</i>	0.301	$p > 0.05$
<i>Readiness</i>	0.247	$p < 0.05$

As per the SPSS outputs, both Model 1 and Model 2 are significant, with the former scoring an *Adjusted R square* of 86.5% and the latter scoring an *Adjusted R square* of 92.2% (Appendix B: Table A3). The *Adjusted R squares* represent the percentage of variability explained by the variables. In other words, the control variables alone account for around 87% (Model 1) of the variability, and when  $RE$  is factored in (Model 2) the percentage of variability explained increases to 92.2%. This indicates that  $RE$  has a positive impact on the predictive power of the model. It is interesting to note that, while the actual change in the *R square* score is only 4.9% (indicating that  $RE$  explains an additional 4.9% of the variance on its own), the change is statistically significant (*Sig.F Change* = 0.034  $\sim p < 0.05$ ). In other words, the addition of  $RE$  as an additional predictor variable of  $CF$  despite having a small impact is still statistically significant.

Model 2 is a significant predictor of  $CF$ . The  $F$  test indicates a score of ( $F = 33.53$ ), which is statistically significant at  $p < 0.001$ . This means that when controlling for the confounding variables of  $P$ ,  $G$ , and  $GDPpc$ , and using  $RE$  as the only predictor variable, the model as a whole is statistically significant in predicting  $CF$ .

Finally, the standardized coefficient (i.e.,  $\beta$  weight) was assessed in order to evaluate the strength of how each of the predictor variables of the study ( $P$ ,  $G$ ,  $GDPpc$ , and  $RE$ ) influence  $CF$ . The higher the  $\beta$  value, the greater the impact of the predictor variable on the dependent variable. The results indicated that while  $P$ ,  $G$ , and  $RE$  have positive  $\beta$  values, with  $P$  (0.596),  $G$  (0.301), and  $RE$  (0.247), only  $P$  and  $RE$  make a statistically significant contribution to the model, with both being significant at  $p < 0.05$ . The  $\beta$  value of  $GDPpc$  was (−0.271), supporting the negative relationship argument with  $CF$  [42,46], with the relationship being significant at  $p < 0.05$ . While the limited sample size could explain the lack of a significant relationship between  $G$  and  $CF$ , the low significance could also relate to the argument that unlike multilateral funds, most large bilateral donors such as the USA and France (whose contributions make up a significant portion of total global aid) are not very selective about the governance quality of countries they channelled their aid to [46,48]. The results therefore indicate that

$P$ ,  $GDP_{pc}$ , and  $RE$ , as the largest unique contributors to the model after the overlapping effects of other variables, have been statistically removed.

## 4. Discussion

### 4.1. Rationalizing the Difference in Readiness Progress

The countries' scores across the three readiness dimensions of this study's framework highlighted that their readiness progress varies greatly across the sub-regions. The Asian countries seem to perform better on average across the 3 readiness dimensions ( $Avg = 35$ ) when compared to the PSIDS ( $Avg = 25$ ). They also appear more ready to access climate finance from diverse sources [49] (see also Appendix A: Table A2). Access to climate finance in PSIDS is still primarily limited to bilateral sources and multinational entities, with grants being the main instruments [49].

The performance of big Asian countries across the readiness dimensions of  $I \& P$ ,  $KM \& L$ , and  $FPE$  is evident in the variety of financial instruments they are using to mobilize climate finance. These innovative ways of mobilizing climate finance include the issuing of instruments such as green bonds, tax-free infrastructure bonds for renewable energy project [50], and the establishment of National Climate Funds (NCF) to pool domestic and international climate finance [51,52]. Creating the environment to implement these financing mechanisms is complex and requires robust  $I \& P$  framework, a high degree of technical knowledge and learning ( $KM \& L$ ), and a vibrant financial sector ( $FPE$ ) to be in place [4,12,22,23,31]. From the perspectives of climate finance providers, the synergy of these dimensions is indicative of an enabling environment in which climate finance can be effectively managed and directed to achieving its objective [4,13,41]. In addition, Asian countries' progressive performance in these three readiness dimensions could also be attributed to the fact that most of them are active participants in the REDD+ programme, an innovative and unique financial mechanism for generating climate finance flows to developing countries [53]. Their progressive 'finance footprint' has therefore not only placed them in a much better position to successfully navigate the complex climate finance architecture but also prepared the right domestic environment to attract this finance.

