

TABWEMASANA

Risej Projek – Research Project



Man we i raetem : Dr. Kirsten Davies – wetem sapot blong Endeavour Fellowship

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“Olgeta kastom fasin blong yumi istap foldaon bikwan folem ol bigfala jenis we istap raonem wol tedei. Ol samting olsem kompiuta, rod mo telefon, hem i mekem laef blong ol man i kam mo isi be yumi no mas lusum stampa kastom mo fasin blong yumi. Yumi mas padel wetem tufala han.”

Hae jif blong Sanma kaonsel blong ol Jif [supenatavuitano, kaonsel blong ol jif] Jif Sale Rani.

Santo, Vanuatu Eprel 2010.



“Our cultural values are being eroded due to globalisation. Modern impacts such as computers, roads and telephones are all good because they empower and improve lives but people should not lose their roots. We need to paddle with two hands.”

High Chief of Sanma Council of Chiefs (Supenatavuitano Council of Chiefs) Chief Charlie Rani

Espiritu Santo, Vanuatu April 2010

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Glossary

Garden	Place where food is grown
Intergenerational Democracy	An approach to community engagement and participation that requires the inclusion of citizens representing all age groups, recognising there are many quieter but equally legitimate voices which are rarely heard in government policy and planning forums. The foundation of ID is based on the principles of direct democracy and intergenerational equity which forms the basis of environmental sustainability (Brundtland 1987). ID aims to engage and motivate whole communities, from children to the elderly, in planning and managing their sustainable futures (Davies 2009).
Kastom	Religious beliefs and traditional Melanesian customs play an integral part in the day to day lives of most Santo residents. These inform environmental protection, attitudes, values, family and community structures, behaviour and participation (Cassidy 2004; ESTA 2010; Romulus & Lucas 2000; Taylor 2008) which are referred to in Vanuatu as 'kastom' and 'kastom law'. Kastom includes beliefs in spiritual powers such as 'tabu' and 'black magic'. Practicing Kastom law is the responsibility of the Chiefs.
Vanuatu Earth Care Association	VECA is a community based organisation located on Espiritu Santo Island, Vanuatu with (approx.) 2,007 volunteer members. VECA's primary objective is the cultural and environmental conservation of the island and to promote sustainable development, sustainable uses of resources, alleviate poverty and improve livelihoods.
ni -Vanuatu and ni-Van	ni- Van is the abbreviation for ni- Vanuatu which refers to the local people as the citizens of the land of Vanuatu
Santo	Abbreviation for the island of Espiritu Santo

Acronyms

ACFID	The Australian Council for International Development
AG	Australian Government
BOM	Australian Bureau of Meteorology
ESTA	Espiritu Santo Tourism Association
FEN	Financial Economic Network
ID	Intergenerational Democracy
MDG	Millennium Development Goals
UNIHRI	United Nations International Human Rights Instruments
USDoS	The United States Department of States
VCC	Vanuatu Cultural Centre
VECA	Vanuatu Earth Care Association
VG	Government of the Republic of Vanuatu
VMS	Vanuatu Meteorological Services
VNACCC	Vanuatu National Advisory Committee on Climate Change
VNSO	Vanuatu National Statistics Office
WHC	World Heritage Centre UNESCO
WHO	World Health Organisation
WRI	World Resources Institute

1. EKSEKUTIF SAMARI - BISLAMA

Tabwemasana resej projek hemi wan projek we i kamaot long las yia 2010 mo 2011 long Ripablik blong Vanuatu long aelan blong Espiritu Santo [Santo] we hemi bigfala aelan aot long ol 83 aelan long nesen blong Vanuatu.

Risej stadi ia i karem nem blong hem (wetem raet blong ol lokol jif) we i kam long haeies maonten long Vanuatu, Mt Tabwemasana, we hemi stap long aelan blong Santo. Total populesen blong Vanuatu hemi 234,304 be long Santo nomo hemi 34,388 [VNSOa, 2009]. Long populesen blong Vanuatu ol yangfala nao oli gat hae pesentej we hemi stat long 0 - 15 yia (MICS 2007). Risej stadi ia gavman blong Ostrelia nao i sapotem tru long wan awod blong Endeavour Research Fellowship we i wok tugeta wetem Vanuatu Eth Kea Asosiesen [VECA] mo Yunivesiti blong Saot Pasifik [Luganville Kampas] folem wan risej pemit we i kam long gavman blong Vanuatu. Projek ia i karem sapot mo involmen blong ol lokol jif wetem ol kaonsela. Risej projek ia oli mekem long bihaf blong komiuniti blong Santo, Vanuatu, we oli stap wok blong konsevem helti mo sastenabol sosial, kaljarol, ekonomik mo lokol envaeromen blong olgeta.

Ol sosial impak blong klaemet jenis ia nao hemi impoten samting insaed long risej ia long saed blong ol lukluk blong ol komuniti. Wan lukluk nao se ol aelan mo pipol blong Vanuatu istap long fored blong experiensem ol efek blong klaemet jenis. Raes blong si level mo ol strongfala disasta olsem ol flat, lanslaed [graon i folfol daon] erosen, drae taem mo harigen hemi exampol blong ol jenis blong envaeromen we i stap happen truaot long rijen (VG 2007). Sam long olgeta jenis ia hemi kamaot nomo tru long nomol klaemet saekel be igat pruf se klobol klaemet jenis tu i gat han insaed (Walther et al.2002) Ol bigfala jenis ia i mekem se naoia inomo gat wan kilia pikja long ol taem blong ol difren sisen mo hemia i afektem prodaktiviti blong akrikalja, hemi enkarejem ol rabis plans wetem animol mo plante rabis sik blong ol man (VNACC 2009). Bitim 75% long ol velej long Vanuatu oli stap kolosap long solwota mo oli stap eksperensem ol situasen olsem we solwota i bitim ples we i stap kasem (kostol erosen), mekem se samfala velej ia i mas muv go antap mo long hae graon. Ol man we oli live long taon oli depen long wota long graon (well) we hemi fres water, mo experiens mo problem se taem tumas ren mo pua drenege nao i stap spolem ol graon wota ia. (BOM 2006)

Ol mein tinktink long risej stadi ia i stap traem blong givim samfala kwik lukluk long rilesensip blong human envaeromen blong taem bifo, tedei wetem nia fiuja we ikam. Taem komiuniti istap adoptem mo long laef blong taon, hemi minim se hemi nomo stap dipen tumas long lokol wei blong laef, yumi save lanem sam impotan lesen long ol jenis ia speseli long kastom mo tradisen we hemi kavremap proteksen blong envaeromen (VCC 2007; Romulus & Lucas 2000; WHC 2010).

Blong mekem sua se igat faondesem blong eni fiuja risej projek igo gud, wan praktikel rikwaemen blong risej stadi ia hemi blong kapjarem or kasem ol ki fiuja tingting we i bes long lukluk blong komiuniti.

Ol objektif blong risej:

1. Wanem nao ol ki priorititi (ol strong tink tink) blong sastenebol fiuja blong Santo?
2. Wanem nao ol level blong konsen, save wetem lukluk long saed blong sosial mo envaeromentol efek blong klaemet jenis?
3. I gat ol difren saed blong lukluk long sosial, kaljarol, ekonomik mo envaeromen bitwin long rurol mo erben?
4. Model blo Intejeneresenol Demokrasi long projek ia hemi aplae stret?
5. Wanem nao samfala sastenabol fiuja step we i save helpem Santo?

Tru long toktok wetem wan wan man, ol mein grup wetem ol sevei we i tekem ples long Luganville mo Port Olry ol infomesen oli ansa long faev fala objektif blong risej. Long wan komuniti metod we oli kolem se Intejeneresenol Demokrasi (ID) ia nao oli iusum we hemi

involvem ol man ples stat long eit yia kasem ol olfala. Man we i mekem risej ia hemi bin divelopem ID long yia 2006 mo hemi traialem long samfala komiuniti long Ostrelia, stadi hemi ofarem fesfala janis blong wan intanasonal traial blong luk kolosap mo long ol aplikesen metod long wan rili difren kalja mo ples we hemi Vanuatu. Projek ia hemi putum wan spesel hevi blong kasem ol tinktink blong ol yang pipol mo ol woman.

Total namba blong ol man we oli patisipet long stadi ia hemi 444 we aot long olgeta 237 (53.4%) hemi ol man mo 191 (43.0%) hemi ol woman (Tebol 1).

Tebol 1: Namba mo genda we oli patisepet

Genda	inteviu	Grup we oli fokus long hem	Sovei Respondens	Total
Man	21 60.0%	61 46.2%	155 56.0%	237 53.4%
Woman	13 37.1%	61 46.2%	117 42.2%	191 43.0%
Olgeta we oli no ansa	1 2.9%	10 7.6%	5 1.8%	16 3.6%
Total	35 100.0%	132 100.0%	277 100.0%	444 100.0%

Majoriti blong ol man we oli tek pat oli ol yangfala pipol. I gat total blong 158 (35.6%) we yia blong olgeta i stat long eleven (11) i go kasem 20 yia, 94 (21.2%) olgeta blong 21 i go kasem 30, 63 (14.2%) mo olgeta blong 30 i go kasem 40 mo 45 (10.1%) olgeta 41 i go kasem 50 yia (tebel 2)

Ol mein tink tink blong stadi ia oli rispon long risej objektif:

1.1 OBJEKTIF 1: OL MAIN PRIORITI BLONG WAN SASTENBOL FIUJA BLONG SANTO

I gat wan total blong 180 (40.5%) man we oli putum ol isiu blong envaeromen olsem wan bigfala fala konsen. Ol isiu blong ekonomik wetem sosial tugeta ikam nambatu (16.0%) be tufala ikarem haf nomo long konsen we ikamaot long envaeromen. Isiu blong Kaljoral hemi kam nambatri konsen (11.5%). Olgeta we igat 11 - 50 yia nao oli konsen moa long envaeromen taem yu komperem wetem ol narafala eij grup. Olgeta we oli gat 51 - 60 yia oli konsen moa wetem ol sosial isiu. Ol pikinini we oli gat 0 - 10 oli konsen moa long ol kaljorol isiu. Hemi kilia nomo se igat ol difren lukluk blong man mo woman long saed blong kaljorol mo ekonomik isiu. Oli I faenem aot tu se ol man oli gat moa konsen bitim ol woman long tufala isiu ya. Tugeta man mo woman oli kat semak konsen wetem 40.7% long ol woman mo 40.4% long ol man we i jusum isiu blong envaeromen olsem main konsen. Ol man we oli stap long taon (43.9%) oli gat moa konsen long isiu blong envaeromen bitim ol man we oli stap long rurol (36.7%). Semtaem tu ol man we oli stap long taon (17.7%) oli gat moa konsen long isiu blong sosial bitim ol man we oli stap long rurol (14.0%).

Olgeta main isiu we ikamaot long ol infomesen we oli kotektem hemi olsem: nogat gud lidaship, hae kost blong edukesen, ol yangfala oli no go long skul, inogat helt edukesen, ol misandastanding bitwin long ol difren kalja, nakaimas, faet blong graon we I lid igo long vaelens, rep, mo domestic vaelens, abius blong draK, lo standed blong laef, nogat wok, nogat saplae blong sef o klin wota, sik suka igo antap wetem gud sastenabol rilesenship long saed blong sosial wetem envaeromen. Ol olfala pipol long vilej blong yumi oli bilif se laef blong ol yangfala tedei hemi mo taf bitim taem blong olgeta bifo. Ol yang woman mo gel oli toktok plante long fraed blong olgeta long saed blong rep. klaemet jenis hemi kam olsem wan nambawan konsen blong ol man Santo. Sam fala mein konsen we ikam antap we ol patisipen oli tokbaot hemi: Taedel wef, saeklon, etkwek, sunami, wetem weta paten we istap jenis. Oli toktbaot se ol weta paten jenis ia we oli no kilia gud oli afektem plante sekiuriti blong kakae

mo graon istap lus. Ol patispem oli tokbaot tu ol rabis samting olsem toti plastic mo karesin long envaeromen mo ol problem blong hao yumi manejem toti.

1.2 OBJEKTIF 2: LEVEL BLONG KONSEN, SAVE MO LUKLUK LONG SAED BLONG SOSIAL MO ENVAEROMEN EFEK BLONG KLAEMET JENIS

Klosap 29.3% oli konsen tumas long klaemet jenis. 23.9% oli konsen mo 19.1% oli konsen bitim mak olgeta. I gat smol man nomo (11.0%) oli gat smol konsen mo (7.2%) oli no konsen nating long klaemet jenis. Yumi luksave nomo se ol olfala nomo we oli gat 51 yia igo antap oli gat bigfala konsen long klaemet Jenis. Yumi notisim tu se ol yangfala we oli gat 0 - 30 yia olgeta nao oli showem se oli gat bigfala konsen. Ol man nao oli konsen moa bitim ol woman. Ol man we oli stap long taon nao oli konsen moa bitim olgeta we oli stap long rurol.

Sovei ia i askem ol man we oli stap givim ansa blong oli putum ol save blong ol long saed blong klaemet jenis long ol difren level. 28.6% we hemi bigfala namba oli putum save blong olgeta long 'avrej' namba tu long hemia oli putum save blong olgeta long level blong 'smol nomoa'. Bitwin olgeta long rurol wetem taon, olgeta long taon nao oli gat moa o gudfala save long klaemet jenis bitim olgeta long rurol. Be long narasaed lukluk olgeta long rurol oli talem se save blong olgeta long klaemet jenis hemi bigwan moa bitim olgeta long taon.

Oli bin askem ol man sipos efekt blong kalem et jenis hemi wan problem naoia o long nekis 50 - 100 yia o nogat. Bitim haf (54.1%) oli talem se oli bilif se hemi wan problem 'naoia'. Andanit long long namba ia (17.8%) oli talem bambai igat problem nomo long nekis 50 yia. I gat wan smol grup (7.7%) oli bilif se bambai klaemet jenis bae ino wan problem. 59.5% long ol man long taon oli talem se klaemet jenis hemi wan problem naoia komperem wetem 47.8% long olgeta long olgeta we oli stap long rurol.

73.9% long ol man we oli soveim olgeta oli luksave samfala jenis we oli tink se hemi risal blong klaemet jenis. Wan smol namba (11.3%) oli ansa 'no' mo 4.7% oli 'no save'. Oli faenem aot se ol ansa olsem oli kamaot long everi eij grup wetem hae wan nao ikamaot long olgeta we oli gat 0 kasem 50 yia. Olgeta we yia blong olgeta istat long 51 kasem 61 plas yia, plante oli talem 'no' nomo long kwesten antap.

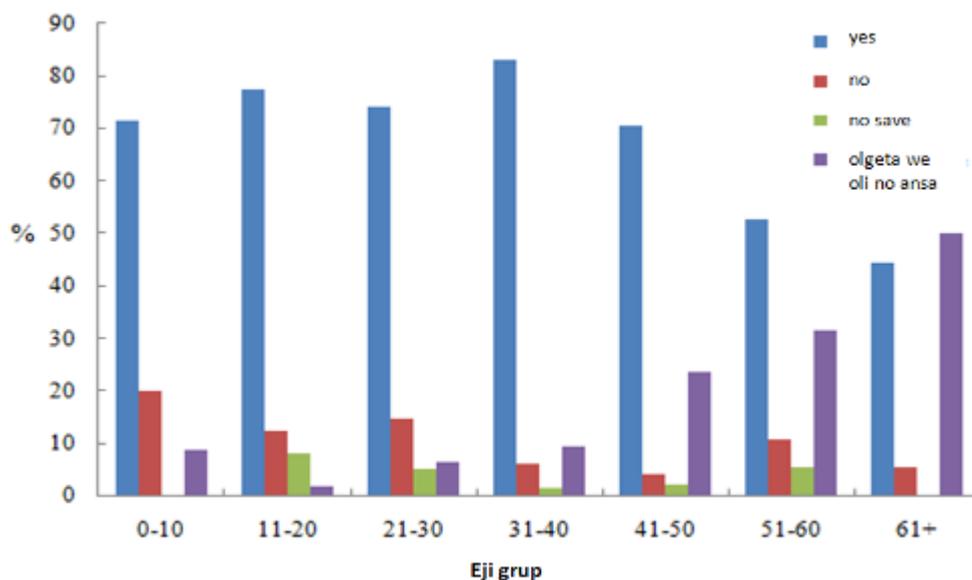


Fig 1: Ol kaen jenis we ol eij grup oli ting se klaemet jenis i kosem

84.4% pipol long taon wetem 61.8% pipol long rurol oli ansa 'yes' se oli notisem samfala jenis we oli ting se kalem et jenis i kosem. 46.8% pipol long taon wetem 20.3% pipol long rurol oli bilif se igat

jenis long klaemet wetem weta paten. Ol man long taon oli notisem se igat moa jenis long graon wetem fasin blong man olsem risal blong kalem jenis. Moa man long rurol (34.8%) oli no bin ansa long kwesten ia bitim ol man long taon (19.0%).

Long saed blong kwaliti blong ol ansa we ikam long ol man blong rurol wetem taon, tugeta igat bigfala konsen long efekt blong klaemet jenis. Oli diskraebem weta paten se inomo kilia blong luksave wea nao ol difren sisen oli stat mo finis. Bigfala konsen blong olgeta nao istap long saed blong sikiuriti blong kakae olsem wan risal blong ol wei blong planem kakae mo hao saplae blong kakae istap go daon. Ol samting ia i mekem se plante famli i dipen tumas long ol kakae blong stoa.

Long namba blong ol ansa we ikam oli bin askem blong ol man ilo givim tingting blong olgeta long samfala jenis we i happen long Santo we oli ting se klaemet jenis i kossem. 44.8% long ol ansa oli putum se 'solwota' nao hemi karem praeoriti. Folem hemia paten 'blong klaemet mo weta' i gat 34.5% long ol ansa. 21.2% oli ansa se graon hemi kam namba tri praeoriti. Moa man long eij blong 31 kasem 61 plas oli luk se igat jenis long 'solwota', 'paten blong klaemet mo weta' kemperem wetem ansa blong olgeta andanit long fesfala grup. 26.8% oli no givim eni ansa.

Long kwalitetif data konsen blong level blong solwota hemi bigwan from hemi stap fosem ol man we oli stap kolosap long solwota blong muv igo antap long hae graon, hemi mekem olgeta oli lusum kaljoral mo tradisenal koneksen blong olgeta wetem graon. Oli tokbaot how level blong solwota ikam antap tumas mo istap washem aot sanbij, koral, wetem ol tri mo graon we oli usum blong planem kakae. Oli shoem plante konsen long saed blong ol disasta olsem: taedel wev, hevi ren, drae taem, etkwek wetem mo jenis long ol sisen. Tugeta ol man long rurol wetem taon oli notisem se igat tumas mosquito from tumas ren we i kontribiut long ol wota we oli no ron mo oli gat ol rotten lif mo stick insaed.

1.3 OBJEKTIF 3: TAON MO RUROL TINKTINK KONSENEM SOSOL KALJA, EKONOMIK, MO ENVAEROMEN SAED

Long namba risal yumi luk se plante ansa oli shoem se 'famli, frens mo komiuniti' wetem 'famli, frens mo envaeromen' ia nao oli fomen wan besik rilensenship fom. Tufala opsen ia i karem ikwel sapot long 37.2% long ol ansa. Wan smol grup nomo i putum 'envaeromen' se hemi importen rilensenship. Ol pikinini we oli gat 0 kasem 10 yia nao oli putum 'famli, frens mo komiuniti' olsem mos impoten rilesenship blong olgeta. Olgeta we oli gat 21 kasem 61 plas yia oli putum 'famli, frens mo envaeromen' olsem impoten. Olgeta we oli gat bitim 61 yia nomo oli kat mo konsen long envaeromen bitim olgeta eij grup andanit. Semfala grup oli putum smol Impotens nomoa long 'famli, frens mo komiuniti'. Ino gat bigfala difrens tumas long ansa blong ol man mo woman long saed blong envaeromen, 12.2% nomo long ol man mo 4.5% long ol woman oli gat konsen long envaeromen. 46.0% blong taon mo 27.1% blong rurol oli putum olsem praeoriti 'famli, frens mo envaeromen tugeta'. 13.0% blong rurol oli putum praeoriti long envaeromen kemperem wetem taon we hemi 5.1%. Long saed blong kwaliteitif risal, kolosap everi ansa long taon mo rurol oli lukluk antap long ol gudgudfala samting blong Santo. Plante long olgeta we oli ansa oli talem se oli laekem ol bush, ol sanbij, solwota, pijin mo animol, maonten, ol frenli pipol wetem ol velejes. Bigfala tingting we everiwan oli sherem hemi pawa blong Santo blong prodium kakae.

Long saed blong kwantiteitif data olgeta ansa oli shoe mol difren aria we ol man oli filim se oli koneksen wetem. Bitwin long rurol wetem taon oli faenem se 26.1% long rurol oli putum praeoriti long ples we famli istap long hem kemperem wetem 16.5% long taon. Mo pipol long taon (13.1%) oli talem besik koneksen blong olgeta long wol bitim olgeta long rurol (3.4%).

Long kwalitetif risal majority long ol man we oli intaviu oli filim se komiuniti wetem envaeromen oli gat strong koneksen. Hemia nomo from hao oli liv evridei. Envaeonmen hemi impoten tumas long olgeta from hemi provaedem ol besik nid blong olgeta long saed blong kakae, haus mo medsin. Ol mein koneksen ia i shoem histori, tradisenal, spirituel, kaljoral mo sosiel. Palnte oli eksplenem hao graon, kastom mo laef blong olgeta oli sem samting nomo, oli no difren tumas long nomol

envaeromen mo hao rilenship ia hemi setem ol sosial valiu wetem wei blong mekem samting. Evriwan oli tokbaot strong risponsabiliti blong olgeta blong protektem mo prisevem graon.

Long saed blong kwaliteitif risal ol man we oli intaviu oli tokbaot ol bigfala jenis bitwin komiuniti wetem envaeromen. Oli talem se olgeta rison blong jenis ia oli kam olsem risal blong ius blong mobael fon mo intanet, muvmen long rurol go long taon, lusum tradisenol kastom mo ius blong mani mekem se igat jenis long wei blong laev mo system blong valiu. Ol jenis ia oli kosem bigfala konsen be majoriti blong ol man oli bilif se oli save tekemaot ol gudgudfala wei we I mekem sua se oli stil save mentenem koneksen blong olgeta wetem envaeromen. Majoriti blong ol patisipen oli bilif se tradisonal save blong olgeta isave helpem ol blong sastenem komiuniti wetem envaeromen, from hemi pointem aot ol gudfala fasin blong laef. Rod blong ajivim hemia hemi tru long paowa we ol jif oli gat blong wok tugeta wetem ol han blong kavman.

1.4 OBJEKTIF 4: HAO YUMI SAVE APLAEM INTEJENERESENOL DEMOKRASI (ID)

Projek ia hemi provaedem wan opotiuniti blong testem intejeneresenol demokrasi [ID] long wan intanasonal steij we bifo hemi bin ius nomo long Astrelia.

Ol risal blong sovei we i bes long eij i go olsem:

Ol yang pikinini stat long 0 kasem 10 yia oli putum hae impotens long koneksen blong olgeta long 'famili, frens mo komuniti' be olgeta we oli gat 21 kasem 61 yia plas oli putum semak hae impotens long 'famili, frens mo envaeromen'. Evri eij grup oli putum low impotens long envaeromen be i jenis long olgeta we oli gat ova long 61 yia. Olgeta we eij blong olgeta istat long 31 igo anta poli shoem strong koneksen wetem place we oli stap long hem. Olgeta we eij blong ol istat long 11 kasem 30 yia oli gat moa atajmen long 'ples we famli istap long hem befo mo tedei'. Olgeta we oli gat 21 kasem 30 yia oli no ataj tumas long 'wol we mi stap long hem'. Olgeta we eij blong ol istat long 41 kasem 60 yia oli pointem aot se oli no 'fil ataj long any ples'.

Ol yangfala we yia blong olgeta istat long I I kasem 11 - 50 yia oli gat hae level blong konsen long envaeromen bitim ol narafala eij grup. Olgeta we oli consen plante lo sosial issue hemi olgeta we oli gat 51 kasem 60 yia. Ol pikinini we eij blong ol istat long 0 kasem 10 yia oli konsen moa long kaljarol isiu. Ol yang pipol we oli gat 0 kasem 20 yia wetem olgeta we oli gat 51 kasem 60 yia oli ting se laef blong olgeta hemi 'stret nomo'. Ol pikinini we eij blong olgeta istat long 0 kasem 10 yia oli ting se laefstael blong olgeta i oraet nomoa wetem olgeta we oli gat 61 plas yia oli lukim laefstael blong olgeta olsem hemi 'no gud tumas'.

Olgeta we oli gat 51 yia igo antap oli gat konsen long klaemet jenis mo majoriti blong ol yangfala we eij blong olgeta istat long 0 kasem 30 yia oli gat bigfala konsen. Majoriti blong olgeta we oli ansa oli putum save blong olgeta abaot klaemet jenis long level blong 'smol' mo 'pua'. Taem oli askem long olgeta grup sipos oli ting se olgeta jenis ia klaemet jenis nao i kosem plante oli akri nomo oltaem. Moa long olgeta we eij blong olgeta istat long 31 kasem 61 plas oli bin lukim jenis long 'solwota', mo 'paten blong weta' bitim olgeta yangfala.

Risal we ibeis lo jenda:

Ol man (12.2%) oli mo ataj lo envaeromen bitim ol woman (4.5%). Ol woman oli mo ataj lo ol ples kolosap lo hom (15.6%) bitim ol man (9.8%). Oli faenem se ol man oli gat strong nasonal atajmen (15.9%) bitim ol woman (8.5%). Igat mo man we oli no filim eni kaen atajmen (19.6%) taem yu komperem wetem ol woman (13.1%). Igat mo man oli 'filim plante konsen' o 'oli konsen tumas' abaot olgeta impaks blo klaemet jenis taem yu komperem wetem ol woman. Taem oli askem ol man se wanem erias nao klaemet jenis I afektem bigwan, moa man (43.7%) oli putum feswan se 'solwora' bitim ol woman (39.7%). Moa man (24.1%) oli pointem aot ol jenis lo 'graon' bitim ol woman (17.6%).

Ol risal blo taon agenstem rurol:

I bin kamaot se majoriti blong ol man we istap liv long taon (46.0%) oli putum feswan se 'famli, frens wetem envaeromen tugeta' nao oli nambawan atajmen blong ol bitim olgeta long rurol (27.1%). Wan bigfala pesentej long rurol oli jusum o fevorem 'envaeromen' bitim olgeta we oli stap long taon (5.1%). I kam aot se plante pipol long rurol we oli ansa lo sovei (26.1%) oli fevorem 'ples we famli ibin stap o stil stap long hem' bitim olgeta long taon (16.5%). Wan bigfala pesentej blong ol man we istap Ingo taon (13.1%) oli nomineitem fes koneksen blong olgeta wetem 'wol' bitim olgeta long rurol (3.4%). I kam aot se mo long olgeta man long taon we oli ansa long sovei (20.7%) oli nogat koneksen nating wetem 'wol or ples we oli stap long hem' bitim olgeta blong rurol (13.0%). Olgeta blong taon we oli ansa long sovei (43.9%) oli mo konsen long ol isiu blong envaeromen bitim olgeta long rurol (36.7%). Olgeta long taon we oli ansa long sovei (17.7%) oli gat mo konsen wetem ol social isiu komperem wetem olgeta long rurol (14.0%). Bigfala lukluk se plante long olgeta long taon we oli ansa long sovei oli 'konsen tumas' o 'konsen' long isiu blong klaemet jenis komperem wetem olgeta we i ansa long rurol. I kam aot se moa pipol long taon oli rankem level blong save blong olgeta olsem 'avrej', 'gud' o 'igud tumas' bitim olgeta long rurol. Long narasaed blong hem plante moa long olgeta we oli ansa long rurol oli putum level blong save blong olgeta olsem 'ekselent' komperem wetem olgeta long taon. Wan bigfala namba blong olgeta long taon (84.4%) oli ansa 'yes' long wan kwesten wei askem long olgeta sipos oli bin notisem sam kaen jenis we olgeta ting se klaemet jenis hemi kosem, komperem wetem olgeta long rurol (61.8%). I kam aot se 46.8% long olgeta we oli liv long taon oli biliv se ibin gat ol jenis long stael blong weta mo klaemet komperem wetem 20.3% long olgeta we oli ansa long rurol. Olgeta long taon tu oli notisem plante jenis long kraon mo fasin blong pipol olsem risal blong klaemet jenis komperem wetem olgeta ansa we ikam long olgeta long rurol.

ID hemi bin wan gudfala tul blong kajem ol tingting blong ol yang pipol kasem ol olfala. Wan had samting long eksperiens blong Vanuatu hemi wei blong faenem ol olfala from se long Vanuatu ino gat haus blong kea long ol olfala mo oli no stap laev long taem tumas. Hemi isi blong kasem ol olfala long ol rurol velej from oli stap wetem ol famli blong olgeta nomo. Level blong edukesen, literasi mo problem blong toktok oli samfala problem wei fesem ol olfala patisipen. Hemi isi blong faenem ol yangfala from oli stap long wan ples long ol skul. Model ia hemi wok gud long Vanuatu from strakja blong hemi go wetem strakja blong tradison blong ples wei mekem se evriwan itek pat. Aplikesen blong model ia ipruvum kapasiti blong hem long wei we oli save iusum long ol narafala kalja more situesen mo valiu blong hem long wei we hemi ting hae long eij blong everiwan blong mekem sua se oli kasem tingting blong everiwan, pikinini kasem olfala. Wan woning nomo blong mas meksua se long fiuja jenda wetem rurol vesas taon imas go tugeta wetem eij long eni stadi o risej we iusum 'Intajeneresenol Demokrasi' (ID), eij hemi no mas stanap hem wan olsem wan 'variant' blong analisis.

1.5 OBJEKTIV 5: OL FIUJA STEP BLONG HELPEN SASTENABOL FIUJA BLONG ESPIRITU SANTO

Tabwemasana Risej Projek hemi provaedem ol faundesen blong plante fiuja projek mo prokram. Olgeta patisipen lo projek ia oli bin pointem aot ol impoten eria we oli ting se mait i save provaedem ansa long ol jalenjes long saed blong envaeromen, kalja, ekonomik wetem sosial.

Samfala fiuja daareksen we stadi ia i pointem aot hemi:

1. Ol developmen we i rekonaesem valiu blong tradisonal save wetem kastom long wei we ol samting ia oli talemaot mo manejem sastenabol envaeromen blong naoia insaed long ol komiuniti. Ol toktok wetem ol jif mo olgeta man blong holem kastom storian i shud tek ples blong pointem aot mo nambarem long impotans ol developmen, we i save inkludim ol risej projek; eksampol, putum tugeta ol storian blong ol tradisonal sistem blong manejem mo lukaotem envaeromen.

