



PACE-NET

PACIFIC EUROPE NETWORK FOR SCIENCE AND TECHNOLOGY

OUTCOMES COMPENDIUM



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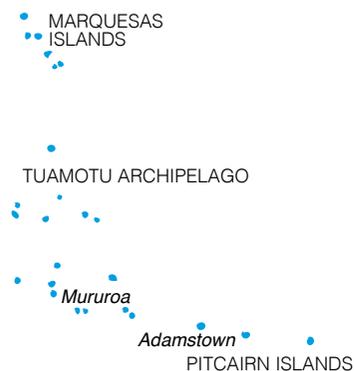
TUBUAI ISLANDS

North Pacific Ocean

Indian Ocean

South Pacific Ocean

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As Policy officer responsible for the Pacific-Europe network for Science and Technology (PACE-Net), I am very pleased to firstly praise all partners for their full commitment to our network's life and events and delivering of high quality outputs and recommendations as well.

I would like to pay tribute to all stakeholders who actively participated in the PACE-Net events and thus contributed to their full success providing our audiences with useful information on their on-going programmes and actions developed for researchers and students in Pacific and in Europe.

I am also grateful to colleagues and institutions located in Pacific islands for their hospitality and welcome during my missions and for helping me to understand the «social fabric» of their societies, to discover the extraordinary variety of Pacific cultures and landscapes of their «Sea of Islands» and how they show their resilience in front of continuous threats endangering their daily livelihoods. Considering future common societal challenges in Europe

Introduction

and Pacific, PACE-Net partners and stakeholders altogether have intrinsically promoted a high-profile and meaningful policy dialogue comprising important domains such as health and biodiversity, and water, fisheries and aquaculture, agriculture and natural hazards in relation to climate change.

And PACE-Net succeeded to date to facilitate the setting up of a specific integrated EU-Pacific S&T policy framework for mutual benefit and interest of research communities and societies in Pacific and Europe.

Doing this, our network has laid solid foundations for future research and innovation programmes and activities and I do not cast doubt it has paved the way to a fruitful bi regional cooperation for the years to come.

Let us enjoy our vibrant dialogue across that booklet that I do hope will give you a thrust of our concrete experience over this three-year period!

Armand BEUF
Principal scientific officer
European Commission
DG Research

PACE-Net partners and stakeholders altogether have intrinsically promoted a high-profile and meaningful policy dialogue



The European Union and the Pacific countries have strong historical and cultural ties going back centuries.

At the geopolitical level, the EU defined a strategy for the Pacific region in 2006 in order to advance the relationship between the two regions. The strategy established regular bi-regional policy dialogues covering domains such as sustainable development and good governance.



As part of this strategy, in 2010, the EU funded the PACE-Net project under the FP7 Capacities research programme, with the aim of enhancing the bi-regional policy dialogue in science and technology between the EU, its Member States, the 15 ACP-Pacific partners, the 'Pacific overseas countries and territories', and Australia and New Zealand. Over its three years existence, the PACE-Net network has developed a very strong

policy dialogue and delivered valuable results for the EU and the Pacific region for all of its main objectives. Specifically:

1) Reinforcing existing science and technology dialogues and networks, and promoting regional integration of those networks. PACE-Net has enhanced the relationship between research organisations and universities of the islands of the Pacific region, and notably with research organisations in Australia and New Zealand.

2) Identifying international cooperation activities in science and technology, and relevant programmes in the Pacific region, for mutual benefit and interest. PACE-Net has thus set-up dialogues bringing together experts and other stakeholders from both regions. The intensive work of all partners throughout the project, together with creative workshops held in Fiji, Brussels, Nouméa and Brisbane have delivered substantive policy briefings focused on important topics such as fisheries, freshwater resources, agriculture and forestry, health, and biodiversity in the Pacific.

3) Strengthening the coordination of science and technology cooperation, complementing activities and programmes carried out by other European instruments, in particular those linked to the EU Common Foreign and Security Policy.

As a result of exchanges and discussions between PACE-Net partners and other stakeholders, the idea of a specific 'Pacific Science, Technology and Innovation' policy framework emerged. I am confident that further development of such an integrated policy framework will be facilitated by the PACE-Net recommendations and I would like to congratulate all PACE-Net partners for their commitment to the enhancement of the EU-Pacific partnership in science and technology.

Laurent BOCHEREAU
European Commission
DG Research and Innovation

The Pacific - a region of innovative people and exquisite natural resources - is too important for Europe and the world to be left out...

Our diagnosis on the research and development priorities established for the region has highlighted the significance of the environment and climate change in relation to major societal challenges. These topics are also of major concern for EU citizens, whose awareness of these issues, especially in relation to the Pacific, still remains to be improved.

With the impact of climate change likely to increase in the near future, and in spite of a rich history of achievements of research on the topic, there are still considerable knowledge gaps on how Pacific communities are likely to face the necessary adaptations under global change constraints, and to respond effectively to many other drivers, which deeply affect their natural environment and resources, and subsequently community well-being.

Both academic research and technological innovation strategies are needed to implement responsive measures and to support adaptation policies effectively. Investments are required at several levels to improve our understanding of overall vulnerability of communities and biodiversity across the Pacific, to monitor in the long term the projected effects of climate change and other threats, and to evaluate the success of adaptation measures and support policies. The Pacific offers researchers the opportunity of working and studying a "life-size" laboratory in a number of S&T fields, and can claim an unquestionable experience in some of those (biodiversity, emerging diseases to name just a couple). However, because most of the Pacific Island Countries and Territories have limited technical capacities, it is crucial to foster regional partnerships by

reinforcing links between ACP countries, OCTs, Australia and New Zealand and to support continued European commitment in the region, in order to foster a "win-win" bi-regional science-based process.

According to the core mission of IRD, which is to promote a sustained dialogue between Nations of the North and of the South, we believe that with PACE-Net,



Michel LAURENT
IRD President



Claude PAYRI
PACE-Net
Project leader

we have been successful in strengthening the bi-regional dialogue on Science and Technology between Europe and the Pacific on global and regional priorities of mutual importance; in identifying potential research partnership projects addressing these priorities; and most of all, in raising awareness of the critical importance of the Pacific region to global sustainability and the vulnerability of its island countries.

In order to achieve a substantial and sustainable impact, it is necessary to collectively develop appropriate adaptation and policy recommendations. The research and development issues we have tackled together during the last three years have been brought to the attention of the European commission level, in order that funding mechanisms appropriate to Pacific mid-term research needs can be developed. Our tools –the bi-regional conferences and thematic workshops that were held and the Policy briefs that were generated in the framework of the project– were essential in this process.

On behalf of IRD, project coordinator of this project, and on behalf of the ten partners of the PACE-Net Consortium, we would like to thank all those who have taken part in the network and dialogue and who have supported us in one way or another... Thank you all very much! We eagerly look forward to keeping in touch with the growing research community that we have mobilised during the 3 last years in the region and in Europe, as well as to ensure the excellence of regional research, while contributing to the well-being of Pacific and EU citizens.

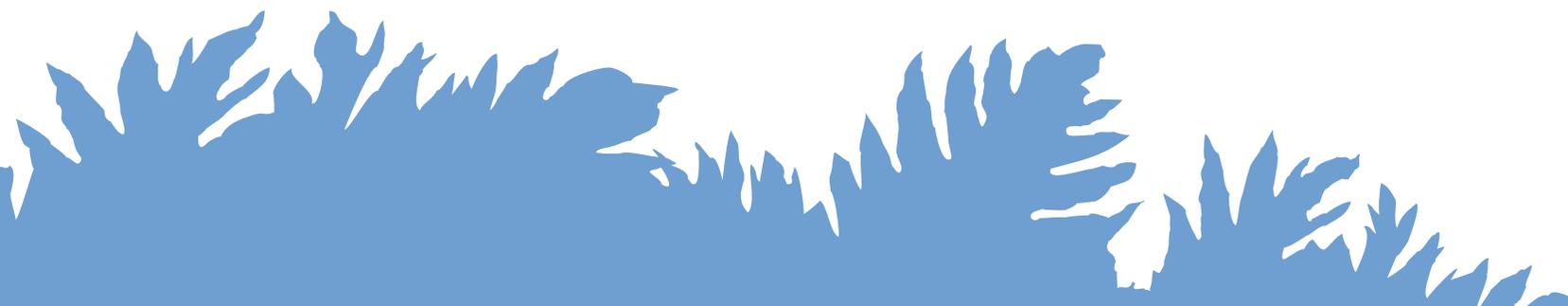




Situational analysis



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SITUATIONAL ANALYSIS

One of the first tasks of the PACE-Net project was to undertake an analysis of the current state of science and technology (S&T) research being carried out in the Pacific Region. For this survey, various organisations (research institutions, academic organisations, private institutions, development agencies and ministries) were contacted in 19 targeted South Pacific Island Countries and Territories (PICTs), as well as in Australia and New Zealand. In total, three questionnaires were designed. The first questionnaire targeted the South Pacific Islands organisations undertaking S&T research, and the second targeted the New Zealand and Australian organisations undertaking S&T research in and with the South Pacific island region. The third questionnaire was on cooperation and strategies of Government Institutions in the Pacific.

The task of contacting the different organisations, and sending, following-up and collecting the questionnaires was divided amongst PACE-Net Partners depending on their geographic location and their contacts in the countries or organisations of study. As such, the Secretariat of the Pacific Community (SPC) covered the regional inter-governmental agencies of the South Pacific Islands, the University of South Pacific (USP) covered the organisations in other Asian Caribbean and Pacific Group States (ACP) countries, the University of Papua New Guinea (UPNG) covered the Papua New Guinean organisations, the Institut de Recherche pour le Développement (IRD) was responsible for the organisations in the Overseas countries and territories (OCTs), the Australian National University (ANU) handled organisations in Australia, and New Zealand's Ministry of Innovation and Science (MSI) (previously known as the Ministry of Research, Science and Technology (MoRST)) covered the organisations in New Zealand. The completed questionnaires collected by each of the PACE-Net Partners were forwarded to USP and SPC for analysis and reporting.

The questionnaires contained both open-ended (completely unstructured) and closed (including yes/no and multiple choices), as well as contingency and matrix-type questions. The questions were of both qualitative and quantitative nature. To assist respondents to respond accurately and so as to avoid ambiguity, a list of definitions and abbreviations was added. In order to facilitate the analysis of results, a multiple choice format was used for questions relating to the scientific focus areas of organisations and researchers.

Table 1 presents the total number of organisations in the Pacific that were contacted to participate in the survey with Questionnaires No 1 and 2, and Table 2 presents the list of organisations who responded to the questionnaires.

Table 1 > **Locations of organisations surveyed and responses obtained**

Questionnaire (regardless of the part completed)*	Organisations contacted for questionnaire n° 1 and 2				Total
	ACP-based	OCT-based	Regional Organisations Organisations	Based in Australia and New Zealand	
Sent	47	43	6	28	124
Received	19	19	3	9	50
% response rate per region	40.4	44	50	32	40%
Overall % response rate					

* As Parts 1 and 2 of the two questionnaires No 1 and 2 address two targeted groups of respondents (Part 1 - the administrative or corporate section and Part 2 - the researchers), these parts were separated. It was observed during the survey that, while researchers of certain organisations participated in Part 2 of the questionnaire, the investigators received no feedback for Part 1 of the corresponding questionnaire from the administration of these organisations. Reasons for this, including the lower

response rate in Australia and New Zealand, were linked to the difficulty for large institutions to know exactly what Pacific-related research was being undertaken at any one time (and even if querying research funding or publications databases could be carried out, this information could not be easily matched to the survey questions). This highlights the needs for alternative surveying methods to be used to target such institutions in the future.