For the PSIDS, the readiness framework indicates a massive readiness gap relative to their larger Asian neighbors. However, PSIDS performed relatively better in the  $I \& P$  dimension ( $Avg = 22$ ) compared to the Asian sub-region ( $Avg = 17$ ). The positive progress in the  $I \& P$  dimension could be linked to the argument that SIDS in general have some of the most sophisticated governance and policy arrangements due to their history and topography [35,54]. Moreover, such positive progress in regard to this readiness dimension could also be explained by fact that the majority of the finance channelled to PSIDS (86%) was geared towards strengthening climate change sector policies [27]. However, the PSIDS still lagged behind the Asia countries in the remaining two readiness dimensions (i.e.,  $KM \& L$  and  $FPE$ ). The major underlying readiness challenges for PSIDS in these two dimensions are hereditary in nature due to their special and unique circumstances [55,56]. Like other SIDS, PSIDS suffer from a chronic lack of knowledge-based capacities to implement innovative financial instruments, and, furthermore, their financial sector is largely underdeveloped or non-existent in some cases due to their very small and largely undiversified economies [57]. Thus, PSIDS are in a conundrum, as despite their progress in the  $I \& P$  dimension, their physical context seriously hinders their ability to capitalize on these gains and translate them into concrete actions in the readiness dimensions of  $KM \& L$  and  $FPE$ .

### 4.2. Linking Readiness Progress to Climate Finance Accessed

While the study notes that the readiness effects are too recent for full impact to be apparent, as there may be a time lag from readiness initiatives to capturing the effects in the indicators, the results revealed that readiness has a predictable but small impact on the magnitude of climate finance accessed. This argument is based on the evidence concerning the  $R$  squared change value of the model and, more importantly, the  $\beta$  value of  $RE$ , which indicates that improving the readiness status of a country

will require significant work addressing improvements captured by the progress indicators, but have a small, although predictable and positive effect on climate finance accessed. This also indicates that the readiness status of a country does not exist in a vacuum, and that it is inextricably linked to other contextual factors in determining access to climate finance.

In addition, the current approach to readiness largely focuses on accessing finance from multilateral funds and does not differentiate between mitigation and adaptation. If readiness were to be discussed within the context of the USD100 billion goal of the Paris Agreement, then it is clear that the current concept of readiness is in the context of mitigation only (see Decision 1/CP21 para 53.). The Paris Agreement also prioritizes the role of the private sector in mobilizing climate finance because of its 'catalyzing capabilities', and the current readiness discourse is in line with such position [15]. Even within the GCF, in which USD 39.5 million has been mobilized for readiness and an explicit 50:50 allocation for mitigation and adaptation is a policy, funds dispersed to approved projects so far indicate that mitigation finance still accounts for 41%, compared to the 26% for adaptation, and the remainder for projects that are cross cutting in nature [58]. This infers that the current readiness approach tend to focus on attracting more mitigation finance than adaptation finance. The PSIDS are therefore at a disadvantage within the current discourse of readiness, as their climate priorities are geared towards adaptation instead of mitigation activities.

Although some gains have been made, increasing the level of finance available for adaptation, a significant gap still exists [59]. Within the context of this study, the imbalance of climate finance against adaptation clearly indicates the need to not only significantly scale-up the availability of adaptation finance globally but to also increase the support that will 'ready' countries to access this finance. For most particularly vulnerable countries such as the PSIDS, facilitating access to sustainable adaptation finance is critical to ensure their effective participation in the global climate finance architecture.