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2. Mo aweanes wetem preperesen blong mitim disasta long saed blong efek blong klaemet jenis. Ol kaen aktiviti ia i save stat wetem how blong lukluk long bigfala iven o disasta we i save hapen kwiktaem go kasem olgeta fiuja risal blong sisonal jenis long saed blong prodiusim kakae wetem akribisnis. Samfala risej mo projek long eria ia isave go blong divelopem:
 - i. Wei blong katem daon risk mo manejmen blong disasta, hemia blong inkludim insaed long karikulum blong sekonderi skol.
 - ii. Ol rekulesen mo wei blong beltem ol kaen haus long fiuja we i save stanap strong long eni bigfala disasta.
 - iii. Wan kabon treiding skim wetem konseveisen blong tropikal fores blong sloem down grin haus kas we istap go antap long ea.
 - iv. Ol indastri we oli stap dil wetem kakae blong oli usim okanik or wei blong groem kakae we ino usim fetalaesa.
 - v. Ol kaen projek long Sanma Provens we i lukluk long kostal erosen (solwora i washem aot graon lo sho) we i mekem se samfala velej oli mas muv lo narafala ples mo fasen blong riva i spolem road olsem long saot Santo.
 3. Impruvem wok blong wan sef mo sekiua wata saplae blong ol komiuniti blong Port Olry olsem wan model blong ol narafala velej.
 4. Ol wei blong manejem toti long rurol wetem sistem blong manejem helt blong man
 5. Kontiniu blong promotem sola pawa olsem bes jois blong residensol, komesial mo indastriol.
 6. Mekem moa edukesen long saed blong envaeromen blong evri komiuniti wetem edukesen long saed blong hao blong manejem toti, klaemet jenis wetem kastom save blong envaeromen.
 7. Fokas bigwan long ol janis blong edukesen, trening mo wok blong helpem ol yang pipol. From populesen blong Vanuatu istap gro hariap tumas wetem hae namba blong yang pipol i mekem se mas mekem sua se skil blong olgeta blong save kontribiut long nesen ia hemi nambawan samting.
 8. Volontia prokram long saed blong envaeromen kea blong evriwan long evri eij, speseli prokram blong ol yang pipol.
 9. Risej long saed blong ol wei blong kontrolem ol denjares plan mo animol long tugeta solwota mo graon.
 10. Ol projek long saed blong putum bak mo lukaotem gud (protektem) ol samting long solwota.
 11. kaljerol turisim bisnis wei we bae hemi helpem ekonomi mo givim plante wok long Santo. Sam long olgeta ia igat:
 - i. Divelopem mo beldem wan historikol miusiam blong showem olgeta olfala samting blong ol Amerikan long taem blong Wol Wo II. Ol samting ia oli save tokbaotem laef blong militari long taem blong bigfala faet ia mo olgeta samting olsem ol olfala haus, President Coolidge we i draon istap mo ol toti aean blong Milian Dola point wetem samfala plen rek. Wan pat long bisnis ia hemi blong remuvum olgeta smolmol toti blong ol Amerikan long aelan.
 - ii. Komiuniti blong Pot Olri hemi statemap finis wan smol bisnis ia we igat bankalo, ol pleplei wetem ol tuas blong tijim ol turis abaotem tradisenal save. Wetem sam moa sapot mo help, smol divelopmen ia isave kam antap moa (eksampol tru lo intanet) mo tu hemi save stap long taem mo impruv. Kaen bisnis ia isave kam olsem wan gud eksampol blong iusum long ol narafala vilej lo rurol mo semtaem tu hemi save givim long ol visita wan
-

gudfala netwok blong ol didifren eksperiens long saed blong eko mo kaljoral turisim.

12. Dvelopem wan maekro-koperatif long ol eria blong Big Bei, Wes kos wetem Saot kos blong helpem ol fama blong transpotem ol kakae igo long ol bigfala maket.
13. I nid blong kavman wetem ol jif mo jioj pasta, olsem ol komiuniti lida, blong tijim ol memba blong pablik mo mekem ol rul mo rekiulesen long saed blong ol helt problem olsem sik suka mo ius blong drak.
14. Mekem strong ol maekro faenans projek we oli fokas long givim help long ol woman long saed blong dvelopem ol opotiuniti blong bisnis.

2. EXECUTIVE SUMMARY - ENGLISH

The Tabwemasana Research Project was conducted from 2010-2011 in the Republic of Vanuatu on the island of Espiritu Santo (Santo) which is the largest in the nation's archipelago of 83 islands. The study derived its name (with permission from the local Chiefs) from the highest mountain in Vanuatu, Mt Tabwemasana, located on the island of Espiritu Santo. The total population of Vanuatu is 243,304 and Santo is 34,388 (VNSOa 2009). The nation's population is largely constituted of young people with 41% of the population 0 - 15 years of age (MICS 2007). The study was funded and supported by an Australian Government Endeavour Research Fellowship Award and conducted in partnership with Vanuatu Earth Care Association (VECA) and the University of the South Pacific (Luganville campus) after attaining a research permit from the Government of Vanuatu. The project had the endorsement and involvement of the local Chiefs and Councillors. It was conducted on behalf of the community for Espiritu Santo, Vanuatu, who actively conserve healthy and sustainable social, cultural, economic and environmental systems.

The social impact of climate change was of special interest in this research in terms of capturing community observations. The Vanuatu archipelago and its inhabitants are considered to be on the front line in experiencing the effects of climate change. Rising sea level and intensified extreme events such as: flooding, landslides, erosion, droughts and tropical cyclones are examples of environmental changes occurring across the region (VG 2007). Some of these occurrences may be attributable to natural climatic cycles however the evidence points towards contributing influences of global climate change (Walther et al. 2002). Incremental changes in the underlying climate appear to have resulted in less demarcation of the seasons which impacts on aspects such as: agricultural productivity, an increase in the presence of invasive flora and fauna species and a subsequent rise in plant and human disease outbreaks (VNACCC 2009). More than 75% of Vanuatu's settlements are located in coastal areas and are experiencing coastal erosion problems which have required some villages to relocate to higher ground. All urban areas rely on groundwater sources for fresh water, and experience localised flooding due to poor drainage which contaminates groundwater (BOM 2006).

Attaining snapshots of human-environmental relationships from the past, present and predictive future trends were key threads in this study. As this community is becoming increasingly urbanised and less directly dependent on subsistence practices, valuable lessons can be learnt from these relational shifts particularly in respect to traditional kastom which incorporates environmental protection (VCC 2007; Romulus & Lucas 2000; WHC 2010).

Capturing key future initiatives from community perspectives was a practical requirement of this study to ensure that it provides a foundation upon which future research and projects can be built.

The research objectives were:

1. What are the key priorities in terms of a sustainable future for Espiritu Santo?
2. What are the levels of concern, knowledge and observations surrounding the social and environmental impacts of climate change?
3. Are there differences between urban and rural views concerning social, cultural, economic and environmental aspects?
4. How applicable was the model for Intergenerational Democracy in this project?
5. What are some future steps that can be taken to assist Espiritu Santo's sustainable future?

Through interviews, focus groups and the distribution of a survey in the urban location of Luganville and rural village of Port Olry information was collected responding to the five research objectives. A whole of community method, titled Intergenerational Democracy (ID) was adopted which required

the involvement of citizens from eight years of age to the elderly. ID was developed by the researcher in 2006 and has been trialed in some Australian communities. This study offered the first opportunity for an international trial to examine the methods application in the very different culture and context that was offered by Vanuatu. This project placed a special emphasis on capturing the views of young people and women.

The total number of participants in this study was 444 of whom 237 (53.4%) were male and 191 (43.0%) female (Table 1).

Table 1: Number and gender of participants

Gender	Interviewees	Focus Group Participants	Survey Respondents	Total
Male	21 60.0%	61 46.2%	155 56.0%	237 53.4%
Female	13 37.1%	61 46.2%	117 42.2%	191 43.0%
No Response	1 2.9%	10 7.6%	5 1.8%	16 3.6%
Total	35 100.0%	132 100.0%	277 100.0%	444 100.0%

The majority of participants in this study were young people. A total of 158 (35.6%) were aged from 11 to 20 years, 94 (21.2%) were 21 to 30 years, 63 (14.2%) were 30 to 40 years and 45 (10.1%) were 41 to 50 years (Table 2).

Findings from this study have been summarised to respond to the research objectives:

2.1 OBJECTIVE 1: KEY PRIORITIES FOR A SUSTAINABLE FUTURE FOR ESPIRITU SANTO

A total of 180 (40.5%) respondents ranked environmental issues as their highest area of concern. Economic and social issues were ranked equally second (16.0%) but measured at less than half of the concern of environmental issues. Cultural issues were the third level of concern (11.5%). Respondents aged from 11 - 50 years had the highest levels of environmental concern when compared to other age groups. Respondents aged from 51 - 60 years were the most concerned group regarding social issues. Children aged 0 - 10 years were the most concerned group regarding cultural issues. There were notable differences in responses by gender which were related to cultural and economic issues. It was found that men were more concerned than women about both of these areas. In terms of environmental issues, men and women were equally concerned with 40.7% of females and 40.4% of males identifying 'environmental issues' as their main concern. Urban respondents (43.9%) were more concerned about environmental issues than rural citizens (36.7%). Urban respondents (17.7%) were more concerned about social issues when compared with rural citizens (14.0%).

The key social issues raised in the qualitative data were: lack of leadership, education and its cost, young people not attending school, lack of health education for young people, the consequences of differing cultures colliding, black magic, land disputes which lead to social conflict and violence, rape and domestic violence, drug abuse, low living standards, unemployment, lack of secure and safe water supplies, increasing rate of diabetes and sustainable social and environmental relationships. Elderly and middle aged people believed that life was much tougher for young people now than in their younger days. Young women interviewees and participants highlighted their fears surrounding rape. Climate change was described as the most important environmental issue for Espiritu Santo. Interviewees and participants described elevating levels of concern surrounding extreme weather events such as: Tidal waves, cyclones, earthquakes, tsunamis and changing weather patterns. They described the indirect effects of less defined seasons and how these had impacted on food security

and erosion. Rural participants noted the negative impact of introduced materials e.g. plastics and kerosene on the environment increasing waste management problems.

2.2 OBJECTIVE 2: LEVELS OF CONCERN, KNOWLEDGE AND OBSERVATIONS SURROUNDING THE SOCIAL AND ENVIRONMENTAL IMPACTS OF CLIMATE CHANGE

Almost one third of respondents (29.3%), described their attitude towards climate change as 'very concerned'. Ranked second was 'concerned' (23.9%) and third was 'extremely concerned' (19.1%). Very few people were either 'marginally' (11.0%) or 'not concerned' (7.2%) about climate change. There appeared to be a trend that more of the older respondents, particularly those aged upward from 51 years of age, were 'very concerned' about climate change. It was notable that young people aged from 0 - 30 years represented the majority of responses in the 'extremely concerned' group. More males were found to be 'very concerned' or 'extremely concerned' when compared with females. Significantly more urban respondents were either 'extremely concerned' or 'concerned' about climate change when compared with rural responses.

Respondents were asked to rank their level of knowledge about climate change. The highest (28.6%) response was 'average' and the second highest (21.4%) was 'poor'. When comparing urban and rural responses it was found that more people in urban areas ranked their level of knowledge as 'average', 'good' or 'very good' than those in rural areas. Conversely more rural respondents described their level of knowledge as 'excellent' when compared to their urban counterparts.

Respondents were asked if they thought the effects of climate change were a problem 'now', in a timeframe into the future (next 50, 100 or after 100 years) or not at all. More than half (54.1%) said that they believed it was a problem 'now'. The next highest response (17.8%) was 'in the next 50 years'. A small group of respondents (7.7%) believed that climate change won't be a problem. When comparing urban and rural responses a total of 59.5% of urban people said that climate change was a problem now, compared with 47.8% of rural residents.

When asked if they had noticed any changes that they thought might be due to climate change 73.9% of people responded 'yes'. A small percentage (11.3%) said 'no' and 'I don't know' (4.7%). These responses were found to be consistently high across all age groups with the strongest representation from those aged 0 - 50 years. Affirmative responses were found to be less in those aged from 51 - 61+ years and it was notable that these age groups had a larger representation of 'no response' to this question (Figure 1).

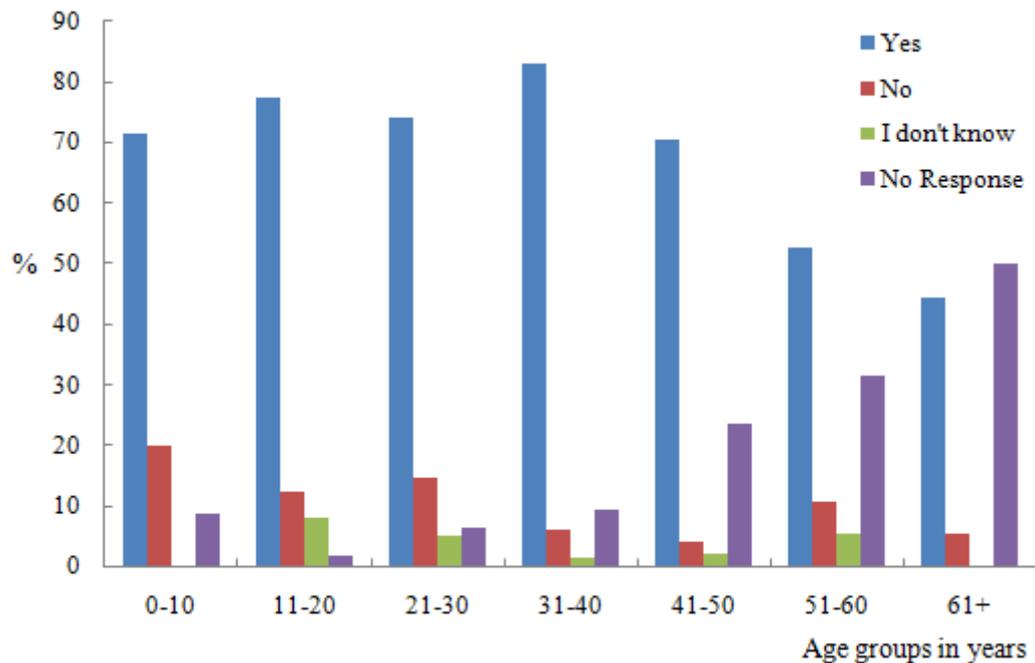


Figure 1: Changes perceived to be attributed to climate change by age group

It was found that 84.4% of urban residents responded ‘yes’ compared to 61.8% of rural residents who said ‘yes’ they had noticed some changes which they perceived were attributable to climate change. It was found that 46.8% of urban dwellers believed that there had been changes in climatic and weather patterns, compared to 20.3% of rural respondents. Urban residents had also noticed more changes in the land and human behaviour as a result of climate change when compared to the responses from rural residents. A notable number (34.8%) of rural residents did not respond to this question compared to 19.0% of urban residents.

In the qualitative results people from rural and urban areas were very concerned about the impact of climate change. They described changing climatic patterns which included: prolonged dry periods and increased flooding, with less demarcation of the seasons. Their most significant concern was food insecurity as a result of these changes which impacted on agricultural practices and decreasing productivity. The consequence of decreased food productivity resulted in citizens being more reliant on cash money to provide food for their families.

In the quantitative results respondents were asked to identify aspects of Santo they thought had changed due to climate change. A total of 44.8% of people ranked ‘the sea’ as their top priority. A close second was ‘climate and weather patterns’, which was nominated by 34.5% of respondents. The third area was ‘the land’ which was nominated by 21.2%. More people in older age groups 31 - 61+ had observed changes in ‘the sea’, ‘climate and weather patterns’ when compared with responses from younger respondents. A notably high number (26.8%) of people did not respond to this question.

In the qualitative data, rising sea level was a significant concern for participants as it was forcing communities to relocate, losing their cultural connections to the land, and eroding traditional systems of cultural heritage and knowledge. They described how the rising sea level was eroding coastal areas, and often the most fertile lands increasing the risk of food insecurity. Extreme weather events and changes in weather patterns were of significant concern such as: tidal waves, earthquakes, tsunamis, increased precipitation, longer dry periods, unusual temperature variations and seasonal changes. Participants from rural and urban areas also noted an increase in mosquitoes and levels of malaria due to higher precipitation levels and the presence of larger quantities of stagnating water.

2.3 OBJECTIVE 3: URBAN AND RURAL VIEWS CONCERNING SOCIAL, CULTURAL, ECONOMIC AND ENVIRONMENTAL ASPECTS

In the quantitative results, when asked to identify their primary forms of attachments, respondents prioritised 'family, friends and community' and their 'family and friends and environment' equally. Each of these options was prioritised equally by 37.2% of respondents. It was notable that only a small group (8.8%) nominated 'the environment' as their key form of attachment. Young children (0 - 10 years) were the age group that placed the most importance on connections to their 'family, friends and community'. People aged from 21 - 61+ years highlighted the importance of 'family and friends and environment' equally. It was notable that environmental attachments were low across all age groups but increased significantly with respondents aged over 61 years. This group's social attachment to 'family, friends and community' was the lowest of all groups. Gender based responses to forms of attachment were not significantly different with the exception of attachments to 'the environment' where 12.2 % of males were found to be more attached to the environment compared with 4.5% of females. When contrasting rural and urban responses to attachments it was found that a larger majority of urban residents (46.0%) prioritised their 'family, friends and the environment equally' compared with their rural counterparts (27.1%). A larger percentage (13.0%) of rural respondents favoured 'the environment' than urban citizens (5.1%). In the qualitative results, when comparing rural and urban responses it was found that interviewees and participants of all ages, both genders and from rural and urban locations, valued similar attributes of Espiritu Santo. Most participants described how they loved: the forests, beaches, the sea, birds, mountains, friendly people and the villages. The key social-environmental attribute in their collective view was the island's capacity to grow food.

In the quantitative data, respondents ranked their attachments in terms of the regions they felt most connected to. The highest ranking response was 'the locality where I currently live' which was nominated by 25.2% of respondents. Ranked second was 'the place where my family lived or still lives' with 20.9% of respondents identifying the importance of family in terms of their connection to place. When comparing urban and rural responses, it was found that a larger group of 26.1% rural respondents prioritised the place where their family lived or still lives than 16.5% of the urban group. More urban residents (13.1%), nominated that their primary connections were to 'the world' than the rural group (3.4%).

In the qualitative results it was found that the majority of interviewees felt that their community and the environment had strong linkages. This was due to their everyday survival as a mainly subsistence culture. The environment for them was vital for survival as it provided basic needs including food, shelter, medicine and fishing. The main links interviewees described were: traditional, historic, spiritual, cultural and social. Many explained how spiritually the land, their lives and customs were intertwined with and inseparable from the natural environment and how these relationships established their social values and norms. People expressed their strong sense of responsibility to protect and preserve the land.

In the qualitative results, interviewees described how there had been changes in the links between communities and the environment. Reasons for changes in human-environmental relationships were perceived to be due to: the introduction of technology (e.g. mobile phones, computers internet), rural-urban migration, turning away from traditional kastom and the cash economy which resulted in a shift from subsistence living to different ways of living and value systems. These changes were of significant concern but the majority of participants believed that their communities could adapt in positive ways, keeping the environment as a fundamental part of their value systems. It was found that the majority of participants believed that traditional knowledge could assist in establishing the sustainable management of the community and environment, as it provides positive direction to the way people should live and interact with nature. The pathway to achieve this was seen to be through strengthening the system of chiefs by further empowering them to work in partnership with government agencies.



Image 1: Rex Thomas Tandak facilitating a primary school focus group, College de St Anne, Port Olry

2.4 OBJECTIVE 4: APPLICABILITY OF INTERGENERATIONAL DEMOCRACY

This project provided the opportunity to test Intergenerational Democracy (ID) in an international context as previously it had only been applied in Australia.

Aged based survey findings of note were as follows:

Young children (0 - 10 years) placed the most importance on connections to their 'family, friends and community' while 21 - 61+ year olds highlighted the importance of 'family, friends and environment equally'. Environmental attachments were notably low across all age groups but increased significantly with respondents aged over 61 years. Respondents aged upward from 31 years appeared to experience the strongest connections to their locality. Those in the age group 11 - 30 years were most attached to 'the place where my family used to live or still lives'. Respondents aged from 21 - 30 years were least attached to 'the world in which I live'. Those aged from 41 - 60 years were the highest groups to nominate that they did not 'feel attached to any places'.

Young people aged from 11 - 50 years had the highest levels of environmental concern when compared to other age groups. It was found that respondents aged from 51 - 60 years were the most concerned group regarding social issues. Children aged 0 - 10 years were the most concerned group regarding cultural issues. When asked to rank their lifestyle in terms of protecting the environment, it was found that young people aged 11 - 20 years and those aged 51 - 60 years were more likely to rank it as 'fair'. Children aged from 0 - 10 years were more inclined to rank their lifestyle as 'average' and older people aged 61+ years often ranked their lifestyle as 'poor'.

Older respondents, particularly those aged upward from 51 years of age, were 'very concerned' about climate change and young people in the groups aged from 0 - 10 years and 21 - 30 represented the majority of responses in the 'extremely concerned' category. Most respondents across all age groups ranked their levels of knowledge about climate change as 'poor' or 'average'. When asked if they had observed changes in the environment that they believed were attributable to climate change responses were found to be consistently and highly affirmative across all age groups. More people in older age groups 31 - 61+ had observed changes in 'the sea', 'climate and weather patterns' when compared with responses from younger respondents.

Gender based findings of note were as follows:

Males (12.2%) were found to be more attached to the environment than females (4.5%). Females were more attached to their locality (15.6%) than males (9.8%). Males were found to have stronger national attachments (15.9%) than females (8.5%). More males did not feel any form of attachment (19.6%) when compared to females (13.1%). More males were found to be 'very concerned' or 'extremely concerned' about the impacts of climate change when compared to females. When asked which areas they thought had been most affected by climate change, more men (43.7%) prioritised 'the sea' than women (39.7%). More males (24.1%) identified changes in 'the land' than females (17.6%).

Urban versus rural findings of note were as follows:

A larger majority of urban residents (46.0%) prioritised their 'family, friends and the environment equally' as their primary form of attachment compared with their rural counterparts (27.1%). A greater percentage (13.0%) of rural respondents favoured 'the environment' than urban citizens (5.1%). More rural respondents (26.1%) prioritised 'the place where my family lived or still lives' than the urban group (16.5%). A larger percentage of urban residents (13.1%), nominated their primary connections to 'the world' than the rural group (3.4%). It was found that more urban respondents (20.7%) were disconnected from 'the world in which they lived' than those from rural areas (13.0%). Urban respondents (43.9%) were more concerned about environmental issues than rural citizens (36.7%). Urban respondents (17.7%) were more concerned about social issues when compared with rural citizens (14.0%). Significantly more urban respondents were either 'extremely concerned' or 'concerned' about climate change when compared with rural responses. It was found that more people in urban areas ranked their level of knowledge about climate change as 'average', 'good' or 'very good' than those in rural areas. Conversely more rural respondents described their level of knowledge as 'excellent' when compared to their urban counterparts. A significantly higher urban group (84.4%) responded 'yes' to the question which asked them if they had noticed changes they attributed to climate change, when compared to rural responses (61.8%). It was found that 46.8% of urban dwellers believed that there had been changes in climatic and weather patterns, compared to 20.3% of rural respondents. Urban residents had also noticed more changes in the land and human behaviour as a result of climate change when compared to the responses from rural residents.

ID proved to be successful in capturing the views of people of all ages. One difficulty experienced in Vanuatu was identifying how to locate the elderly as aged care institutions do not exist and life expectancy is low. It was easier to contact elderly people in a rural village as they were more accessible. Education levels, literacy and language barriers were more significant challenges with older participants. Access to young people was enabled through schools, with relative ease. The model was embraced in Vanuatu, because of its alignment with traditional community structures that require the involvement of people of all ages. The application of this model affirmed its capacity to be applied in different cultural contexts and the value of the age based approach as a primary method of capturing whole of community views. However the researcher cautions that secondary variables, in this case gender and urban versus rural place of residence, should be coupled with age in any future studies that utilise Intergenerational Democracy. Age should not be the sole variant of analysis.

2.5 OBJECTIVE 5: FUTURE STEPS TO ASSIST ESPIRITU SANTO'S SUSTAINABLE FUTURE

The Tabwemasana Research Project has provided the foundations for many future projects and programs. Interviewees and participants identified the key areas that they perceived would potentially provide solutions to environmental, cultural, economic and social challenges.

Some of the future directions identified in this study were:

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1. Initiatives that recognise the importance of traditional knowledge and kastom in the context of informing and managing contemporary sustainable environments and communities. Further discussions with chiefs and knowledge holders should occur in terms of identifying and prioritising these initiatives, which could include research projects. e.g. the documentation of traditional systems of environmental management through oral histories.
 2. Increased awareness and disaster preparedness planning surrounding the impacts of climate change. These activities could range from addressing the immediacy of extreme climatic events to the long-term consequences of seasonal changes on food production and agribusiness. Research and projects in this area could include developing:
 - i. disaster risk reduction and disaster management modules for inclusion in secondary schools curriculum.
 - ii. building regulations and practices to ensure that future building constructions comply with standards designed to withstand extreme events.
 - iii. a carbon trading scheme with tropical forest conservation to reduce net greenhouse gas (GHG) emissions.
 - iv. organic food processing industries for food security.
 - v. projects that address the coastal erosion that is threatening villages and infrastructure in Sanma Province e.g. the road to the south of Luganville.
 3. Improved provision of a safe and secure water supply for the community Port Olry as a model for other villages.
 4. Waste management systems in rural villages including systems to manage human sanitation.
 5. Continuing rollout and promotion of solar energy as the preferred option for residential, commercial and industrial energy needs.
 6. Increased environmental education for whole communities including education surrounding waste management, traditional environmental knowledge and climate change.
 7. Special focus on education, training and employment opportunities for young people. Due to Vanuatu's rapidly increasing population growth and predominance of young people, recognising that their future capacity to contribute to the nation's growth should be prioritised.
 8. Volunteer environmental care programs for residents of all ages, with particular emphasis placed on programs for young people.
 9. Research and initiatives that address the control of invasive flora and fauna marine and terrestrial species.
 10. Projects for marine restoration and conservation.
 11. Cultural tourism ventures that will assist economic and employment growth in Espiritu Santo. Some of these opportunities include:
 - i. The development of a military history Museum and precinct in Luganville and surrounds, which tells the World War II history of this location as a significant base for the USA military forces. Such a development could utilise remnant buildings and artefacts that remain largely without conservation in the town and without interpretation with the exception of the sunken vessel SS President Coolidge. This ship wreck would form part of the suite of attractions and activities. Other places that could be included are Million Dollar Point and plane wreck sites. As a component of this venture,

discarded military waste that is not significant, could be removed from the island.

ii. The community of Port Olry has established a cultural tourism venture, which includes bungalow accommodation, recreational activities and traditional knowledge tours. With some support and assistance this development could be promoted (e.g. via a website) and extended to enable it to increase its viability. This model could be adopted by other rural villages, which could offer visitors a network of eco and cultural tourism experiences.

12. Develop a micro-cooperative in the Big Bay, West Coast and South Coast areas to assist in the marketing and transport of goods to larger markets.
13. Health issues such as diabetes and drug use require continuing investment and involvement of the government and community leaders (such as the chiefs and religious leaders) to educate the public and to implement rules and regulations.
14. Strengthening of micro finance projects focused on providing assistance for women towards business development opportunities.



Image 2: Kirsten Davies conducting an interview with a student at Santo East School, Luganville

3. INTRODUCTION

The Tabwemasana Research project derived its name from the highest mountain in Vanuatu, Mt Tabwemasana, which is located on the island of Espiritu Santo, where this research project was conducted. Permission to use this name was attained from the local chiefs. According to local legend the mountain's twin peaks represent male and female forms coming together as a whole. This project was developed in partnership with Vanuatu Earth Care Association (VECA), the High Chief of Sanma Council of Chiefs and Honourable Councillors, and was endorsed by the Vanuatu Government. It was funded and supported through an Australian Government Endeavour Research Fellowship. The research was conducted from 2010-2011 with the communities from Sanma Province, Espiritu Santo Island, Vanuatu.

This report has been researched with the aim of providing a foundation upon which future sustainability activities and research can be built. Of specific focus in this study was documenting the links between the island's cultural and environmental heritage and capturing community views on the social impacts of climate change. This was achieved by Intergenerational Democracy as a method of 'whole of community' engagement developed by Kirsten Davies.

The report commences with a literature review which describes the historic, social, cultural, environmental and economic context in which this study was situated. There is a special focus in the literature on global climate change and its existing and projected impacts on Vanuatu. It progresses to outline the research methods which were adopted. This section is followed by a report on the qualitative and quantitative social data that was collected. The report concludes with a summary of the findings and proposes some future directions for research and activities.

4. LITERATURE REVIEW

4.1 BACKGROUND VANUATU

Vanuatu is a nation that comprises a Y-shaped archipelago of 83 islands in the South Pacific region of Melanesia, 1750km east of Australia (Figure 2). Vanuatu has a total land area of 12,190km² (USDoS 2009), and a total population of 243,304 of whom 184,126 reside in rural areas and 59,178 reside in urban areas (VNSOa 2009). The capital is Port Vila, which is located on Efate Island and has a population of 45,694.



Figure 2: Geographic Location of Vanuatu
(Source: FEN ©2000-2009)

4.2 GEOGRAPHY

Vanuatu is a volcanic arc of islands formed at tectonic plate boundaries in the Pacific Ocean. Vanuatu has active volcanic mountains and is heavily forested, with narrow coastal plains, lowlands and plateaus, raised coral atolls and relatively deep natural harbours (Caminade *et al.* 2001; USDoS 2009).

4.3 CLIMATE

Lying in tropical to sub-tropical latitudes south of the Equator, Vanuatu experiences a sub-tropical maritime climate, with average annual rainfalls of 2360–4000mm, and average temperatures between 19°C (min.) and 28°C (max.). Vanuatu's climate is divided into two seasons – the cold/dry season (May to October) and the hot/wet/cyclone season (November to April). Vanuatu experiences, on average, 20-30 cyclones per decade, with 3–5 of those causing major destruction to urban and rural centres. Flooding occurs to lowland flood plains during the wet/cyclone season and in La-Niña years of the ENSO cycle. Drought has been linked to El-Niño years, with severe droughts occurring in 1982/83, 1990-95, and 1997/98. The worst drought year to date was 1993, when major crops were greatly affected (VMS 2007).

A seismically active region, Vanuatu is susceptible to earthquakes with magnitude 5-6 events relatively common. These can result in landslides (terrestrial and submarine) and tsunamis (Caminade *et al.* 2001).

4.4 GOVERNMENT

Vanuatu was declared an Independent Nation on 30th July 1980. Prior to this date it had been jointly governed as colonial territory by Britain and France via a Condominium Government (1906–1980) known as New Hebrides. The translation of the name Vanuatu is 'our land'. The Vanuatu Government comprises a 52 member Legislative Assembly, which currently has 50 men and 2 women representatives. Voting age is 18 years, with a Supreme Court Judiciary governing legal structure (USDoS 2009).

4.5 SOCIETY

Vanuatu's population is largely Indigenous (ni-Vanuatu 94%), with European (4%) and other Pacific Islanders & Asian (2%) having minor representation. A wide number of languages are spoken with English and French the most common foreign languages. Bislama (Pidgin) is the national language, and there are (approx.) 105 tribal languages and dialects. More than 90% of the population is Christian, with a further 8% subscribing to tribal beliefs (USDoS 2009).

Vanuatu's population is growing annually at a rate of 2.4%. Urban centres have the strongest growth: Port Vila (4.7%) and Luganville (4.1%). The nation has an average population density of 17 people per km² (VNSOa 2009).

According to the UNICEF prepared *Multiple Indicator Cluster Survey (MICS) Report (2007)*, Vanuatu's population has a very young age structure, with approximately 41% aged between 0 - 15 years, and 3% are 65 years or older (Figure 3 and Figure 4).