Table 2 > **Organisations that participated in the survey**

	Organization type	Country headquarter
■ ACP-based Organisations		
1 University of the South Pacific	Public University	Fiji
2 University of Fiji	Public University	Fiji
3 Sugar Research Institute of Fiji	Institute	Fiji
4 Ministry of Natural Resources and Environment (Samoa)	Governmental	Samoa
5 Scientific Research Organization of Samoa	Institute	Fiji
6 University of Papua New Guinea	Public University	PNG
7 University of Natural Resource & Environment	Public University	PNG
8 University of Goroka	Public University	PNG
9 University of Technology	Public University	PNG
10 Pacific Institute of Public Policy	NGO	Vanuatu
11 JAM Consulting	Private Institute	Vanuatu
12 Topou Tertiary Institute	Private University	Tonga
13 Ministry of Agriculture, Food, Forests & Fisheries (Tonga)	Governmental	Tonga
14 Ministry of Environment and Climate Change (Tonga)	Governmental	Tonga
15 Cook Islands Whale Research	Institute	Cook Islands
16 Centre for Cetacean Research & Conservation	Institute	Cook Islands
17 PNG University of Technology	Public University	PNG
18 Pacific Adventist University	Public University	PNG
19 Divine Word University	Public University	PNG
■ OCT-based Organisations	Organization type	Country headquarter
20 BLUECHAM SAS	Institute	New Caledonia
21 Centre National de Recherche Technologique Nickel et son environnement	Institute	New Caledonia
22 Centre de recherches insulaires et Observatoire de l'Environnement de Polynésie Française	Institute	Tahiti
23 Grand Observatoire de l'environnement et de la biodiversité terrestre et marine du Pacifique Sud	Institute	New Caledonia
24 Institut Agronomique Néo-Calédonien	Institute	Tahiti
25 Institut Français de Recherche pour l'Exploitation de la Mer	Institute	Tahiti
26 Institut Louis Malardé	Institute	
27 Institut Pasteur de la Nouvelle-Calédonie	Association	New Caledonia
28 Institut de Recherche pour le Développement	Institute	New Caledonia
29 Institut de la Statistique et des Etudes Economiques	Institute	New Caledonia

... OCT-based Organisations

- 30 Météo France NC
- 31 Université de la Nouvelle-Calédonie
- 32 Université de la Polynésie Française
- 33 Institut de Radioprotection et de Sûreté Nucléaire
- 34 Institut National de la Recherche Agronomique*
- 35 Centre de Recherche et de Documentation sur l'Océanie*
- 36 Lisode*
- 37 Association Française pour la Coopération en recherche et développement industrielle avec l'Australie*

* These organisations are located in France but actively undertake S&T research on the Pacific Region

■ Regional Organisations

- 38 Secretariat of the Pacific Community
- 39 South Pacific Applied Geoscience Commission
- 40 Secretariat of the Pacific Regional Environment Programme

■ Australian/New Zealand Organisations

- 41 Australian National University (Australia)
- 42 Central Queensland University - Institute for Resource Industries and Sustainability (Australia)
- 43 Victoria Police (Australia)
- 44 Department of Employment, Economic Development and Innovation (Australia)
- 45 Auckland University of Technology (New Zealand)
- 46 University of Canterbury (New Zealand)
- 47 University of Otago (New Zealand)
- 48 University of Auckland (New Zealand)

Organization type

Institute
University
University
Institute
Institute
Institute
Enterprise

Association

Country headquarter

New Caledonia
New Caledonia
Tahiti
New Caledonia
France
France
France

France

Organization type

Regional Organisation
Regional Organisation
Regional Organisation

Country headquarter

New Caledonia
New Caledonia
Samoa

Organization type

University

University/Institute
Government
Government
University
University
University
University

Country headquarter

Australia

Australia
Australia
Australia
New Zealand
New Zealand
New Zealand
New Zealand

Looking specifically at Pacific-related research projects as shown in Table 3, out of a total 549 projects, 294 projects (54%) were registered for the ACP countries, of which 103 projects were from USP. According to the overall numbers of projects collected, the majority of the registered research projects are undertaken in the R&D sector of Environment including Climate Change (39%), followed closely by Biology and Medicine (25%)

and Agriculture and Food Supply (13%). Pacific ACP countries registered more research projects in the survey than OCTs (35%) or regional organizations (6%). From the survey results, there also appears to be comparatively little research registered in the areas such as Information Communication Technology (ICT), Energy, and Transport and Construction.

Table 3 > **Comparison of numbers of registered research projects on or related to Pacific Islands by ACP, OCT, regional organisations and Australia and New Zealand**

Research and Development Sector	Number of Research Projects Undertaken per Region				Total
	ACP	OCT	Regional Organisation	Australia and New Zealand	
Percentage Response from Research Teams	100%	95%	96%	83%	96%
Agriculture and food supply	49	7	15	3	74
Biology and medicine	75	54	2	4	135
Energy	18	1	0	3	22
Environment and climate	84	108	17	5	214
Industry and Industrial technology	27	8	0	2	37
Information and communication technology (ICT)	13	0	0	4	17
Social and economic concerns	15	12	1	9	37
Transport and construction	1	0	0	0	1
Others: mathematics/physics	12	0	0	0	12
Total number per region	294	190	35	30	549

If one compares the inventoried research teams with the research projects as represented in Figure 1, it can be observed that some of the research teams work on many projects. Sixteen percent of the registered research teams work on Social and Economic Concerns, but this area has only 7% of the research projects. There is also a disparity in ICT, with 6% of the research teams and 3% of the research projects. The Environment and Climate Change area has the highest number of research teams (24%) and projects (40%). Teams which are doing a significant number of projects when compared to the number of teams are Environment and Climate Change and Industry and Industrial Technology. It can also be observed that from the survey responses to date, no Transport and Construction teams in the Pacific Islands have been recorded, and hence there are

no projects on this theme. Despite having two inventoried ICT Teams in the OCT, and one in Australia and New Zealand, there are no projects that have been registered through the survey on this theme. It should also be noted that similarly the survey did not register any Energy teams in the OCT, Australia and New Zealand. However, as some such research teams are known to exist, this highlights the challenges with obtaining information through surveys. As future work is undertaken, further data sources and alternative methods of research will need to be used to develop a more complete picture of Pacific-related S&T. Specifically, more private companies and consulting groups (both international and local enterprises) working in or with the Pacific may need to be targeted, as much work in these noted sectors occurs in the private rather than public sector.

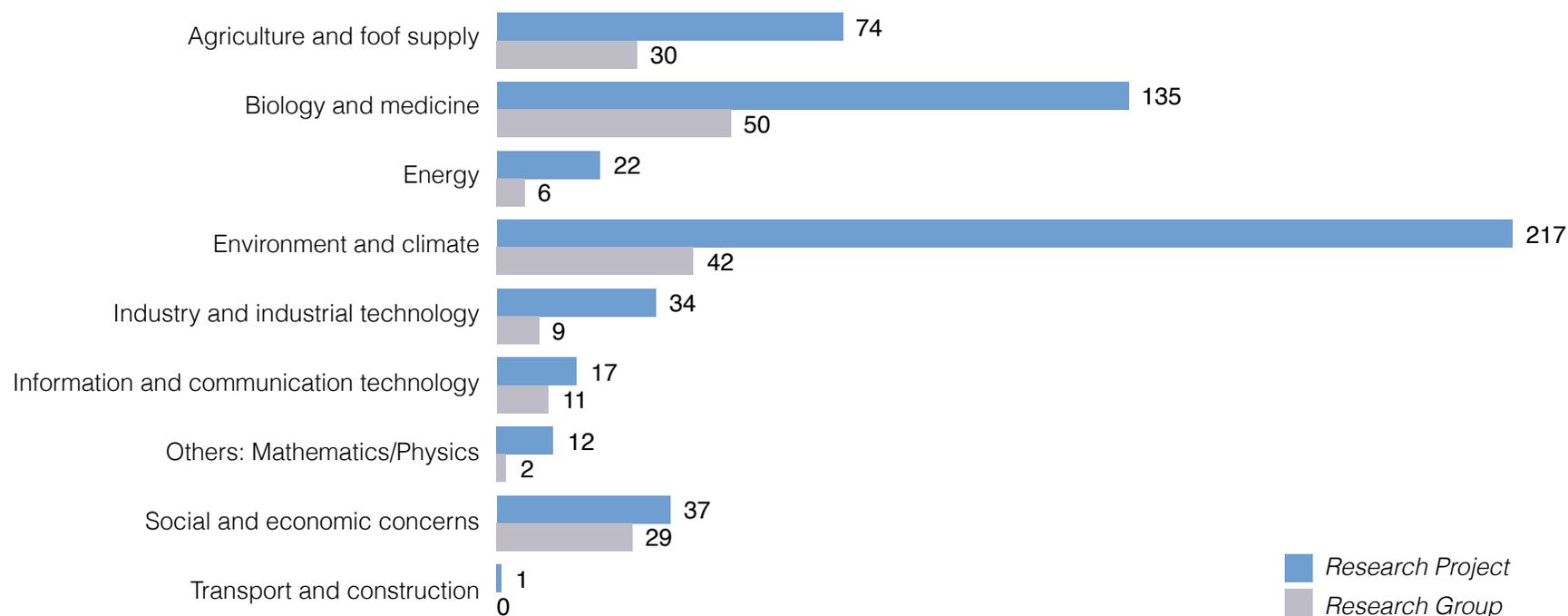


Figure 1 > **Comparison of research teams against research projects**

Turning next to S&T collaborative activities, from our survey results as shown in Table 4, there appears to be an insignificant number of collaborations between the neighbouring Pacific ACP countries and the OCT, even though they share similar concerns with regard to research and development. A major reason would be language issues between the two regions. The largest proportion of collaboration activities in relation to Pacific Islands research projects involve between or with the organisations in the OCT (involved in 27% of research projects via collaboration). Organisations in Europe are also as heavily involved in research

projects (24%) of the Pacific Islands through partnership with various Pacific organisations. Moreover, we observe from the data collected that there are considerable partnerships on Pacific Islands research projects with organisations in various countries of Asia and in America (15%) and organisations of Australia and New Zealand (13%). The OCT heavily collaborates with the European countries, when compared to the Pacific ACP countries and Regional Organisations. Thirty-two percent of the research projects of the OCT are undertaken in partnership with European organisations.

Table 4 > **Number of collaborations with research organisations located in different regions of the world or with regional and international organisations**

Respondent research teams based in:	% response rate	Number of Collaborations with Research Organizations Located in Different Regions of the World or with Regional and International Organizations:							Collaboration on totals per Region Surveyed
		ACP	OCT	Regional Organisations	Australia and New Zealand	Europe	Other Countries	International organizations	
ACP	38	26	1	15	21	8	19	17	107
OCT	74	7	114	6	27	92	37	1	284
Regional organisation	72	5	1	3	6	2	5	3	25
Australia and New Zealand	26	5			2		3		10
Total	57	43	116	24	56	102	64	21	410

Looking at the funding sources of S&T research in the Pacific region, Figure 2 shows that research is funded from several sources, including institutional, private sector, civil sector, and bi-lateral and multi-lateral donors. This shows that the stakeholders from across sectors of society all play a part (to a greater or lesser extent) in supporting S&T research in the Pacific region. The pie chart illustrates that 36% of the inventoried research projects for the Pacific have government funding. It should be

noted that the research projects from the ACP are mostly collated from research teams at USP and, according to the numbers of projects registered, these projects are mainly funded by the organization itself. Hence, USP funds 21% of the overall inventoried research projects in the region. For the projects in our survey sample, multilateral Donors, NGOs, IGOs, Enterprises, Regional Organization, Bilateral Donors contribute approximately 5-6% each.

