

出國報告（類別：國際會議）

## 參加太平洋能源高峰會 返國報告

報告人：國際合作發展基金會

投融資處組長陳俐君

出國期間：民國102年3月24日至3月27日

派赴國家：紐西蘭

報告日期：民國102年4月2日

## 壹、緣起與任務目標

太平洋能源高峰會(Pacific Energy Summit, PES)主辦單位為歐盟與紐西蘭政府，目的為分別回應太平洋島國論壇(Pacific Islands Forum, PIF)於2011年在奧克蘭與2012年在庫克群島舉辦之年度元首高峰會，以及國際再生能源機構(International renewable Energy Agency, IRENA)於2012年在馬爾他舉辦之再生能源與島國全球高峰會(Renewables and Islands Global Summit)之會議結論，相關議題包括論壇公報(Forum Communique)內容、會議期間各國領袖發表之永續經濟發展宣言(Waiheke Declaration on Sustainable Economic Development)，以及各國對於改善能源安全(energy security)及加強發展再生能源<sup>1</sup>之承諾。

本次任務目標為了解太平洋各國之能源政策與目標、國際組織及開發銀行對於該地區提供之協助、再生能源在各國發展現況，以及如何吸引私部門業者投入再生能源發展，以作為日後本會推動相關業務之依據。工作說明書請詳附件一。

## 貳、會議議程與重點摘要

### 一、會議議程與經過

PES討論之議題著重在全球能源發展經驗與展望、太平洋地區各國如何取得潔淨可負擔且可靠的能源管道、各國對於發展再生能源的承諾及現況、主要開發機構對於再生能源與能源效率(Renewable Energy and Energy Efficiency)計畫之投入、私部門如何看待再生能源與能源效率計畫之投資、發展再生能源未來的挑戰與機會等，詳細會議議程請詳附件二。

除前述討論會議外，主辦單位另規劃展場出租攤位予私部門業者

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<sup>1</sup>再生能源包括水力、生質燃料、太陽能、地熱、海洋(潮汐)、風力等。

<sup>2</sup>展出相關商品與服務文宣，在會議中場休息期間，亦有技巧地引導與會者至展場與參展單位互動，為本次會議之一大特色。與會者包括太平洋島國政府、區域外各國政府、國際組織(含多邊開發銀行及國際能源專業機構)、雙邊發展機構、非政府組織、學術界、及私部門業者等，詳細清單請詳附件三。

世界銀行集團(World Bank Group)所屬國際金融公司(International Finance Corporation, IFC)之東亞太平洋部門於會議結束後隔日另行辦理說明會，邀請此次參與高峰會之私部門能源相關業者，介紹IFC可運用之產品與服務，以及其未來在太平洋地區能源產業可能扮演的角色，以協助業者參與世銀集團未來在太平洋地區之相關發展計畫。

## 二、會議重點摘要

### (一) 受援國政府關切之主要議題

1. 氣候變遷：溫度上升造成海平面上升，各國海岸線遭受破壞情形嚴重；
2. 石油供需與價格：各國對於能源需求只升不降，因此在石油價格高漲的趨勢下，應如何降低：(1)對進口化石能源的依賴、(2)能源支出在國家整體預算的比重；
3. 能源可負擔性(affordability):如何建立合理收費機制(包括預付電費制度)，提供消費者(包括貧窮者)可負擔之現代化電力服務；
4. 能源普及性(access to energy):如何提高國家電網涵蓋率，特別是對偏遠及外島地區；
5. 政府相關政策、法令與法規架構，包括政府應如何：
  - (1) 在財政預算有限前提下，訂定合理之電價補貼政策；
  - (2) 引入來自私部門之獨立發電業者(Independent Power Producer, IPP)並建立合作關係；

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<sup>2</sup>參與之私部門業者幾為紐國當地企業，約有 40 家參展，其中未有我國業者與會。

- (3) 建立再生能源認證制度;
  - (4) 進行國營電力公司之機構能力改革，以避免無謂行政效率損失;
  - (5) 訂定合理之保證電價收購制度(Feed in tariff)或購電協議(Purchase Power Agreement, PPA)，包括衡量協議期間、通貨膨脹、費率、補貼、退出機制、定期議約、風險管理、市場競爭者等因素;
6. 能源安全(Energy Security)：藉由提高再生能源使用配置比例，可達多元化能源管道之目的，從而加強能源供給安全。