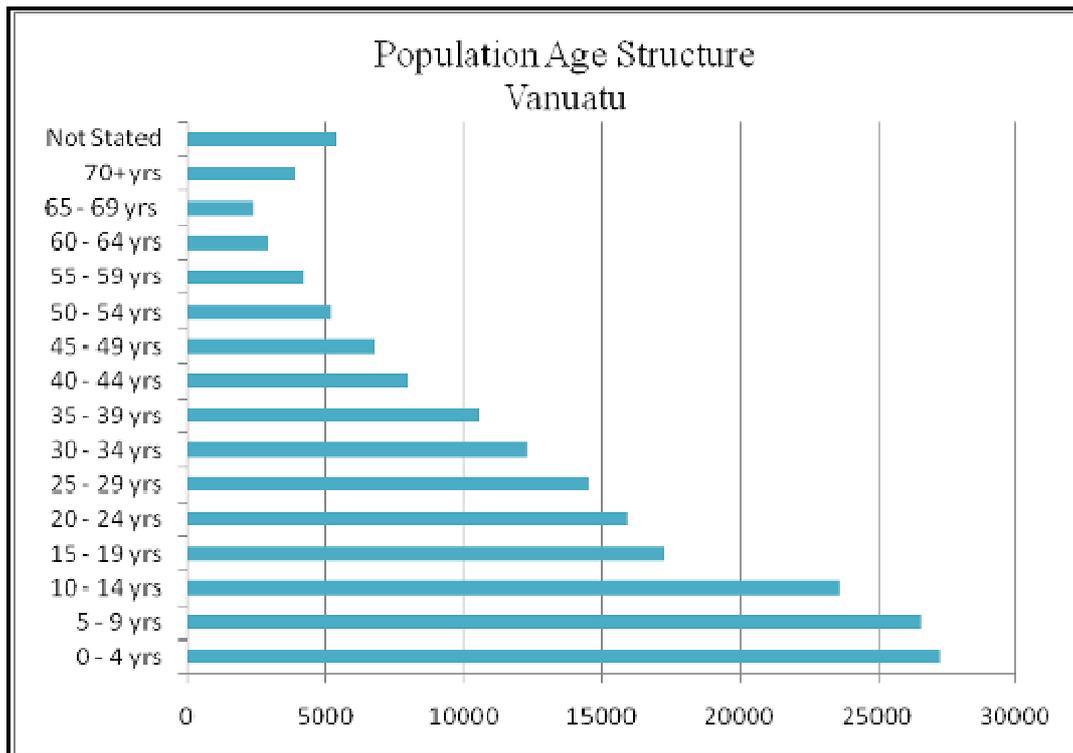


Figure 3: Vanuatu National Population Age Structure (VNSO 2009b).

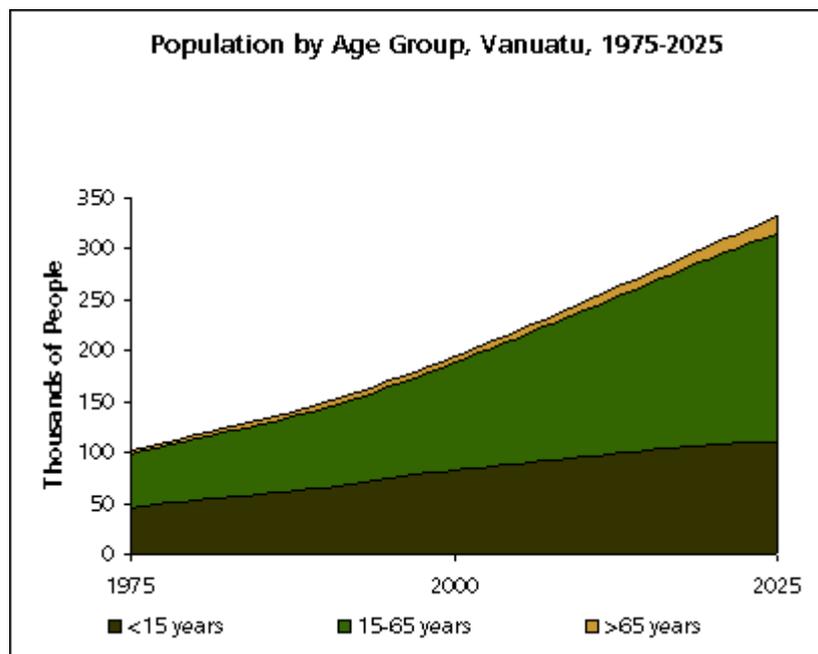


Figure 4: Population structure by age with projections, Vanuatu (Source: WRI 2008)

There is a high dependency ratio of 0.83 (i.e. for every 100 people working there are 83 people dependent). The majority of households include males (91.9%), with 8% of households headed by females. More than 85% of households include at least one woman of reproductive age (15 - 49 years) (VNSO 2009b).

Average Life expectancy at birth is 71 years for females and 67 years for males (Figure 5).

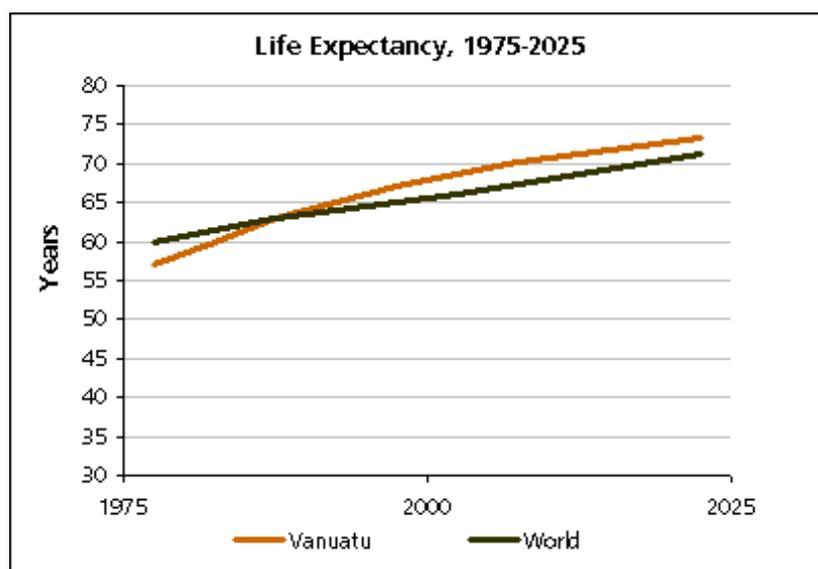


Figure 5: Average Life Expectancy with projections, Vanuatu
(Source: WRI, 2008)

Vanuatu has a relatively high infant mortality rate of 25 in 1000, and an under-5 mortality rate of 30 in 1000. These mortality rates are lower in urban centres. 74% of births are attended by trained personnel and 79.8% are institutional deliveries. Child health is of concern with only 24.3% of Vanuatu's children being fully immunized. 16% of children are moderately to severely underweight, 20% have moderately to severely stunted growth and 7% are moderately to severely wasted (muscle mass). Malnutrition is more prevalent amongst boys than girls.

85.1% of Vanuatu's population has access to safe drinking water sources. These rates are higher for populations in urban areas (VNSOb 2009). Malaria is prevalent in Vanuatu. In 2003 15,240 cases were identified with no reported deaths. Tuberculosis and Hepatitis B have been reported in a limited number of cases (WHO 2010). Only 16.3% of young people (up to 19 years) possess a comprehensive knowledge about HIV transmission. Marriage before the age of 18 years is largely common (30.6%) with a spousal age difference of more than 10 years in 31.6% of cases (VNSOb 2009).

4.6 EDUCATION

Improvement in education participation and retention rates is one of the Millennium Development Goals (MDGs) for Vanuatu. Currently, primary education attendance stands at 72.7%, with a considerably large drop to secondary levels: junior attendance (Grades 7–9) being 37.2%, and senior (10–12) being just 11.5% (VNSOb 2009). The adult literacy rate for 15 years and older is 76.6% (VNSOb 2009). In 2010 primary school education became free of charge however fees remain for students to attend secondary school who do not receive a scholarship.

4.7 ECONOMY

Vanuatu's workforce is largely divided into three sectors: Agricultural (65%), Industry (5%) and Service (30%) (VNSOb 2009). The GDP for 2006 was US\$343.6 million, with an average per capita income of US\$1,576 per annum, an economic growth rate of 3.4% driven largely by tourism, and an inflation rate of 3.8%. The National currency is the Vatu, with an average exchange rate (2008) of USD\$1 = 100.87 Vatu (USDoS 2009). Figure 6 shows comparative GDP per capita for Vanuatu, the Oceania Region, and the World, in US dollars, for 1985-2000 (WRI 2008).

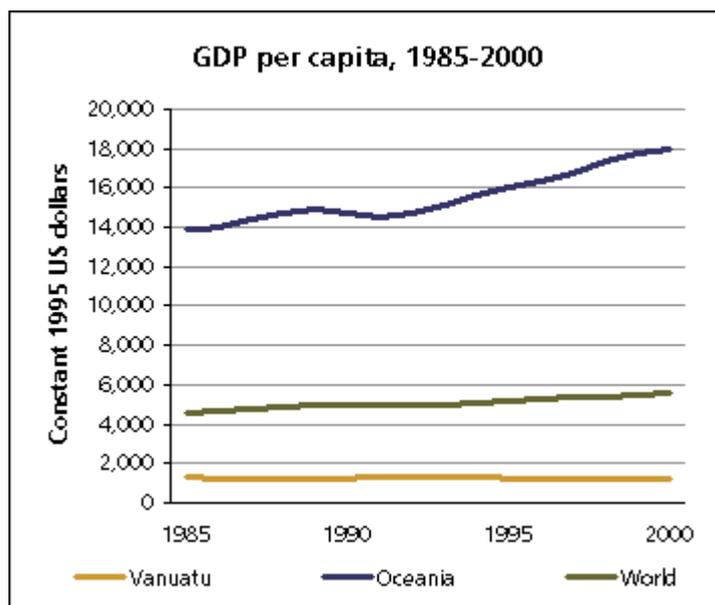


Figure 6: Comparative GDP per Capita, Vanuatu: Region: World
(Source: WRI 2008)

Vanuatu’s natural resources include hardwood timber forests, rich agricultural land, and marine resources bound within the 735,893km² of its exclusive economic zone. Its main agricultural products are copra, cocoa, coffee, cattle and timber. Major industries are those associated with processing these products for export, as well as the tourism sector which generates 20% of the GDP and the financial sector (Vanuatu has international tax exemption status). Vanuatu’s main export markets are to Europe 44.9%, Australia 12.1%, Japan 6.8% and New Caledonia 4.6%. In 2003, exports generated US\$135.3 million. Vanuatu imports in 2003 totalled US\$181.4 million and comprised machinery and transport equipment, food and live animals, mineral fuels, and basic manufactured items. Major suppliers were Australia 42.5%, New Zealand 13%, Fiji 8.6%, and Singapore 6.2% (USDoS 2009; WRI 2008).



Image 1: Marketplace in Luganville

In 2002, Vanuatu was ranked the third poorest nation in the Pacific Region, and 131st out of 173 countries which were assessed in the *UNDP Human Development Report* (ACFID 2004). Since independence in 1980, the bulk of Development Aid has been provided by Australia, United Kingdom, France and New Zealand, largely directed towards infrastructure projects (USDoS 2009). In 2004, the Australian Government announced sustained aid funding via the *Australia-Vanuatu Joint Aid Strategy 2005-2010*, with a focus on supporting community partnership programs, involving

contributions from all levels of community, local, regional, national and international Governments, foreign and local NGO's, volunteers and businesses (ACFID 2004). In September 2009, Prime Minister Rudd and Prime Minister Natapei signed the *Australia-Vanuatu Partnership for Development Agreement*, with its focus on sustainable economic growth, and expedient attainment of the Millennium Development Goals (MDGs) for the health and social welfare of the Vanuatu people (AG 2009).

5. BACKGROUND OF ESPIRITU SANTO

5.1 HISTORY OF ESPIRITU SANTO

Indigenous habitation of Espiritu Santo (and Vanuatu generally), supported by archaeological evidence, dates back approximately 4,000 years to a period of human expansion known as the Lapita Expansion (Spriggs 1984) when people arrived from New Guinea and the Solomon Islands by canoe (FEN 2009).

The island of Espiritu Santo (Figure 7) was named in 1606 by a Spanish expedition searching for ‘the unknown southern land’. It was led by Portuguese explorer Pedro Fernandez de Quirós who landed at Big Bay in the northern part of the island and briefly established a settlement there (ESTA 2010; Romulus & Lucas 2000).

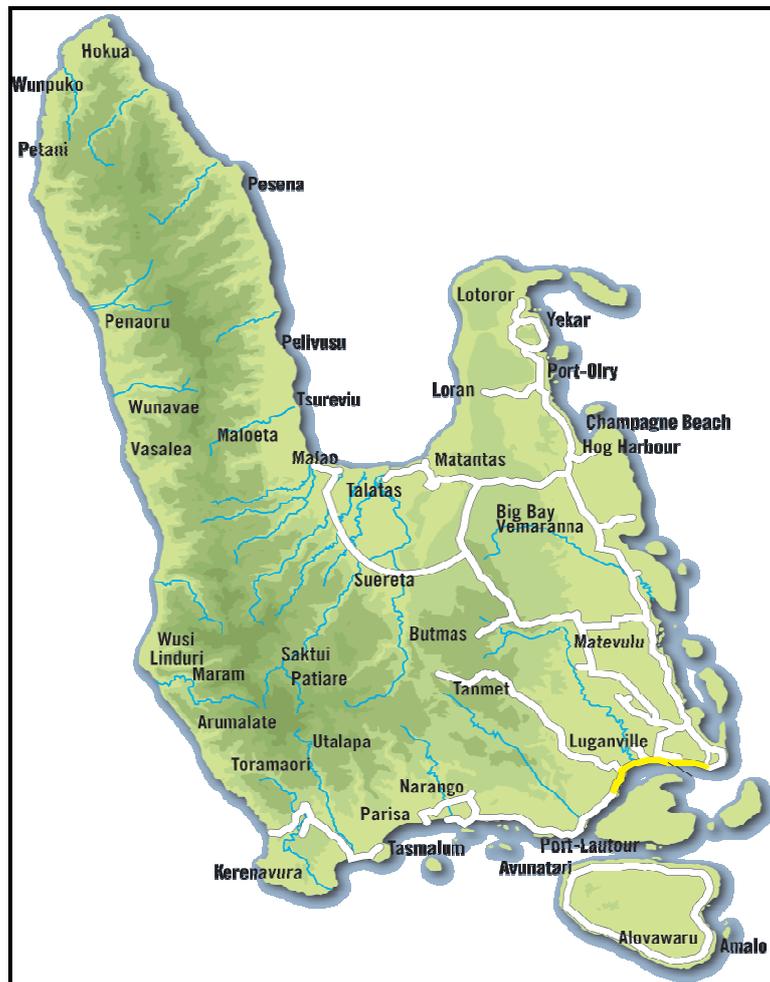


Figure 7: Espiritu Santo Island, Sanma Province, Vanuatu
(Source: Jasons Travel Media © 2010)

Other European explorers and traders sailing from the Dutch East Indies visited the island in subsequent years, and the French navigator Louis Antoine de Bougainville ‘rediscovered’ Espiritu Santo in 1768. It was not until 1774 that the archipelago of islands were officially charted during the Pacific voyages of Captain James Cook, who named them ‘The New Hebrides’ (ESTA 2010). European interest in the islands for their sandalwood forests initiated a rush of traders from 1825, which climaxed in a violent clash between local Melanesians and immigrant Polynesian workers in 1830. During the 1860s, a long-term indentured labour-trade of Melanesian men, known as ‘black-birding’

was established to provide workers on plantations in Australia, Fiji, New Caledonia and Samoa, removing up to half the local male population from Espiritu Santo (ESTA 2010; World 66 2010).

Around this time, Catholic and Protestant missionaries, British (from Australia) and French (from New Caledonia) settlers arrived on the island. The missionaries sought to convert the indigenous peoples to Christianity. The settlers claimed lands for plantations: initially cotton, but later cocoa, coffee, bananas and copra (coconuts) when cotton proved economically unsuccessful (World 66 2010). Competing interests from British and French powers generated petitions to annex the territory. An accord was reached in 1906 to govern the islands as a Condominium Government. Dual systems of bureaucracy and education, with separate languages (French and English), were established, and only the judicial system worked in unison (Romulus & Lucas 2000; World 66 2010). By 1935, diseases transmitted by European traders, missionaries and settlers had decimated the indigenous population, reducing it by 95% from 1 million in 1800 to 45,000 (FEN 2009). Several local resistance movements, including Rongofuru, the 'death raising' cult, had formed on Espiritu Santo by 1923 as dissatisfaction with European governance grew stronger (Belshaw 1950; ESTA 2010; Tabani 2008).

During World War II, following the bombing of Pearl Harbour in Hawaii, Allied Forces established military supply and support bases on the island, along with three airfields and a large naval harbour. Approximately 500,000 Allied servicemen served active duty on Espiritu Santo during this period (ESTA 2010; FEN 2009).



Image 2: World War II Nissan Hut, Luganville

In the aftermath of World War II, Espiritu Santo had been influenced by western culture which has eroded traditional culture but improved transport and communications across the island. Remnants of the war are evident across the island today e.g. Nissan huts and the military refuse that was dumped at Million Dollar Point near Luganville.



Image 3: Million Dollar Point, Luganville

Partly inspired by the equality of African-American soldiers to their white counterparts, a strong new Indigenous resistance called Nagriamel was formed, led by a charismatic Santo man named Jimmy Stevens (Tabani 2008).

Nagriamel's agenda addressed a return to Indigenous customs (including polygamy), a Christian patriarchal 'chieftain' village power structure, collective Indigenous ownership and stewardship of lands, and National Independence (Tabani 2008). Stevens leadership of this group, and his development of *kastom* as the group's code of principles, drew militant support from Santo's islanders and saw the establishment of a community collective village powerbase 'Vanafo' ('fruit-basket' in local dialect) in the central part of the island (Tabani 2008).

As Nagriamel became better organised and more powerful, news of this movement reached Government in Port Vila, and troops were mobilised to try to oust the resistance, but failed. Espiritu Santo's lands and labour force meanwhile were being organised by a community 'executive' of 21 *kastom* chiefs from local villages, who challenged the colonial powers. Stevens aimed to unify other Pacific Island countries, such as Fiji, into a Federation of free and independent island states, but was rebuffed. However Vanafo, and its estimated 15,000 Indigenous members, moved to secede from the Condominium Government. They printed currency and passports, prepared a constitution and chose a flag. In the lead-up to elections for Independence in 1980, the now political Nagriamel separatist party declared the island of Espiritu Santo 'The Republic of Vemerana'. They initiated the destruction of British Administration offices in Luganville, took hostages, and looted and violently rioted in the town. The Government in Port Vila responded with a complete blockade and threats of military hostilities (Tabani 2008).

After the elections in July 1980, until November of that year, a concerted military push involving Papua New Guinea (PNG) troops and Vanuatu Mobile Forces employing aircraft supplied by the Royal Australian Air Force, continued aggressive efforts to 'quell the uprising' in Santo, which ended with Stevens arrest. He served 11 years in prison and was released in 1991. Nagriamel as a political

party adopted more mainstream policies and contested seats during the 1983 and 1987 general elections. Jimmy Stevens died in 1994 (Tabani 2008). Vanafo is still an active community village, but is now more focused on tourism (ESTA 2010).

5.2 ENVIRONMENT OF ESPIRITU SANTO

The largest island in Vanuatu is Espiritu Santo which is situated to the north of Efate and has a total area of 4,010km² (Romulus & Lucas 2000). Espiritu Santo, located in the north of the archipelago, has a more tropical climate and experiences relatively higher average rainfalls and temperatures than southern islands, such as Efate or Tanna, with dominant wet (Nov-Apr) and dry (May-Oct) seasons (Figure 8 and Figure 9).

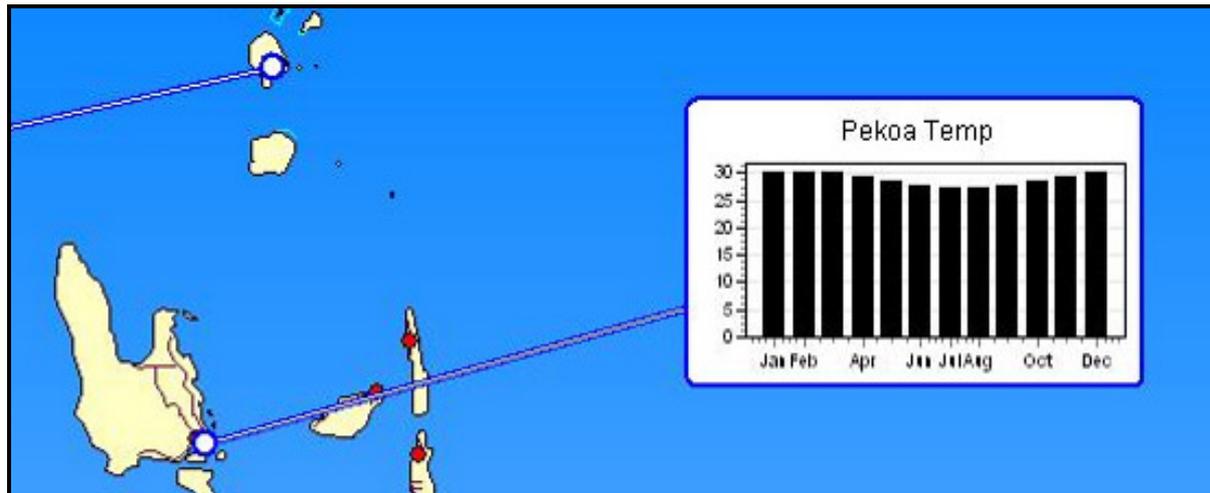


Figure 8: Average Monthly Maximum Temperatures (°C) Espiritu Santo, Vanuatu (Source: VMS, 2007)

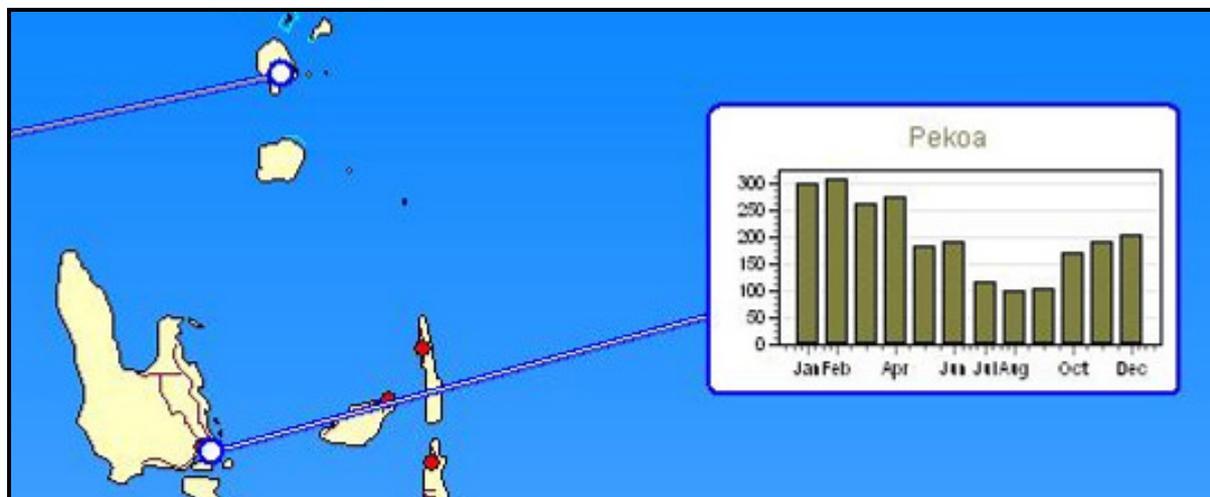


Figure 9: Average Monthly Rainfall (mm) Espiritu Santo, Vanuatu (Source: VMS, 2007)

The largest of Vanuatu's islands (4,010km²), and the richest in agricultural lands and natural resources, Espiritu Santo is home to Vanuatu's four highest peaks, Mt Tabwemasana at 1890m, and Mt Kotamtam, Mt Tawalaala and Santo Peak, each over 1700m high (ESTA 2010). The western side of the island is rugged and mountainous, whilst the southern and eastern regions comprise more gentle lowlands and river valleys. Espiritu Santo has a number of rivers, including Vanuatu's longest and largest, the Jordan River (ESTA 2010). Although it is volcanic in composition, Santo's landscape is volcanically dormant, but seismically active as it lies in the Central Basin area of two tectonic plates

(Figure 10). For this reason, the island is especially susceptible to earthquakes, landslides and tsunamis (Caminade *et al.* 2001). In 2009 and 2010 earthquakes measuring 7.3 – 7.8 on the Richter scale, were documented. These generated small tsunami waves and tsunami warnings for the Pacific Region. Residents in Luganville were reported to have run from shaking buildings and sought higher ground (SMH 2009).

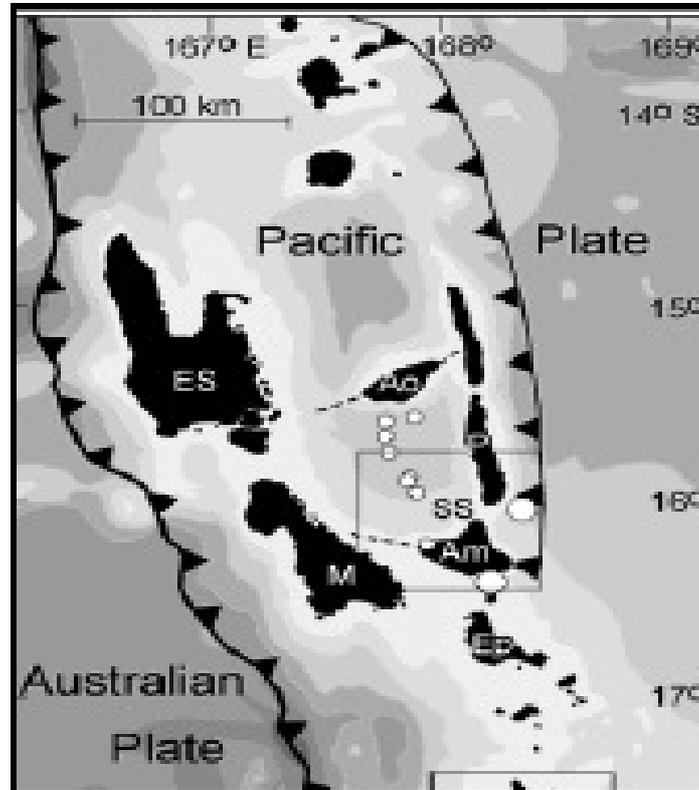


Figure 10: Tectonic and bathymetric diagram, Central Basin area, Vanuatu
(Source: Caminade *et al.* 2001)

The Vatthe Conservation Area is Vanuatu’s oldest and largest protected natural area in all of the islands. It covers 4,200ha of lowland, riparian and limestone forest that has been left unlogged. Located in the north of Espiritu Santo at Big Bay, it extends westward to the Jordan River and southward incorporating the Mantatas River (WHC 2010).

The Area was established in 1994 through a co-operative tribal agreement between the Mantatas and Sara villages, the two Indigenous tribes who have stewardship over the land, when the threat of international logging was imminent. Through the South Pacific Regional Environment Programme (SPREP) the Village chiefs agreed to manage and conserve the biodiversity of the region, whilst at the same time using the forest resources to generate a sustainable income for each community through traditional management practices. The agreement was sealed with the symbolic planting of a cycad at Big Bay (Romulus & Lucas 2000). Vatthe provides these villages with food, medicines, custom ceremony, building materials, and harvestable products which are sold at local markets. 265 plant species have been identified as having traditional uses. Vatthe encompasses sacred and ‘taboo’ places associated with Indigenous belief systems (WHC 2010). Vatthe comprises seven broad forest communities, 74 endemic species of land and freshwater birds, 21 freshwater fish and 13 crustacean species, and a unique cave system housing an endemic species of insectivorous bats (Romulus & Lucas 2000; WHC 2010). It was submitted for consideration for World Heritage status in 2004 (WHC 2010).

Further conservation of natural areas in Santo are being investigated through a Landholders’ Conservation Initiatives Project, administered by the Vanuatu Cultural Centre and Vanuatu

Environment Unit, with an emphasis on Traditional Ecological Knowledge (TEK) and Traditional Resource Management (TRM) practices (VCC 2007). An initial four year project to establish TEK and TRM databases was operated between 2004 and 2007 (VCC 2007).

An environmental threat in the region and widely spread across Santo is the invasive ‘mile a minute’ weed (*Persicaria perfoliata*) which covers much of the islands less accessible terrain. This plant was thought to be introduced during World War II as a quick growing camouflage plant and has been widely recognised as an environmental issue across the region (Image 4).



Image 4: Mile-a-minute (*Persicaria perfoliata*) weed blanketing the landscape

5.3 THE SOCIETY OF ESPIRITU SANTO

The total population of Espiritu Santo is 34,388. Its major city is Luganville with a population of 13,484 (VNSOa 2009). Espiritu Santo society is divided between the urban society of Luganville, and the rural village life of the majority of the island’s population (ESTA 2010) (Figure 11).

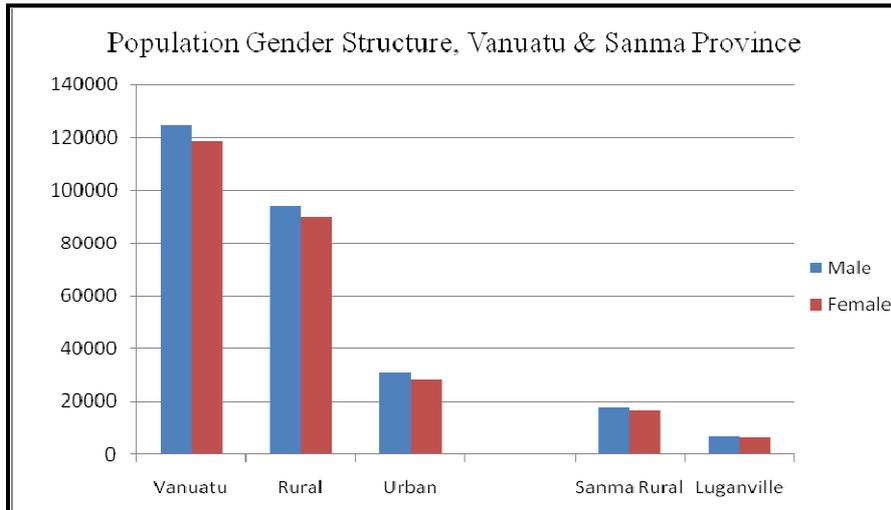


Figure 11: Vanuatu National & Sanma Province – Rural and Urban Population by Gender (Source-VNSO 2009c)

A town of note to the North of Luganville is Port Olry with a population of 1,300. It has a Catholic mission, French speaking and was first settled 4,000 years ago by people from New Guinea & Solomon Islands (FEN 2009).



Image 5: Children playing in Port Olry

Luganville is located within the Sanma Province which has a high percentage of children and young people reflecting national trends (Figure 12).