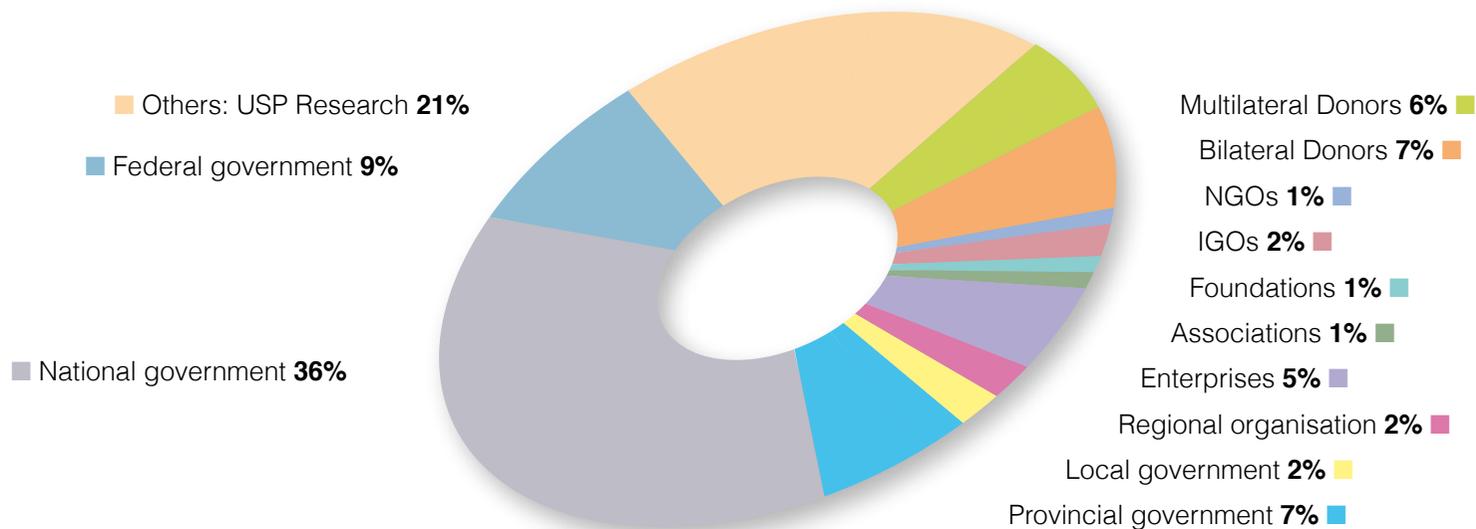


Figure 2 > Overall distribution of inventoried source of funding for research projects

Finally, the survey looked at the familiarisation of respondents with the European Union’s Seventh Framework Programme for research. As shown in Table 5, only 20 (or 57%) declared to know or have heard about the FP7, while 43% replied that they were unaware of this funding programme. It should be noted the OCT survey respondents comprised mostly researchers from New Caledonia and French Polynesia. These countries are

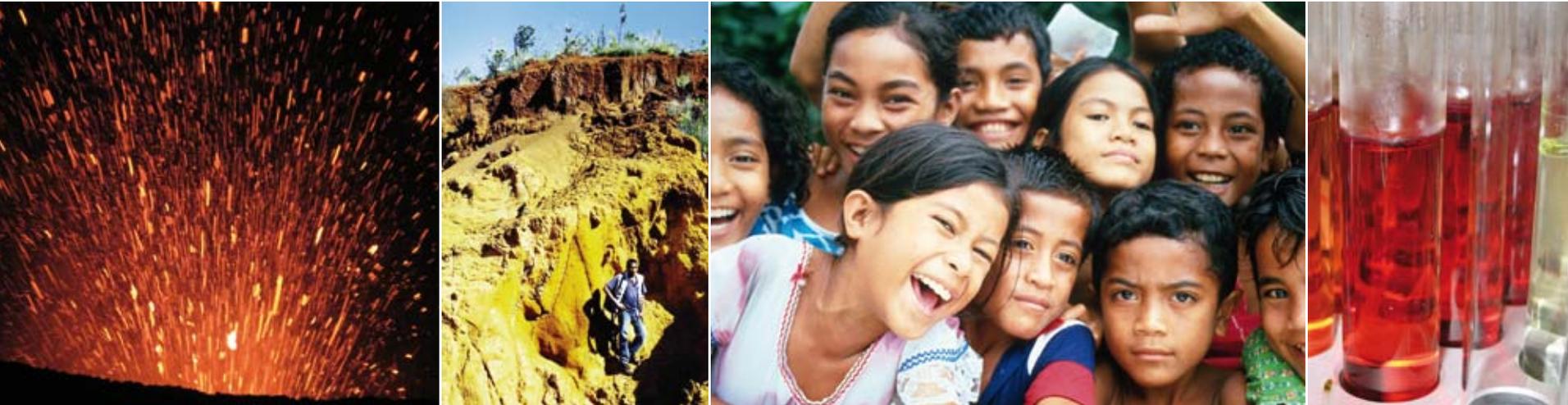
French territories and are, therefore, special member state territories of the EU. It is hence not surprising that the researchers in those countries are aware of EU programmes like the FP7. Only one out of 24 ACP respondents noted that they had heard of the FP7, so it is particularly in this region where the work of PACE-Net in raising awareness of, and capacity to participate in, FP7 activities is needed.

Table 3 > Familiarization with Seventh Framework Programme (FP7)

	Number of responses per Region				Total number of reponses
	ACP	OCT	Regional organisation	Australia and New Zealand	
Are you familiar with FP7?					
Yes	1	12	2	5	20
No	23	16	13	5	54
Total participation to Q5	24	38	15	10	74
% response rate to Q5	33	86	100	58	70

LINKING SCIENCE AND TECHNOLOGY TO DEVELOPMENT GOALS OF THE PACIFIC

As the Pacific island region has significant and pressing needs and challenges to respond to, the development of Pacific-related S&T becomes an ever increasing necessity for its sustainable development. (see Table 1). In light of this acknowledged need, one of the initial tasks of PACE-Net was to undertake a desktop review of Pacific-related documentation on development goals, agendas and programmes was to study the current and needed linkages between development and S&T research. Specifically, the objective of this Study was to identify science programmes in the development agendas of the Pacific islands as well as cross-cutting issues. However, individual governments of the ACP countries in the Pacific tend not to have comprehensive and overarching S&T research national plans as such, and only a very few of them make significant, if any, mention of the role of S&T research in their national policies as means to achieve their development goals. At a regional level, the Pacific island leaders have endorsed the Pacific Regional Digital Strategy for Information and Communication Technology, Pacific Islands Energy Policy and Plan, Pacific Regional Strategy on Disability, and Pacific Islands Framework for Action on Climate Change 2006-2015, which contain some research components.



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It should be noted that as S&T is inherently cross-sectoral, it implicates many stakeholders and for this reason to complement this Study, in addition to the development agendas, development programmes of several important research centres in the region, with both national and regional mandates, regional development bodies, development research initiatives and international donors

were also analysed for S&T topics. Table 1 shows the linkages that were clearly acknowledged in the range of documentation studied, as the methodology developed below outlines. It is, however, noted that further linkages could be easily imagined or may have been too subtly alluded to in the documentation studied to be recorded.

Table 1 > Linking development goals and challenges of the Pacific Islands to S&T themes

Development Need and Challenges	Themes												
	Health	Fisheries and Aquaculture	Biodiversity	Environment	Climate Change	Energy	Culture, Social and Human sciences	Information and Communication Technology	Agriculture and Forestry	Disaster Management	Transport	Water and Sanitation	Food Security
Size, Isolation and Resources	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Economy	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Institutional and Infrastructure Capacity						✓		✓		✓	✓	✓	
Demography and Urbanisation	✓	✓	✓	✓			✓		✓		✓	✓	
Productive Sectors		✓						✓					✓
Environmental Fragility		✓	✓	✓	✓			✓					
Social Situation	✓	✓					✓	✓					
Regional Cooperation and Regionalism	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Political Leadership and Governance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

To identify the science focal areas shown in Table 1 that support the development goals of the region and on which future collaboration between the European Union (EU) and the Pacific under the Framework Programme (FP) can be based, a ques-

tionnaire was drafted during the first PACE-Net consortium meeting in Suva (Fiji) in November 2010 and a large scale survey launched thereafter. In spite of the difficulties faced (low response rate, partial data etc.), this survey laid the foundations for

a comprehensive overview of the region's research landscape. To this end, 136 development commitments, programmes and initiatives were analysed for focal areas in this study. This included 25 development commitments, 39 research programmes of academic and science institutions, 9 and 15 programmes, respectively, of inter-governmental agencies and civil society organisations, 26 diverse Pacific island-relevant development initiatives and 22 bilateral and multilateral donors to Pacific islands, from which 40 themes emerged. These include themes that are specific to S&T and also cross-cutting issues that may carry relevance, though indirect, to S&T.

The 17 S&T themes include: agriculture and forestry; biodiversity; climate change; culture, social and human sciences; disaster management; earth sciences; energy; environment; fisheries and aquaculture; food security; health; information and communication technology (ICT); mineral resources; transport; technology transfer and innovation; waste and pollution management; and water and sanitation.

The 23 cross-cutting themes include: civil society involvement; crime management and terrorism; disabilities; economic development; education; gender equality; governance and policy; human resource development; human security; indigenous knowledge systems; industrial sector development; infrastructure development; institutional capacity building; labour mobility; media studies; microfinancing and investment; private sector development and integration; poverty alleviation; rural development; social development; sustainable development; tourism and trade.

Of the S&T themes, 15 have emerged as priorities for the Pacific (descending order of score):

- environment (appears in 63/136 documents studied);
- health (60);
- biodiversity (56);
- climate change (56);
- fisheries and aquaculture (50);
- agriculture and forestry (41);
- culture, social and human sciences (37);
- disaster management (30);
- energy (29);
- food security (29)
- waste and pollution management (27);
- water and sanitation (27);
- transport (21);
- ICT (20); and
- mineral resources (20).

Of these 15 S&T themes, certain of these S&T themes (such as environment, health, biodiversity, climate change, fisheries and aquaculture, agriculture and forestry and culture, social and human sciences) are mentioned at a higher frequency in the development agendas reviewed than the others (disaster management, energy, food security, waste and pollution management, water and sanitation, transport, ICT and mineral resources). One of the reasons for this could be that some themes such as environment and health could be considered as umbrella categories for those with less specific mentions such as water and sanitation or waste and pollution management. In other words, the themes emerging through this study are not mutually exclusive.

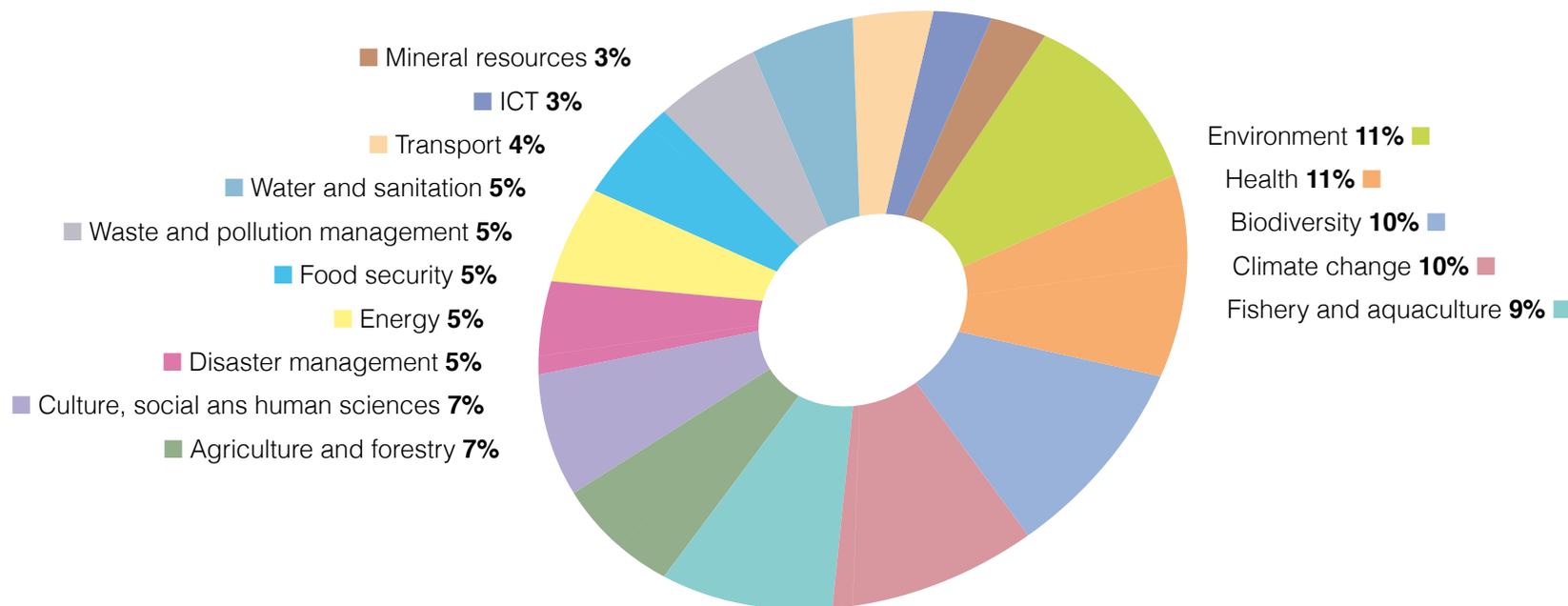


Figure 1 > **Pie chart representation of frequency at which S&T themes that have emerged as priorities in the development agendas of the Pacific islands are mentioned in the 136 development agendas studied**