Moreover, the study also suggests that the level of precedence given to readiness in relation to access to climate finance contradicts the goal of the UNFCCC. Under the Convention, while the purpose of climate finance is to assist developing countries, Article 4(4), specifically mentions the need to provide adaptation assistance to those that are particularly vulnerable to the impact of climate change. While all countries can reasonably claim vulnerability to climate change, SIDS are explicitly recognized in the Convention as particularly vulnerable. Other vulnerability studies have also affirmed this position. For example, within the Asia-Pacific region, the PSIDS are considered more vulnerable to their Asian counterparts as per the NDGain Vulnerability index, with mean and standard deviation scores of 0.48 and 0.029, respectively, compared to the scores of the latter ( $M = 0.45$ ,  $SD = 0.058$ ).

For PSIDS, as well as the donors of readiness initiatives in the region, such findings provide 'food for thought' on the viability of the current approach for readiness. Evidence seems to indicate that the current approach to readiness will yield little improvement to the PSIDS' demand for more access to quality climate finance. Thus, an alternative readiness pathway should be explored.

#### 4.3. Readiness for Bilateral and Remittance Finance—An Alternative

The proposition that PSIDS should re-orient their readiness efforts towards bilateral support and remittances as alternative sources of sustainable climate finance is founded on the fact that they are, and have been, the primary sources of external finance assistance to SIDS [60], and that their flow into countries is largely insensitive to the quality of the enabling/investment environment of a country [61,62].

Since bilateral sources have been the dominant source of climate finance for PSIDS, leveraging such a source to its full potential is critical. For PSIDS, it makes more sense to explore such option, as bilateral finances are largely driven by diplomacy and thus are unaffected by the stringent readiness requirements demanded by private and multilateral sources. While some may argue that bilateral sources cannot be a sustainable source of long-term climate finance, it is critical to point out that Article 4(4) of the Convention provides the basis to believe that, at least in the context of climate finance,

bilateral flows will be ongoing indefinitely. Moreover, the special circumstances of the PSIDS provide a moral basis for indefinite bilateral support for climate finance, as there is evidence that a majority of the PSIDS economies will never reach their full development potential [63]. PSIDS may therefore consider re-orienting their readiness approach to promote scaling up of their global diplomacy efforts, enhancing the capacity of their foreign affairs ministries and tasking such ministries with playing a more prominent role in the area of climate change. The ultimate goal of readiness initiatives in this area is to scale up existing bilateral relationships, as well as build new ones. As developing countries are also increasingly mobilizing climate finance beyond their borders, PSIDS should take an aggressive approach in diversifying their bilateral relations and actively pursue new bilateral relationships for the purpose of securing new sources of finance.

Remittances also offer an ideal source of climate finance and are worth exploring, as they account for more than 40% of external financial assistance to SIDS [60]. For PSIDS, the influx of remittance from diasporas continues to increase significantly [64] and now accounts for a significant portion of the PSIDS GDP. For example, remittance in Samoa accounts for 23% of GDP [65]. While evidence indicates that only 5% of such finance flow is used for productive investments [65], there is huge potential for remittance finances to be an alternative source of climate finance for PSIDS. Existing evidence also indicates that remittance finance meets the desired characteristics of climate finance: predictability, sustainability, adequateness, and accessibility [65]. Remittance relative to private sector investment continues to flow, regardless of the existing investment environment, as it is largely motivated by the individual interest and market mechanisms [61]. The remittance pathway provides an opportunity for PSIDS to also re-orient their readiness focus on an enabling environment that prioritizes new entrepreneurial opportunities that can effectively harness the potential of remittance to trigger diaspora's investment in building national and community resilience to climate change. Senegal and Mexico provide two case studies in which governments have been actively promoting policies that facilitate an enabling environment in which diasporas can invest and contribute to domestic development [66,67].