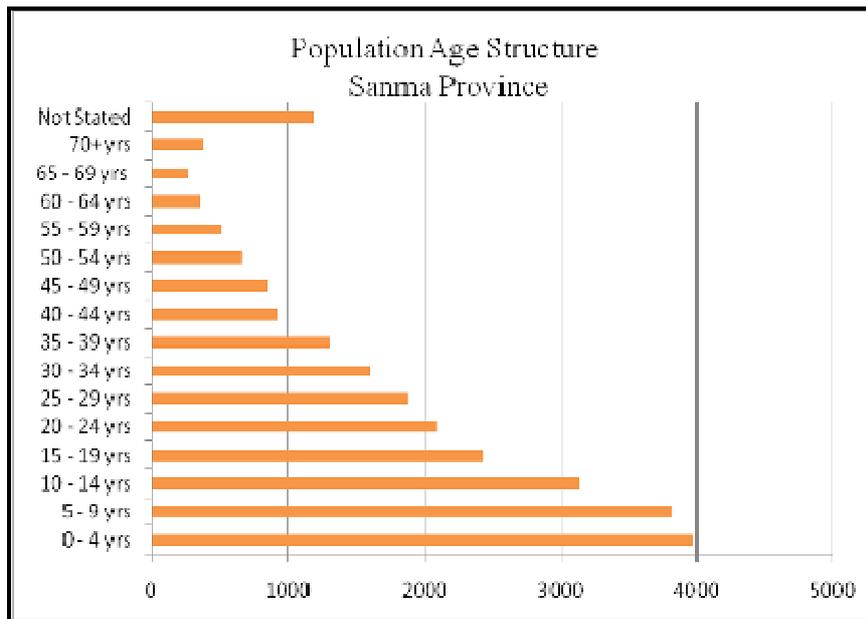


Figure 12: Sanma Province Population Age Structure (Source VNSO 2009b)

Luganville is the provincial capital and a busy port centre, with a protected natural harbour and improved road systems directed at the export of the island's major agricultural products. Regional Municipal administrative buildings, the major regional hospital, tourist boutiques and small commercial businesses, a central marketplace, a courthouse and police station, and a number of service facilities such as banks, hotels and law firms, have been established. Remnants of World War II provide tourist opportunities, especially dive sites, and the airfields are now used for commercial air traffic. The Luganville population comprises a majority of ni-Vanuatu, with descendants of European and Chinese settlers and other Pacific Islanders (VNSO 2009a).

Employment for most Luganville residents largely depends on tourism, but opportunities are low and welfare is non-existent, so there is a high dependency ratio. The employment rate for Luganville is 14.7% (Cox *et al.* 2007; UNESCAP 2000).

In terms of health and education, Luganville children fare better than their rural counterparts, with lower rates of child mortality and malnutrition/wasting, greater access to safe drinking water supplies, improved sanitation, trained medical practitioners and higher education retention rates (VNSOb 2009).

There is a higher adult literacy rate amongst the urban population than the rural. The rise in popularity of 'western' alcohol over the traditional kava drink has seen an increase in alcoholism and its related diseases. Incidents of domestic abuse and violence against women have been increasing (Taylor 2008; VNSOb 2009). The founding of the SANMA Women's Counselling Centre, increased numbers of divorce, child custody and domestic assault litigations, and the drafting of a Family Protection Act (as yet unpassed) have been in response to this rise.

Espiritu Santo's large rural population comprises village communities practising subsistence farming under traditional village practices and customs (ESTA 2010). Larger farming lands are generally owned by Australian, New Zealand and European concerns and often employ local villagers. The official rural employment rate is only 10% (Cox *et al.* 2007). Village chiefs (men) are the head of these patriarchal communities, and make general decisions with regard to community issues, particularly land uses and access to tribal land, perform ceremonies and facilitate dispute resolution (ESTA 2010; Romulus & Lucas 2000). Village remoteness from the main urban centre, coupled with rugged terrain means that access to education, health, sanitation, improved water sources, transport and communications infrastructures is generally poorer than urban counterparts, and reflected in mortality and education retention rates and other health statistics (Cox *et al.* 2007;

VNSOb 2009). Traditional attitudes on the roles of men and women play a large part in women's lower participation rates in education in the rural villages on Santo (ACFID 2004; AG 2009; Cox *et al.* 2007).

These inequities, and others related to lack of opportunity for ni-Vanuatu people, form the basis of the Millennium Development Goals (MDGs) for Vanuatu. Agreements such as the Australia-Vanuatu Joint Aid Strategy 2005-2010 and Australia-Vanuatu Partnership for Development seek to address these inequities (ACFID 2004; AG 2009).

In a survey conducted in 2004, Santo residents, both urban and rural, were asked for their opinions on economic, cultural and other aspects of tourism, and Australian tourists, with regard to Espiritu Santo (Cassidy 2004). Most respondents (93.4%) wanted tourists to come to their island, thought that tourism was good for the economy (73.8%), wanted to show their island and culture to visitors (62.3%), and believed that tourism would generate future investment and development (54.1%). Some respondents (25.9%) thought that tourism had a negative effect on local culture and customs (Cassidy 2004).

5.4 CULTURE OF ESPIRITU SANTO

Religious beliefs and traditional Melanesian customs play an integral part in the day to day lives of most Santo residents. These inform environmental protection, attitudes, values, family and community structures, behaviour and participation (Cassidy 2004; ESTA 2010; Romulus & Lucas 2000; Taylor 2008) which are referred to in Vanuatu as 'kastom' and 'kastom law'. Kastom includes beliefs in spiritual powers such as 'tabu' and 'black magic'. Practicing Kastom law is the responsibility of the Chiefs.

Christian religions account for over 90% of the population's affinities, with approximately 8% subscribing to tribal Indigenous religions. More than 100 tribal languages are spoken on Espiritu Santo (ESTA 2010; USDoS, 2010). Village communities are organised around a Chief as authority, with specific cultural roles for men, women and children, working together to attain communal and individual goals (UNIHRI 1998). A traditional Council of Chiefs, uniting the leaders of all tribal clans together, is the supreme decision making structure when tribal conflicts over land arise. The Sanma Council of Chiefs is Chief Charlie Rani (Image 6).



Image 6: Chief Charlie Rani

Rural villages are reliant on their forests and lands for their livelihood and Indigenous cultural ceremonies, and stewardship over land is important in maintaining these. Traditional medicines are frequently used and traditional healers are consulted when villagers fall ill (Liu 2007).



Image 7: Ceremony in Luganville to welcome the new Catholic Bishop of Vanuatu

The extended family system is the most important in Melanesian culture, and children are raised by the community, fostering lifelong obligations to care for and support village members. Under village hierarchy, this makes the Chief ultimately responsible for the welfare and traditional education of children, who are seen in Melanesian culture as important in maintaining community happiness, security and wealth (UNIHRI 1998).

Village customs regarding the selection of chiefs, religious ceremonies, marriages, births, deaths and coming-of-age vary from tribe to tribe. Traditional culture on the island is slowly being influenced by western inputs, but the maintenance of traditional knowledge and practices with regard to environmental management and conservation is proving an important mechanism to establishing sustainable livelihoods for Espiritu Santo's residents (Liu 2007; Romulus & Lucas 2000; UNIHRI 1998; VCC 2007).

6. CLIMATE CHANGE

Earth's climate has warmed by an average of 0.6°C in the past 100 years (Walther et al. 2002). Ecological responses are regionally highly spatially heterogeneous as warming is asymmetric: diurnal temperature ranges have decreased because minimum temperatures are increasing at twice the rate of maximum temperatures.

There are essentially two ways in which increased levels of CO₂ in the atmosphere can affect ecosystems: direct fertilisation and changes in temperature and precipitation (Warrick, et al. 1986).

Direct fertilisation: relates to the effect of added carbon in the atmosphere because terrestrial plants use CO₂ for growth and reproduction therefore greater levels of carbon tend to increase the growth rates in plants (Solomon & West 1985).

Changes in temperature and precipitation: The link between spatial patterns of vegetation and climate variables has been recognised for many years (Holdridge 1947; Thornthwaite 1948). In more recent times studies have shown significant shifts in vegetation patterns due to climatic variables, which include changes in precipitation and temperature, could be attributable to increased atmospheric CO₂ levels (Neilson et al. 1992; Prentice et al. 1992).

Ecological responses can be categorised into (1) phenological (timing) and physiological responses, (2) range and distribution of species, (3) community composition and interactions and (4) ecosystem structure and dynamics.

Phenological responses notably focus on 'spring' activities, such as earlier breeding and mating cycles, earlier arrival of migratory species (especially birds), earlier shooting and flowering of plant species and earlier appearances of insects. These trends have been apparent since the 1960s, becoming earlier with each season. Subsequently, 'autumnal' changes have been gradually delayed, with an overall lengthening of the growing season (Walther et al. 2002).

Species ranges and distributions have predominantly shifted towards the poles and higher altitudes, but are reliant on temperature/light/precipitation tolerances, and so are less easily generalised. However, this overall trend, whilst extending the range for some species, has resulted in more specialized species becoming increasingly endangered. Ranges and distributions of invasive, non-native species are also more greatly favoured by climate change (Walther et al. 2002).

Changes in range and distributions also alter community compositions and their interactions, most particularly trophic webs (food chains). Niche species (specialists) are disadvantaged by climate change, generalist species are favoured. For sedentary species for example, vegetation communities and coral reefs, climate warming can result in extinction events, such as dieback and bleaching (Walther et al. 2002).

Ecosystems' structures and complex dynamics are altered by climate warming in multiple ways, largely as the compound result of individual and community responses and the physical responses of marine and terrestrial circulation patterns. For example, recruitment in fish populations (such as salmon) can be altered by ocean circulations, so that either sexual signalling or migration is unsynchronized, leading to population decline (Walther et al. 2002).

The South Pacific Sea Level and Climate Monitoring Project is an AusAID funded monthly and annual reporting mechanism, managed by the Australian Bureau of Meteorology. It monitors and records sea-level changes, ENSO phenomena, sea-level temperatures, wind strengths and cyclones, to gauge climatic changes which may require human response and adaptation for the people of the South Pacific (including Vanuatu). In the *July 2008 – June 2009 Sea Level Data Summary Report*, it found that the monthly mean sea levels recorded by SEAFRAME stations at Vanuatu (Nov '08), Tonga (Jan '09) and Fiji (Feb '09) were the highest on record (since 1993), and that sea levels had been recorded at Vanuatu as increasing, on average, 4.8mm per year since 1993 (BOM 2009).

VanuaCLIM’s initial application has assessed trends in minimum, maximum and mean temperature for Bauerfield, Efate situated 7 kms from the capital Port Vila. A general trend towards temperature warming has been demonstrated that is in line with global changes. Although slightly slower in its overall temperature increase profile, as a result of the moderating effect of the surrounding Pacific Ocean, maximum temperatures increased an average of 0.046 °C per year over the period of record. In line with global trends, the overnight minimum temperatures increased 70% more rapidly than the maximum, averaged at 0.069 °C per year (VNACCC 2009).

Data from Australia’s National Tidal Centre for the past 17 years was also analysed for tidal extremes and trends using VanuaCLIM to construct a sea level rise scenario generator. When high climate sensitivity was applied to a worse case story line for global greenhouse gas emissions, a possible sea level rise of 100 cms by 2100 for Port Vila was found (Figure 13).

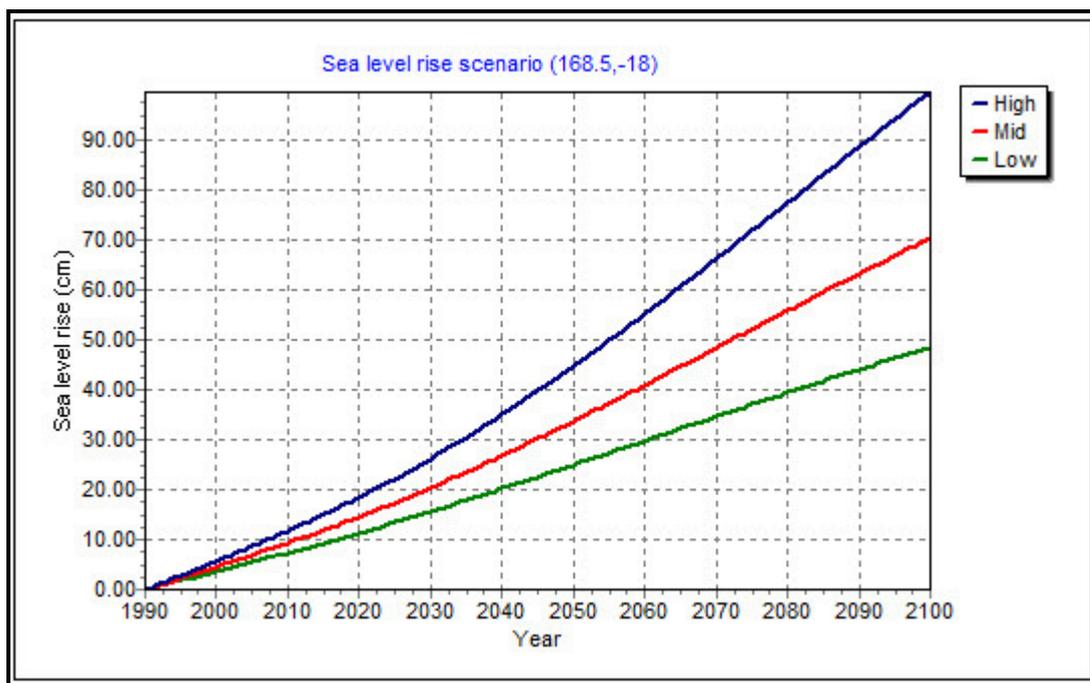


Figure 13: Projected sea-level rise for Vanuatu using Low, Mid and High Greenhouse Gas scenarios. (Source: VNACCC, 2009)

6.1 IMPACTS OF CLIMATE CHANGE ON VANUATU

The Vanuatu archipelago and its inhabitants are considered to be on the front line of effects due to climate change. Rising sea levels and intensified extreme events such as droughts and tropical cyclones are examples of global environmental change occurring across the region. However, incremental changes in the underlying climate also impact on day-to-day activities such as farming, with weed invasions already occurring and plant and human disease outbreaks now more prevalent. Both can be linked to increasing temperatures and shifts in precipitation regimes that now exceed very sensitive thresholds (VNACCC 2009). More than 75% of Vanuatu’s settlements are located in coastal areas and are experiencing coastal erosion problems. All urban areas rely on groundwater sources for fresh water and experience localised flooding due to poor drainage which contaminates groundwater (BOM 2006). Vanuatu Department of Fisheries reported that outbreaks of fish poisoning due to *Sigatara* are highly related to climate variability (BOM 2006).

In 2007 the entire village of Loteu on Tegua Island, in the Torres Islands of far north Vanuatu, was relocated inland to higher ground due to rising sea-levels. Chief Reuben, paramount head of the island, stated that at least once a year a combination of king tides and a surging sea flooded Loteu. As a young boy, he remembered walking 30 metres from his house to fish from a rocky beach

platform. Now the platform is submerged and he has been forced to abandon his childhood home. "I'd say the sea has come up 10 or 20 metres since I was a boy...The advancing salt water is killing our coastal coconut trees. Before, those trees were behind the beach, but now they are right at the water's edge. So we have to plant new trees and new gardens further inland" (Bohane 2006). A lack of fresh water was a major problem for Tegua islanders. For more than a decade prior to relocation, the islanders relied solely on rainwater harvested during the 6-month wet season. Tegua's new village, half a kilometre inland, has seven simple wooden houses with sloping roofs draining into 6000-litre water tanks.



Image 8: Port Olry beach showing the encroachment of the sea into coconut plantations

Sea-level rise poses the greatest risk to Pacific islanders living on low-lying coral atolls. Two uninhabited Kiribati islands disappeared in 1999. Tuvalu has approached Australia and New Zealand to resettle its entire population when its islands are expected to go under water within the next 30 years, and 2000 people on the Carteret islands in Papua New Guinea are preparing to move to Bougainville Island (Bohane 2006).

Development of a National Disaster Risk Reduction and Disaster Management (DRR & DM) Plan for Vanuatu was undertaken in 2005 through workshops and consultations with representatives from all National and Provincial government departments, local municipalities, NGOs, women's and youth groups, and communities. Workshops identified that:

- The Republic of Vanuatu is one of the most vulnerable nations worldwide to extreme natural disasters, regularly subject to cyclones, landslides, flooding, earthquakes, tsunamis and volcanic eruptions, with an increasing intensity of some due to human-induced climate change (VG 2007). The national population is growing, and urban areas are expanding quickly, so that these disasters pose potentially greater threats to lives, livelihoods and infrastructure.
- Prior disaster management had essentially been response-based. Effective management needed to incorporate risk reduction planning, early warning and continuous monitoring systems, more frequent and widespread community consultations, improved and explicit information about specific hazards and vulnerability, and improved government policies and legislation to underpin risk

reduction and management frameworks; DRR & DM strategies needed to incorporate both Traditional Knowledge and scientific information (VG 2007).

- Achieving well-planned, holistic and appropriate DRR & DM strategies for Vanuatu would: increase national resilience; empower communities; strengthen Government frameworks; promote knowledge-based decision-making; and promote co-ordinated local, regional and international disaster responses (VG 2007).

7. METHODS

7.1 OBJECTIVES

The objectives for this project were to capture community views in response to the following questions:

1. What are the key priorities in terms of a sustainable future for Espiritu Santo?

Approach: Interview, survey and focus group questions were designed to capture the views of local people in terms of key priorities pertaining to their sustainable future.

2. What are the levels of concern, knowledge and observations surrounding the social and environmental impacts of climate change?

Approach: Interview, survey and focus group questions were designed to capture community concern, knowledge and observations surrounding the social and environmental impacts of climate change.

3. Are there different views comparing urban and rural perspectives concerning social, cultural, economic and environmental aspects?

Approach: Responses were compared between a rural community (Port Olry) and an urban community (Luganville).

4. How applicable was the model for Intergenerational Democracy in this project?

Approach: This objective was to test in an international context, a whole of community approach to consultation developed by Kirsten Davies as part of her PhD research. This model has been titled 'Intergenerational Democracy' (ID). It is defined as an approach to community engagement and participation that requires the inclusion of citizens representing all age groups, recognising there are many quieter but equally legitimate voices which are rarely heard in government policy and planning forums. The foundation of ID is based on the principles of direct democracy and intergenerational equity which forms the basis of environmental sustainability (Brundtland 1987). ID aims to engage and motivate whole communities, from children to the elderly, in planning and managing their sustainable futures (Davies 2009).

5. What are some future steps that can be taken to assist Espiritu Santo's sustainable future?

Approach: Responding to this objective required identifying and documenting future actions that were presented during interviews and/or focus groups.

7.2 DEVELOPMENT AND DESIGN

The project was a quantitative and qualitative study. It commenced in early 2010 with a literature review to provide background information on the demographic, environmental, cultural and social profiles of Vanuatu and the island of Espiritu Santo. A section on climate change and its implications for this region was also included.

The second project stage required designing, planning and the field work in Vanuatu. This involved developing and testing a suite of documents including: a background information sheet (Appendix 1), interview and focus group questions and template (Appendix 2) and a (paper based) survey (Appendix 3). The survey form was translated into French (Appendix 4), and Bislama (Appendix 5) to assist the process of bridging language barriers. This form was designed as a single page, double sided questionnaire which could be easily comprehended by a range of age groups and education levels. It could be completed by the respondent in 5-10 minutes while the researcher or volunteer was present. Completed forms were then collected by the researcher which meant that subsequent methods of returning forms (such as postal systems) were not required as this was not practicable given factors such as: language barriers and the isolation of many communities. Digital distribution methods were offered via the VECA web site, however due to a low rate of internet coverage and access to computers, most forms were completed in hard copy.

The field work was undertaken in a total of seven weeks, over two periods in April and July 2010. Prior to the commencement of the field work, an application was lodged with the Vanuatu Government requesting permission to conduct research and a permit was granted in April 2010.

7.3 RECRUITMENT

Interviewees, focus group participants and survey respondents were recruited from the Council of Chiefs, local schools, youth councils, markets, homes, health agencies and the VECA. They were selected with the aim of achieving an equal age and gender representation. In addition, adult participants were selected by geographic spread, education, tribal heritage, language group, religion and socio-economic position to ensure input from a broad cross-section of the community. The interviews and focus groups were held in two locations, Luganville and Port Olry, to obtain comparative urban and rural views. The survey was distributed across the island. These communities and the inclusion of young people and rural communities were prioritised by VECA members and the Council of Chiefs as those of highest need in terms of their social and environmental challenges. The assistance of translators was required in most sessions and interviews when they usually translated responses from Bislama to English. Many agencies and individuals volunteered to distribute the survey which resulted in its wide coverage of locations across the island. A student from The University of The South Pacific (USP) provided extensive assistance in the survey distribution. This included completing forms on behalf of illiterate people when required and targeting respondents such as the elderly who would have been difficult for the researcher to locate.

7.4 DATA TRANSCRIPTION, COLLATION AND ANALYSIS

Each interview and focus group was assigned a code. Responses were transcribed digitally (using a lap top computer) in English at the time of the interview and focus group. These transcriptions were checked and de-personalised. Coded responses were grouped thematically by question to enable counting of responses and summaries to be written.

Completed survey forms were individually coded and responses entered into an Excel spread sheet. Social demographic data was captured from all interviews, focus group participants and survey respondents, translated (as required) and entered into an excel spreadsheet.

8. RESULTS

8.1 DEMOGRAPHICS

A total of five focus groups (132 participants) were held between April and July 2010, 35 Individual face to face interviews and 277 surveys were returned. It should be noted that everyone involved in this study completed a survey form. To discern between groups in the following reporting, those who completed a survey only have been referred to as survey respondents. The total number of people participating in this study was 444, 237 (53.4%) were male and 191 (43.0%) were female, 16 (3.6%) did not indicate their gender (Table 2). This sample was aligned to the age composition of the national population with 41% being 0 -15 years of age and 3% 65 years or older (MICS 2007).

Table 2: Number and gender of participants

Gender	Interviewees	Focus Group Participants	Survey Respondents	Total
Male	21 60.0%	61 46.2%	155 56.0%	237 53.4%
Female	13 37.1%	61 46.2%	117 42.2%	191 43.0%
No Response	1 2.9%	10 7.6%	5 1.8%	16 3.6%
Total	35 100.0%	132 100.0%	277 100.0%	444 100.0%

The majority of participants in this study were young people. A total of 158 (35.6%) were aged from 11 to 20 years, 94 (21.2%) were aged from 21 to 30 years, 63 (14.2%) were aged from 30 to 40 years and 45 (10.1%) were aged from 41 to 50 years (Table 3).

Table 3: Age group of participants

Age group in years	Interviewees	Focus Group Participants	Survey Respondents	Total
0 - 10	1 2.9%	27 20.5%	5 1.8%	33 7.4%
11 - 20	12 34.3%	84 63.6%	62 22.4%	158 35.6%
21 - 30	4 11.4%	4 3.0%	86 31.0%	94 21.2%
31 - 40	8 22.9%	2 1.5%	53 19.1%	63 14.2%
41 - 50	5 14.3%	0 0.0%	40 14.4%	45 10.1%
51 - 60	3 8.6%	0 0.0%	12 4.3%	15 3.4%
61 - 90+	2 5.7%	0 0.0%	11 4.0%	13 2.9%
No Response	0 0.0%	15 11.4%	8 2.9%	23 5.2%
Total	35 100.0%	132 100.0%	277 100.0%	444 100.0%

There was a relatively even distribution of participants from urban and rural localities. A total of 207 (46.6%) participants came from rural areas, and 237 (53.4%) came from urban areas (Table 4). This sample differed from the national population as approx. 45% of citizens reside in rural areas (VNSOa).

Table 4: Number of participants located in rural and urban localities

Type of locality	Interviewees	Focus Group Participants	Survey Respondents	Total
Rural	9 25.7%	96 72.7%	102 36.8%	207 46.6%
Urban	26 74.3%	36 27.3%	175 63.2%	237 53.4%
Total	35 100.0%	132 100.0%	277 100.0%	444 100.0%

Participants described their religious beliefs as Christian. A total of 418 (93.7%) nominated a Christian religion (Table 5).

Table 5: Religious beliefs of participants

Religion	Actual Number	%
Christian	416	93.7
Other	9	2.0
No Response	19	4.3
Total	444	100

Most participants in this study were born in Vanuatu. A total of 385 (86.7%) nominated Vanuatu as their birthplace (Table 6).

Table 6: Birth place of participants

Birthplace	Interviewees	Focus Group Participants	Survey Respondents	Total
Birthplace Vanuatu	8 22.9%	112 84.8%	265 95.7%	385 86.7%
Birthplace Pacific Region	2 5.7%	1 0.8%	5 1.8%	8 1.8%
Birthplace Other	0 0.0%	1 0.8%	1 0.4%	2 0.5%
No Response	25 71.4%	18 13.6%	6 2.2%	49 11.0%
Total	35 100.0%	132 100.0%	277 100.0%	444 100.0%

Participants' parents were usually born in Vanuatu. A total of 396 (89.2%) participants nominated their parents had been born in Vanuatu (Table 7).

Table 7: Birth place of participants' parents

Parents Birthplace	Interviewees	Focus Group Participants	Survey Respondents	Total
Birthplace Vanuatu	32 91.4%	110 83.3%	254 91.7%	396 89.2%
Birthplace Pacific Region	2 5.7%	2 1.5%	8 2.9%	12 2.7%
Birthplace Other	0 0.0%	0 0.0%	1 0.4%	1 0.2%
No Response	1 2.9%	20 15.2%	14 5.1%	35 7.9%
Total	35 100.0%	132 100.0%	277 100.0%	444 100.0%

Language groups were measured and it was found that most participants spoke at least two languages. A total of 286 (25.1%) of participants spoke a traditional language, 405 (35.5%) spoke Bislama, 234 (20.5%) spoke English and 177 (15.5%), spoke French (Table 8).

Table 8: Language group of participants

Language group	Number	%
Traditional Local language	285	25.1
Bislama	405	35.5
English	234	20.5
French	177	15.5
Chinese	1	0.1
Japanese	3	0.3
Korean	1	0.1
Other	30	2.6
No Response	4	0.4

Due to the inclusion of young people in this study, a considerable group of 128 (28.8%) participants nominated that they were still attending school. It was found that 96 (21.6%) participants had completed year 10 of secondary school and 51 (11.5%) had completed year 12. A significant number of 84 (18.9%) participants had not completed their schooling (Table 9). The percentage of educated people who participated in this study was higher than the national average (VNSOb) due to the involvement of primary and secondary school students in this study.

Table 9: Education level of participants

Education Level	Interviewees	Focus Group Participants	Survey Respondents	Total
Have not attended school	0 0.0%	1 0.8%	11 4.0%	12 2.7%
Did not complete school	5 14.3%	0 0.0%	79 28.5%	84 18.9%
Still attending school	8 22.9%	98 74.2%	22 7.9%	128 28.8%
Year 10	10 28.6%	10 7.6%	76 27.4%	96 21.6%
Year 12	3 8.6%	1 0.8%	47 17.0%	51 11.5%
Year 13	0 0.0%	0 0.0%	4 1.4%	4 0.9%
Year 14	3 8.6%	4 3.0%	7 2.5%	14 3.2%
TAFE qualification	3 8.6%	1 0.8%	4 1.4%	8 1.8%
University degree	3 8.6%	2 1.5%	13 4.7%	18 4.1%
No Response	0 0.0%	15 11.4%	14 5.1%	29 6.5%
Total	35 100.0%	132 100.0%	277 100.0%	444 100.0%

8.2 SURVEY RESULTS

The following summaries, figures and tables report on the survey results. Responses to each of the survey questions include: Age-based graphs, discussion and comparisons by gender and rural versus urban responses. Age based tables can be found in Appendix 8.



Image 9: Health worker and member of Sanma Provincial Youth Council completing a survey form, Luganville

Q.1. Which do you feel most connected to?

Respondents ranked their attachments to ‘family, friends and community’ and their ‘family and friends and environment equally’ as their most important forms of connections. Each of these options was prioritised by 165 (37.2%) respondents. It was notable that only a small group of 39 (8.8%) respondents nominated ‘the environment’ as their key form of attachment (Figure 14).

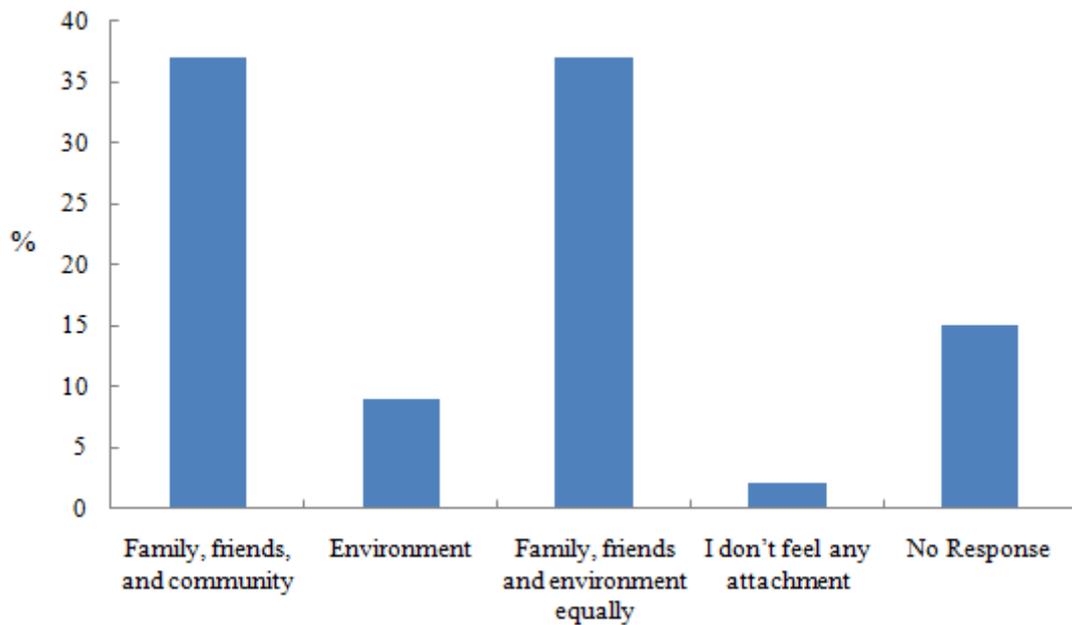


Figure 14: Responses to survey Question 1

Young children (0 - 10 years) were the age group that placed the most importance on connections to their 'family, friends and community'. People aged from 21 - 61+ years highlighted the importance of 'family and friends and environment equally'. It was notable that environmental attachments were low across all age groups but increased significantly with respondents aged over 61 years. This group's social attachment to 'family, friends and community' was the lowest of all groups (Figure 15).