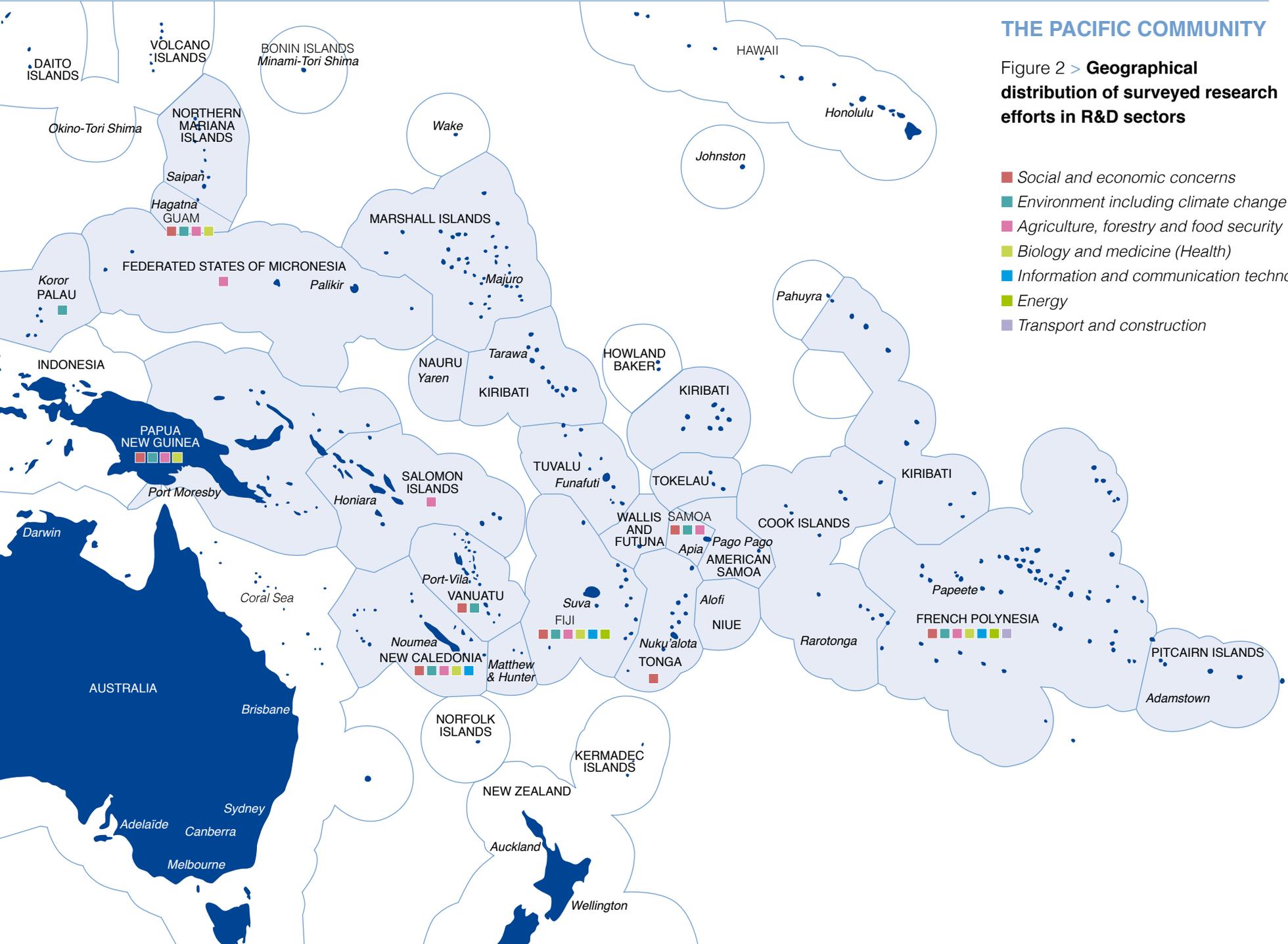
When these 15 S&T themes were linked to the research and development (R&D) sectors of the EU (www.cordis.eu); the results strongly indicated that the R&D sectors that would be most appropriate to Pacific island region in terms of Specific International Coordination Action (SICA) programmes include; (1) environment and climate; (2) biology and medicine; (3) social and economic concerns; (4) agriculture and food supply; and (5) energy.

For a better understanding of the regional R&D efforts highlighted through the study, the map in Figure 2 indicates the geographical distribution of S&T sectors in which academic and

science organisations were found to provide research to the Pacific island region.

The views expressed are those of the authors alone and do not necessarily represent any official view of the Commission. The authors note that the information provided in these documents is based only on the survey responses received and documents reviewed during the study period. The representations provided are thus partial and it is acknowledged that there are likely to be gaps in the analysis. Care should therefore be taken in the interpretation and use of these results.

130°E 140°E 150°E 160°E 170°E 180° 170°W 160°W 150°W 140°W 130°W 120°W



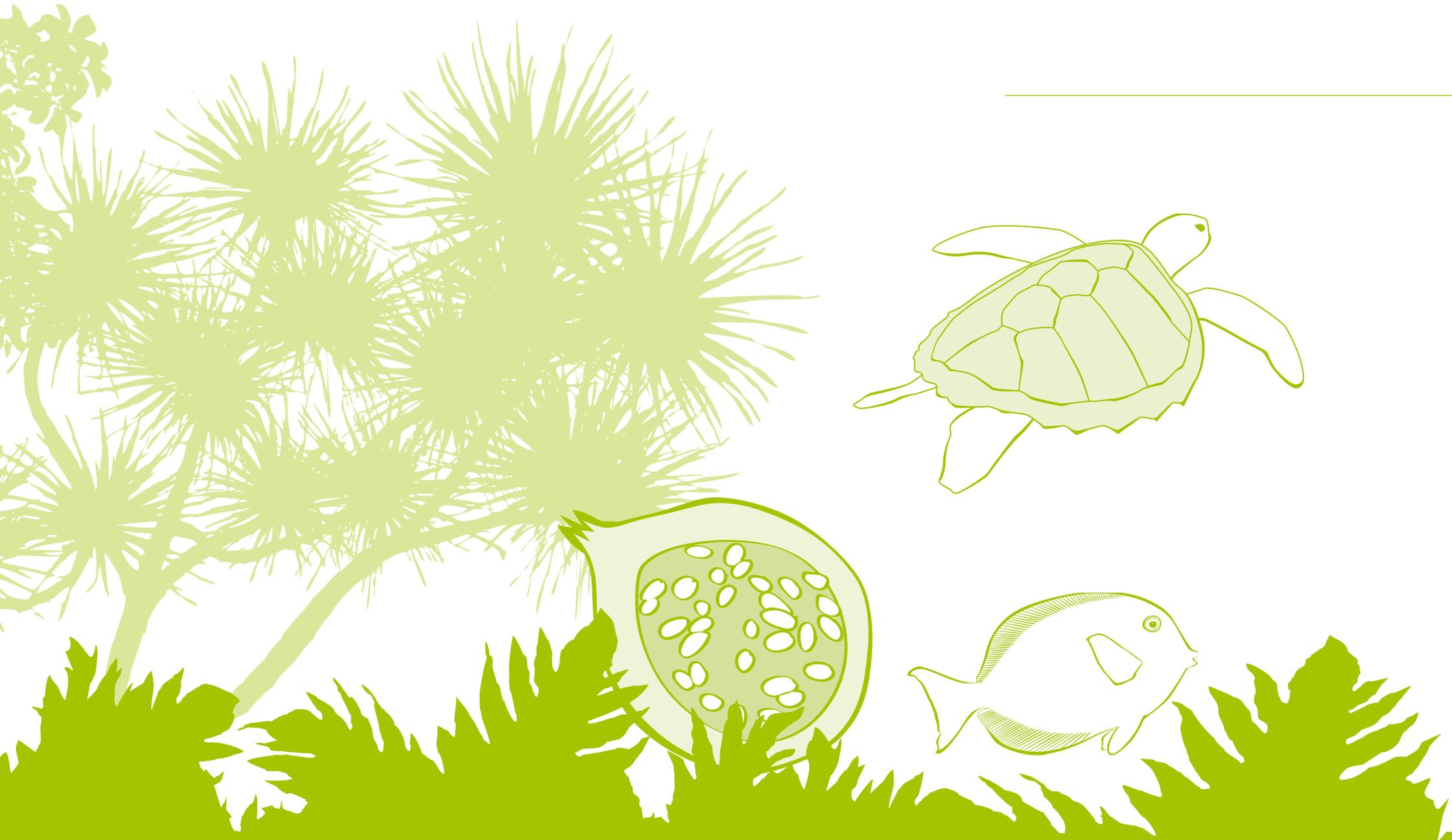
THE PACIFIC COMMUNITY

Figure 2 > **Geographical distribution of surveyed research efforts in R&D sectors**

- Social and economic concerns
- Environment including climate change
- Agriculture, forestry and food security
- Biology and medicine (Health)
- Information and communication technology
- Energy
- Transport and construction



The Pacific as a “Sea of Islands” (E. Hau’ofa)



Thematic workshops and policy briefs



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3



KEY MESSAGES FROM PACE-NET THEMATIC WORKSHOPS

Scientists from the Pacific and Europe developed their perspectives on the priorities in research, development, and innovation in various thematic areas in the Pacific during several workshops in the Pacific and Europe. The thematic areas included: health, biodiversity/ecosystem management; climate change and climate variability; climate change and energy; climate change and fresh water; climate change, agriculture and forestry; climate change and natural hazards; climate change, fishery and aquaculture; and cross-cutting issues in the Pacific. The policy frameworks, proposed adaptations and potential impacts of investments targeted to these priorities were characterized together with suggestions for concrete actions. The key messages from this intensive period of work are presented in the following pages. The detailed documentation can be found in the respective policy briefs which are available at: http://brussels-conference.pacenet.eu/policy_briefs



© <http://limitlifesiye.com/heaviest-people-on-earth-in-nauru/index.html>



HEALTH IN THE PACIFIC

Investments are necessary

- The populations and economies of Pacific nations are too small to undertake the research necessary to inform their own evidence based health programs. Effective health planning in the Pacific can only be undertaken when long-term, collaborative, research has provided the necessary evidence.
- Current (rheumatic heart disease, leptospirosis, dengue, food and water-borne diseases, HIV AIDS) and emerging (influenza, vector-borne viruses, antibiotic resistant bacteria) communicable diseases pose a threat to the health and productivity of the people of the Pacific which they are ill equipped to manage.
- Almost all communicable disease threats in the Pacific are likely to be exacerbated by climate change and the effects are likely to vary from one island nation to the next so a single approach to this issue is unlikely to be appropriate for all locations.
- The extensive air links within the Pacific and between the Pacific and major Asian, American and European population centres allows the rapid movement and mixing of almost any pathogen able to infect humans.

There is a need:

To establish, train and sustain a laboratory diagnostic capacity throughout the Pacific in order to provide comprehensive data which can be used to measure disease trends and to evaluate the effectiveness of any interventions.



BIODIVERSITY / ECOSYSTEMS MANAGEMENT IN THE PACIFIC

Investments are necessary

- No other places in the world shelter terrestrial and marine biodiversity as diverse and unique as the tropical Pacific islands, but this biodiversity has experienced and is still experiencing the world's strongest extinction processes due to anthropogenic impacts. These islands support more rare and endangered species per capita than anywhere else on earth. This urges for a voluntarist reinforcement of (i) research dedicated to the study of human-nature relationships and of (ii) implementation of large sustainable protected areas for biodiversity conservation.
- In the context of global change, Pacific nations are too small to undertake relevant research to monitor and to follow at every scale the changes that biodiversity experiences. But effective strategies to cope with the consequences of global change for sustainable livelihood of human populations can only be achieved through collaborative and long term research on ecosystems. The scale of the region offers unique opportunities for comparative multi-scale and multi-site approaches, multidisciplinary integration combining social and natural sciences, local stakeholders' involvement, and bottom up/community-driven priority setting.
- Ecosystem (or 'socio-ecosystem') should be favoured as research entry-gate, rather than biodiversity, in order to raise relevant questions from livelihood perspective rather than from the sole natural sciences categories.
- An overview of biodiversity policy frameworks at country/territory, regional (South Pacific) and international levels (including articulation and model transfers between levels of governance) is also needed.
- Context-specific knowledge and indicators on biodiversity, taking the diversity of situations and viewpoints into account would help policy makers in crafting adapted regulatory frameworks.