Regarding the readiness for bilateral and remittances as per the understanding of this study, while it can be seen as a component of the larger climate finance readiness package, it represents a different blend of readiness from that promoted by multilateral sources of climate finance. For example, the readiness for remittances as argued by this study promotes an enabling environment in which innovative finances such as green bonds can be used to raise new sources of climate finances. While it can be argued that green bond is part of readiness, the target area, however, differs, as this study argues that instead of only targeting the private sector entities to invest in green bonds, the scope should be extended to also include diasporas (indicating that the readiness activities will be different), and this is where the focus on readiness in PSIDS should be concentrated on given their largely underdeveloped private sector.

## 5. Limitation of this Study

The small sample size of this study (i.e.,  $N = 12$ ) had a potential impact on the quality on results and generalizability of its findings. In fact, the results of this study should be treated with some reservations, as the bootstrap analysis of the model suggests that the bootstrap estimates varied considerably from the original sample (Appendix B: Table A6). The authors of [68,69] argued that this could indicate that the sample size used might not be satisfactory. The sample size is, however, as such because only 12 countries in the Asia-Pacific region have completed, and have publically availed their CPEIR. The author of [68] also argued that the results should be not be disregarded altogether if this is the case as "...it may still be better than anything else that is available" (pg.196). In line with this argument, this paper offers the first critical insights on how climate finance readiness has progressed in the region. Future research could fill this data gap and build strong evidence based on the impacts of readiness and climate finance, especially from the perspectives of PSIDS as more countries in the region release their CPEIR studies in the future.

## 6. Conclusions

This study provides critical insight in to the current approach to readiness. Firstly, evidence from the Asia-Pacific region indicates that readiness plays a small but predictable role in accessing climate finance. Effective access to climate finance cannot be achieved just by focusing on improving readiness, because access is inextricably linked and influenced by other factors. Readiness does not exist in isolation, permitting a dramatic improvement through appropriate input by governments and donors. Secondly, while the understanding of readiness does not differentiate between mitigation and adaptation finance, it is biased towards mitigation because of the precedence it places on creating an enabling environment that is private sector-centric. Thirdly, the emphasis on readiness as the new currency in the climate finance discourse suggests a divergence from the original understanding and objective of climate finance, as encapsulated in the Convention. Climate finance is intended to be treated differently from normal official development aid (ODA); thus, there is an expectation of donors, especially multilateral funds such as those continuously raised during the UNFCCC process, to not place stringent access requirements to climate finance aimed at particularly vulnerable countries. This is echoed in the consistent call from particularly vulnerable countries to the UNFCCC for simplified and enhanced direct access to multilateral climate funds.

These critical insights, as well as the massive readiness gap between the Asian countries and the PSIDS, question whether the PSIDS stand any realistic chance of being ready to access predictable and long-term climate finance. The PSIDS and its donors should rethink their current approach to readiness towards other alternative funding sources, as there is a strong indication that the current readiness pathways will yield little benefits to PSIDS. The misalignment between the PSIDS climate change needs (adaptation centric) and the current readiness approach (mitigation centric) is further exacerbated by the PSIDS' chronic lack of resources and capacity due to their special circumstances. Thus, the feasibility of PSIDS ever achieving a readiness status similar to their Asian counterparts is highly unlikely.

Bilateral and remittance finances offer a practical alternative for uncomplicated sources of climate finance that the PSIDS could target for their readiness efforts due to their strong track record of consistently mobilizing external financial assistance in-country. In addition, the flow of finances from these two sources is to a larger extent insensitive to the quality of the enabling/investment environment status of a country. It is worth exploring the potential of mobilizing quality and predictable climate finance on customizing readiness to suit these two sources. For the PSIDS, the current readiness approach, which tends to emphasize access from multilateral funds and the private sector, provides little assurance that it will improve their 'access to climate finance' conundrum and thus should be extended to bilateral and remittances sources. Thus, as radical as this study's readiness recommendation may be, the impact of on-going and prolonged inaccessibility of multilateral funds, as well as private finance for a majority of the PSIDS, will be severe, and existential for some.