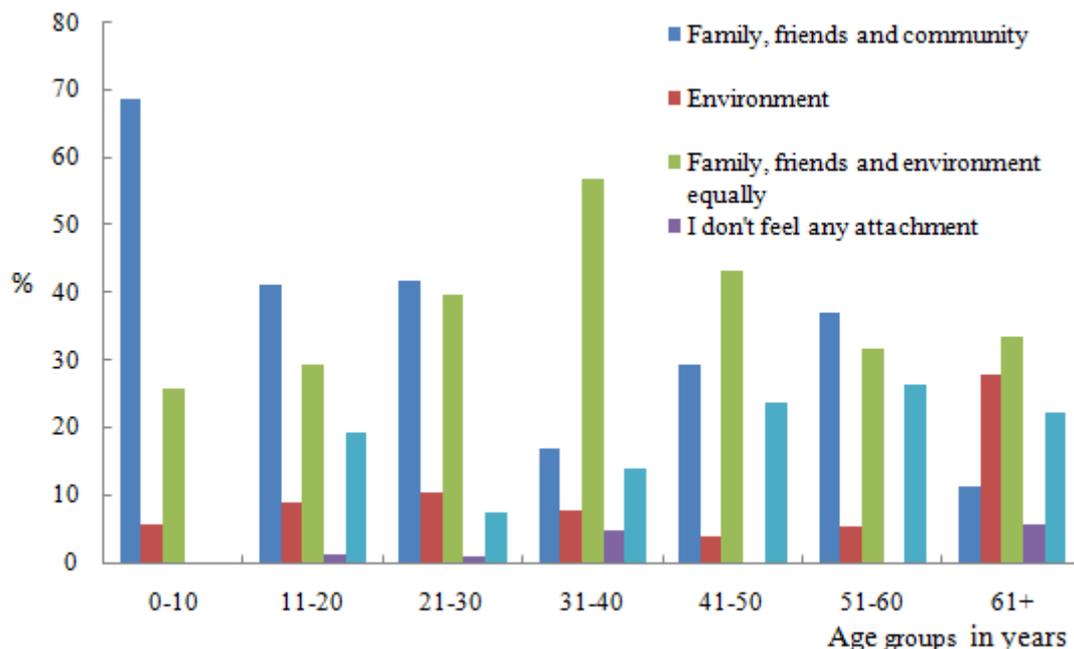


Figure 15: Responses to survey Question 1 by age group

Gender based responses to this question were not significantly different with most males and females prioritising 'family, friends and community' or 'family, friends and the environment equally'. The exception was males (30, 12.2%) who were found to be more attached to 'the environment' than females (9, 4.5%) (Table 10).

Table 10: Responses to survey Question 1 by gender

Description	Female	Male	Total
Family, friends and community	79 39.7%	86 35.1%	165 37.2%
Environment	9 4.5%	30 12.2%	39 8.8%
Family, friends and environment equally	75 37.7%	90 36.7%	165 37.2%
I don't feel any attachment	1 0.5%	6 2.4%	7 1.6%
No response	35 17.6%	33 13.5%	68 15.3%
Total	199	245	444

When contrasting rural and urban responses it was found that a larger majority of urban residents (46.0%) prioritised their 'family, friends and the environment equally' compared with their rural counterparts (27.1%). A larger percentage (13.0%) of rural respondents favoured 'the environment' than urban citizens (5.1%) (Table 11).

Table 11: Results to survey Question 1 comparing urban and rural responses

Description	Urban	Rural	Total
Family, friends, and community	76 32.1%	89 43.0%	165 37.2%
Environment	12 5.1%	27 13.0%	39 8.8%
Family, friends and environment equally	109 46.0%	56 27.1%	165 37.2%
I don't feel any attachment	5 2.1%	2 1.0%	7 1.6%
No Response	35 14.8%	33 15.9%	68 15.3%
Total	237	207	444

Q.2. Which of the following regions do you feel most attached to?

Question 2 asked people to rank their regional attachments. The highest ranking response was 'the locality where I currently live' with a total of 112 (25.2%) respondents prioritising the locality as the region they felt most attached to. Ranked second was 'the place where my family lived or still lives' with 93 (20.9%) respondents identifying the importance of family in terms of their connection to place. It was notable that only a small group of 38 (8.6%) respondents felt a strong attachment to the world in which they lived (Figure 16).

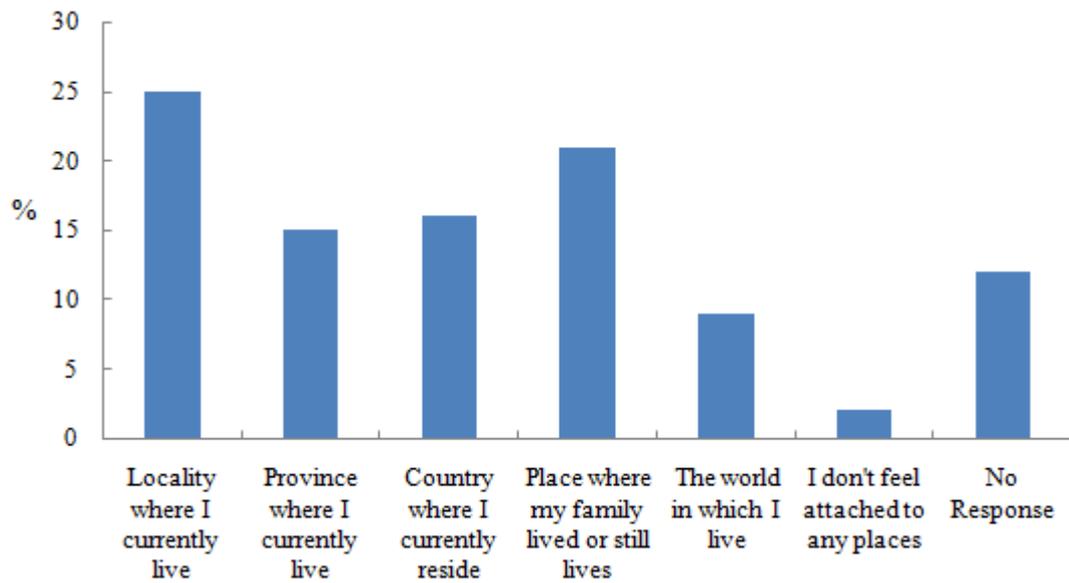


Figure 16: Responses to survey Question 2

Respondents aged upward from 31 years appeared to experience the strongest connections to their locality. Those in the age group 11 - 30 years were most attached to 'the place where my family used to live or still lives' (Figure 17).

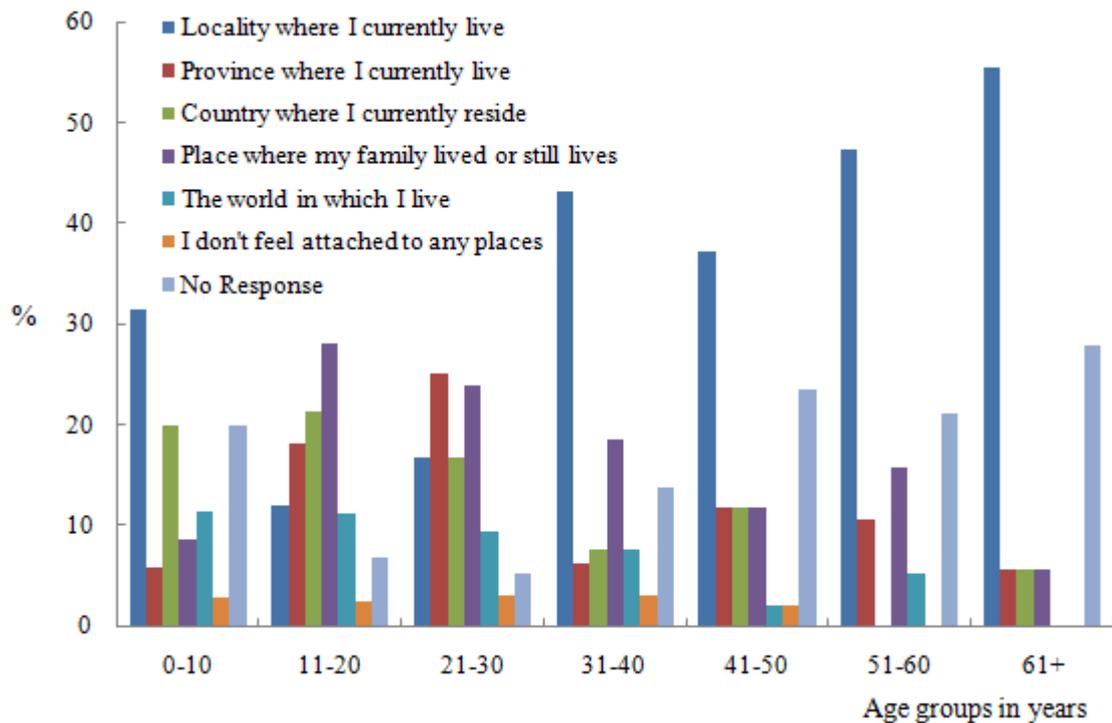


Figure 17: Responses to survey Question 2 by age group

There was not found to be any significant gender based differences in responses (Table 12).

Table 12: Responses to survey Question 2 by gender

Description	Female	Male	Total
Locality where I currently live	49 24.6%	63 25.7%	112 25.2%
Province where I currently live	27 13.6%	41 16.7%	68 15.3%
Country where I currently reside	26 13.1%	43 17.6%	69 15.5%
Place where my family lived or still lives	47 23.6%	46 18.8%	93 20.9%
The world in which I live	17 8.5%	21 8.6%	38 8.6%
I don't feel attached to any places	2 1.0%	9 3.7%	11 2.5%
No Response	31 13.6%	22 9.0%	53 11.9%
Total	199	245	444

When comparing urban and rural responses, it was found that a larger group (54, 26.1%) of rural respondents prioritised the place where their family lived or still lives more than the urban group (39, 16.5%). More urban residents (31, 13.1%), nominated their primary connections to the world than the rural group (7, 3.4%) (Table 13).

Table 13: Results to survey Question 2 comparing urban and rural responses

Description	Urban	Rural	Total
Locality where I currently live	64 27.0%	48 23.2%	112 25.2%
Province where I currently live	34 14.3%	34 16.4%	68 15.3%
Country where I currently reside	40 16.9%	29 14.0%	69 15.5%
Place where my family lived or still lives	39 16.5%	54 26.1%	93 20.9%
The world in which I live	31 13.1%	7 3.4%	38 8.6%
I don't feel attached to any places	6 2.5%	5 2.4%	11 2.5%
No Response	23 9.7%	30 14.5%	53 11.9%
Total	237	207	444

Q.3 Which of the following regions do you feel least attached to?

When asked to identify the region that respondents were least attached to, responses were relatively evenly spread across all options. The highest scoring response was 'the world in which I live' with 76 (17.1%) choosing this response. Ranked a close second (74, 16.7%) was 'I don't feel attached to any places' (Figure 18).

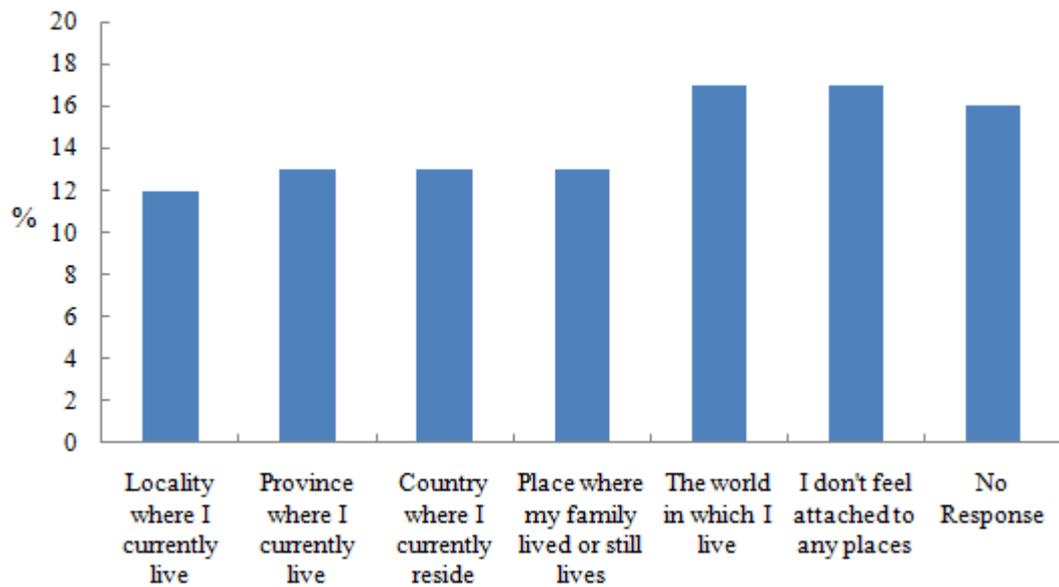


Figure 18: Responses to survey Question 3

Respondents aged from 21 - 30 years were least attached to 'the world in which I live'. Those aged from 41 - 60 years were the highest groups to nominate that they did not 'feel attached to any places' (Figure 19).

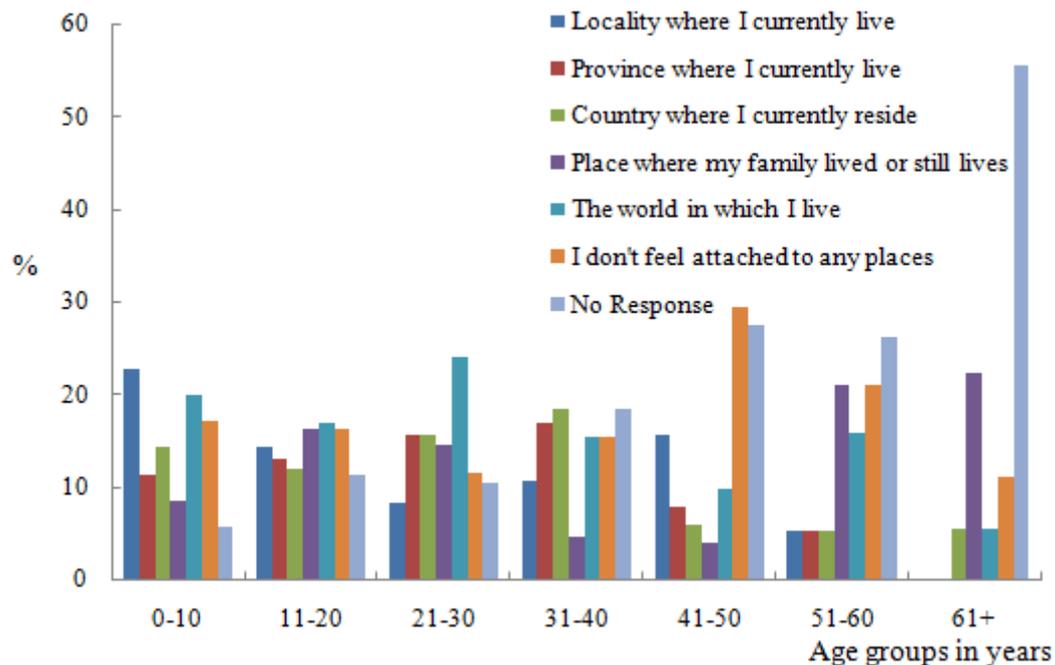


Figure 19: Responses to survey Question 3 by age group

Some gender based differences in responses were noted. Females were more attached to their locality (31, 15.6%) than males (24, 9.8%). Males were found to have stronger national attachments (39, 15.9%) than females (17, 8.5%). More males did not feel any form of attachment (48, 19.6%) when compared to females (26, 13.1%) (Table 14).

Table 14: Responses to survey Question 3 by gender

Description	Female	Male	Total
Locality where I currently live	31 15.6%	24 9.8%	55 12.4%
Province where I currently live	26 13.1%	30 12.2%	56 12.6%
Country where I currently reside	17 8.5%	39 15.9%	56 12.6%
Place where my family lived or still lives	29 14.6%	27 11.0%	56 12.6%
The world in which I live	34 17.1%	42 17.1%	76 17.1%
I don't feel attached to any places	26 13.1%	48 19.6%	74 16.7%
No Response	36 18.1%	35 14.3%	71 16.0%
Total	199	245	444

When comparing urban and rural responses, it was found that more urban respondents were disconnected from 'the world in which they lived' (urban 49 people, 20.7% and rural 27 people, 13.0%) (Table 15).

Table 15: Results to survey Question 3 comparing urban and rural responses

Description	Urban	Rural	Total
Locality where I currently live	27 11.4%	28 13.5%	55 12.4%
Province where I currently live	32 13.5%	24 11.6%	56 12.6%
Country where I currently reside	29 12.2%	27 13.0%	56 12.6%
Place where my family lived or still lives	27 11.4%	29 14.0%	56 12.6%
The world in which I live	49 20.7%	27 13.0%	76 17.1%
I don't feel attached to any places	40 16.9%	33 15.9%	74 16.7%
No Response	33 13.9%	39 18.8%	71 16.0%
Total	237	207	444



Image 10: Tarcisus Alguet assisting carpenter at Port Olry to complete a survey form

Q.4. What are you most concerned about in Espiritu Santo?

When asked to identify the area they were most concerned about, the majority of respondents nominated 'the environment'. A total of 180 (40.5%) respondents ranked environmental issues as their highest concern. Economic and social issues were ranked equally second (71, 16.0%) measuring at less than half of the concern of environmental issues. Cultural issues were found to be the third level of concern (51, 11.5%) (Figure 20).

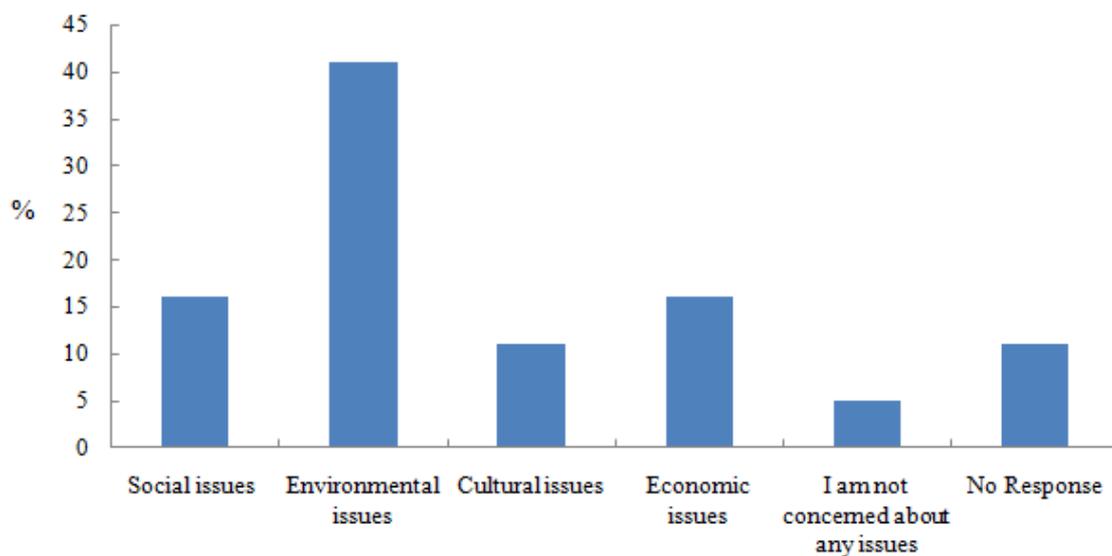


Figure 20: Responses to survey Question 4

Respondents aged from 11 - 50 years had the highest levels of environmental concern when compared to others age groups. It was found that respondents aged from 51 - 60 years were the

most concerned group regarding social issues. Children aged 0 - 10 years were the most concerned group regarding cultural issues (Figure 21).

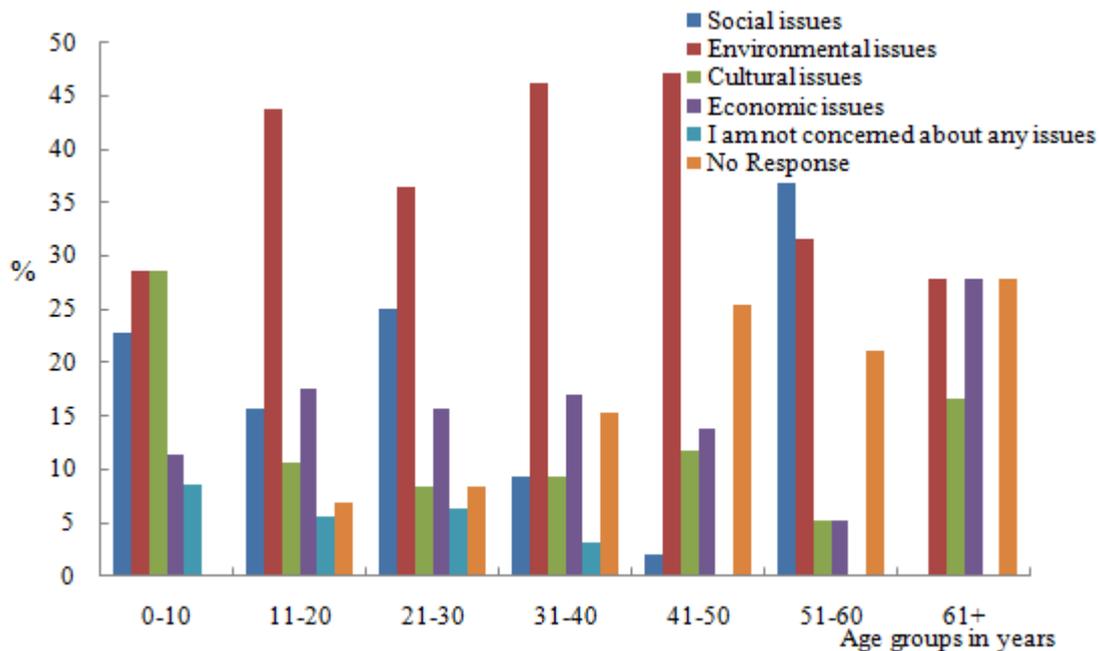


Figure 21: Responses to survey Question 4 by age group

Notable differences in responses by gender related to cultural and economic issues. It was found that men were more concerned than women about both of these areas. In terms of the priority environmental issues, men and women were (approx) equally concerned with 81 (40.7%) females and 99 (40.4%) males identifying ‘environmental issues’ as their main concern (Table 16).

Table 16: Responses to survey Question 4 by gender

Description	Female	Male	Total
Social issues	38 19.1%	33 13.5%	71 16.0%
Environmental issues	81 40.7%	99 40.4%	180 40.5%
Cultural issues	15 7.5%	36 14.7%	51 11.5%
Economic issues	29 14.6%	42 17.1%	71 16.0%
I am not concerned about any issues	7 3.5%	13 5.3%	20 4.5%
No Response	29 14.6%	22 9.0%	51 11.5%
Total	199	245	444

Urban respondents (104, 43.9%) were more concerned about environmental issues than rural citizens (76, 36.7%). Urban respondents (42, 17.7%) were more concerned about social issues when compared with rural citizens (29, 14.0%) (Table 17).

Table 17: Results to survey Question 4 comparing urban and rural responses

Description	Urban	Rural	Total
Social issues	42 17.7%	29 14.0%	71 16.0%
Environmental issues	104 43.9%	76 36.7%	180 40.5%
Cultural issues	22 9.3%	29 14.0%	51 11.5%
Economic issues	36 15.2%	35 16.9%	71 16.0%
I am not concerned about any issues	8 3.4%	12 5.8%	20 4.5%
No Response	25 10.5%	26 12.6%	51 11.5%
Total	237	207	444

Q.5. What are you least concerned about in Espiritu Santo?

When asked to describe the areas that concerned respondents the least, their responses were relatively equally spread across all options. They were least concerned about economic issues, with 82 (18.5%) people selecting this response (Figure 22).

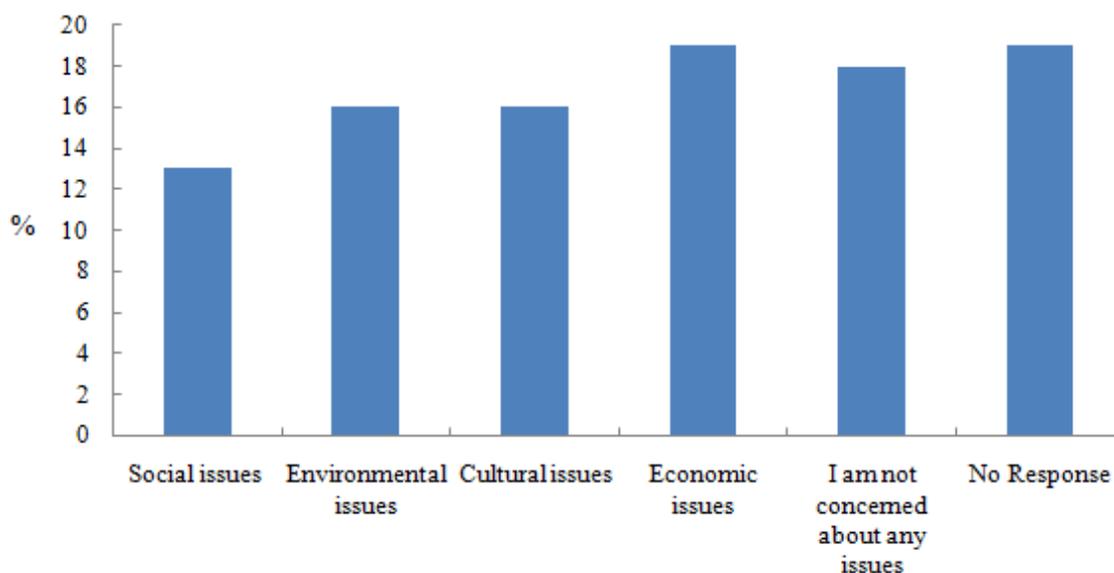


Figure 22: Responses to survey Question 5

Responses to this question were relatively evenly distributed across age groups with a few exceptions. Children aged 0 - 10 years were the least concerned age group regarding environmental issues. People aged from 51 - 60 years were the age group that were least concerned about any issues. The number of 'no response' to this question in 51 - 61+ age groups was notable (Figure 23).

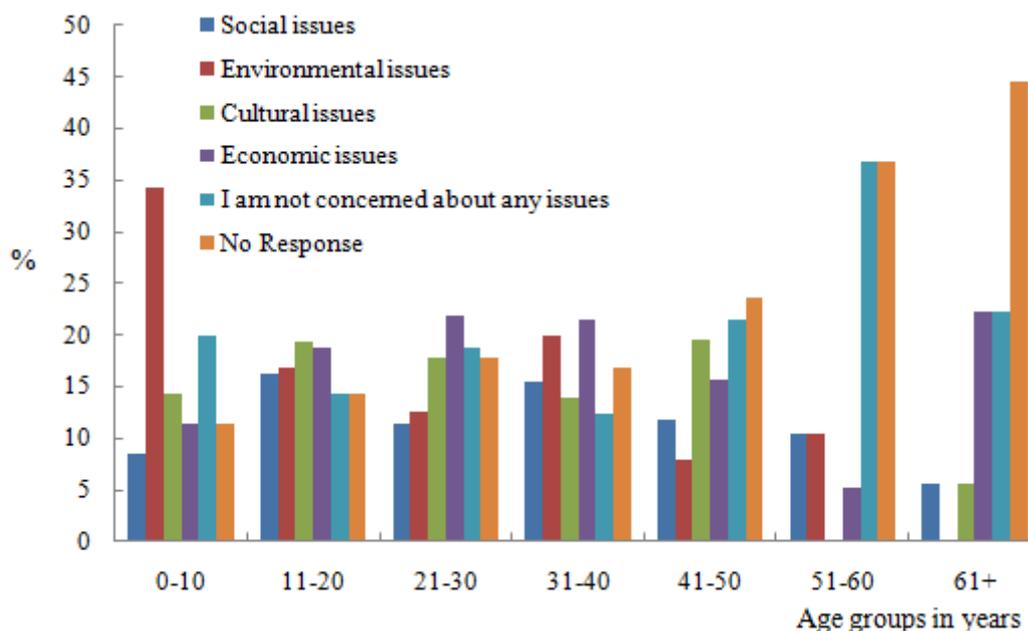


Figure 23: Responses to survey Question 5 by age group

There were not significant differences in responses to this question based on gender. However, it was found that men were marginally less concerned about environmental and social issues than women (Table 18).

Table 18: Responses to survey Question 5 by gender

Description	Female	Male	Total
Social issues	24 12.1%	35 14.3%	59 13.3%
Environmental issues	26 13.1%	44 18.0%	70 15.8%
Cultural issues	29 14.6%	44 18.0%	73 16.4%
Economic issues	35 17.6%	47 19.2%	82 18.5%
I am not concerned about any issues	43 21.6%	35 14.3%	78 17.6%
No Response	42 21.1%	40 16.3%	82 18.5%
Total	199	245	444

When comparing rural and urban responses there was found to be some notable differences. Urban dwellers were less concerned about social and economic issues when compared with rural residents and a higher number of urban residents nominated that they were not concerned about any issues (Table 19).

Table 19: Results to survey Question 5 comparing urban and rural responses

Description	Urban	Rural	Total
Social issues	34 14.3%	25 12.1%	59 13.3%
Environmental issues	35 14.8%	35 16.9%	70 15.8%
Cultural issues	36 15.2%	37 17.9%	73 16.4%
Economic issues	47 19.8%	35 16.9%	82 18.5%
I am not concerned about any issues	44 18.6%	34 16.4%	78 17.6%
No Response	41 17.3%	41 19.8%	82 18.5%
Total	237	207	444

Q.6. How concerned are you about climate change and how it might affect Espiritu Santo?

Respondents were asked to describe their level of concern surrounding climate change. Close to a third of respondents (130, 29.3%), described their attitude as ‘very concerned’. Ranked second was ‘concerned’ (106, 23.9%) and third was ‘extremely concerned’ (85, 19.1%). Very few people were either ‘marginally concerned’ (49, 11.0%) or ‘not concerned’ (32, 7.2%) about climate change (Figure 24).

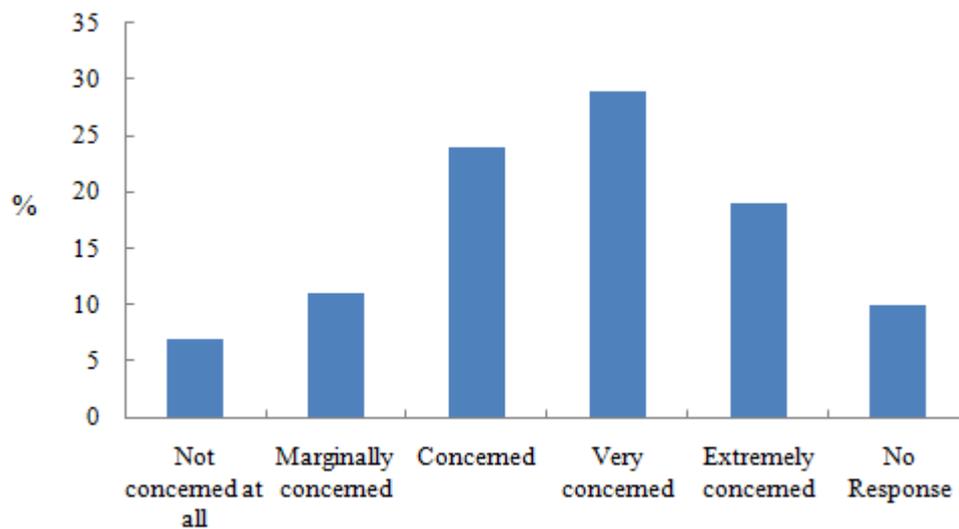


Figure 24: Responses to survey Question 6

There appeared to be a trend which revealed that more of the older respondents, particularly those aged upward from 51 years of age, were ‘very concerned’ about climate change. It was notable that young people in the groups aged from 0 - 10 years and 21 - 30 represented the majority of responses in the ‘extremely concerned’ category (Figure 25).