## (二)能源安全為各國國家優先發展領域

太平洋各國對於發展再生能源與能源效率，具明確共識與堅定承諾(clear consensus and firm commitment)。太平洋共同體秘書處(Secretariat of the Pacific Community, SPC)在太平洋能源安全行動方案框架<sup>3</sup>下，已協助太平洋各國訂定各項國家能源安全指標<sup>4</sup>，並定期檢視發展成效。發展再生能源為太平洋各國的首要選擇，依序為太陽能、風力及生質燃料，各國均已明確承諾其發展再生能源目標(RET)。我國在南太平洋之友邦之再生能源目標詳如附件四。

## (三)追求經濟與環境雙贏之能源發展整合方案

再生能源如太陽能或風力等對太平洋地區已非新導入之概念，各國均強調目前亟盼國際發展夥伴提供快速且創新的能源發展整合(integration)方案協助各國發展再生能源，並提供各項財務與技術(特別是後續營運與維護能力最為短缺)上的支援。

## (四)能源議題與人類發展福祉密切相關

能源議題與千禧年發展目標雖無直接關聯，但能源普及卻是協助各國達成以下目標不可或缺的元素：

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<sup>3</sup> 各國領袖於 2010 年 PIF 領袖高峰會時承諾推動太平洋能源安全行動方案框架(Framework for Action on Energy Security in Pacific, FAESP)。

<sup>4</sup> 請詳各國 Country Energy Security Indicator Profile

1. 降低極度貧窮：基本電力服務可協助發展商業活動及微型企業，改善生活；
2. 普及初級教育：提供基本電力可供學齡孩童脫離家計負擔，有機會接受學校教育，亦可在夜間提供學習所需照明。
3. 對抗疾病：電力可以使基本醫療及維生設備發揮應有功能；
4. 促進性別平等：婦女可自家庭勞務中釋放出來，進而從事生產性活動。

故主要國際組織及開發銀行近年來無不倡議能源普及概念，例如聯合國開發總署(UNDP)於2011年推動之Sustainable Energy for All以及亞洲開發銀行(ADB)之Energy for all Partnership。

#### (五) 國際能源機構已積極提供個別國家再生能源之顧問諮詢服務

國際再生能源機構(IRENA)為協助各國導入再生能源，已開始運用科學方法，藉由盤點該國現有再生能源資源、協助與相關利害關係人對話、診斷發展再生能源潛力及相對優勢、釐清再生能源驅動因子、分析再生能源優先選項及模式利弊、提出政府各部門應配合改善方向等，協助政府部門層級(government-level)全面規劃具體能源整合方案。以吉里巴斯為例，IRENA已於2012年底完成該國Renewables Readiness Assessment，對於有意介入該國再生能源部門之利害關係人極具參考價值。

#### (六) 再生能源計畫風險仍高，需配套措施方能吸引私部門投入

與會之私部門業者坦言需有相當規模之基礎建設計畫方有意願投入，除了交易標的本身之商業風險外，政治與總體風險亦為其考量之重要因素。因此，開發銀行設計之風險分擔(Risk-sharing)機制以及相對搭配優惠資金來源（如贈款、零息貸款等），已成為其促成能源相關計畫成案，以及吸引私部門投入之必要工具。