*PACE-Net
Workshop on
Ecosystems
management in
Brisbane
(July 2011)*

CLIMATE CHANGE AND CLIMATE VARIABILITY IN THE PACIFIC

Investments are necessary for research on:

- Regional evolution of sea levels and predictions of absolute sea variations on short and long term.
- Climate/meteorological/oceanographic systems specific to the Pacific area and their interactions during the past, present day and future climate, specifically:
 - Enhancing understanding of SPCZ, Cyclones, MJO, ocean circulation; and
 - Enhancing understanding of interactions between these systems and with the land (e.g., mass effects for ocean, vegetation-atmosphere).
- Downscaling large scale climate systems to island scales from present-day situations to future climate as projected by IPCC, and especially for the updated CMIP5 climate simulations.
- Responses of the ocean, biogeochemistry, including acidification to these climate/meteorological/oceanographic systems (and understanding why they occur). This includes the open ocean and the coastal and lagoon systems.
- Ecosystem responses up to top predators, on land, atmosphere and coastal/open ocean (and understanding why they occur)
- How this impacts human behaviour (migration, economy, security)

Expected impacts of investments:

The key outcomes sought from the R&D related project would be an increased scientific knowledge on this topic; creating tools to help managers; assistance in policy and development decisions at local and regional scales; possibilities for mitigation of climate change effects.



CLIMATE CHANGE AND ENERGY IN THE PACIFIC

Investments are necessary

- For research on exploring the linkages between the lack of access to energy and other development indicators, including those of the Millennium Development Goals. Energy and gender, energy and health; and energy and water are such examples
- Energy access should also not be looked at as a stand-alone solution to the energy problem, but it must be developed in such a way that supports the overall sustainable development of the Pacific communities.
- For a South-Pacific renewable energy data centre. In order to develop locally appropriate solutions for energy access, knowledge of available resources was imperative. Data on availability and quality of renewable energy resources is not available for most of the countries. This makes development of renewable energy projects well-nigh impossible.

Expected impacts of investments:

Improved understanding of the importance of energy to livelihoods in the Pacific region. Collecting and making data available from a central location will help:

- Project developers (e.g. Independent Power Producers).
- Development partners to more efficiently look at the feasibility of setting up renewable energy based electricity generation or establishing bio-fuel production.
- Carbon trading projects (e.g. CDM) where definite numbers are required by the investors/buyers.



PACE-Net Conference in Brisbane (July 2011)

CLIMATE CHANGE AND FRESH WATER IN THE PACIFIC

Investments are necessary

- Concerted, interdisciplinary knowledge-based approaches are necessary for developing sustainable, solutions to the complexity of PICT's severe ENSO-related droughts floods, cyclones, population growth, development, urbanisation, land use change, waste production, governance failures and predicted climate change impacts.
- Island communities have sound local institutions, resilient social systems, are sensitive to environmental change and have a high degree of equity. These, with their kinship-based, trans-national networks, form a limited capacity to adapt to threats and change. This capacity can be greatly enhanced by scientific networks and research partnerships involving regional and European researchers with complementary skills linking into already established regional networks and bi-lateral research partnerships. The focus of networks and partnerships should be on sustainability, adaptation, innovation and capacity building.
- A consortium between European, regional and local actors is the most effective way of carrying out the proposed research programme through a series of small, up to three-year, pilot projects in selected high priority locations in an initial design phase for scaled-up projects.

The investments proposed here that will help PICTs meet Millennium Development Goals, adapt to global change and ensure economically sustainable development, including to:

- Design and implement effective and efficient ways to develop and translate water and sanitation policy and plans into accepted community practice;
- Understand and manage water availability and quality and adapt to global and local change in vulnerable island environments;
- Develop innovative technologies to enhance management, use, conservation, monitoring, and analysis of freshwater systems in dispersed, remote islands;
- Develop innovative coupled renewable energy – water supply and storage systems and distributed energy systems, in small, remote islands; and
- Increase the impact of large donor water and sanitation programmes by identifying and addressing knowledge gaps and cultural, social, technological, institutional and scale mismatches between donor and recipient countries.

PACE-Net Workshop on "Water in relation with Climate change" in Brussels (March 2012). Centre left: I. White (ANU); far right: R. Robinson (SOPAC).





CLIMATE CHANGE, AGRICULTURE & FORESTRY IN THE PACIFIC

There is a need:

- For an overarching policy framework that integrates the appropriate environmental and socio-economic measures, addresses the vulnerabilities of the agriculture and forestry sector and makes the necessary changes;
- To embark on a programme of research, development and innovation that would both inform and facilitate long-term policy development while at the same time produce results that would have an immediate impact on the management of the region;
- To develop a synergistic relationship between policy and programme that would create a positive spiral of mutually supporting activities.

Investments are necessary for:

- Researchers' and technicians' mobility and cooperation between Pacific countries and also between European and Pacific regions;
- Genetic Resources and Management of Crops and Livestock;
- Monitoring and compliance related to crops and forest resources;
- Traditional Knowledge & Culture;
- Cross-cutting issues (Awareness-raising, monitoring, impact assessment);

Expected impacts of investments:

Overall we anticipate that the proposed actions would lead to higher resilience of the Pacific Island countries against internal as well as external threats by:

- Improved human talent capacity in key areas of climate change mitigation and adaptation;
- Improved preparedness of smallholder farming communities to the effects of climate change;
- Increased food security by both higher diversity of production and management as well as non-agricultural income options (e.g. fishing, hunting, tourism);
- Creation and improvements on integrated information systems linking into regional and international systems;
- Appropriate policies and strategies for mitigation of effects of climate shocks and other natural disasters, international markets for Pacific produce;
- Social change by Pacific Islanders towards climate change;
- Preserving cultural and ecological diversity by Pacific Islanders.



Top left:
Australian forest

Top right:
Kava planting in Vanuatu
and market in Port-Vila



Bottom right:
J. Francis (CTA) and
S. Bang (NARI PNG)

Key Stakeholder
Conference and
Agriculture-Forestry Workshop
in Brussels (March 2012).



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CLIMATE CHANGE AND NATURAL HAZARDS IN THE PACIFIC

The Pacific Islands are one of the world's most vulnerable regions with respect to the impacts of climate change according to the Intergovernmental Panel on Climate Change (IPCC) in its 4th Assessment Report. In the 1990s, the cost of extreme events in the Pacific Island region is estimated to have exceeded US\$1 billion. Many Pacific countries are Small Islands Developing States sharing characteristics of vulnerability to natural hazards, limited resource base and undiversified economies.

Investments are necessary to:

- Understand climate variability and its influence on natural hazards (e.g. sea level rise, tidal and storm surges, coastal erosion, cyclones, floods, landslides and droughts);
- Identify communities already at risk through physical and societal impact modelling;
- Educate and train local communities towards natural hazard adaptation;
- To focus future research in this field on: establishing Education centres in the South Pacific and Data centre(s) in the South Pacific; recognizing the uniqueness of the region and invest in (expensive) ship time for monitoring [1].

[1] From the Policy brief currently being drafted.



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Above: Cyclone damages

CLIMATE CHANGE, FISHERY & AQUACULTURE IN THE PACIFIC

Investments are needed on:

- Research to fill the gaps in knowledge required to further reduce vulnerability of economies and communities to alterations in production of oceanic, coastal and freshwater fisheries and aquaculture caused by climate change;
- Developments to launch the ‘no regrets’ adaptations to reduce the threats and capitalise on the opportunities; and
- Innovations to monitor the status of resources, evaluate the success of adaptations, engage coastal and inland communities in developing and applying practical adaptations, and facilitate communication among all stakeholders to improve the uptake of these adaptations.
- Maintaining the important contributions of tuna to economic growth, where key investments in research, development and innovation include:
- Strengthening stock assessments for tuna to allow management agencies to maintain stocks at levels where the expected opportunities resulting from climate change can be harnessed;
- Improving the models for assessing the combined effects of climate change and fishing on tuna catches, including long-term observations of variation in the food webs that support tuna to inform and verify these models; and
- Development of better systems for collecting and transmitting data on (i) species composition and length frequency of tuna, and (ii) features of the ocean of importance to modelling tuna (e.g. water temperature profiles and acoustic data for tuna prey), onboard industrial fishing vessels.

For food security, the key investments centre around:

- Minimising the gap emerging between the fish needed by coastal and urban communities and the best possible sustainable harvests from coastal fisheries – this involves better use of catchments to maintain vegetation to safeguard the coral reefs, mangroves and seagrasses underpinning coastal fisheries production from sediments and nutrients, and preventing over-exploitation of coastal fish stocks;
- Filling the gap by (i) improving access to the region’s rich tuna resources for national food security through innovations to make tuna from industrial catches more available to urban communities and installing anchored fish aggregating devices to help coastal communities catch more tuna; (ii) developing fisheries for small pelagic fish species (e.g. mackerel and pilchards); and (iii) expanding freshwater pond aquaculture in locations where communities are likely to have poor access to tuna, e.g. inland Papua New Guinea; and
- Research and innovations to maintain the appeal of coastal areas for tourism to increase the disposable income of coastal communities.

Expected impacts of investments:

- The proposed investments will help make adaptive responses by policy makers, managers, fishing communities and enterprises faster, less expensive and more flexible. In particular, these investments should also help ensure that:
- Well-managed tuna resources continue to make major contributions to Pacific economies;
 - Threats to vital coastal fish habitats and stocks are reduced;
 - Practical ‘no regrets’ adaptations for economies and communities are launched; and
 - The fisheries and aquaculture sector builds resilience not only to climate change but to a broad range of other drivers, especially the effects of rapid population growth and urbanisation.



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Above: PACE-Net Workshop
on "Fishery and Aquaculture" in Brussels
(March 2012).
J. Bell (SPC)
E. Pita (Tuvalu National Private Sector org.)



© IRD / LEOPOLD



CROSS-CUTTING ISSUES IN THE PACIFIC

Investments are needed to:

- Ensure healthy and clean resources (access to water, fish, crops) and genetic resources
- Match the research to the communities
- Develop practice in capacity-building (especially on how to make it effective)
- Highlight the importance of monitoring in all themes
- Use and develop knowledge
- Understand the importance of the use of models
- Involve all stakeholders from the beginning of projects (taking into consideration the community needs; also the women)
- Develop use of ICTs, databases and all existing data (plus analyse the currency of the data).

All of these issues are of vital importance for the populations of the South Pacific.

These recommendations were developed by the researchers in the workshops in the hope that they will be addressed, specifically by the institutional players.





Bi-regional dialogue



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4

PACE-NET CONFERENCES: ENHANCING THE BI-REGIONAL EU/PACIFIC DIALOGUE

Our first Bi-regional Dialogue Platform in Brisbane (July 2011) brought together 80 participants from ACPs (Africa, Caribbean & Pacific countries), OCTs (Overseas Countries & Territories), Australia, New Zealand and Europe. It focussed on the “efficiency of tools to foster bi-regional cooperation”. The event started with the restitution of work from the first two work packages of the PACE-Net project: listing Pacific organisations involved in science and technology (S&T), as well as a report on connecting research for S&T with development goals (see part 1 of this compendium). In spite of a need for further data, and to provide deeper analysis and interpretation in order to better profile research in the Pacific, this report allowed the audience to better understand the very specific situation of S&T research and development priority areas in the Pacific.

*PACE-Net Brisbane Conference
(July 2011)*



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From the discussions, the need for a database grouping such information was, to our knowledge, raised for the first time. The importance of regional organisations in the Pacific was acknowledged, and it was also recommended that PACE-Net be linked with equivalent fora between Europe and other regions (particularly the Caribbean area).

During the dialogue, the necessity of addressing critical issues in the Pacific, even if they do not directly fit EU research priorities (such as in agriculture or fisheries) was raised. As explained by I. White (PACE-Net EAB), “In many Pacific countries the focus is on survival and it is important that already long-identified Pacific priorities and needs be recognised and accommodated”.

After an introduction of the European Union's Framework Programme for research (FP7), A. Beuf (EC research officer) underlined in one of his presentations that even if the project is about priority setting through the analysis of S&T cooperation patterns and the mapping of key institutes, it is also on the roadmap of the project to analyse national policies towards global challenges.

The Pacific matters for the EU; is how A. Pascal Perez (EC, EEAS) started his presentation, entitled "Towards a renewed Pacific-EU development partnership", which summarised a range of challenges and opportunities for the EU to engage in the Pacific. He reminded the audience of the EU's considerable research capabilities in and relevant to Pacific issues (social and applied science); the EU's potential to promote investments and business linkages; and the wide ranging expertise and know-how on regional integration and policies, as well as its substantial financial resources to back the bi-regional partnership (with a focus on development and climate cooperation). Climate change, he added, "is an existential 'beyond environment' issue: its impact comes on top of development challenges faced by Pacific

Islands which are the most affected by climate impacts without having a direct responsibility for it". After the Memorandum of Understanding (MoU) on a "Joint Pacific-EU initiative on climate change" signed in 2011, there is room, he said, for cooperation towards a Plan for Action on climate change.

The issue of "research funds" versus "development funds" also emerged from the EC presentations, with a focus requested on "policy relevant research".