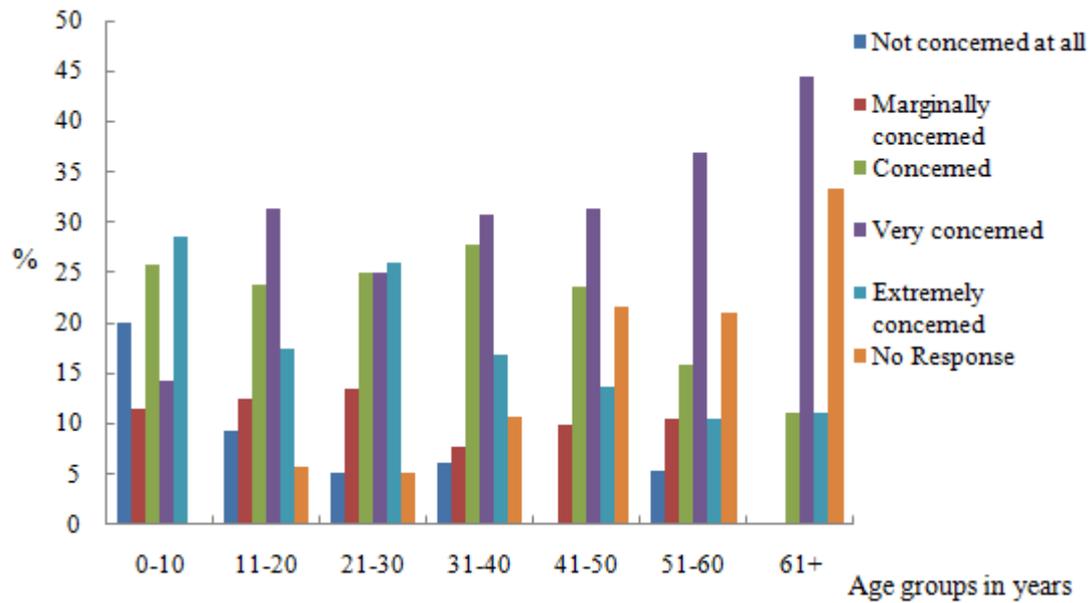


Figure 25: Responses to survey Question 6 by age group

More males were found to be ‘very concerned’ or ‘extremely concerned’ when compared to females (Table 20).

Table 20: Responses to survey Question 6 by gender

Description	Female	Male	Total
Not concerned at all	11 5.5%	21 8.6%	32 7.2%
Marginally concerned	21 10.6%	28 11.4%	49 11.0%
Concerned	57 28.6%	49 20.0%	106 23.9%
Very concerned	59 29.6%	71 29.0%	130 29.3%
Extremely concerned	31 15.4%	54 22.0%	85 19.1%
No Response	20 10.1%	22 9.0%	42 9.5%
Total	199	245	444

Significantly more urban respondents were either ‘extremely concerned’ or ‘concerned’ about climate change when compared with rural responses (Table 21).

Table 21: Results to survey Question 6 comparing urban and rural responses

Description	Urban	Rural	Total
Not concerned at all	14 5.9%	18 8.7%	32 7.2%
Marginally concerned	24 10.1%	25 12.1%	49 11.0%
Concerned	60 25.3%	46 22.2%	106 23.9%
Very concerned	69 29.1%	61 29.5%	130 29.3%
Extremely concerned	55 23.2%	30 14.5%	85 19.1%
No Response	15 6.3%	27 13.0%	42 9.5%
Total	237	207	444

Q.7. How would you rank your knowledge about climate change?

Respondents were asked to rank their level of knowledge about climate change. The highest (127 responses, 28.6%) response was 'average' and the second highest (95 responses, 21.4%) was 'poor' (Figure 26).

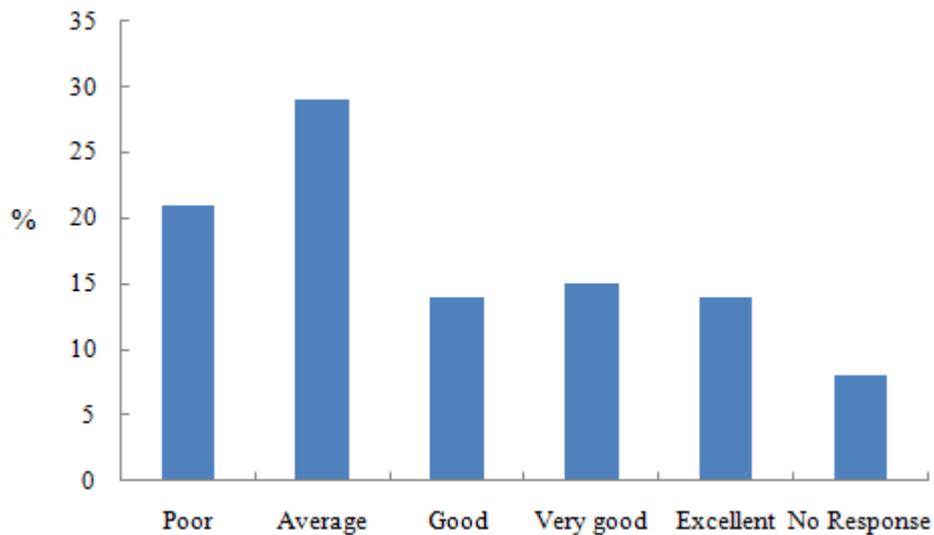


Figure 26: Responses to survey Question 7

Most respondents across all age groups ranked their level of knowledge of climate change as 'poor' or 'average'. It was notable that a significant group of respondents aged 0 - 10 years ranked their level of knowledge as 'poor'. Conversely, the largest number of respondents who ranked their level of knowledge about climate change as 'excellent' were young people aged from 11 - 20 years. The age group which described their level of knowledge as predominantly 'average' were those aged from 21 - 30 years (Figure 27).

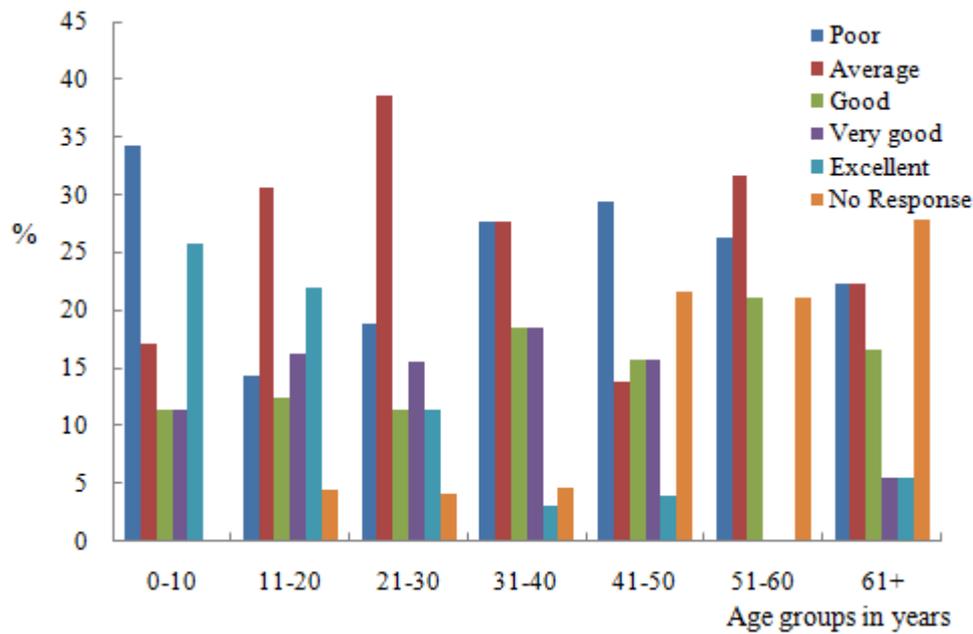


Figure 27: Responses to survey Question 7 by age group

More males ranked their levels of knowledge as ‘average’, ‘poor’, ‘very good’ and ‘excellent’ when compared to females (Table 22).

Table 22: Responses to survey Question 7 by gender

Description	Female	Male	Total
Poor	44 22.1%	51 20.8%	95 21.4%
Average	57 28.6%	70 28.6%	127 28.6%
Good	29 14.6%	33 13.5%	62 14.0%
Very good	26 13.1%	40 16.3%	66 14.9%
Excellent	19 9.5%	41 16.7%	60 13.5%
No Response	24 12.1%	10 4.1%	34 7.7%
Total	199	245	444

When comparing urban and rural responses it was found that more people in urban areas ranked their level of knowledge as ‘average’, ‘good’ or ‘very good’ than those in rural areas. Conversely more rural respondents described their level of knowledge as ‘excellent’ when compared to their urban counterparts (Table 23).

Table 23: Results to survey Question 7 comparing urban and rural responses

Description	Urban	Rural	Total
Poor	46 19.4%	49 23.7%	95 21.4%
Average	70 29.5%	57 27.5%	127 28.6%
Good	42 17.7%	20 9.7%	62 14.0%
Very good	44 18.6%	22 10.6%	66 14.9%
Excellent	22 9.3%	38 18.4%	60 13.5%
No Response	13 5.5%	21 10.1%	34 7.7%
Total	237	207	444

Q.8. Do you think the effects of climate change is a problem....

Respondents were asked if they thought the effects of climate change were a problem ‘now’, in a timeframe into the future (next 50, 100 or after 100 years) or not at all. More than half (240 responses, 54.1%) responded that they believed it was a problem ‘now’. The next highest response (79, 17.8%) was ‘in the next 50 years’. A small group of 34 (7.7%) respondents believed that climate change won’t be a problem (Figure 28).

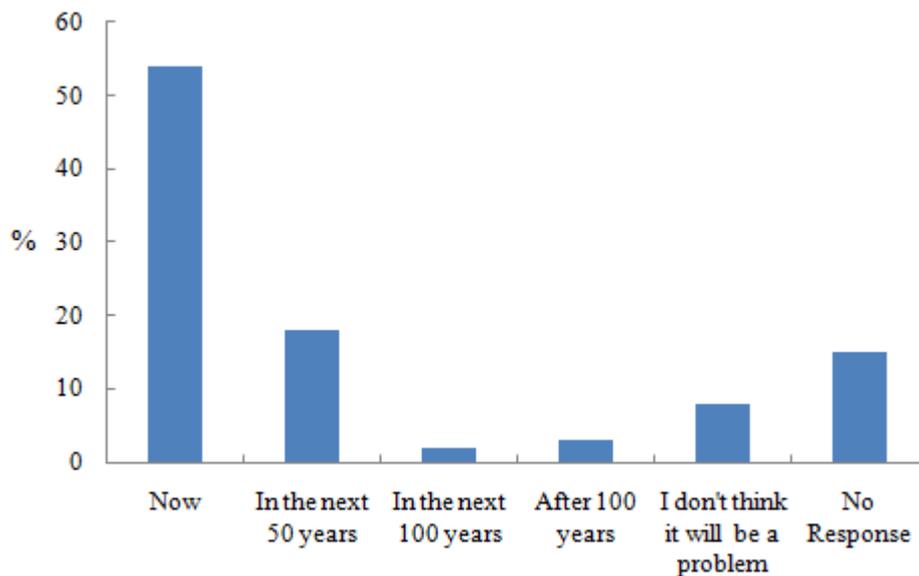


Figure 28: Responses to survey Question 8

The immediacy of climate change was prioritised by respondents from all age groups. When they were asked in what timeframe did they believe it was an issue all age groups said ‘now’. Children ages 0 - 10 years noted that it was an issue over the next 50 years (Figure 29).

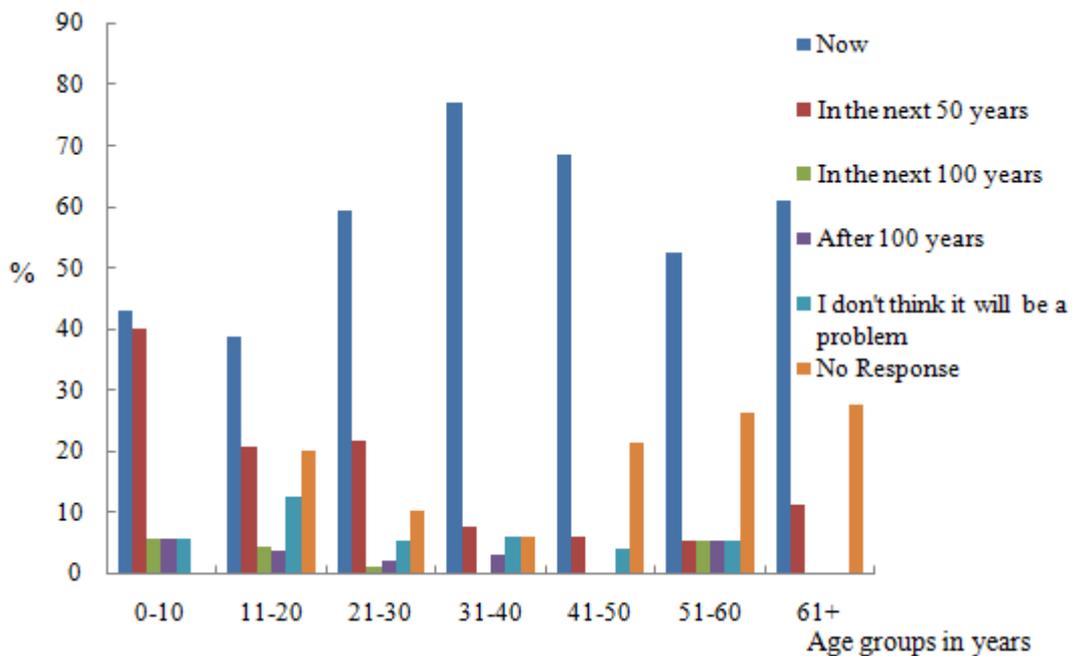


Figure 29: Responses to survey Question 8 by age group

Responses according to gender were equitably spread across most options. One hundred and ten (55.3%) females and 130 (53.1%) males stated that they believed climate change was a concern 'now' (Table 24).

Table 24: Responses to survey Question 8 by gender

Description	Female	Male	Total
Now	110 55.3%	130 53.1%	240 54.1%
In the next 50 years	36 18.1%	43 17.6%	79 17.8%
In the next 100 years	1 0.5%	10 4.1%	11 2.5%
After 100 years	5 2.5%	8 3.3%	13 2.9%
I don't think it will be a problem	13 6.5%	21 8.6%	34 7.7%
No Response	34 17.1%	33 13.5%	67 15.1%
Total	199	245	444

When comparing urban and rural responses more urban residents believed that climate change was a problem now. A total of 141 (59.5%) urban people said that climate change was a problem now, compared with 99 (47.8%) rural residents (Table 25).

Table 25: Results to survey Question 8 comparing urban and rural responses

Description	Urban	Rural	Total
Now	141 59.5%	99 47.8%	240 54.1%
In the next 50 years	43 18.1%	36 17.4%	79 17.8%
In the next 100 years	5 2.1%	6 2.9%	11 2.5%
After 100 years	6 2.5%	7 3.4%	13 2.9%
I don't think it will be a problem	13 5.5%	21 10.1%	34 7.7%
No Response	29 12.2%	38 18.4%	67 15.1%
Total	237	207	444

Q.9. Have you noticed changes that you think may be due to climate change?

When asked if they had noticed any changes that they thought might be due to climate change 328 (73.9%) people responded 'yes'. A small percentage said 'no' (50, 11.3%) and 'I don't know' (21, 4.7%) (Figure 30).

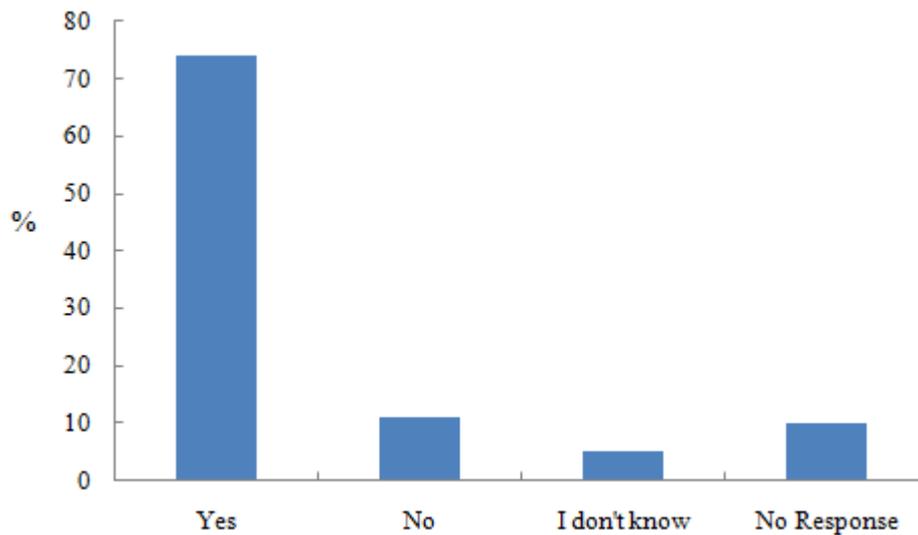


Figure 30: Responses to survey Question 9

These responses were found to be consistently high across all age groups with strongest representation from 0 - 50 years. Affirmative responses were found to be less in those aged from 51 - 61+ years and it was notable that these age groups had a larger representation of 'no response' to this question (Figure 31).

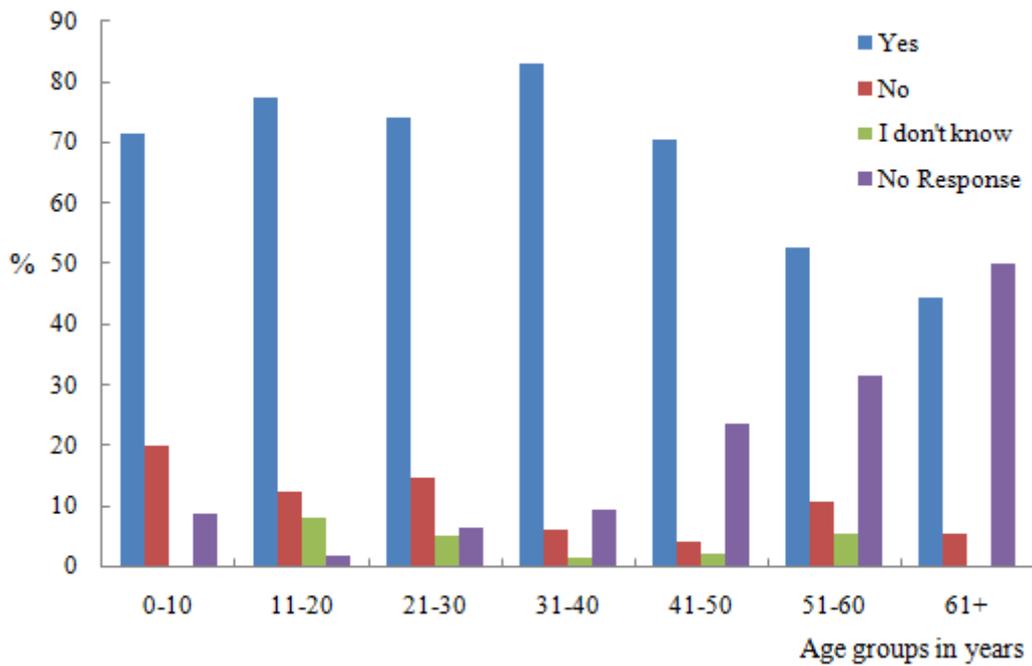


Figure 31: Responses to survey Question 9 by age group

There was not found to be any significant gender based differences in response to this question (Table 26).

Table 26: Responses to survey Question 9 by gender

Description	Female	Male	Total
Yes	150 75.4%	178 72.7%	328 73.9%
No	15 7.5%	35 14.3%	50 11.3%
I don't know	11 5.5%	10 4.1%	21 4.7%
No Response	23 11.6%	22 9.0%	45 10.1%
Total	199	245	444

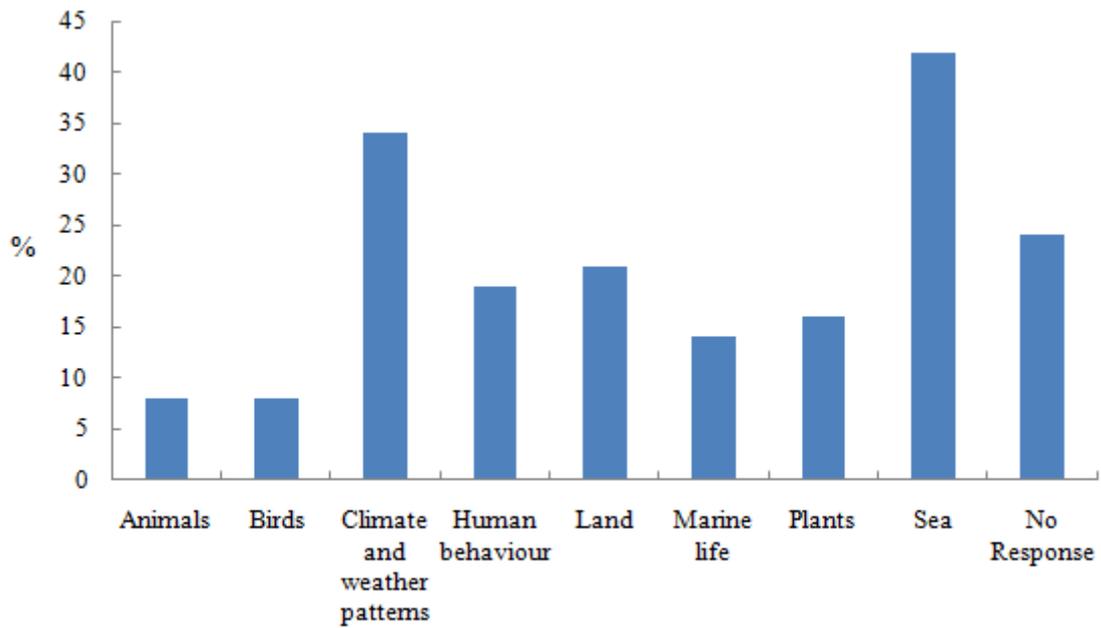
When comparing urban and rural responses a significantly higher urban group responded ‘yes’ to this question when compared to rural responses. It was found that 200 (84.4%) urban residents said ‘yes’ compared to 128 (61.8%) rural residents who said ‘yes’ (Table 27).

Table 27: Results to survey Question 9 comparing urban and rural responses

Description	Urban	Rural	Total
Yes	200 84.4%	128 61.8%	328 73.9%
No	24 10.1%	26 12.6%	50 11.3%
I don't know	3 1.3%	18 8.7%	21 4.7%
No Response	10 4.2%	35 16.9%	45 10.1%
Total	237	207	444

Q.10. Which areas do you think have changed due to climate change?

Respondents were asked to describe which areas they thought had changed due to climate change. A total of 199 (44.8%) people ranked 'the sea' as their top priority. A close second was 'climate and weather patterns', which was nominated by 153 (34.5%) respondents. The third area where people believed there had been changes due to climate change was the land which was nominated by 94 (21.2%) people (Figure 32).



**Multiple choice question, percentages calculated by number of respondents, n = 444*

Figure 32: Responses to survey Question 10

More people in older age groups 31 - 61+ had observed changes in 'the sea', 'climate and weather patterns' when compared with responses from younger respondents. A notably high number (119, 26.8%) of people did not respond to this question (Figure 33).

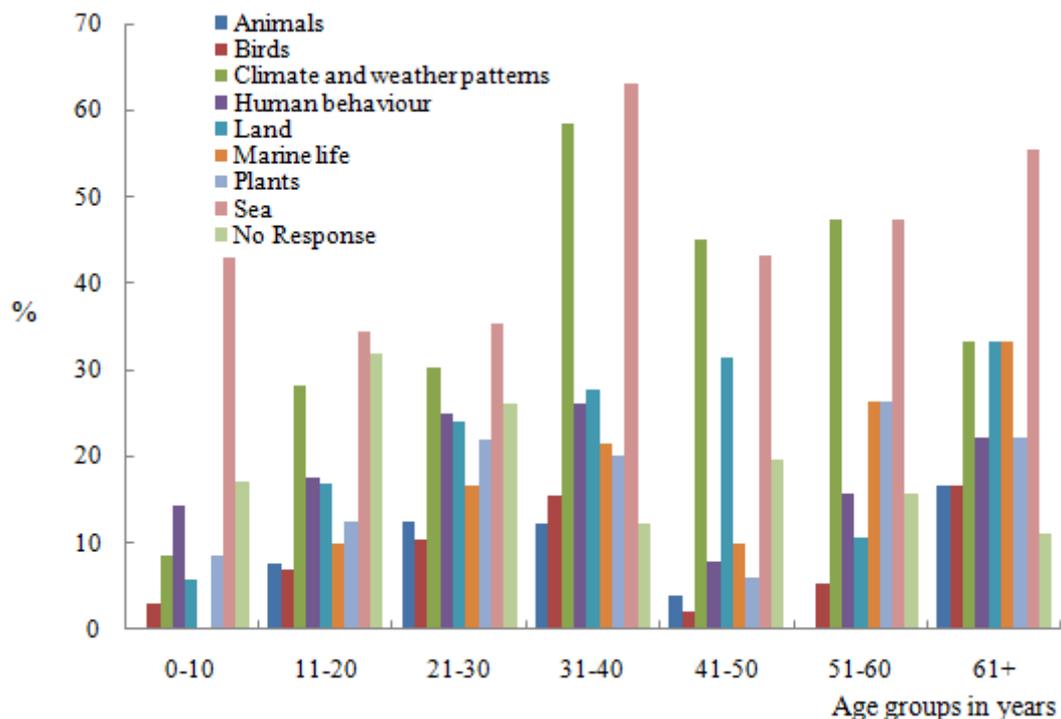


Figure 33: Responses to survey Question 10 by age group

Significantly more men (107, 43.7%) prioritised ‘the sea’ than women (79, 39.7%). More males (59, 24.1%) identified changes in ‘the land’ than females (35,17.6%) (Table 28).

Table 28: Responses to survey Question 10 by gender

Description	Female	Male	Total
Animals	14 7.0%	23 9.4%	37 8.3%
Birds	17 8.5%	20 8.2%	37 8.3%
Climate and weather patterns	72 36.2%	81 33.1%	153 34.5%
Human behaviour	44 22.1%	41 16.7%	85 19.1%
Land	35 17.6%	59 24.1%	94 21.2%
Marine life	31 15.6%	31 12.7%	62 14.0%
Plants	30 15.1%	39 15.9%	69 15.5%
Sea	79 39.7%	107 43.7%	186 41.9%
No Response	36 18.1%	69 28.2%	105 23.6%
Total*	358	470	828

*Multiple choice question, percentages calculated by number of respondents, n = 444

It was found that 111 (46.8%) urban dwellers believed that there had been changes in climatic and weather patterns, compared to 42 (20.3%) rural respondents. Urban residents had also noticed more changes in the land and human behaviour as a result of climate change when compared to the responses from rural residents. A notable number of rural residents did not respond to this question (72, 34.8%) compared to 45 (19.0%) urban residents (Table 29).

Table 29: Results to survey Question 10 comparing urban and rural responses

Description	Urban	Rural	Total
Animals	26 11.0%	11 5.3%	37 8.3%
Birds	29 12.2%	8 3.9%	37 8.3%
Climate and weather patterns	111 46.8%	42 20.3%	153 34.5%
Human behaviour	58 24.5%	27 13.0%	85 19.1%
Land	60 25.3%	34 16.4%	94 21.2%
Marine life	48 20.3%	14 6.8%	62 14.0%
Plants	51 21.5%	18 8.7%	69 15.5%
Sea	122 49.8%	64 30.9%	186 41.9%
No Response	45 19.0%	60 34.8%	105 23.6%
Total*	550	278	828

*Multiple choice question, percentages calculated by number of respondents, n = 444

Q.11. How would you rank your lifestyle in terms of its effects on protecting the environment?

Respondents were asked to rank their lifestyle in terms of its effects on protecting the environment. Respondents thought their lifestyle was 'fair' (99, 22.3%), 'average' (75, 16.9%), 'poor' (74, 16.7%), and 'very good' (54, 12.2%) (Figure 34).



Figure 34: Responses to survey Question 11

When examining trends across age groups it was found that children aged from 0 - 10 years were the highest age group to rank their lifestyle as 'average'. Young people aged 0 - 20 years and those aged 51 - 60 years were more likely to rank their lifestyle as 'fair'. Older people aged 61+ years often ranked their lifestyle as 'poor' (Figure 35).

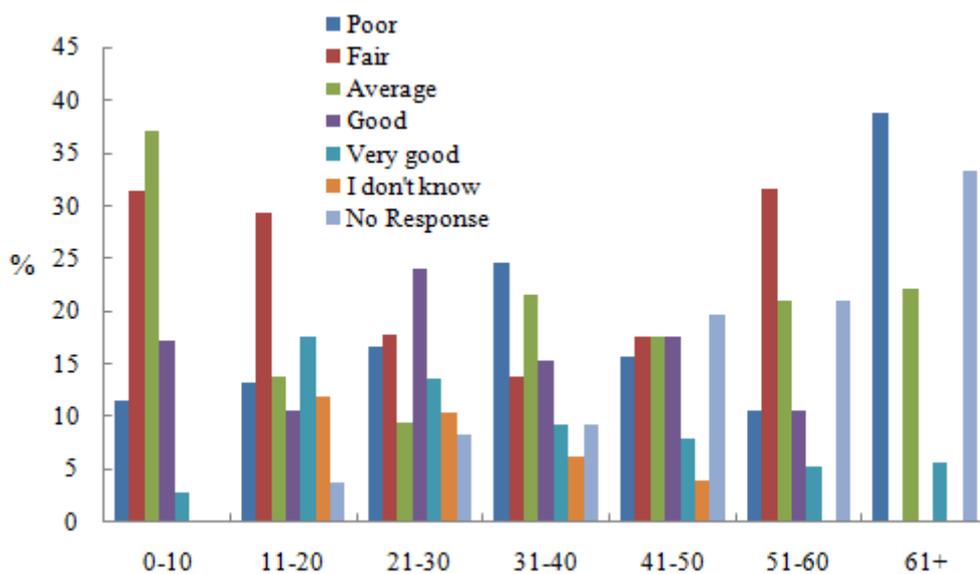


Figure 35: Responses to survey Question 11 by age group in years

Generally there were not any notable gender differences in response to this question. The exception was with the small group that described their lifestyle as 'very good'. More males (38, 15.5%) believed their lifestyles were very good compared with females (16, 8.0%) (Table 30).

Table 30: Responses to survey Question 11 by gender

Description	Female	Male	Total
Poor	34 17.1%	40 16.3%	74 16.7%
Fair	47 23.6%	52 21.2%	99 22.3%
Average	29 14.6%	46 18.8%	75 16.9%
Good	33 16.6%	34 13.9%	67 15.1%
Very good	16 8.0%	38 15.5%	54 12.2%
I don't know	16 8.0%	19 7.8%	35 7.9%
No Response	24 12.1%	16 6.5%	40 9.0%
Total	199	245	444

When comparing urban and rural responses most were found to be in a similar range. The exception was those who believed their lifestyle was 'good'. More urban citizens (45, 19.0%) ranked their lifestyle as 'good' compared to (22, 10.6%) rural residents (Table 31).

Table 31: Results to survey Question 11 comparing urban and rural responses

Description	Urban	Rural	Total
Poor	39 16.5%	35 16.9%	74 16.7%
Fair	49 20.7%	50 24.2%	99 22.3%
Average	38 16.0%	37 17.9%	75 16.9%
Good	45 19.0%	22 10.6%	67 15.1%
Very good	33 13.9%	21 10.1%	54 12.2%
I don't know	16 6.8%	19 9.2%	35 7.9%
No Response	17 7.2%	23 11.1%	40 9.0%
Total	237	207	444

8.3 INTERVIEWS AND FOCUS GROUPS

A total of 167 people participated in the qualitative component of this study. This group was (approx) equally represented by both genders with 82 (49.1%) males and 74 (44.3%) females (Table 32).