## 參、 觀察與結論

- 一、本次會議中與會者一再強調「能源不只是能源」，由於能源議題涉及之領域不僅有電力，尚包括交通、環境、健康、安全等，可說是影響國家經濟發展、社會發展及環境保護之主要介面因子。本次會議中亦可觀察到太平洋各國對於能源發展的需求，已脫離入門階段，各國領袖已體認「永續能源管理(整合前述各項領域)」方能應付氣候變遷下之眾多挑戰。有鑒於此，我國過去以一次性、示範性方式援贈之小型基礎建設(系統或設備)計畫，已不足以因應各國現階段的需求，而對於該地區之能源發展實應以新思維來重新規劃。
- 二、能源為全球最為關注之議題，國際組織對其發展路徑早已建立有全球性或區域性發展框架，特別是太平洋地區多屬脆弱型島國，自不例外。各國領袖在會議中亦提及盼各援助機構應相互協調，避免獨立導入各自系統，反造成管理上之困擾。爰我國在提供援助時，亦應遵循諧和性(harmonization)之行動準則，儘可能在合作國既有之發展框架下進行，方能發揮最大綜效。
- 三、在再生能源發展上，太平洋各國面臨相同的挑戰，惟各國先天條件不同，且發展進程各異，對於個別國家應有量身訂做之解決方案。各國不同之能源發展經驗，實可作為我國介入該地區發展業務之參考依據。舉例來說，斐濟已開始導入來自私部門之獨立發電業者(IPP)，其國營電力公司對於與 IPP 打交道已有相當經驗；而吉里巴斯之國營再生能源電力公司在管理外島離網型太陽能光電所面臨之問題與挑戰，亦可為作為他國之前鑒。
- 四、對於我國應如何從雙邊合作跨入國際舞台來協助太平洋地區國家之能源發展，鑒於受援國要求國際開發夥伴間需具協和性，而在太平洋地區的國際多邊合作關係下，我政府為亞銀正式會員國，除善盡會員國義務續捐助亞銀「亞洲開發基金(Asian Development Fund)」外，應可比照其他會員國之作法，由政府以已開發會員身分，與亞銀協商成立單一夥伴信託基金(Single-Partner Trust Fund)，以量身訂作方式指定該基金之資金

專款專用於該地區國家與再生能源及能源效率相關計畫，再結合亞銀及本會其他資源，提高該基金之使用效益及能見度。

五、在本次會議前兩日，太平洋各國領袖已在東加王國討論相關議題、凝聚共識、互享經驗，故出席之各國代表均能成功聚焦於主題；除國際組織、各國政府(區域外)及私部門業者均應邀出席外，主辦單位亦邀請國際能源專業機構參與討論，使得本次會議政治與專業目的均能達成，成為紐國政府展現援外實力之最佳場合，足為日後我國辦理類似國際會議之參考。

附件一：工作說明書

**TaiwanICDF Mission**

Date: March 13, 2013

To: Ms. Chen Li-chun, Division Chief, Lending and Investment Dept.

From: TaiwanICDF

C.c.: Ms. Hsu Hui-wen, Deputy Director, Lending and Investment Dept.

Amb. Tao Wen-lung, Secretary General, TaiwanICDF

Dr. Lee Pai-po, Deputy Secretary General, TaiwanICDF

Mr. Morgan C.P. Chao, Deputy Secretary General, TaiwanICDF

Subject: The Pacific Energy Summit (“Summit”)

**Terms of Reference**

**I. Background**

The Summit aims to build on the momentum established at the Pacific Islands Forums in Auckland in 2011 and Rarotonga in 2012, and at the International Renewable Energy Agency conference in Malta in September 2012, which focused on renewable energy sources and technologies in Island contexts. There will be 48 countries attend the Summit, including 15 Pacific Energy Ministers, along with a wide range of donors, investors, multilateral banks, development partners and private sector players. The focus of the Summit is on investment in both renewing energy and energy efficiency.

Under the Paris Declaration on Aid Effectiveness, all donors are urged to be more harmonized and transparent, including the Taiwan, especially when delivering aid to fragile countries. The Summit brings together leading bilateral and multilateral donors and the private sector. And, by the event, the TaiwanICDF could realize how other donors support in a co-ordinated way the Pacific island countries to access to clean, reliable and affordable energy for sustainable economic development.

**II. Objectives**

From 24-26 March, you will attend the Summit co-hosted by the New Zealand



government and the European Union in Auckland. The objectives of this mission are as follows:

- ✧ Comprehend the Pacific island countries' energy plans and targets to attract donors and private sector investment and expertise.
- ✧ Understand the renewable energy projects, services, technologies from public and private sector through showcase activities.
- ✧ Learn more about how the major bilateral and multilateral development institutions help the Pacific island countries to make progress towards their renewable energy targets.

### **III. Tasks**

Attending the activities of the Summit, a brief agenda is attached hereto.

### **IV. Outputs**

You will draft a Back to Office Report within five working days of returning to Taipei.