"Let us not be too late" was what Prof. R. Hynes (Vice Chancellor, UPNG) advocated in his dinner speech. "These crucial issues (climate change, use of natural resources) also provide an opportunity to come together to forge a collective response to these global problems. PACE-Net can be a key contributor to this process in the Pacific. We need to rise as one to face these challenges. However, Homo sapiens, as a generalist, has in the past usually responded more to major crises rather than having implemented disciplined strategic actions. The prognosis is extremely serious, to say the least", he concluded.



*Key Stakeholder
PACE-Net Conference
in Brussels (March 2012).
From left to right:
K. Hussey (ANU),
N. Lymberopoulou
(UNIDO-ICHET),
B. Lahui-Ako (UPNG),
J-M. Sers (EC).*

As part of the Brisbane platform's dialogue activities, themed discussion groups on **“Facilitating EU-Pacific networking, dialogue and collaboration”** were also held with a focus on:

- Bridging S&T and development funding instruments
- International cooperation projects: potential synergies and challenges
- S&T for development: opportunities and barriers in the Pacific
- Evaluating tools for bi-regional cooperation
- Capacity building (multipliers / contact points)
- Overcoming barriers to mobility and accessing FP7
- Ethical frameworks for research and collaboration

Linked to these topics, some of the platform participants' key conclusions included the:

- Necessity to improve communication and language translation between different groups and sectors – science, development, community, policy – as they all use different languages/lingo.
- Need to engage with local knowledge (including expertise, customs, ethics etc.).
- Importance of working within Pacific goals and priorities.

- Need for assistance with finding information about relevant mechanisms and programmes, and the importance of existing and new networks to provide this information. Regional “multipliers” (contact points who gather information) could support dissemination, rather than just local ones.

- Importance of sharing research outputs with the entire Pacific region, and the necessity to be creative in order to communicate the relevance of the research to the local people.

- Challenges with inadequate workforce skills, education and retention.

- Need for increased joint activities (PhDs, exchanges, meetings, infrastructure, projects etc.) between the EU and the Pacific, to increase international connections and input.

- Tyranny of distance – for intra-region in the Pacific, as well as with Europe.

- Issue that funding cycles are too short, as there is a need for longer term certainty for project initiatives, as well as career prospects.

- Need for a Pacific Academy of Sciences, to represent and advocate science in the region.

Key Stakeholder PACE-Net Conference in Brussels (March 2012).

From left to right: I. Azid (USP), B. Charma (USP), K. Amian (Humboldt Fd), R. Tamanikaiyaroi (USP), L. Falealuga-Leuelu (Tuvalu Embassy to the EU), C. Payri (IRD), L. Matainaho (UPNG), G. Lachut (EC), R. Banati (ANSTO).



The most important outcome of this first bi-regional event was probably to initiate a feeling among the involved stakeholders of belonging to a regional research community and a desire to embark on much stronger S&T relations between the two regions (EU and the Pacific).

The results of the thematic workshops (outlined in another section of this compendium), held at the Brisbane platform, together with the relevant tools to cope with the core needs, were fed into our next bi-regional dialogue that took place in Brussels, 21-23 March 2012, which was called the: “Pacific-European Stakeholder Conference - Strengthening PACE-Net Research, Development and Innovation (R,D&I) Collaboration to Find Common Solutions on ‘Climate Change Mitigation and Adaptation in Relation to Water, Agriculture, Natural Hazards, Fisheries, and Mid-Term Research & Innovation Policies in the Pacific’”.

REFINING PACE-NET GOALS

Participants at the very successful High Level Forum held on 23 March 2012 during the Second **PACE-Net Stakeholder Conference in Brussels** issued several challenges to the PACE-Net project. Mr Paul Ash, Deputy Head of the New Zealand Mission to the EU, as well as representatives of several Pacific Island Countries (PICs), invited PACE-Net project members to clarify the objectives of the project and what the expected benefits would be to those nations represented, as well to the European Union (EU). With such clarification, the PACE-Net Goals were refined as follows, to work towards:

- Strengthening bi-regional dialogue and planning on Science and Technology between Europe and the Pacific on global and regional priorities of mutual importance;

- Identifying research partnership projects that will address those priorities;
- Raising awareness of the critical importance of the Pacific region to global sustainability and the vulnerability of its island countries; and
- Implementing a science, technology and innovation policy framework for the Pacific with the leaders of the scientific community in the Pacific, and the support of the development partners.

*PACE-Net Conference in Brisbane (July 2011).
G. Ruecker (DLR),
C. Payri (IRD),
K. Daniell (ANU).*



Mr. Ranieri Sabatucci, Head of Division, Relations with the Pacific countries and region, European External Action Service (EEAS), started the day's debate and challenged all attendees. In his experience, he observed that, unlike the Amazonian Rainforest, the climatic and ecological significance of the Pacific was not widely recognised in Europe. For him, **it is the responsibility of all scientists engaged in the Pacific to raise awareness of the Pacific's global importance.** The EC needs to know more, to understand more, not only to tailor-make their support and to be better able to engage with small island States, but also to make sure that some of this knowledge can also be used to raise awareness. The global political dialogue will be increasingly focussed on the challenges but also the opportunities of climate change which is a cutting-issue. A lot of progress has been achieved since Copenhagen and Durban in terms of the EU and the Pacific island states' position and this political dialogue has produced some real, tangible changes. If climate change is an existential threat for many of the small island states in the Pacific, the response to it has to be comprehensive.

It is also very clear that the purpose of FP7 funding is to benefit EU citizens, EU researchers and EU industries. The issue raised by Pacific representatives of how the Pacific's needs and

priorities are incorporated in PACE-Net is still difficult to capture, even after two Platforms have discussed the issues. PACE-Net started and will continue to facilitate this dialogue.

Also, while there is huge potential for research cooperation with the developing countries (i.e. in the Pacific) there is a dearth of relevant information on how this can be supported. PACE-Net should find the best ways to help find and access the relevant information.

HOW TO MAKE THE PACIFIC RELEVANT TO THE EU?

It is a fact that the EU funds target development assistance per se. The concept of budget support (eligibility, assessment, negotiation, identification of priorities, support for national development strategies etc.) was then explained in detail to the dialogue participants. In this context, climate change is mainstreamed in the national budget and development strategy. Once again, the climatic and ecological significance of the Pacific is not widely recognized in Europe. Another recommendation from the EC was for Pacific stakeholders to better communicate, conveying simple but clear messages to them. The other requirement for the EC is to be able to monitor the effectiveness or their support. As D. Redcliff (DG DEVCO, EC) reaffirmed, "the Pacific region deserves attention".



Key Stakeholder
PACE-Net Conference
in Brussels
(March 2012).
From left to right:
I. Azid (USP),
P. Raharivelomanana (UPF),
B. Pelletier (IRD/GOPS).

2005 PACIFIC REGIONAL PLAN (REVISED 2007)

Pacific regional priorities, strategic objectives and initiatives are grouped under four key themes in the 2005 Pacific Plan for Strengthening Regional Cooperation and Integration (Pacific Islands Forum Secretariat, Revised 2007): Economic Growth; Sustainable Development; Good Governance; and Security. The plan does not mention Science, although technology is covered under “communication technology”. Indeed, as was identified at the Conference, the Pacific region and member countries do not have Science & Technology Plans and there is an opportunity for PACE-Net, together with other organisations such as UNESCO Small Islands and Indigenous Knowledge, to assist in their development. Despite the absence of a formal Science and Technology Plan, the strategic objectives and initiatives within the Pacific Plan and those within medium to long-term Pacific Island Country Sustainable Development Strategies, Plans and Vision statements are associated with major research questions. Some of these have been considered at the two PACE-Net Platforms: such as health; biodiversity; and fisheries, water, agriculture and forestry, and natural hazards in relation to climate change. **The opportunity therefore already exists to demonstrate that PACE-Net provides an opportunity to discuss and research issues of global concern.**

“The outcome from this project really must fit in the future national research agendas and help **establish a clear Pacific research agenda**”, said L. Matainaho (UPNG), “for example, USP has specific research priorities relating to regional economies and integration, and climate change. Those two things are both very high on the European agenda as well”.

Along the same lines, considering the unique marine and oceanic

dimension of the Pacific region and the way Europe is equipped with particular strategies with a logical framework concerning the sea (MSFD: Marine Strategy Framework Directive), as well as the way Australia and New Zealand (partners of the PACE-Net project) understand the importance of setting up a marine strategy of their own, setting up a **“Pacific Marine Strategy Framework” for PICs and OCTs**” could be another goal, proposed L. Loubersac (IFREMER) of PACE-Net.

INNOVATION

As part of the discussions, it was considered that the PACE-Net project could benefit more from the rich competence of the private sector (deeply involved in education, basic research) and explore opportunities with the private sector, which can have traditional links to academia. The project should also better link with Small and Medium Enterprises (SMEs). On the EU side, thanks to UNIDO, information can be better disseminated on regional economic integration with respect to the Economic partnership agreement.

What remains to be done practically in the PACE-Net project?

Experts have been working on the research, development and innovation needs, trying to be very careful during the workshops to aggregate them to a level where they can be communicated in policy-relevant terms. Yet it remains to be established how relevant this needs assessment is, specifically related to the EC thematic directorates’ work, for example, on climate, marine or fishery issues. There is also a need to separate the priorities into opportunities for pursuing the **scientific excellence agenda in terms of cooperation and the development agenda**; and therefore a need to involve more Pacific policy makers in PACE-Net events to ensure that there is a more equal balance.

H. Thulstrup (UNESCO) concluded by offering to undertake, in partnership and dialogue with PACE-Net, some stocktaking of the existing sectoral policies and to see what priorities and recommendations could be made to the Pacific Islands Forum. According to him, the existing local framework in development there could take care of a Pacific research strategy, providing, added J. Francis (CTA), that this initiative will be led by the Pacific country leaders themselves with the support of the development partners.

There was also a proposition from C. Hindmarch (NET-BIOME) who suggested that implementing an ERANET would be a powerful way of coordinating actions, specific actions, and also delivering concrete results. For G. Heinrichs (German Federal

Ministry for Education and Research) the next step for PACE-Net should be to link up a few of the best researchers and research institutes in the Pacific to the best research facilities in Europe. His ministry, he said, foresees offering small mobility grants based on excellence (seed funding), to better understand what research is going on in the Pacific and build its research capacity: “we need to be more ambitious (...), because by raising the level of the best research institutions in the Pacific, we are raising the rest too.”

This dialogue and progress on the proposals made during the first two stakeholder conferences will form a key part of the discussions at the next bi-regional dialogue in Suva, Fiji.

Key Stakeholder PACE-Net Conference in Brussels (March 2012).

From left to right:

N. Salden (DAAD), R. Sabatucci (EC), R. Smith (Nottingham Trent University), H. Thulstrup (UNESCO), J. Vanualailai (USP), T. Leuelu (Tuvalu Embassy to the EU), L. Loubersac (IFREMER).





PACE-Net Bi-regional Key Stakeholder Conference in Brussels (March 2012)



Capacity-Building



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CAPACITY-BUILDING & NETWORKING

The European Commission (EC) has a large budget for research, which is quite open to supporting international cooperation. The PACE-Net project was designed to help build understanding on how the EC delivers its research programs and the opportunities for researchers in the Pacific to access them. To this end, a section of the PACE-Net project was dedicated to capacity building and partnering:

- 1 > to enhance EU linkages with regional researchers and institutions in order to drive Pacific research agendas; and
- 2 > to enhance the capacity of Pacific researchers and institutions to participate actively in FP7 research opportunities.

The specific objectives were:

- To identify strengths and drawbacks of the current EU-Pacific S&T cooperation, to capitalise on experiences and to identify possible future initiatives that stimulates S&T cooperation with Pacific within FP7 and beyond.
- To identify and analyse key cross-cutting issues considered as key transversal challenges for S&T in the Pacific such as brain drain, ethics in applied research through public private interfaces, bringing evidence into policy-making and the popularisation of science.
- To examine current barriers to FP7 participation and to identify a rationale for greater inclusion of developing countries into FP schemes.
- To provide the PICTs with the information resources, build the skills of Pacific S&T actors, and raise awareness on the European Framework Programme.

WHAT HAS BEEN DONE SO FAR

In order to facilitate EU-Pacific networking, dialogue and collaboration, presentations, as well as themed discussion tables, were organised during our bi-regional conferences (see the bi-regional dialogue section of this compendium for the topics covered).