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## Appendix A

Table A1. Common climate finance readiness problems derived from the CPEIRs.

<i>Policies/Laws/Regulation</i> Delays in CC related policies /plans/strategies being endorsed and approved by cabinet.	<i>Inclusive Decision Making</i> Minimal engagement/consultations with private sector, civil societies, and communities.	<i>Power Structure</i> Fragmented institutional settings.	Weak fiscal policy environment.
CC policies/plans/strategies are still being developed or in draft.	Lack of structured systems/processes in place to engage all relevant stakeholders.	Uncertain institutional arrangement due to volatile political environment.	Lack of long term budget projection.
Existing CC related polices/plans/strategies are too broad and unclear.	Non-traditional stakeholders no adequately represented in the decision making bodies.	Weak institutional links between central line ministries and other bodies.	Weak of accountability mechanism in place.
Existing CC related polices/plans/strategies are out of date.	CC-related materials are not easily accessible by the public.	Over-governance: too many committees with similar roles and responsibilities	Lack of a structured approach to holistically capture and classify CCE in national budgets.
Key CC policies/legislations missing.	<i>Coordination</i> Inconsistent flow of information amongst key line ministries.	Lack of clear mandates on roles and responsibilities.	<i>Evidence based decision making</i> Lack of reliable, complete, and up to date data.
<i>Knowledge Management</i> Lack of technical and specialized knowledge at in line ministries and agencies.	Critical CC policies/plans/strategies not harmonized and linked.	Existing CC related decision making bodies' lack leadership and political backing.	Lack of a formal data management system to support evidence-based policy making.
Lack of systematic training needs assessment within line ministries and agencies.	Mainstreaming/integrating of climate change into existing strategies/plans/policies is difficult.	<i>Public Finance Management</i> No/narrow national definition of climate finance.	Lack of a formal procedure on data sharing amongst government, donors, and other stakeholders.
High staff turn-over.	Lack of a formalized planning process.	Lack of budget support received.	Lack of systematic M & E systems and established indicators at all levels to assess performance of projects.
Heavy reliance on international consultants.	Misalignment between CC policies and its allocated resources.	Heavily dependent on single bilateral donor.	Lack of formal data management system to capture and store funding from other sources.
Lack of human capacity within key line ministries and agencies.	Lack of coordination amongst central CC line ministries during CC project life cycles.	Weak PFM in place.	Responsibilities of M & E not clear amongst line ministries.
Lack of long-term plan and financial commitments to build capacity at all levels.	Lack of awareness across line ministries on CC related issues.	Frequent delays in disbursement of funds through national systems.	Disparate collection/storage of data and monitoring amongst key line ministries and agencies.
Lack of knowledge at the community level.	Infrequent & inconsistent meetings of key national CC committees responsible for coordinating CC issues.	Fragmented budgeting structure and process.	Unclear and broad CC related targets being set.

Table A2. Climate Finance Accessed in 2016 [70].

Countries	USD (Millions)			Grants (%)	Debt Instrument (%)
	Lower Bound	Upper Bound	Average		
Fiji	6.97	22.45	14.71	100	0
Nauru	0.141	2.67	1.4055	100	0
RMI	0.12	11.83	5.975	100	0
Samoa	9.14	67.17	38.155	99	1
Tonga	3.04	10.31	6.675	48	52
Vanuatu	35.4	77.23	56.315	55	45
Vietnam	1441	1081	1261	9	90
Cambodia	78.4	161.8	120.1	28	72
Thailand	7	1377	692	1	99
Bangladesh	897	1634	1265.5	13	87
Nepal	66.4	67.9	67.15	77	23
Pakistan	108	1071	589.5	11	89

## Appendix B

Table A3. Model summary results.

Model	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
			R Square Change	F Change	Sig. F Change
1	0.865	166.70143	0.902	24.425	0.000
2	0.922	126.50826	0.049	6.891	0.034

Table A4. ANOVA <sup>a</sup> results.