## 附件二：會議議程

### PROGRAMME DAY 1

Increasing access to clean, affordable and reliable energy is a focus for the future of the Pacific. Day One will provide an opportunity for Pacific Island leaders to present their energy plans for reducing the use of fossil fuels and to hear insights from keynote speakers on the energy situation in the Pacific.

09.00 - **Formal Summit Opening**

09.30 ***Venue: Kawau Room 1***

Hon Murray McCully, Minister of Foreign Affairs, New Zealand

Andris Piebalgs, Development Commissioner, European Union

#### **Plenary 1: Renewable energy in the Pacific**

##### ***Keynote Speakers:***

09.30 - Hon Henry Puna, Prime Minister, Cook Islands

10.10 Lord Tu'iavakano, Prime Minister, Tonga

Adnan Z. Amin, Director General, International Renewable Energy Agency

#### **Launch of Energy Investment Showcase**

##### ***Venue: Kawau Room 1***

Achieving the goal of greater energy security in the Pacific will require a variety of actors covering technology development, innovation, finance, private sector, utilities, regulators, donors, and governments. Together these players will be represented at the Energy Investment Showcase. The European Union will launch the Showcase and share experiences supporting energy efficiency and investment.

10.10 -

10.30

##### ***Speakers:***

Andris Piebalgs, Development Commissioner, European Union

Pim van Ballekom, Vice President, European Investment Bank

10.30 -

11.00

#### **Refreshments and Showcase viewing - *Waiheke Room***

#### **Plenary 2: Pacific energy plans and roadmaps: Tonga Summit report back**

11.00 - ***Venue: Kawau Room 1***

12.00 A high-level Pacific panel will provide an overview of highlights from the Pacific Leaders' Energy Summit hosted by the Tongan Government and development partners and an update on progress of the region's energy roadmaps.

***Moderator:***

Hon Richard Marles, Parliamentary Secretary for Foreign Affairs and  
Parliamentary Secretary for Pacific Island Affairs, Australia

***Panel:***

Pacific leaders and Ministers

12.00 -

**Lunch and Showcase viewing - *Waiheke Room***

13.00

13.00 -

**Parallel Sessions. Choose from Stream A or B or visit the Energy**

15.00

**Investment Showcase**

**Energy Challenges and Opportunities**

**Stream A**

***Venue: Kawau Room 1***

A panel of senior officials and sector leaders will talk on the challenges  
and opportunities for realising sustainable energy goals and roadmaps in  
Pacific countries.

**Session A1**

***Moderator:***

13.00 -

Xianbin Yao, Director General, Pacific Department, Asian Development  
Bank

14.00

***Panel:***

American Samoa, Cook Islands, Niue, Samoa, Tokelau, Tonga and  
Tuvalu

**Session A2**

***Moderator:***

14.00 -

Franz Drees-Gross, Country Director for Timor Leste, Papua New  
Guinea and the

15.00

Pacific Islands, The World Bank Group

***Panel:***

Republic of Fiji, Republic of Kiribati, Nauru, Independent State of Papua  
New Guinea, Solomon Islands and Vanuatu

**Technical Sessions**

**Stream B**

***Venue Rangitoto Room 1***

**Session B1: Financing renewable energy and energy efficiency**

13.00 -

Learn what financing instruments are available for the energy sector

14.00

from development institutions. This session will focus on the  
requirements for obtaining finance from multilaterals supported by

examples of what works well in practice for renewable energy and energy efficiency.

***Moderator:***

Gavin Murray, Country Manager, Australia, New Zealand, Timor-Leste, Papua New Guinea and the Pacific Islands, International Finance Corporation

***Panel:***

Asian Development Bank, European Investment Bank, International Finance Corporation and ANZ Banking Group Ltd

**Session B2: Case Studies: Mobilising the private sector in the Pacific**

A series of case studies and success stories on renewable energy projects in the Pacific.