Table 32: Number and gender of interviewees and participants

Gender	Interviewees	Focus Group Participants	Total
Male	21 60.0%	61 46.2%	82 49.1%
Female	13 37.1%	61 46.2%	74 44.3%
No response	1 2.9%	10 7.6%	11 6.6%
Total	35 100.0%	132 100.0%	167 100.0%

The majority of interviewees and participants in this study were young people. A total of 28 (16.8%) were aged from 0 - 10 years and 96 (57.5%) were aged between 11 - 20 years (Table 33).

Table 33: Age groups of interviewees and participants

Age group in years	Interviewees	Focus Group Participants	Total
0-10	1 2.9%	27 20.5%	28 16.8%
11-20	12 34.3%	84 63.6%	96 57.5%
21-30	4 11.4%	4 3.0%	8 4.8%
31-40	8 22.9%	2 1.5%	10 6.0%
41-50	5 14.3%	0 0.0%	5 3.0%
51-60	3 8.6%	0 0.0%	3 1.8%
61+	2 5.7%	0 0.0%	2 1.2%
No response	0 0.0%	15 11.4%	15 9.0%
Total	35 100.0%	132 100.0%	167 100.0%

The following summaries describe interview and focus group responses to each of the fourteen questions. The same questions were asked of interviewees and focus group participants and their responses have been combined.

1. What are the aspects of Espiritu Santo that you love?

When comparing rural and urban responses it was found that interviewees and participants of all ages, both genders and from rural and urban locations, valued similar attributes of Espiritu Santo. Responses can be divided into social, cultural and environmental aspects. It was notable that economic opportunities were not mentioned.

Most participants described how they loved: the forest, beaches, the sea, birds, mountains, friendly people and the villages. The key social-environmental attribute in their collective view was the island's capacity to grow food. A typical comment was: "You have place where you can make a garden. In Vila you don't have those kinds of chances as most of the land has been sold. You can make your own garden. It is more accessible to grow your own food." The land mass was identified as important for food production. An interviewee said: "We have those products like cocoa, beef, copra, kava, timber, coconut because the land mass is so big."

Links between culture and the environment were explained as 'traditional kastom' interconnected to sustainable environments and livelihoods. A participant described this relationship when he said:

“Culturally people depend on nature for survival. Way back in history we have passed knowledge from generation to generation... we have been nurtured by the land so it is like a mother to us.” Another interviewee extended upon the significance of culture when she said: “Santo is proud we have the highest mountain in the areaWe have traditional practices and villages all up in those mountains and makes it so special. High value of the mountains it is our treasure. They believe in traditional storms where the water flows from, traditional super natural beliefs and the link between community and nature. Super natural powers and how the chiefs show their strengths and wisdoms and the linkage between tradition is very, very strong. Traditional beliefs and ways of sorting out the issues through traditional ways link with the land.”



Image 11: Women’s outdoor food stall, Luganville

Traditions were also linked to friendliness and embracing visitors to Santo including tourists. This concept was described by an interviewee who said: “Traditionally respect for any visitor or tourists coming around and hospitality is always available freely welcoming everyone and anyone, hospitality is rooted in the traditions. Any visitors can have any fruits like banana or coconut..... In every situation, in every context, when a visitor comes they have to go see the chief and we still maintain this practice so that they are then welcome into the community.”

Interviewees described the importance of networks such as mobile phones which had improved communications particularly in terms of warning communities of possible tsunamis and tidal waves.

In the rural village of Port Olry interviewees and participants often described how much they valued the newly improved road network which made transport to and from Luganville much easier, the recent development of a generator for the village which was driven by coconut oil and supplies energy to some buildings. When compared to responses from their urban counterpart, residents from this community appeared to place more emphasis on the value of the local school, church and health centre. They stressed the importance of their access to ‘food from the sea’ such as fish and shellfish.



Image 12: Luganville market

2. What are the aspects of Espiritu Santo that concern you?

The key aspects concerning interviewees and participants were: the sale of land, land disputes, violence, rape, alcohol and drug abuse, education, lack of jobs, witchcraft and environmental threats such as climate change, rising sea levels and extreme weather events. Elderly and middle aged people believed that life was much tougher for young people now than in their younger days. Young women interviewees and participants highlighted their fears surrounding rape.

The sale of land and land disputes appeared to be the most critical issue. One interviewee explained this as: “The ease with which locals parcel and sell off their land cheaply regardless of all the media attention and education about the dangers of this selfish practice. In addition to this fact there seems to be very little effort and importance given to education in relevant agribusiness activities to arrest this malpractice (of selling land).” Other interviewees expressed their concern around young people not completing school and the lack of job opportunities. For example: “the worst concern is the high rates of school drop outs, no job opportunity for the drop outs. Rates of finishing school are low. They don’t know where to go to and they just wander in both urban and rural areas.”

A young interviewee captured key areas of concern when he described the growing disconnections between people and the environment and the detrimental impacts on ecosystems. He said: “Environmental issues how people interact with the environment so it is not wasteful. It may be a problem with our awareness and how we preserve the environment. Firstly I take the coastal environment. People many times come to visit a distinctive coast and the beautiful beaches and the species that live amongst the eco system, they are running in a chain. When us humans step in we disturb the chain. Disturbance can come in the trees which can lead to coastal erosion, also the sea can move. With these rough seas the spaces where the trees have been cut down, the sea can rise up to these places. The trees protect the coastal erosion. If we take it inland one aspect is that people depend on crops for their income so whenever companies...contract to cut trees down for timber then the run off that washes over is a problem. People tend to cultivate the crops that earn money. If we go down to marine life there is a dumping of waste especially when people have a problem they just dump their rubbish. The marine creatures then feed on the waste which might be toxic so we have already lost lots of species. A few years ago if someone attempted to dive here you would have found many more species.”

Participants were concerned about economic shifts from subsistence to a cash economy. One participant explained how: “The cash flow is slow here. If you want to sell something and the price is very high people can’t afford to buy. There is not much circulation of cash, there are a lot of taxes but most peopleand don’t pay any tax. As the prices in the market go up you can hear people complaining. Compared to previous years, there is not so much food or quality. I think it is because things are becoming expensive, it costs too much for them to transport their food from the gardens to the markets. If you go back into the villages you will find people still gardening but it’s not the same as before. The market used to be so packed.”

The need to train women in financial areas was highlighted by an interviewee when she said: “Women in the village don’t know how to manage their money properly so I would like them to be trained in how to save and manage money. They need to set up small businesses and learn how to do that properly so that they have the money to support their children and family and send the kids to school.”

The issues described in the urban community appeared to be more significant in the rural location. One interviewee described his concerns for Port Olry as: “Not easy access for good clean water, doesn’t supply to the whole households. No education. No toilet system or sanitary system. School fees apply which mean people can’t access secondary schools. Too much rubbish and no proper waste management system. Though we have the health centre we don’t have sufficient medical supplies or doctor or things that we need for health problems. The youth sometimes do not feel part of the community as they can’t provide cash income and contribute to community. The youth here are sort of flouting not knowing what to do now.”



Image 13: Women drawing water from the well, Port Olry

A local Port Olry fisherman described his dismay that young people don’t tend to derive an income from fishing. He said that Port Olry was a: “Good place for fisherman but nothing to do for the young people. They need some more training or education. Young people don’t fish. When I was young we used to go every day and now they don’t understand. I have five children and everyone is going to secondary school [paid for] from my fishing, you can make money from fishing. It is the garden of the sea. Copra is very hard work for little money.”

Interviewees from the Big Bay area described the challenges that remote communities face in terms of transport and water supply and quality. An interviewee explained that remote communities: “Have a lot of cattle and other products they have to drag it to the markets. Very hard to transport it to the market and uses a lot intense labour and man power. Takes a long time to drag the products especially beef from Peamatsina and Tavunapui and the villages on that side of Big Bay to the market. Transport is a big issue as there is no way of easily getting the produce to the market in to Luganville. Water is a big issue. Mothers find it difficult to get the water as it is a long way especially during dry season. It is a woman’s responsibility to get the water. They usually use running water but they can’t tell whether people get sick from water or from something else as there are no health services around here. Sometimes during dry season they have to close the primary schools as there is no water.”



Image 14: Kirsten Davies conducting an interview at Santo East School, Luganville

3. What are the most important environmental issues for Espiritu Santo?

Climate change was described as the most important environmental issue. Interviewees and participants described elevating levels of concern surrounding extreme weather events such as: Tidal waves, cyclones, earthquakes, tsunamis and changing weather patterns. They described the indirect effects of less defined seasons and how these had impacted on food security and erosion. An interviewee said: “Planting seasons have changed and now they don’t know when to plant various crops so find it really hard to grow sufficient crops. Laplap is dry and dying so that we cannot use it anymore and some insects are eating them. Sometimes it rains a lot so new rivers and creeks form from nowhere.” Another said: “thinking back to the previous times I can see a lot of differences in food production. Before bananas food etc was all prosperous and now it is not as productive but it has been a gradual change.” Interviewees from Luganville described how the sea level was rising. However people from Port Olry said that the sea level there was receding not rising. They described how large boats previously came into the harbour and could no longer access some areas. An interviewee said: “Some places in the ocean used to be empty and people would dive and now the reef is shallow and is at the surface, you cannot swim there.”

Another significant issue was the sale of land and disputes over land ownership. Many believed that traditional values and practices relating to land management were changing. An interviewee said: “The understanding by the indigenous [people] that land is sacred and indispensable especially for

such an island economy where agriculture is the most available and viable as a potential commercial enterprise... rather land is seen more as a saleable commodity not for indigenous use for agriculture but sold especially to so-called rich investors for quick cash.” Others expressed their concern about the increases in logging. A participant said that her concern was “...allowing overseas companies to cut down the forest. Then the rivers and streams go dry and the birds and flying creatures don’t have places to live.”

Participants and interviewees explained the significance of culture and the environment and their concern that traditional practices may be diminishing. They made comments such as: “tabu, stops people from touching [plants], to keep it, to preserve, to make it important. Some of the plants and animals we have to keep.” And “If you are always fishing in one place you destroy it, if you want to preserve something you must go some other place, need to move around to make sure there are enough fish. Make a farm for fish so that the fish can grow else they are always small. You must make some areas tabu so that the fish can grow so that you have got enough. Always money, focusing on money so they are fishing in one spot and not moving destroying the sea.”

Pollution was identified as an increasing issue. An interviewee said: “when I was a kid I used to be swimming in the river...but now you cannot swim There is pollution. The river is not clean. You hardly see kids swimming there. I don’t think the sea [is polluted] but the rivers have all the waste and rubbish.” And “Plastics are just being thrown on the ground no one is cleaning it up. We need a rubbish system so that it doesn’t get in the water. A lot of new food with packaging, so they burn plastic and throw it in the ocean. No one educates them about waste management.”

It was notable that interviewees and participants did not mention the environmental threat of the invasive ‘mile a minute’ weed (*Persicaria perfoliata*) which covers much of the island’s less accessible terrain.

4. What do you think can be done about these issues?

Interviewees and participants identified the key areas of solutions being: regulatory, education and awareness, training local people in agribusiness and hospitality, improved waste management systems, achieving water security, improved disaster preparedness systems and recognition of the importance of traditional knowledge.

Interviewees believed there should be stronger environmental protection regulation and enforcement. This was explained by an interviewee who said: “For me I think the authorities concerned with looking after this province should put some laws in place concerning how we use our coastal areas and farm lands. Because people must learn to put back all of these things in the environment and in a chain they should provide laws on all of this. We should be saving and preventing loss of marine life. They are becoming extinct.”

They described how they believed there should be greater joint responsibility for environmental protection between investors and local people which was reflected and enforced through legislation.

They felt that increased legislation should be accompanied by more environmental education. A participant said: “I think those people who do those things need further education about fish life about the stages of life as they start as babies and then they grow up. The forest the people are destroying. It is time to educate the rural people and the expats and the people that are doing the logging. It is hard when you cut a big tree for a little tree to get that size. People need education.”

Education and training was also seen to be important in terms of creating more job opportunities for local people to become “self-employed by branching into agribusiness or hospitality activities; there is all the possibility of undertaking joint business ventures with expats but the locals must be the main players in the game, to recognise that money does not bring happiness but their being masters in their own backyard is giving back their responsibility.”

Education and regulation were identified as key solutions to improving waste management systems. This appeared to be an issue across both communities but a greater concern in the rural community where they had no system of disposing of non biodegradable waste, especially plastics.

A typical comment was: “Not to burn plastic bags, can affect our health..... More awareness to the people to let them know that we are in a state of climate change and global warming, facing issues that we’ve never faced before.”

Water security and quality was identified as a major issue for Port Olry and remote villages. An interviewee from the Big Bay area stressed the importance of traditional knowledge and new technologies when he said: “No creek around here, and water has been the biggest problem, completely dry. An old man was using magic power and making the water flow again. Possible for him to pass it to his family and to the chiefs. They have been going to the magic man to try and access the knowledge but he wasn’t ready to pass on the knowledge. People trying their best but it is hard for them to raise funds to put in tanks.”

People from both communities described their concern surrounding diminishing fish populations and identified the need for a proactive conservation program. An interviewee said: “Big fishing companies are over fishing. Inside the reef there are not enough fish and they are very small. We need to protect areas so the [fish] numbers can grow.”

Interviewees and participants explained how increasing land development required legislation and government control focused on the long term benefits and planning for local people. This was encapsulated by an interviewee who said; “A lot of people want to grow economically and so the owners of land want to get the cash but there is no proper consultation. They want quick cash and when they have it they don’t use it wisely. A lot of the land that has been bought cheap from the people then it is resold and the local people don’t have the knowledge to develop the land. They sell it for quick cash. They sell it for 3,000,000 Vatu thinking that this is very big big money but compared to what the developer will sell it for its nothing. Government should explain the values of land to the people before they sell it because they don’t understand. They are concerned about money flowing into the country. The government needs to work with people on the provincial levels. The government is the gateway for allowing investors to come in and out. In the long term this is in the best interests of the investors too. Immigration laws and systems should also be strengthened.”

New ways of managing land disputes were called for as participants believed that current methods were not adequate. This was described by a participant who said: “Now days we have some chiefs or some main people of this area to keep those things safe, to keep people from destroying this but there are so many problems for the land disputes. The main way to deal with this, the dispute office, should be blocked until we have better processes then they can have their choices.”

Improved disaster preparedness was identified as a key solution as it is projected that Santo will face increased risks from earthquakes, tidal waves and tsunamis, erosion, coupled with a rapidly accelerating population. This preparedness could include: improved warning systems, increased education and planning, improved construction practices (housing and infrastructure) and the relocation of some vulnerable villages.

5. What are the most important community issues for Espiritu Santo?

The key social issues raised were: lack of leadership, education and its cost, young people not attending school and with nothing to do, lack of health education for young people, the consequences of differing cultures colliding, black magic, land disputes which lead to social conflicts and violence, rape and domestic violence, drug abuse, low living standards, unemployment, lack of secure and safe water supplies, increasing rate of diabetes and sustainable social and environmental relationships.

The importance of leadership was stressed by an interviewee who said: "Most of the community leaders haven't played their role. If there is correct leadership in the community there should not be such big problems as those which are now arising. In Vanuatu people in the village follow what their leaders show or tell them. So if the leaders push them in the wrong direction it all goes wrong either culturally by losing respect or environmentally by environmental damage." Leadership was seen as particularly important in the context of resolving land disputes which were highlighted as the major issue. Land disputes lead to social conflicts "...dividing the community, causing big fighting."

The lack of education was raised as a significant issue that was linked to the cost of secondary education, lack of income and marrying and having children at an early age. This was explained by an interviewee who said: "my friends they married early like 16, 17 years and now they don't have money to pay school fees, big issues. Now the primary school is free but secondary school is very expensive. In my view the young people must marry later to have the skill and knowledge to handle their family life. Marry earlier they are not mature enough to handle the money and responsibility. Education most important. If you don't go to school then after that you make it very hard for your family." They were concerned that: "Young people aren't going to school and they just wander. When they go to school they learn. When they stay at home they learn nothing. They learn culture but things have changed, life has changed." Interviewees described how an education did not mean secure employment as there were so few job opportunities. A typical comment was: "So many youth graduates finishing school or stopping school and are coming back to the village as there are no jobs."

Social responsibility for those who have attained education and employment was raised as an issue. A young woman said: "I live with my partner. I have a job but I pay the school fees of four of my siblings and I can't say no to my Mum. I can't say no to the fees now as without their (parents) help I wouldn't be here. Down the line my sisters will help me if I need it but if things get too expensive they may not be able to look after me. We can't neglect people who are close to us. One of my brothers went to NZ but he still contributed to my family. Even if you get a small job you can still help your family. I have a cousin who has three kids who don't go to school. When I came here I took her little daughter with me so I can teach her to read and write. With the free schools now there are too many children but there are not enough schools. Everything people do costs cash now ..before people would give their food away..."

The need for increased health education for young people was identified by a youth worker who said that people should be "supportive of working with the children and programs like this and building up the communities. We are only working with the community. Really support our work. Youth participation, HIV/AIDs awareness, sex education major issues, healthy lifestyle, sexual reproductive health issues."

Differing cultures colliding were described as some of the causes of social problems. These culture clashes could be from differing neighbouring islands or those introduced from Western cultures such as religious practices. Examples were: "Culture and tradition between islands. Like my culture is different from the other islands and if something happens and it is resolved in a way that it is not good for them but good for us as it's the way we think causes problems. Communication between the two cultures and the traditions." And "New religion is coming and dividing the community. When boy/girl doesn't like who it has been arranged to be married to then the parents will be disappointed so that the young run to a different village creating tension in the communities and families. The marriage is not a big issue now but it is getting bigger due to religion and the new idea of people being able to choose who they can marry."

Issues relating to culture and the consequences of new technology were raised. An interviewee said "new things are not normal to us e.g. mobile phones. They are causing social problems." She progressed to explain that these social problems included petty theft as technology required cash e.g. to recharge mobile phones.



Image 15: Digicel credit recharge stall, Luganville

Changing cultural practices of caring for community members was explained by an interviewee who said: “If you come to my house you can eat or drink anything. It’s a cultural thing. Whatever small amount of food they have, they share.. Today I go to my family’s house I still get something to eat. They feed me. If they go into other family’s houses they can still get food to eat. I think that will change when life gets more expensive you will start to budget everything they eat and put limits. We can’t look after everyone.” Community members including young people believed in the powers of ‘black magic’. A young girl said that she feared black magic because it had the power to “take people away.”

The standard of living was identified as a social issue and was described by many as ‘low’. For example a participant said: “Plenty of problems in the local community. Standard of living is low and makes peoples livelihoods difficult. They want a change in the communities to improve standard of living but chiefs could not find an answer to that so they don’t know where to go.”

The reasons for low standards of living were explained by lack of: employment, cash income and fluctuating prices for produce e.g. “The price of cocoa is never stable, high, low, always changing not good for business. The low cash flow puts pressure onto the families, everyone has to put cash into the family. This pressure leads to domestic violence.”

The high incidence of rape was highlighted by young female participants as the social issue of most concern to them. Due to the sensitivities around this issue they were not prepared to discuss it in any further detail.

Water security, quality, lack of sanitation systems and links to poor community health were described as key social issues particularly for rural communities. This was explained by an interviewee from Port Olry who said: “Better water, safe drinking water in the community.....to avoid diseases. The water sanitation is bad so people get sick. Poor access to the water is a major concern and sometimes it results in people spending a lot of time trying to find water and not in the gardens. No toilets and sanitation or sewage system for the community.” In communities traditionally it is the responsibility of women to provide water for the family and as such the lack of a secure and safe water supply was of particular concern to women from Port Olry who participated in this study. A woman interviewee said: “Mothers find it especially difficult to fetch the water and the distance to carry the water. ..Mothers need good healthy water for drinking especially. Polluted and the streets have lots of rubbish attracts flies etc. Need a rubbish system to clean it up and put it in the drums.”

Another health issue was the increasing incidence of diabetes which was attributed to the introduction of refined sugar. A participant said: “Diabetes is bad here, from the adoption of western food. Many women have diabetes. They drink tea, don’t drink water by itself. They add sugar. Don’t drink enough water.”

Kava and marijuana were described as escalating drug issues. They said: “Kava is an issue. A long time ago our parents didn’t drink kava. The kava is from Pentacost, Tanna and Sheppard Island. Our parents don’t drink kava but during independence they brought kava here. When they drink kava they are lazy, they don’t do anything. .It is men only. Women don’t drink kava.” And “Marijuana is an issue for young people. A doctor came and spoke to the young people about how it affects the brain. The mamas are against the smoking. Chief is not strong and he must be strong. He doesn’t put rules. The church and chief must work together to put in rules. They don’t do anything about it.”

Sustainable living with the environment was described as an important aspect of the long-term future of Santo. A young interviewee said: “Looking after their physical environment and making the most out of it for themselves as well as remembering to leave something intact for their future generations... Also learning to adapt intelligently to the modern changes that seem to be overtaking them in rapid succession.”

6. What do you think can be done about these issues?

Interviewees and participants identified key areas to solve these various community problems. Solutions suggested by interviewees included the need for improvements in: governance and leadership, education, land ownership, economic growth, environmental awareness, water security, drug prevention, health and religion.

The need for stronger more influential leadership was identified as a key strategy to solve community issues. Through community leaders and the government, interviewees believed that positive action could be achieved through community activation, education programs and the law. This need for stronger governance over community issues is evident in the following participant’s statement: “Chiefs need to be strengthened and the government of the chiefs need to be strengthened so that issues can be sorted out. Rather than going to modern forums like courts, local forums need to be used, unifying the community and reinforcing control.” The government was seen to play an important role relating to issues concerning the environment, climate change and land disputes as evidenced in one urban interviewee’s comment: “The short-sightedness of some of Santo’s leadership puts the largest province in danger of selling itself into the hands of profiteers and big-time crooks in land dealings.”

Education was also identified as a method of resolving community problems, with the majority of participants viewing education as a fundamental step towards a better future. This widely held view was evident in the statement by a interviewee who said: “Kids not being in schools, I think they should be in schools so if they stay back at home we can help them somehow to get in schools. I

think the chiefs should arrange something different for them to learn about if they are not at school.” Education, particularly for the younger generations was identified as a priority. Representatives from the Luganville Youth Centre described how targeting the young with education programs was a way of ensuring these community issues such as unemployment and health concerns (e.g. contraception and drug abuse). Interviewees also suggested there was a need to increase awareness and education of environmental issues including: traditional knowledge, climate change and waste management as expressed by one participant who said: “More awareness about the importance of the environment to us humans in the areas we live in.”



Image 16: Rex Thomas Tandak facilitating focus group, College de St Anne, Port Olry

The selling of land and land disputes was a major concern for participants from both rural and urban areas. The selling of traditional lands resulted in individuals turning away from traditional subsistence lives towards a cash economy. This significant concern was voiced by several interviewees, one stating: “With this civilization people have developed a different mindset. I have been in many schools where people with big land could not pay their school fees but if they don’t have land no problem... they have to do whatever they can to survive. School fees and other social things drive parents to sell land and also how we control the family. Some people have many children it’s difficult to send to high school.”

These economic changes towards a cash economy were also identified as a key concern and part of the solution of community issues. This was evident in a comment by a female interviewee who stated: “[We] need to utilise the land to generate a cash income for the mothers. We find a proper marketing system to market our produce and products. Mothers can easily plant watermelons and pineapples and need to build some kind of process to sell the products as lots of the produce goes to waste.” Participants believed they would financially benefit through the formation of a regulated and structured market.

Access to secure and safe drinking water was a significant concern expressed by participants. A woman highlighted this priority when she said: “60% don’t have water into their house. Most don’t have water tanks concrete or plastic tanks.” The lack of a safe and secure water supply was described as a problem that could be solved due to the high levels of rainfall. Participants believed that achieving water security would significantly improve people’s lives if assistance and funding was provided by government and/or aid agencies. This priority was reflected in the following statement

made by an interviewee from Port Olry: [we need a] "...proper pumping system for the water so that it can supply to the village households for drinking gardening etc daily life. Water catchment like tanks for drinking water."

Religion was described as very influential regarding encouraging positive behaviour, however it was also identified that religion could create conflict and tension. This was apparent in communities not only between traditional and introduced beliefs, but also between different Christian denominations as described by a participant who said: "In each community they have one church so that community is more comfortable to work together as one. But if someone wants to change religions they have to move out of the community and establish a new church so that each community has one religion one church and one community. Never two religions in one community so it splits the community." The need for stronger community cohesion was identified as an important part of solving and addressing community issues.

Health issues were also identified as significant community problems. These included: diabetes, use of marijuana and kava. The increase in diabetes was attributed to the introduction of western foods which are high in sugar. This problem was described as most prevalent in women as explained by a participant who said: "Many women have diabetes. They drink tea, don't drink water by itself. They add sugar. Don't drink enough water." Marijuana was identified as a major issue for the younger generation. Interviewees suggested various ways of overcoming this problem including education, regulation and leadership.

7. How concerned are you about the impacts of climate change on Espiritu Santo?

People of all ages and genders, from both rural and urban areas stated that they were very concerned about the impacts of climate change with an interviewee saying: "I have already seen the impacts of climate change. These are all negative impacts. It affects people, animals and the environment. I am very concerned." Their concern was mainly due to anxiety about food insecurity which they believed may be attributable to changing weather patterns as stated by an interviewee who said: "I think the weather pattern is quite unpredictable. It is an issue...spices such as vanilla was a very good crop for communities in Sanma, but with the irregular climate patterns they are not producing and this affects the communities. I think it is affecting a lot of things such as rain and sun. I am not sure if it's a result of climate change." This impact was further emphasised by another interviewee who said "...They don't plant crops there. The soil has been washed away by heavy rain. Plants don't grow there. The rich soil washed away. Just last month we had very heavy rain and just last month on the way to the airport, this never happened before, a big river from the plantations crossing the road. Rain from morning till afternoon, it is part of climate change I think." Most participants described how climatic changes had affected their food security, as seasons seem to have become less defined and less predictable, resulting in more crop failures and decreased productivity. For example they said that the leaves used to wrap laplap were dying so people are forced to use alfoil instead, and yams and taro are said not to be growing at the same rate.

Recent changes in weather patterns and climate were described by the participants as: "a big concern, evidently it is clear that there is a huge impact on the climate change now. Like today it seems to be very hot. Now when we sleep we barely have our blankets on. Before we used to have thick blankets [at this time of the year]. Also it seems to rain all throughout the year which is strange.....it seems to create a lot of water and flooding. I have been here for six years and last year and this year I know that from the heavy rain it goes right up to my veranda. I think it has changed a lot in the last two years." Interviewees were concerned that climatic changes were affecting their livelihoods, homes, crops, and the surrounding environment that they depended on to feed their families. One participant described these changes when he said: "When you say climate change people just talk about the changes in climate patterns. There are no more seasons. It's all gone wrong. For me it's more about the weather patterns..."

Another significant problem identified by the participants was changes they have noticed in sea levels which they associated with the impacts of climate change. One interviewee stated: "At some places, when I was a student, the water stopped at a different place but now it keep [sic] coming up on the land and some places different to when I was a kid..." Participants saw this as a significant concern as the sea was washing away fertile soil and was encroaching on their villages and houses. They recognised that there could be several factors at play resulting in this coastal erosion, the other one being developments which were clearing vegetation along the coastline and disrupting soil retention by removing these plants. This problem seemed of more concern in rural communities with one participant from Big Bay describing his concern: "[Sea level rising is a] Big problem. At one time I didn't see all of this but now we see it is becoming a great threat to the generations that are up and coming. Like in Sanma sometimes people live close to the river and now they have to move." However, in Port Olry the interviewees had noticed the opposite effect with sea levels decreasing stating: "The reef there, close to the beach, about two metres away from edge. Before for us to swim there it used to be a very long way to get there. The water is going out, not like what they said would happen. The water is not rising. It is different here.... In Ambea the water is going up to the plantations the water is rising in East Ambea." This change in sea levels with waters gradually declining was also seen as a problem as it impacted on fishing levels due to changes in reef sizes and depth.

Another significant problem identified by the participants was the lack of education, awareness and knowledge about the effects and causes of climate change. An interviewee from Port Olry said "...Here people don't have a good knowledge. Plastics you get from the shops, the gas you use to burn. Everyone wants something easy but we don't understand the consequences of this easy stuff. There is a lot of plastic things get thrown out on the roads. All of these things slowly build up and affect everyone." This concern about the ignorance and lack of education was mostly with the middle aged group as they noted there had been a change in younger generations and their connection and relationship with the local environment. They believed that this was due to the introduction of modern values and products which has become an increasing concern as stated by an interviewee who said: "Yes, I am very concerned about the well being for the future generation. Today's ignorance about the environment [they are] not aware enough of the issues."

8. Have you noticed any changes in the natural environment that you think may be due to climate change?

The majority of participants described changes they had observed in the natural environment and attributed these to global climate change. Males and females from rural and urban locations, noted changes in climatic patterns including: increased rainfall and flooding, warmer temperatures and changes in seasons as noted by an interviewee who said "...before there used to be distinct seasons like [the] windy season or rain season etc ...but all of the sudden the seasons are changing and mixing, like it will rain for weeks in the dry season. I foresee a lot [of] flow [on] effects due to weather pattern changes." Participants also stated there had been an increase in mosquitoes due to higher levels of precipitation. This concern was noted by two participants who said: "Yes. Creeks fill up and too many mosquitoes..." and "it has been raining a lot and encouraging the mosquito to breed."

The main concern expressed was noticeable changes in climatic patterns and the significant impact on food security. Many participants noted the links between changing weather patterns, crop failure and decreased productivity. One female participant described this link between poor crops and changing weather patterns when she said: "...for years now we haven't eaten mangoes. It rains most of the time and doesn't flower. We have wind changes [sic] direction at a certain time of the year. We used to have the easterly winds and now it comes from the west. There seems to be a change in the wind patterns. When you plant cabbage it doesn't grow as well as it used to before. Last year I have lost half of [the] taro [crop] because of the drought. It all dried up." This loss of crops and

productivity was a common complaint as it is their source of food and income. This concern for food security was expressed by a member of the Port Olry community who stated: “Plant it in the proper dry season, for when the plant should grow, and then it rains so that the plant doesn’t grow, so now we don’t know when to plant or what will grow when, so we don’t have enough food.”

Concern about rising sea levels and coastal erosion were also linked to food insecurity as stated by a community leader in Luganville who said that: “The coastal and inland erosion by [the] sea and rivers is becoming more noticeable and frightening for low-lying areas where farms and communities are located. The implications for agricultural practices cannot be overlooked especially with the fast increase of the country’s population – one of the fastest growing in the South-West Pacific. Santo with its vast expanse of rich alluvial deposits and floodplains can be seen as the future food-bowl, should other low-lying and smaller islands succumb to the effects of global warming”. Sea level changes were of significant concern to the participants, with one male student from Luganville describing these as: “The first one is sea level rise. If you go down near the municipal area you will see some post in the sea. Several years ago the level of the sea was beyond the post. Maybe four years ago, you could see green grass. Now, we can see how it has risen. The next one is flooding sometimes due to deforestation some families have to move out from their houses because there is mud flowing everywhere...”



Image 17: Rex Thomas Tandak and coastal erosion near St. Michel College, Luganville, Santo Island

However sea level changes were experienced differently in Port Olry with participants noting sea levels decreasing¹. This was described by an interviewee who said: “Yes, everything’s dry. The sea is going further out. When I was 12 boats would go between here, Port Olry and that Dolphin Island which you walked to today. Last five years I have noticed a big change and the water is lower.” This description of sea level change at Port Olry is the opposite of what was described in both Luganville and Big Bay, although all participants said that it was still a significant concern for fishing and the role of this village as a port.