This first major bi-regional platform was combined with EU Seventh Framework Programme (FP7) Info days in the Pacific (Brisbane, Australia) with a focus on the efficiency of the tools (existing means of cooperation such as People, Ideas and Capacities EC programmes) to foster bi-regional cooperation and increase participation in the core activities of FP7. Major regional BILAT programmes (FEAST for Australia and FRENZ

for New Zealand) were presented to the participants. Barriers to participation in FP7 (such as the low success rate, the high costs related to proposal preparation, the difficulty in searching for partners or in matching research interests with the topics of the calls) were also identified during this event. A useful way to consolidate networks and existing ones at the regional level before accessing to large European-style projects was mentioned: the “seed funding” i.e. inputting of small amounts of money to help researchers talk together and exchange ideas before any call of proposals (I. White, PACE-Net EAB [1]).

Specifically related to the Framework Programme, a range of reasons for **why EU and Pacific institutions might want to participate** in FP7 were given by APRE, including: research

[1] PACE-Net
External Board
Adviser

excellence; fruitful collaborations during and beyond the project; international marketing; widening of the range of services offered; entering into new markets and placement in highly specialized market niches; increase in revenues; increase in employment; social benefits; pre-financing; and more favourable conditions for private investments in R&D.

Yet, there are also a number of **barriers for the Pacific to Participate in FP7**. The major obstacle identified as part of the PACE-Net Brisbane Platform's discussion was the low awareness about FP7. Other barriers noted during a brain-storming exercise included the:

- “Jungle” of legal & financial rules and procedures;
- Huge volume of documents to browse (Work Programme, guide for applicants, evaluation procedures, financial guidelines...);
- Low success rate of applications;
- High costs related to proposal preparation;
- Partner search is not easy and Pacific researchers lack visibility for the EU;
- Insufficient matching with research topics in calls;
- Administrative aspects of the project (management, socio-economic impact of research);
- Time difference impedes a little the work between Europe and the Pacific region;
- Lack of coordination with the consortium; and
- Language barriers (including EU research and administration vocabulary).

Considering these barriers, discussion also focussed on how they might be overcome and **how to improve Pacific participation in FP7**, including the need for: assistance with finding information about relevant mechanisms and programmes,

and the importance of existing and new networks to provide this; regional multipliers (not just local); and increased joint activities (e.g. PhDs, exchanges, meetings, infrastructure, projects), to increase international connections and input.

At both conferences, **Funding Opportunities and Networking events** were also organised to provide an overview of many of the programmes (see list below) that may be accessed to support increased collaboration between Europe and the Pacific. During these events, a range of European financial instruments was presented (programmes for research, education, capacity building, networking and mobility, as well as experiences from

Right: C. Glynn (Euro-Research Support Ltd) and a colleague from Massey University



similar regions) and discussed, in order to allow participants to understand their purposes and the eligibility requirements, as well as to equip participants with 'hooks' upon which they could hang ideas for cooperation.

During the questions/answers sessions that followed the presentations, further details on the **EU framework programmes**, on the **Marie Curie Actions** and on the **ASEAN programme** were provided to the participants. There was information and

Funding Opportunities and Networking presented in the framework of PACE-Net

- FP7 short introduction (Armand Beuf, EC DG Research)
- Towards a renewed EU-Pacific development Partnership (Alfonso Pascual Perez, EC EEAS)
- FEAST & FRENZ funding & support programmes (Rado Faletic, FEAST)
- Marie Curie actions (Rado Faletic, FEAST)
- Cooperation Australia/Europe (Graham Rankin, Australian Government)
- Presentation of best practices: ENLACE/EUCARINET projects (Caterina Buonocore, APRE)
- SEA-EU-Net – South East Asia INCONET (Christoph Elineau, IB of the IBMF)
- EU-ASEAN S&T policy relationships: Process steps and lessons learnt for the EU-Pacific relationships (Jean-Michel Sers, EC)
- EU-Pacific partnership and its perspectives: European External Action Service (Ranieri Sabatucci, EC)
- EC tools for coordination of national programmes – FP7 and beyond (Ivan Conesa Alcolea, EC)
- Marie Curie Fellowships and the Pacific (Carole Glynn, ERSL)
- The IDEAS Programme (Manuela Schisani, APRE)
- Funding opportunities for the Pacific from the European Investment Bank (Flavia Palanza, EIB)
- Exzellenz verbindet – be part of a worldwide network: The Alexander von Humboldt Foundation (Katrin Amian, AvH)
- Short Remarks on National Research Funding and International Cooperation: The German Research Foundation (Christoph Mühlberg, DFG)
- Funding opportunities of the German Academic Exchange Service (Nina Salden, DAAD)
- UNESCO: Facilitating science, technology, capacity development and innovation policy partnerships (Hans Dencker Thulstrup, UNESCO)
- Funding opportunities for the Pacific through UNIDO Technical Assistance (Christophe Yvetot, UNIDO)
- Energy and environmental aspects of Hydrogen and related funding opportunities (Nicholas Lymberopoulos, UNIDO-ICHET)
- Funding opportunities from the Technical Centre for Agricultural and Rural Cooperation ACP-EU (Judith Francis, CTA)

training on the EU framework programmes: about deadlines and duration, about Horizon 2020 requirements for EU partners but, most of all, about the way the Pacific needs could be fed into the next calls. Topics released every year are decided on by the commission that are related to challenges foreseen in each specific field: it is principally to look at single work programmes and adjust them to the needs of the Pacific; a relevant question was “how to join a consortium that has a specific interest for the region”?

In the Brussels dialogue, a number of issues were then treated in greater detail by the high-level panel on the final day. Specifically, the concept of budget support of the EC External action service was explained by G. Lachut (EEAS, EC), who was questioned about **why research in the Pacific has never been funded by the EEAS.**

Mr. E. Pita, a delegate from the Tuvalu Government, also asked Ms Lachut if **Tuvalu’s (and other Pacific nations’) Exclusive Economic Zone** would still be recognised if their land is submerged. Although there is still no formal answer to the question, it was interesting to hear that the EC is working on the issue – as well as all other partners of these countries – especially on the legal level.

I. Conesa Alcolea (DG Research & Innovation, EC) then spoke on the **participation of private companies in ERA-Nets**, which is possible if the latter provide their own funds. Moreover, he also recommended carefully reading the H2020 proposal in which there will be something new for the developing regions, which then give OCTs and autonomous regions the possibility to cumulate two sorts of funding; one for development for regional capacities, and the other for research.

It was also acknowledged that poor attempts have been made up until now to promote the **Marie Curie fellowships** through the Pacific region; however, as explained by C. Glynn (Euro Research Support Ltd), it takes time to train people and disseminate the relevant information to all research organisations throughout the Pacific.

Speaking about the **DAAD programme**, K. Amian (AvH) clarified that the best way to benefit from the programme is to connect to a German partner university (with the view of exchanging students and staff, or developing together joint study programmes with the Pacific region). It was further noted that DAAD fellowships are not for countries but only for individuals (from everywhere). Up until now, no one from the Pacific has been involved in these programmes, but this can change.

Linked to the question of the **competitiveness of funding organisations**, C. Mühlberg (DFG) answered that DFG, as well as DAAD, focus on post-doctoral studies, whereas the other organisations focus mostly, if not only, on pre-doctoral studies and the success rates for these organisations (as well as the Humboldt Foundation) are rated as good.

On the issue of the **unbalance of focus, in favour of Australia and NZ (strong research nations)**, when PhDs are so much needed in the South Pacific countries as well, the idea, said Mr. Mühlberg, is to have joint or international research training groups to develop “structured PhD training” through bilateral contacts all around the world. He also underlined that, in fact, it is a token of performance to get to know interesting people, through literature, through international contacts and conferences. And,

of course, if there are strong links with strong organisations, then in each and every individual case, it is the strength of the researchers that counts. He further specified that “in order to develop our relations beyond the strong science nations, we try to emphasise cooperation with developing countries as well. Now, in only a few developing countries there is a research council or research funding organisation. Nevertheless, on the individual basis, we can give the kind of support already mentioned”.

Talking about other networking opportunities in the Pacific, H.D. Thulstrup (UNESCO) stated that New Caledonia and French Polynesia were currently not involved in the **Networking university consortium** [2] which is an independent body of its own right and a dynamic growing organisation (further contact details will be provided at the Suva conference). He also confirmed that the LINKS programme engages with the Pacific Diaspora to capture indigenous knowledge.

On a different topic, as requested by one of the participants, J. Francis (CTA) detailed the **CTA position on the use of genetic modification probes**. He noted that CTA does not have a position on this *per se* but has set up biotechnology experts across the ACP region, together with EU colleagues working on the ACP position on biotechnology.

Also speaking on the challenges of innovation development, C. Yvetot (UNIDO) confirmed the **possibility to implement EU-ACP projects under the relationship agreement with the ACP secretariat** and offered to help with this process, if need be, in designing the development component and in boosting the local private sector to benefit from the trade liberalisation (opening the borders for products from EU or from ACPs).

Related specifically to the capacity-building agenda, it was stressed that more widespread **information and training on FP7/H2020 are needed**: about deadlines and duration; about requirements for EU partners; but most of all, about the way the Pacific needs could be fed into the next calls. As specified during presentations on Funding & Networking (Day 1 of the Brussels Conference), OCTs will be given the possibility to participate in Horizon 2020, and possibilities to implement EU-ACP projects under the relationship agreement with the ACP secretariat should be explored. “The EC has a large budget for research, which is quite open for international cooperation, and EC delivering modalities are constantly improving and getting simpler”, added Mr Laurent Bochereau (DG Research at EC). We have to ensure the ability from both sides to fulfil this requirement. J. Vanualailai (USP) reasserted the will of the Pacific Island States to take up the challenge.

There is a need to train multipliers further (i.e. “key individuals”) in main research institutions in the Pacific who know about research in their organization and who will also have an idea about the opportunities that exist from Europe and beyond. Training those individuals to be mindful about seeking information on new opportunities as they arise, and how best they can advise their colleagues on engaging with the programs, is a time consuming process and it is important to mobilize these people because then it becomes possible to access many more individuals across institutions.

[2] Cf. Presentation on the PIURN (Pacific Islands Universities Research Network) at the PACE-Net Suva Conference (March 2013).

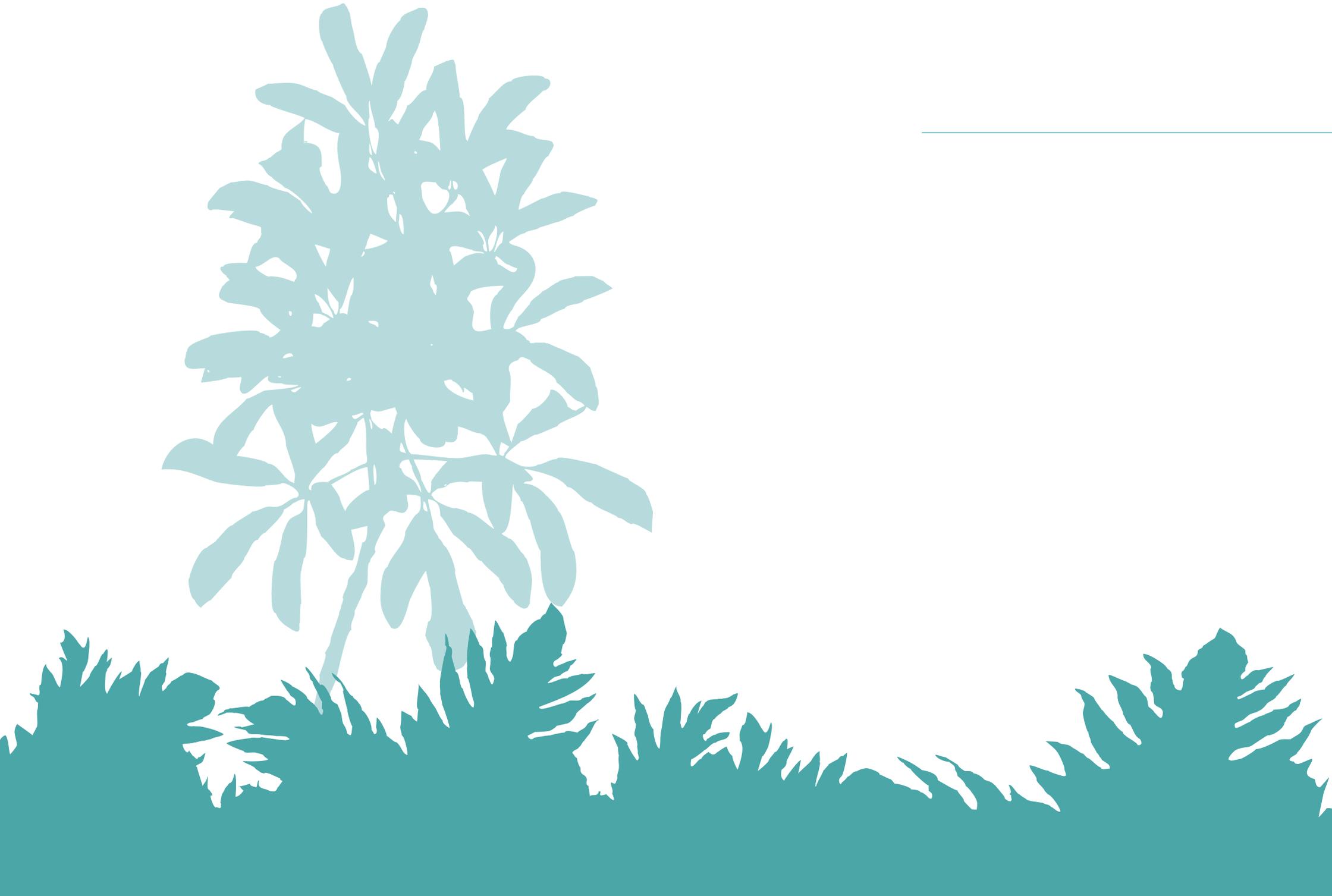
In response to this need which had also been foreseen in the design of the PACE-Net project, **INFO Days and Multipliers training** were organised. The objective of this task was and still is to build regional capability in FP7 engagement through the provision of information, tools and strategies to researchers and information multipliers in the Pacific region, in order to increase the participation of Pacific-based actors in FP7 projects and dialogue.