***Moderator:***

14.00 - Tuiloma Neroni Slade, Secretary General of the Pacific Islands Forum  
15.00 Secretariat

***Panel:***

Australian National University, Japan International Cooperation Agency, MWH Global, Northpower Ltd, Powersmart NZ Ltd, Tonkin & Taylor and Union Électrique du Vanuatu Ltd

15.00 -  
15.30 **Refreshments and Showcase viewing - *Waiheke Room***

**Stream A Energy Challenges and Opportunities**

**Session A3**

***Moderator:***

Dr Jimmie Rodgers, Director-General, Secretariat of the Pacific  
Community

15.30 -  
16.30 ***Panel:***

The Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, French Polynesia, Guam, New Caledonia, Republic of Palau, Pitcairn Islands, Republic of the Marshall Islands, The Territory of the Wallis and Futuna Islands

18.30 -  
19.00 **Pre-Dinner Drinks and Networking - *Waiheke Room***

19.00 -  
21.30 **Summit Dinner - *Kawau Room 1***

**PROGRAMME - DAY 2**

Day Two will have an international focus, with some of the world's most renowned

international organizations and key bilateral donors offering deeper perspectives on how to make progress towards Pacific renewable energy targets, and the lessons they have learned. This will be a unique opportunity to hear from global leaders and experts.

**Welcome**

***Venue: Kawaii Room 1***

08.45 -  
09.00

Hon Simon Bridges, Minister of Energy and Resources, Minister of Labour and Associate Minister for Climate Change Issues, New Zealand  
H.E. Artur Trindade, Secretary of State for Energy, Portugal

**Plenary 3: Global perspectives and lessons**

A series of keynote addresses from global leaders and partners from around and outside the region.

***Chair:***

John Allen, Secretary of Foreign Affairs and Trade, New Zealand

***Keynote Speakers:***

09.00 -  
10.15

Helen Clark, Administrator of the United Nations Development Programme  
Maria van der Hoeven, Executive Director, International Energy Agency  
H.E. Dr Sultan Ahmed Al Jaber, Minister of State, Assistant Minister of Foreign Affairs and Special Envoy for Energy and Climate Change; Chief Executive Officer of Masdar United Arab Emirates  
Dr Toshiko Abe, Parliamentary Vice-Minister for Foreign Affairs, Japan  
Christiana Figueres, Executive Secretary, United Nations Framework Convention on Climate Change

10.15 -  
10.45

**Refreshments and Showcase viewing - *Waiheke Room***

**Plenary 4: Donor investment in renewable energy and energy efficiency**

***Venue: Kawaii Room 1***

10.45 -  
11.30

This panel will address financing energy sector investments in terms of institutional and public funding.

***Moderator:***

Adnan Z. Amin, Director-General, International Renewable Energy Agency

***Panel:***

Karin Finkelston, Vice President, Asia Pacific, International Finance

Corporation

Pim van Ballekom, Vice President, European Investment Bank

Stephen P Groff, Vice President, Asian Development Bank

Stephen G Sawyer, Secretary General, Global Wind Energy Council

**Plenary 5: Attracting private investment in renewable energy and energy efficiency**

***Venue: Kawau Room 1***

This panel will address opportunities and barriers for private sector investment in the Pacific energy sector.

***Moderator:***

11.30 - Dr Mike Allen, New Zealand Special Envoy for Energy and Executive  
12.30 Director, Geothermal New Zealand

***Panel:***

Rob Hills, Technical Director, Project Management, Beca

Ira C. Magaziner, Chairman, Clinton Climate Initiative

Ambassador Vince Henderson, Commonwealth of Dominica

Hasmukh Patel, Chief Executive Officer, Fiji Electricity Authority

Caitlin Metz, Community Relations Manager, Vodafone New Zealand

12.30 - **Lunch and Showcase viewing - Waiheke Room**  
13.30

13.30 - **Parallel Sessions. Choose from Session B3 or B4 or visit the Energy**  
14.30 **Investment Showcase**

**Technical Sessions**

**Session B3: Improving supply/demand side efficiency**

***Venue: Kawau Room 1***

Energy efficiency can offer low cost options to reduce the use of energy. Learn about best practice in energy efficiency amongst Pacific utilities, based on recent regional benchmarking data and specific case studies such as utility performance improvement plans. Look at regional experiences regarding cost reduction strategies linked to issues such as generator maintenance and non-technical losses.