Model		Sum of Squares	Mean Square	F	Sig.
1	Regression	2,036,234.120	678,744.707	24.425	0.000 <sup>b</sup>
	Residual	222,314.930	27,789.366		
	Total	2,258,549.050			
2	Regression	2,146,518.663	536,629.666	33.530	0.000 <sup>c</sup>
	Residual	112,030.387	16,004.341		
	Total	2,258,549.050			

<sup>a</sup> Dependent Variable: CF; <sup>b</sup> Predictors: (Constant), Govern\_quality, GDP\_pc, Population; <sup>c</sup> Predictors: (Constant), Govern\_quality, GDP\_pc, Population, Readiness.

Table A5. Coefficients <sup>a</sup> results.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	-106.652	101.086		-1.055	0.322
	Population	$3.145 \times 10^{-6}$	0.000	0.468	1.919	0.091
	GDP_pc	-333.058	165.896	-0.244	-2.008	0.080
	Govern_quality	0.352	0.177	0.487	1.989	0.082
2	(Constant)	-349.370	120.142		-2.908	0.023
	Population	$4.002 \times 10^{-6}$	0.000	0.596	3.112	0.017
	GDP_pc	-370.269	126.693	-0.271	-2.923	0.022
	Govern_quality	0.218	0.144	0.301	1.514	0.174
	Readiness	24.492	9.330	0.247	2.625	0.034

<sup>a</sup> Dependent Variable: CF.

**Table A6.** Bootstrap for Coefficients results.

Model	B	Bootstrap <sup>a</sup>				
		Bias	Std. Error	Sig. (2-Tailed)	BCa 95% Confidence Interval	
					Lower	Upper
1	−106.652	72.116 <sup>b</sup>	139.419 <sup>b</sup>	0.695 <sup>b</sup>	0.000 <sup>b</sup>	0.000 <sup>b</sup>
	$3.145 \times 10^{-6}$	$3.112 \times 10^{-6}$ <sup>b</sup>	$6.610 \times 10^{-6}$ <sup>b</sup>	0.515 <sup>b</sup>	$-3.435 \times 10^{-6}$ <sup>b</sup>	$2.611 \times 10^{-5}$ <sup>b</sup>
	−333.058	140.887 <sup>b</sup>	247.911 <sup>b</sup>	0.541 <sup>b</sup>	0.000 <sup>b</sup>	0.000 <sup>b</sup>
	0.352	−0.245 <sup>b</sup>	0.554 <sup>b</sup>	0.561 <sup>b</sup>	−0.587 <sup>b</sup>	0.762 <sup>b</sup>
2	−349.370	175.477 <sup>c</sup>	243.379 <sup>c</sup>	0.421 <sup>c</sup>	0.000 <sup>c</sup>	0.000 <sup>c</sup>
	$4.002 \times 10^{-6}$	$2.968 \times 10^{-6}$ <sup>c</sup>	$8.797 \times 10^{-6}$ <sup>c</sup>	0.353 <sup>c</sup>	$-2.021 \times 10^{-5}$ <sup>c</sup>	$5.230 \times 10^{-5}$ <sup>c</sup>
	−370.269	159.302 <sup>c</sup>	244.986 <sup>c</sup>	0.396 <sup>c</sup>	0.000 <sup>c</sup>	0.000 <sup>c</sup>
	0.218	−0.197 <sup>c</sup>	0.623 <sup>c</sup>	0.601 <sup>c</sup>	−0.477 <sup>c</sup>	0.527 <sup>c</sup>
	24.492	−10.175 <sup>c</sup>	16.624 <sup>c</sup>	0.404 <sup>c</sup>	5.558 <sup>c</sup>	22.997 <sup>c</sup>

<sup>a</sup> Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples; <sup>b</sup> based on 999 samples; <sup>c</sup> based on 993 samples.

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