In the first instance, this objective was to be achieved through a **series of information and training events** by National Contact Points (NCPs) in New Zealand (Carole Glynn, CGC), representing FRENZ, Facilitating Research cooperation between Europe and New Zealand), in Australia (FEAST, the Forum for European-Australian Science and Technology Cooperation) and in Italy (APRE), to both disseminate information on FP7, and also help to develop local capacity to support researchers in the development of FP7 proposals. Whenever possible, these activities were held in conjunction with other PACE-Net events such as platforms, workshop or board meetings. These NCPs also provided relevant background information materials, such as relevant EC documentation, for INFO days, in coordination with PACE-Net's dissemination activities.

On November 14-17 2011, a four-day training session was undertaken in Auckland (New Zealand) for multipliers from USP (3 participants), UPNG, SPC, IRD, the University of New Caledonia and the University of French Polynesia to participate in FP7 capacity building activities. The multiplier programme was

arranged to allow training on the initial aspects identified in the first event, and included case study work, followed by meetings with three universities in Auckland (University of Auckland, Massey University and Auckland University of Technology), each active in research on and with the Pacific. A networking event was organized to allow researchers/organisations from around New Zealand to be introduced to a number of multipliers from the Pacific. The aim of this event was to strengthen Pacific researchers' access to local New Zealand programmes on and with the Pacific. This four-day training had a number of **outcomes**, including that participants: gained basic knowledge of applicable programmes to support EU-Pacific collaboration; and got to know some Pacific and EU-based multipliers who can identify local research capability. Experiences from the Pacific and other regions provided background information on the policy and other supporting actions in the process to strengthen EU-third country or region research, development and innovation collaboration. In addition, participants were offered, after the various presentations, the chance to have a face-to-face conversation with the speakers, in order to discuss specific issues of interest.

To continue this capacity building role, another similar session will be organized in conjunction with the third PACE-Net bi-regional Platform, which will take place in Suva (Fiji) from the 12th to the 15th of March 2013.



Towards Implementation and Future Actions



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6

PACE-NET KEY STAKEHOLDER CONFERENCE IN SUVA

DISSEMINATION OF PROJECT RESULTS AND NETWORKING TOWARDS IMPLEMENTATION AND FUTURE ACTIONS

Suva, Fiji 12th – 14th March 2013

The Suva Conference will be the last bi-regional conference of the PACE-Net project. The objective of the conference is to present the results of the whole three year PACE-Net project. We will discuss their implementation and future actions with stakeholders from policy, research, development, and innovation. The PACE-Net results include capacity development, analytical work on S&T capacity and priorities in the Pacific, and outcomes of two previous bi-regional PACE-Net conferences.

Our first PACE-Net conference in Brisbane (July 2011) focused on the “Efficiency of instruments to foster bi-regional cooperation”. The second conference in Brussels (March 2012) laid emphasis on a high-level dialogue on “Strengthening Pacific-European Collaboration in Research, Development and Innovation”. Both events also generated concrete policy relevant outputs on prioritizing sectoral challenges and elaborating strategic funding frameworks, and initiatives. The sectors considered were Biodiversity/Ecosystem Management, Health, Climate Change and Climate Variability, Water, Agriculture/Forestry, Fisheries/Aquaculture, Natural Hazards, as well as Mid-term Research, Development and Innovation Policies.

The PACE-Net results session will lead into a panel discussion on success stories of funding and networking at regional scale and with Europe. High-level representatives from different funding partnerships (e.g. private sector, development banks, governments, research networks) will present and discuss past & current research, development and innovation collaboration activities, as well as innovative planned activities between partners from the EU and the Pacific and within the Pacific. The scope, impact, sustainability, transferability of the partnership models will be discussed in view of which role science plays and could play in future collaboration activities.

The conference further includes an info-session on EU research and innovation framework programme tools and programmes and other mobility schemes to demonstrate opportunities for international collaboration between Europe and the Pacific. Presentations and discussions with key actors from the “Pacific

Islands University Research Network (PIURN)” are targeted to support intra- and inter- regional knowledge creation and sharing, and to further advance the development of the regional ST&I policy framework. Finally, we offer a full day field trip to outstanding Fijian research organisations to provide opportunities for insights into research facilities and exchange with researchers to further stimulate initiatives for collaborations.

The conference will be held at the University of the South Pacific (USP) in Suva, Fiji to allow a greater degree of networking between stakeholders within the Pacific and between the Pacific and Europe. USP is the premier institution of higher learning for the Pacific region, uniquely placed in a region of extraordinary physical, social and economic diversity. Established in 1968, USP is jointly owned by the governments of 12 member countries: Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu and Samoa. The USP region spreads across 33 million square kilometers of ocean, an area more than three times the size of Europe. The conference is targeted to

- Decision makers from the Pacific ACP countries and OCTs, Australia and New Zealand;
- European Commission and EU member states including relevant government ministers and permanent secretaries from the Pacific and EU representatives;
- Research organization representatives, research coordinators, outstanding scientists (engaged in research on climate change themes biodiversity, health, water, agriculture/forestry, natural hazards, fisheries/aquaculture in the Pacific);
- National level research organizations, coordinators, scientists;
- Funding organizations other than EU (national and multi-lateral funding organizations) including multi-lateral funding organizations and national funding organizations;
- Regional level research organizations/coordinators/scientists; and
- Non-Governmental Organizations (NGOs).



REFLECTIONS AND PERSPECTIVES

It comes to the External Advisory Board (EAB) to write the final words of the first sequence of Pace-Net. The work we completed over the last three years, the progress achieved, and the outcomes produced, are described in this booklet. It is important because it proves that considerable distances, major differences of languages and of cultures are not obstacles when people decide to talk about what unites them, the challenges they face and strategies to overcome them. We would like to emphasize the amazing spirit of goodwill and collegiality that were present over these last three years, the true fraternity at our different meetings and the capacity of both groups from the EU and the Pacific, to understand one another and to build collectively shared conclusions.

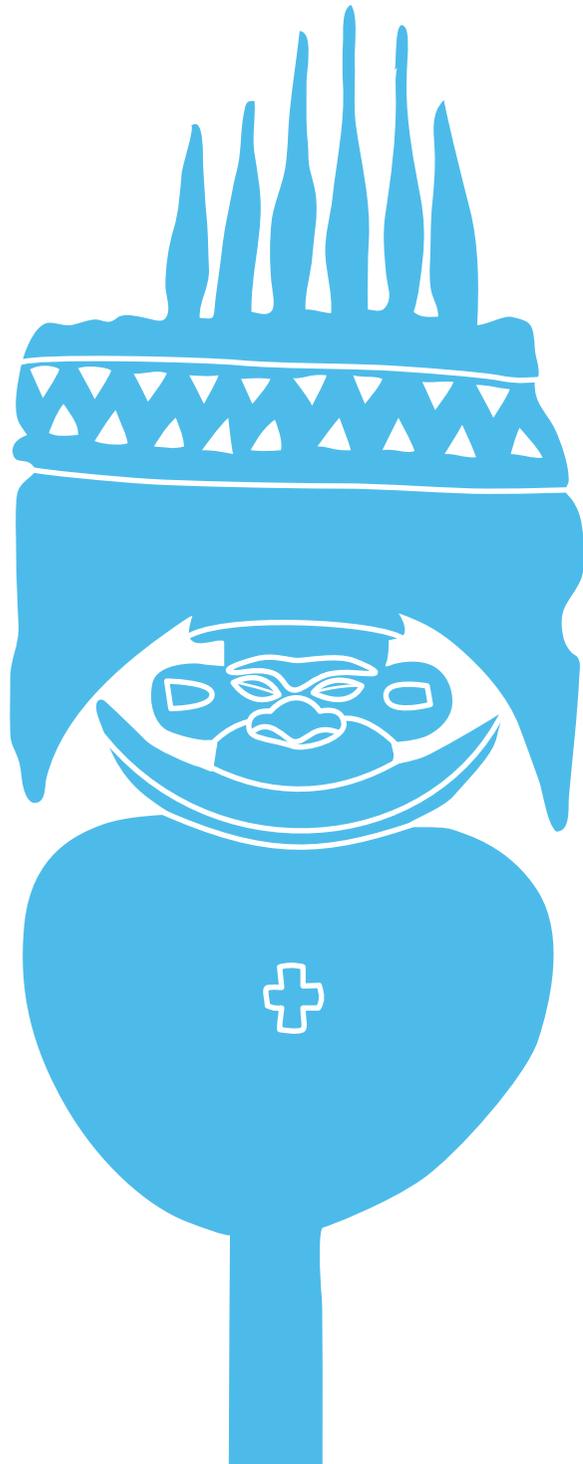
The influence of the Pacific on global climate, great ocean currents and world fish stocks demands international attention. The extreme vulnerability of Pacific island communities to natural and human-induced global change dictates that sustainability is a high regional priority. At both the international and regional levels, fundamental knowledge gaps remain. The key messages in the Introduction highlight that *“Scientists from the Pacific and Europe developed their perspectives on the priorities in research, development, and innovation in various thematic areas in the Pacific during several workshops in the Pacific and Europe.”* We have now come to the limits of our work as scientists. In the Pacific we need to make science a priority on the agendas of our governments. We need to confirm and to share with our populations that research is still a great intellectual adventure and that, as our ancestors did on their canoes, it is a journey that promises progress and happiness. In both cases we also know that sometimes, the objectives can be obscure and are very hard to reach. Unfortunately, not enough Islanders turn to research professions and this is prejudicial for at least two reasons. First, in this world, countries are engaged in a very strong competition with each other and the best weapon to

respond to this situation is economic growth and the creation of jobs. Second, our planet, like a canoe lost on the immensity of the Ocean, is not in such good health and we can enumerate the long list of threats that are not just a concern to the Pacific but to the world in general. There is therefore an imperative to raise internationally the global importance of the Pacific and the significant gaps in our knowledge.

Facing these global challenges, solutions lie in a concerted and collective effort between governments and their needs for research. Collaborative research in equal partnerships is a proof of solidarity in both short and long term. The Pacific has to be present in endeavours towards these frontiers. PACE-Net has shown the possibilities and the opportunities for support both academically and financially. Island nations need to seize the opportunities to engage and to build capacities in Science at the local and at the global level by building a Pacific research system to contribute constructively to the debate with unique Pacific perspectives and research. PACE-Net needs to be strengthened by political, multilateral support from the Pacific Island Countries and Territories (PICTs) and true engagement to make research a priority, to strengthen capacity and provide opportunities for the youth of the Pacific to join high level teams of researchers that are proud to bring the Pacific Spirit to solutions for a better world.

We would not end without expressing our great thanks to the European Commission first for the PACE-Net initiative, all scientists and key stakeholders for their engagement, and all partners for their collective efforts that demonstrated great generosity, vision, understanding and exceptional commitment.

Thierry Mennesson (Deva project) and **Ian White** (ANU)
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