13.30 -  
14.30

***Moderator:***

Faouzi Bensarsa, Senior Adviser on Energy Matters, representing Development Commissioner Piebalgs

***Panel:***

Asian Development Bank, Pacific Infrastructure Advisory Centre, Pacific Power Association

## **Session B4: Resource mapping and data sharing**

### ***Venue: Rangitoto Room 1***

- Mapping national renewable energy resources and developing a comprehensive picture of the energy sector are crucial steps to provide governments/investors with the information needed to support the sustainable expansion of renewable power generation. This session will look at the elements necessary to: investigate renewable energy potentials, options for internet based mapping platforms and demonstrate how analysis of the energy sector supports policies that encourage the utilisation of renewable energy technologies.
- 13.30 -  
14.30

### ***Moderator:***

Professor Ralph Sims, Professor of Sustainable Energy; Director, Centre for Energy Research, New Zealand

### ***Panel:***

International Renewable Energy Agency, Secretariat of the Pacific Community, The World Bank Group and Secretariat of the Pacific Regional Environment Programme

## **Plenary 6: Partner dialogue: Action and next steps to increase renewable energy in the Pacific**

### ***Venue: Kawaii Room 1***

- This session will highlight new and existing renewable energy and energy efficiency initiatives and investments for the Pacific. Donors, development partners and Pacific governments will bring together the Summit dialogue and outline the steps to realise the goal of achieving affordable and clean energy for the Pacific.
- 14.30 -  
15.30

### ***Co-Chair:***

Hon Murray McCully, New Zealand Minister of Foreign Affairs, European Union

Representative and Hon Henry Puna, Prime Minister, Cook Islands

15.30 -

## **Refreshments and Showcase viewing - Waiheke Room**

16.00

16.00 -

## **Closing Plenary - Kawaii Room 1**

17.00

17.00 -

## **Concluding Cocktail Event in the Energy Investment Showcase -**

18.30

## ***Waiheke Room***

附件三：與會者清單

國家/機構	參與者
區域內各國政府	紐西蘭(外經貿部)、澳洲、庫克群島(總理)、東加王國(總理)、吉里巴斯(總統)、薩摩亞(總理)、斐濟、關島、馬紹爾、諾魯、帛琉、巴布亞紐幾內亞、索羅門群島、吐瓦魯(總理)、萬那杜、法屬玻里尼西亞、美拉尼西亞、密克羅尼西亞、紐埃等國家
區域外各國政府	中國、日本、韓國、多米尼克、阿拉伯聯合大公國、葡萄牙
國際組織	歐洲聯盟(European Union)、聯合國開發總署(United Nations Development Program)、聯合國氣候變遷小組(United Nations Framework Convention on Climate Change)、國際能源機構(International Energy Agency)、國際再生能源機構(IRENA)、太平洋島國論壇秘書處(Pacific Islands Forum Secretariat)、太平洋共同體秘書處(Secretariat of the Pacific Community)
開發銀行	世界銀行(World Bank)、歐洲投資銀行(European Investment Bank)、亞洲開發銀行(Asian Development Bank)、世銀集團所屬國際金融公司(International Finance Corporation)
雙邊發展機構	日本國際協力機構(Japan International Cooperation Agency)、澳洲國際發展署(AusAID)、美國國際發展署(USAID)



非政府組織	全球風能協會(Global Wind Energy Council)、Pacific Infrastructure Advisory Center、Pacific Power Association、New Zealand Wind Energy Association、Center for Energy Research, New Zealand、澳洲國立大學、美國亞歷桑那州立大學、奧克蘭大學、奧克蘭商業協會、柯林頓基金會
私部門業者 (約 40 家)	包括金融業(如澳盛銀行)、電信公司(如 Vodafone)、工程顧問公司(如 Beca)、設備供應商與顧問管理公司(含太陽能、地熱、水力、風力等業者)

附件四：南太平洋友邦之再生能源承諾與目標

國家	目前再生能源比例	國家再生能源目標	相關能源政策
索羅門	1%(包括小型水力、太陽能、椰子油)	2020 年前達 20%	National Energy Policy Framework
諾魯	小於 1%(併聯型及離網型太陽能)	2015 之前達 50%	National Energy Policy Framework/ National Sustainable Development Strategy
吉里巴斯	—	2025 年前達 40%	National Energy Policy
吐瓦魯	4%(併聯型太陽能)	2020 年前達 100%	Master Plan for Renewable Electricity and Energy Efficiency
馬紹爾	—	2020 年前達 20%	National Energy Policy
帛琉	2%(併聯型太陽能及小型水力)	2020 年前達 20%	National Energy Policy