¹ The retreating sea level in Port Olry is probably attributable to activities of the tectonic plates resulting in land movement

9. If you have noticed some changes, do they have any impacts on local people?

The majority of interviewees stated that they had seen significant changes which they believed were due to climate change. They described these changes as impacting on local people socially, economically, culturally and geographically. Interviewees and participants described their elevated concern surrounding extreme weather events including cyclones, tsunamis, tidal waves and earthquakes. This concern was described by one interviewee who stated: "People have been moving away from the sea [they are concerned about] tsunamis and sea level rising."

The social impacts of rising sea levels were explained by the participants and interviewees. An interviewee described how coastal communities have been forced to relocate which has flow on social and economic effects. He said: "Already we looked at the sea level rise in the coastal areas. Some of the settlements have been warned that they need to move out....They sometimes feel reluctant to move but they have no choice. They relocate to somewhere. They have to do this on their own. A few have started to move. All around parts of Santo they have experienced the sea level rise. They have the coconut plantations which are being destroyed by the sea. Also the infrastructure close to the sea is being destroyed. Coconut plantations would have been there for over 30-40 years. They have no idea they have limited knowledge." This relocation has forced many participants to move away from ancestral lands, therefore communities are losing local knowledge and connections to place, eroding the cultural and environmental frameworks and knowledge systems of the island. This concern was expressed by one participant who stated: "Some of them have moved out for their original places of their ancestors. They had been living there for most of their lives."

This concern for food security was evident in both rural and urban areas as explained by an interviewee who said: "The rain makes our crops doesn't [sic] grow good. When we face lots of heavy rain, it stops all our fruits and flowers from growing. Sun being too hot our leaves are getting brown, the banana leaves and baking leaves are all getting brown so we can't use them [e.g. for making lap lap]." Interviewees stated there had been an increase in erosion due to rising sea levels and increased rain meaning much of the fertile land had been washed away. This concern was expressed by one urban participant who said: "People find it difficult to plan as it keeps raining, so they can't grow crops or build. Due to erosion [the] land can't produce good things like before. Now its tiny, not enough, food insecurity. People depend on rice and now there is no rice in Luganville."

Participants complained about the increased physical, financial and emotional pressures that were being placed on them and their families due to decreased plant productivity. A rural participant said: "[I] have to work a bit harder....I'm living near a slope where I plant my garden and now I have to grow in another place. I have to walk now further I have to plant around. Before now I used to just plant anywhere." This increase in pressure was also found to be affecting participants financially as they explained how they could no longer support themselves and their families through subsistence living. An interviewee said: "People getting hungry as there is not enough food, as the production of food is reduced, due to the changing seasons. [They] can't pay school fees as they cannot produce food to sell." As a result people were forced to buy food and described being financially poorer as a result and the increased importance on having money. One interviewee said: "Maybe the way we survive with money is not as normal as in the past. People cannot survive with small [amounts of] money as in the past. e.g. 5 years ago 1,000 Vatu for a week. Now it costs about 2-3,000 Vatu for a week."

Another change noted by participants was the change in weather patterns with the majority of interviewees stating that they had noticed increased rainfall, longer periods of drought and higher temperatures which were evident in the following participant's statement: "I know Santo used to be very hot but now the weather patterns are every different, just over a few years." As a result of climatic changes interviewees noted an increase in disease as reflected in the following comment from a female participant who said: "When it rains a lot... there are more mosquitoes and malaria."

10. Is there is a strong link between your community and the environment? Please explain why you have said yes or no.

The majority of participants said that there was a strong and dependent connection between their community and the environment. This link is described by one interviewee who said: "Everyone needs the environment. Life of the people depends on the environment." Food production and the provision of construction materials for housing were described as key contributors to sustaining the links between communities and the environment which was reflective of a mostly subsistence lifestyle of the majority of Ni-Van communities on Santo as explained by an interviewee who said: "Yes. Without those things [environment] we cannot exist. We grow crops, we use woods to cook, we use coconuts for oil, everything we need without those things [we have] nothing. We use palms for our shelter, local woods to build the houses, everything around we need." The use of natural materials for medicine and health was another social-environmental link as described by an interviewee who said: "They use leaves to make traditional medicines. Not everybody uses traditional medicines, just some we do in our family."



Image 18: Produce at the market, Luganville

However the main forms of connections identified by participants and interviewees were: traditional, historical, cultural and social links. This strong traditional connection to the land was described by a Luganville community leader who said: "Life and customs of all Ni-Vanuatu is intertwined with the physical environment and from these aesthetic and spiritual values are hewn, so to speak...sociologically we say a community's norms and values are shaped by the environment and Vanuatu is no exception. Our religious totems and traditional dance chants all testify to this immediately outside of the Christian belief of the Creator God or Yahweh." This strong spiritual connection is further evident in the responsibility participants feel to protect and preserve the natural environment which was explained by a community member from Port Olry when he described the program he had established to help preserve the environment. He said: "Yes, for my community, I feel responsible for my community as I run this program. We are trying to draft a structure to send to South Pacific Committee. One is targeting the youth groups, the second trying to

[establish a] reserve in the sea for the community, like 30 metres out to sea. For funding we are presenting it to him [South Pacific Committee]. I wish if [sic] these people like us, in every community [would] to help and protect environment.” A component of the program this man had helped to establish was a community clean up and education program to inform community members, particularly children, of the importance of environmental sustainable practices and waste management solutions.



Image 19: Tarcisius Alguet with an environmental care sign for the Port Olry waste management program

Interviewees and participants did note a trend of diminishing connections between their communities and the environment. One participant said: “If there is really a strong link people would be planting local food and local trees and now people are thinking about money now and before we thought about the environment. People don’t plant enough food for their family, they now look for money and a job to provide for family.” This shift was further evident in the following interviewee’s statement: “In today’s world we depend on money not like before we depend on [the] environment. Without money we still survived, without environment we don’t survive. The link is very strong tie. Without the environment we wouldn’t be surviving.”

11. Do you think links between your community and the environment are changing and if so why?

The majority of participants of both genders, from rural and urban areas and of all ages stated that they had seen changes in the links between their community and the environment. These changes included: the introduction of technology, the construction of infrastructure, rural to urban migration, a diminution of traditional culture and economic structural changes. The introduction of new technologies including mobile phones, the internet, movies and television was the most common change recorded by interviewees. They recognised that as a result of new technologies people were being introduced to different cultures and value systems and turning away from traditional kastom and the links between people and the environment were weakening. This was explained by an interviewee who said: “Before we relied on kastom. Now with mobile phones, ideologies within the community is becoming separated.” He progressed to explain that “Mobile phones have a good side and a bad side” for example they are essential for disaster preparedness in terms of warning communities of potential tidal wave or tsunamis.

Urbanisation was also noted as the cause of significant changes in the relationships between communities and the environment. Participants noted that this was particularly evident in young people as explained by a participant who said: “young people are coming more to town. They don’t want to stay on the farm. They prefer to go to the offices to find a job.” This desire to live in urban areas was reinforced when the researcher asked a focus group of secondary school students of Port Olry if they planned to remain living in the village. They unanimously said that they wished to leave and reside in a larger town such as Luganville or Port Vila. Urbanisation was viewed as a negative impact as participants believed it was eroding communities’ direct relationships with the environment as the society becomes more dependent on money and cultural norms and values become reflective of introduced ideals. This change was made evident in the statement of a rural interviewee who said: “Yes changing negatively. Because plenty of our villagers have migrated out of our place to urban areas then they come back and want to behave the same as they did in town. They have adopted the other behaviour they have experienced in urban areas.”



Image 20: Local women with Courtney Angus transcribing their focus group at the market, Port Olry

Links to the environment have fundamentally changed with communities moving away from subsistence living — a trend which was described by a participant who said: “I think it’s changing. There is less gardening because we have to work... we just have a small garden.” Participants felt that their community’s relationship with the environment was changing due to people becoming less dependent on nature for survival. This change was affecting *kastom* and changing traditional values, as evident in the following comment by an interviewee who said that: “The old traditional ways of living are struggling.” These changes have been compounded by new technologies and the cash economy as explained by an interviewee who said: “Yes in the past, let’s say before Western intervention, natural resources were abandoned. Now they are declining because of the changes that are taking place in Santo and elsewhere. Mainly the economic force which is making communities more dependent on imported goods so they have to spend more time to earn income to get these things. With all of these changes it’s affecting the environment in the way that the communities even have a changed attitude regarding how they can use the environment to get income.”

12. Can Indigenous knowledge assist in managing the environment and community?

Interviewees and participants suggested that Indigenous knowledge could assist in managing the environment and community. A Luganville community leader said: “Indigenous knowledge can assist as it has its own way of directing a way to live. People think these are from the past but I don’t agree. With past experience there is a lot of wisdom in traditional ways.” Participants believed that the traditional practice of cultural and environmental protection known as ‘*Tabu*’ was fundamental

in ensuring the survival and sustainable use of the natural environment through managing the communities' involvement and use of it. One interviewee explained Tabu as: "Some style of living we need to keep, explains kastom tabu. There are traditional ways of preserving and conserving. For example the chiefs will say you can go fishing in one place for six months then not for the following." Tabu was described by interviewees as part of 'kastom law', a traditional preservation method used to ensure the sustainable use of the environment through the direction of the chiefs. An interviewee provided an example when he said: "using Namele Palm, if you place that leaf and you hang it on the mandarin tree nobody will take it. Makes it forbidden, people will respect..... Generally palm leaf means you need to respect. Other plants are also respected but this is the most important. Others are used on various islands." The importance of the traditional chief system to ensure the sustainable use of the environment was supported in the comment by an interviewee who said: "First and foremost our community leaders they can make good decisions at community levels such as placing tabus on the destruction of native forests."

Interviewees noted that there had been generational changes in traditional community structures and values. These changes were described by a participant who said: "The change of the world around also has an impact on this traditional system. The chiefs can talk and try to solve the issues but young people no longer respect the roles of the chiefs... for young people would [sic] work closer with the chiefs this would be better. Chiefs also need to respect young people. Young people are the greatest portion of the population. I am married to a chiefly title but I even ask him about the chief. They obey everything the chief says but now you often can't work out who is the chief. This has changed over the last ten years. Now the chief doesn't have much say. They will respect them because they have a chiefly title but they [communities] are no longer fully controlled by the chiefs. I think what holds them now, they used to believe that if you disrespect the chief something would happen that was bad. This is what holds the community, they still have the obligations to obey. If that link is broken people won't obey the chiefs." Many participants felt that through the re-establishment of traditional leadership systems in partnership with government agencies, social and environmental problems such as family planning, education, domestic violence, land sales etc would be resolved more satisfactorily.

Education was also identified as a key traditional practice that assisted the management of communities and the environment through cultural and environmental awareness. Education was viewed as a way of preserving traditional knowledge and values and through this practice environmental management skills could be passed through generations. The significance of education was explained by an interviewee who said: "The way of the forefathers are time-tested and still applicable today but this is not being preserved through educational curriculum."



Image 21: Researchers conducting an interview in rural area, Vathe National Park

13. Who should be responsible for managing environmental issues?

The majority of participants believed that it was everyone’s responsibility to manage environmental issues. This was expressed by an interviewee who said: “Each individual starting from kids, boy, girl, mother, father, all of the community at whatever level you are in you should have a respect for the environment.” Participants felt that the management of environmental issues was everybody’s business because its ongoing viability affected their way of life and their survival. An interviewee said that the: “Easy answer is everyone. But everyone needs to be educated so that everyone can be involved and make a difference. Needs to be the ministry of the environment. They are the leading figure to set up policy and give funding at community level. But everyone needs to take precautions and get involved.”

Many participants nominated community leaders and experts as those responsible for managing environmental issues. The chief was identified as a key person in rural areas and the police in urban locations as explained by an interviewee who said: “In the village the chief should take a lead...and in the urban areas the police should take a lead.” This belief was also held by the Port Olry chief, however he believed he required expert assistance and guidance to support his leadership. He said: “Me the chief [am responsible, but I] need some experience and expertise to manage issues, I can lead the community and organise things.” An interviewee confirmed that additional expert advice was required when she said: “Conservationists and the people from the outside. The experts to make people aware, locals aware of the issues.” Community leaders such as chiefs, land owners, government departments and teachers are seen as responsible for managing environmental issues as these key community figures are able to educate and promote community awareness surrounding environmental protection and restoration.

14. Is there anything else you would like to say?

The main topics interviewees discussed were issues around youth, education, the environment, governance and leadership and economic changes. These issues were evident in the following comment by a participant who said: “Concerning the youth they should come up to learn more about the kastom and culture and how we originated... I think we should take them back to the old days to our ancestors rather than using the modern system to destroy the environment.”

The main concerns surrounding youth was described by a young interviewee who said: “Pressure to get married early from the community. Too much rape. Marijuana, alcohol, cigarettes and kava is a

problem with the young people. Stealing – worse now than it used to be, no employment so [they] have no choice as they need the money for cigarettes, kava and mobile phone.” These issues were also nominated by secondary school students from Port Olry. The general consensus of interviewees was that the younger generations need to be more involved in the community and be given more opportunities for education, employment and other life choices. The concerns surrounding young people are being addressed through the Youth Centre program which is based in Luganville. An employee from the centre said: “The objective of the project is to provide a safe place for young people. Coming to the centre young people can learn what other NGOs are doing They can access the computer to learn about the world outside of them. Their education levels are low but we help them to apply for jobs. We help look around for notices in the paper...We don’t restrict anyone or any information, for example the churches can come in...The whole idea is for them to participate here with the clinic. There are workshops on drugs HIV and contraceptives. We believe the more information they get then they are prepared to make choices.”

An interviewee stressed the importance of nurturing subsistence practices with young people when she said: “With children teaching them traditional ways. Go into the garden plant cabbage, plant good crops. Always take them to the garden. When they grow up they don’t have jobs [but] they can still eat. They can survive.” This concern for the community changes and the need for environmental education were made clear in a comment by a Port Olry fisherman who stated that: “Our population in Port Olry is growing very fast, so to feed the population we need to go to the sea else we will not survive.”

The changing relationship between people and the environment was continuously expressed as a key concern as explained by a interviewee who said: “The environment on its own is totally perfect but we humans are contributing to these issues rising up but we must not forget that we depend on the environment to live so to help us to live an easy life we need to care for the environment. If we care for the environment we care for ourselves too. If we destroy the environment we destroy ourselves. We must stop and try and manage ourselves. If we interact wisely then it should be Ok with us, but if we do not care then it is more likely in the near future we will face many disturbing issues that we might not expect.” Climate change and natural disasters were also identified as a key environmental concern with interviewees expressing their need for education. One participant said: “Climate changes and environmental changes [are] the most big [sic] issues in this world. All we have to do is we have to take advice, we have to get instructions, we have to help ourselves to face whatever comes to manage it and to get through.”

Leadership was a key concern for interviewees who expressed the need for more influential leadership systems from the chiefs to the government. A participant said: “...the government has a duty to its people and the leaders of this nation should only enjoy their given privileges after they have ensured the country is running on an even keel despite the imminent risks of the global warming or atomic and nuclear disaster.” Government issues raised were mainly concerned with corruption, land management, climate change and environmental leadership. This was further reflected when an interviewee said: “We must change the current government systems and come up with a system that is suitable. Good knowledge about the environment and the ability to do tabu is important.”

Economic changes with people moving away from subsistence living towards a cash economy was a key concern identified by interviewees. A participant from Port Olry said: “for economic system we must be fifty-fifty between new and old. Take the good of both, leave the bad of new and old.” This economic transition from traditional life to a more Western lifestyle was identified as a significant concern for participants. A participant said: “Due to the influence from the outside people are turning away from traditional ways and not depending on the environment. They are not living with the environment. They will be focusing on the money. Money will be playing a big role. They will change their focus. Before they focused on environment and subsistence living. Good sides and bad sides of both traditional and modern, people need to be educated to adopt what is more fitting to

the society and rejecting what is not good. We are a part of the world, we need to live with it and we have to integrate what is relevant.” A microfinance scheme was being implemented in Hog Harbour as a way of overcoming social, gender and economic issues. It was run by the local community for women in Hog Harbour. The program was explained by one of the women from Hog Harbour who said: “It teaches women to be responsible for their own money and not to be dependent on anyone. By running their own program they are trained and learn and become responsible and to properly look after the money. Best to train women in the village as they are more interested to learn and they come together and share together and share experience and help each other.”



Image 22: Woman fishing in Big Bay Area

9. LIMITATIONS

The limitations in this project related particularly to the language and cultural barriers between the researchers and the community. As few people spoke English as their first language, translators were used extensively and it was critical that they had excellent English skills to ensure that interviewees and participants responses were accurately documented. Survey forms were translated into Bislama and French, and a local university student assisted those with low literacy skills to complete survey forms. While the research communities were very supportive of the project it was difficult to capture the views of women, particularly in the rural community. The women's time constraints contributed to the challenge of engaging them. During the daytime they were working in their gardens and in the evening cooking and caring for their families. A small women's focus group was held in the Port Olry marketplace one evening with several men escorting the women to the location and participating in the discussion. The presence of men in a focus group and the male translator may have limited aspects of the women's responses. It would be preferable, in future projects, to engage female translators for focus groups and interviews particularly in communities where culturally gender differences inform day to day activities. It was the original intent of the project to include some of the remote rural communities to the north of Espiritu Santo. The inaccessibility of these villages, coupled with the project's time and financial constraints meant this was not feasible. As an alternative, the community of Port Olry provided a rural perspective to the qualitative aspects of this study. Residents from across the island, including remote locations, completed the survey, which added another dimension to rural representation.

This study does not attempt to analyse if climatic and precipitation changes noted by participants were attributable to global climate change or if they were part of natural cycles and/or a combination of both. Rather its aim was to document participants observations and perceptions surrounding climate change.

10. CONCLUSIONS

The following conclusions have been formed through the thematic analysis of the qualitative and quantitative results. Themed summaries respond to the five research objectives. In some themes there is a combination of qualitative and quantitative responses and in others the emergent theme only relates to one aspect of the data.

10.1 OBJECTIVE 1: KEY PRIORITIES FOR A SUSTAINABLE FUTURE FOR ESPIRITU SANTO

In the quantitative data, when asked to identify the area they were most concerned about relating to Espiritu Santo, the majority of respondents nominated 'the environment'. A total of 180 (40.5%) respondents ranked environmental issues as their highest area of concern. Economic and social issues were ranked equally second (16.0%) measuring less than half of the concern of environmental issues. Cultural issues were found to be the third level of concern (11.5%). Respondents aged from 11 - 50 years had the highest levels of environmental concern when compared to other age groups. It was found that respondents aged from 51 - 60 years were the most concerned group regarding social issues. Children aged 0 - 10 years were the most concerned about cultural issues. Notable differences in responses by gender related to cultural and economic issues. It was found that men were more concerned than women about both of these areas. In terms of environmental issues, men and women were (approx) equally concerned, (40.7% females and 40.4% males) identifying 'environmental issues' as their main concern. Urban respondents (43.9%) were more concerned about environmental issues than rural citizens (36.7%). Urban respondents (17.7%) were more concerned about social issues when compared with rural citizens (14.0%).

When asked to describe the areas that concerned respondents the least, their responses were relatively equally spread across all options. They were least concerned about economic issues, with 18.5% selecting this response. Children aged 0 - 10 years were the least concerned group regarding environmental issues. When comparing rural and urban responses there was found to be some notable differences. Urban dwellers were less concerned about social and economic issues when compared with rural residents and a higher number of urban residents nominated that they were not concerned about any issues.

In the qualitative data key aspects of concern to interviewees and participants were: the sale of land, land disputes, violence, rape, alcohol and drug abuse, low levels of education, lack of jobs, witchcraft and environmental threats such as climate change, rising sea levels and extreme weather events. Elderly and middle aged people believed that life was much tougher for young people now than in their younger days. Young women interviewees and participants highlighted their fears surrounding rape. Climate change was described as the most important environmental issue for Espiritu Santo. Interviewees and participants described elevating levels of concern surrounding extreme weather events such as: Tidal waves, cyclones, earthquakes, tsunamis and changing weather patterns. They described the indirect effects of less defined seasons and how these had impacted on food security and erosion. Rural participants noted the negative impact of introduced materials e.g. plastics and kerosene on the environment increasing waste management problems.

The key social issues raised were: lack of leadership, education and its cost, young people not attending school having nothing to do, lack of health education for young people, the consequences of differing cultures colliding, black magic, land disputes which lead to social conflicts and violence, rape and domestic violence, drug abuse, low living standards, unemployment, lack of secure and safe water supplies, increasing rate of diabetes and sustainable social and environmental relationships.

10.2 OBJECTIVE 2: LEVELS OF CONCERN, KNOWLEDGE AND OBSERVATIONS SURROUNDING THE SOCIAL AND ENVIRONMENTAL IMPACTS OF CLIMATE CHANGE

10.2.1 COMMUNITY CONCERN ABOUT CLIMATE CHANGE

The quantitative data measured respondent's levels of concern surrounding climate change. Almost one third of respondents (29.3%), described their attitude as 'very concerned'. Ranked second was 'concerned' (23.9%) and third was 'extremely concerned' (19.1%). Very few people were either 'marginally' (11.0%) or 'not concerned' (7.2%) about climate change. There appeared to be a trend which revealed that more of the older respondents, particularly those aged upward from 51 years of age, were 'very concerned' about climate change. It was notable that young people aged from 0 - 30 years represented the majority of responses in the 'extremely concerned' group. More males were found to be 'very concerned' or 'extremely concerned' when compared to females. Significantly more urban respondents were either 'extremely concerned' or 'concerned' about climate change when compared with rural responses.

10.2.2 LEVELS OF KNOWLEDGE ABOUT CLIMATE CHANGE

Respondents were asked to rank their level of knowledge about climate change. The highest (28.6%) response was 'average' and the second highest (21.4%) was 'poor'. Most respondents across all age groups ranked their level of knowledge of climate change as 'poor' or 'average'. It was notable that a significant group of respondents aged 0 - 10 years ranked their level of knowledge as 'poor'. Conversely, the largest number of respondents who ranked their level of knowledge about climate change as 'excellent' were young people aged from 11 - 20 years. The age group which described their level of knowledge as predominantly 'average' were those aged from 21 - 30 years.

More males ranked their levels of knowledge as 'average', 'poor', 'very good' and 'excellent' when compared to females. When comparing urban and rural responses it was found that more people in urban areas ranked their level of knowledge as 'average', 'good' or 'very good' than those in rural areas. Conversely more rural respondents described their level of knowledge as 'excellent' when compared to their urban counterparts.

10.2.3 TIMEFRAME OF CLIMATE CHANGE EFFECTS

Respondents were asked if they thought the effects of climate change were a problem 'now', in a timeframe into the future (next 50, 100 or after 100 years) or not at all. More than half (54.1%) responded that they believed it was a problem 'now'. The next highest response (17.8%) was 'in the next 50 years'. A small group of respondents (7.7%) believed that climate change won't be a problem. The immediacy of the problem was prioritised by respondents from all age groups. Responses according to gender were equitably spread across most options. One hundred and ten (55.3%) females and 130 (53.1%) males stated that they believed climate change was a concern 'now'. When comparing urban and rural responses significantly more urban residents believed that climate change was a problem now. A total of 59.5% of urban people said that climate change was a problem now, compared with 47.8% of rural residents.

10.2.4 CHANGES DUE TO CLIMATE CHANGE

When asked if they had noticed any changes that respondents thought might be due to climate change 73.9% of people responded 'yes'. A small percentage (11.3%) said 'no' and 'I don't know' (4.7%). These responses were found to be consistently high across all age groups with strongest representation from 0 - 50 years. Affirmative responses were found to be less in those aged from 51

- 61+ years and it was notable that these age groups had a larger representation of 'no response' to this question. It was found that 84.4% of urban residents responded 'yes' compared to 61.8% of rural residents who said 'yes' they had noticed some changes which they attributed to climate change. It was found that 46.8% of urban dwellers believed that there had been changes in climatic and weather patterns, compared to 20.3% of rural respondents. Urban residents had also noticed more changes in the land and human behaviour as a result of climate change when compared to the responses from rural residents. A notable number (34.8%) of rural residents did not respond to this question compared to 19.0% of urban residents.

In the qualitative results people from rural and urban areas were very concerned about the impacts of climate change. They had already noticed differing weather and climatic patterns. These included prolonged dry periods and increased flooding, with less demarcation of the seasons. Their most significant concern was food insecurity as a result of these changes in weather and climate patterns with changes in planting seasons and the lack of clear seasons destroying crops. Food security was the biggest concern socially, economically, and culturally. The connection to economic prosperity was due to decreased levels of food productivity, self sufficiency and subsistence. The consequence of decreased productivity resulted in citizens needing cash money to buy food for their families.

In the quantitative results respondents were asked to describe aspects of Santo they thought had changed due to climate change. A total of 44.8% of people ranked 'the sea' as their top priority. A close second was 'climate and weather patterns', which was nominated by 34.5% of respondents. The third area where people believed there had been changes due to climate change was the land which was nominated by 21.2%. More people in older age groups 31 - 61+ had observed changes in 'the sea', 'climate and weather patterns' when compared with responses from younger respondents. A notably high number (26.8%) of people did not respond to this question. Significantly more men (43.7%) prioritised 'the sea' than women (39.7%). More males (24.1%) identified changes in 'the land' than females (17.6%). In the qualitative data concerns were also raised regarding changes in sea levels with most areas noting a rise in sea levels affecting soil fertility and fishing. However Port Olry noted the opposite trend with water levels decreasing. This was still a concern as fish levels had changed due to the decreased water covering the reefs.

In the qualitative data rising sea levels were a significant concern for participants as it forced communities to relocate, losing their cultural connections to the land, and eroding traditional systems of cultural heritage and knowledge. They described rising sea levels which were eroding coastal areas, and often the most fertile lands increasing the risk of food insecurity. Extreme weather conditions and changes in weather patterns were of significant concern. These were described as: tidal waves, earthquakes, tsunamis, increased precipitation, longer dry periods, unusual temperature variations and seasonal changes. Participants from rural and urban areas also noted an increase in mosquitoes and levels of malaria due to higher precipitation levels. This concern for changes in weather patterns was heightened due to the impacts on plant production which has decreased with increased levels of food insecurity as a result.

10.3 OBJECTIVE 3: URBAN AND RURAL SOCIAL, CULTURAL, ECONOMIC AND ENVIRONMENTAL VIEWS

10.3.1 PRIMARY FORMS OF ATTACHMENTS

In the quantitative results, when asked to rank their primary forms of attachments, respondents prioritised 'family, friends and community' and their 'family and friends and environment equally' as their most important forms of connections. Each of these options was prioritised by 37.2% of respondents. It was notable that only a small group (8.8%) nominated 'the environment' as their key form of attachment. Young children (0 - 10 years) were the age group that placed the most importance on connections to their 'family, friends and community'. People aged from 21 - 61+

years highlighted the importance of ‘family and friends and environment equally’. It was notable that environmental attachments were low across all age groups but increased significantly with respondents aged over 61 years. This group’s social attachment to ‘family, friends and community’ was the lowest of all groups. Gender based responses to forms of attachment were not significantly different with the exception of attachments to ‘the environment’ where 12.2 % of males were found to be more attached to the environment compared with 4.5% of females. When contrasting rural and urban responses to attachments it was found that a larger majority of urban residents (46.0%) prioritised their ‘family, friends and the environment equally’ compared with their rural counterparts (27.1%). A larger percentage (13.0%) of rural respondents favoured the environment than urban citizens (5.1%). In the qualitative results, when comparing rural and urban responses, it was found that interviewees and participants of all ages, both genders and from rural and urban locations, valued similar attributes of Espiritu Santo. Most participants described how they loved: the forest, beaches, the sea, birds, mountains, friendly people and the villages. The key social-environmental attribute in their collective view was the island’s capacity to grow food. It was notable that economic opportunities were not mentioned.

10.3.2 REGIONAL ATTACHMENTS

In the qualitative data respondents ranked their attachments in terms of the regions they felt most connected to. The highest ranking response was ‘the locality where I currently live’ which was nominated by 25.2% of respondents. Ranked second was ‘the place where my family lived or still lives’ with 20.9% of respondents identifying the importance of family in terms of their connection to place. It was notable that only a small group of 8.6% of respondents felt a strong attachment to ‘the world in which I live’. Respondents aged upward from 31 years appeared to experience the strongest connections to their locality. Those in the age group 11 - 30 years were most attached to ‘the place where my family used to live or still lives’. When comparing urban and rural responses, it was found that a larger group of 26.1% rural respondents prioritised the place where their family lived or still lives than 16.5% of the urban group. More urban residents (13.1%), nominated their primary connections to the world than the rural group (3.4%).

10.3.3 REGIONAL DETACHMENTS

In the quantitative results respondents identified the region they were least attached to. Responses were relatively evenly spread across all options. The highest scoring response was ‘the world in which I live’ with 17.1% choosing this response. Ranked a close second was ‘I don’t feel attached to any places’ which was the response selected by 6.7%. Respondents aged from 21 - 30 years were least attached to ‘the world in which I live’. Those aged from 41 - 60 years were the highest groups to nominate that they did not ‘feel attached to any places’. Some gender based differences in responses were noted. Females were more attached to their locality (15.6%) than males (9.8%). Males were found to have stronger national attachments (15.9%) than females (8.5%). More males did not feel any form of attachment (19.6%) when compared to females (13.1%). When comparing urban and rural responses, it was found that more urban respondents (20.7%) were disconnected from ‘the world in which they lived’ than rural dwellers (13.0%).

10.3.4 LIFESTYLE AND ENVIRONMENTAL PROTECTION

In the quantitative results their lifestyle was ranked by respondents in terms of its effects on protecting the environment. Respondents thought their lifestyle was ‘fair’ (22.3%), ‘average’ (16.9%), ‘poor’ (16.7%), and ‘very good’ (12.2%). When examining trends across age groups it was found that a large percentage of children aged from 0 - 10 years ranked their lifestyle as ‘average’. Young people aged 0 - 20 years and those aged 51 - 60 years were more likely to rank their lifestyle

as 'fair'. Older people aged 61+ years often ranked their lifestyle as 'poor'. When comparing urban and rural responses most were found to be in a similar range. The exception was those who believed their lifestyle was 'good'. More urban citizens (45, 19.0%) ranked their lifestyle as 'good' compared to (2, 10.6%) rural residents.

In the qualitative results it was found that the majority of interviewees felt that their community and the environment had strong linkages. This was due to their everyday survival as a mainly subsistence culture. The environment for them was vital for survival as it provides basic needs including food, shelter, medicine and fishing. The main links were described as: traditional, historic, spiritual, cultural and social. Many described how spiritually the land, their lives and customs were intertwined with and inseparable from, the natural environment and how these relationships established their social values and norms. People expressed their strong sense of responsibility to protect and preserve the land.

10.3.5 CHANGES IN HUMAN- ENVIRONMENTAL RELATIONSHIPS

In the qualitative results, interviewees described how there had been changes in the links between communities and the environment. Reasons for changes in human-environmental relationships were perceived to be due to: the introduction of technology, rural-urban migration, turning away from traditional kastom and the cash economy which resulted in people moving away from subsistence living and adopting different value systems. These changes were of significant concern but the majority of participants believed that their community could adapt in positive ways, keeping the environment as a fundamental part of their value systems.

The increasing reliance of communities on technology e.g. mobile phones, cars, roads, boats etc meant that people had often abandoned traditional ways of living. Interviewees described technology as both improving quality of life and damaging traditional practices particularly with the younger generations.

Rural-urban migration was another significant change, particularly with younger generations, which was a negative environmental trend with people over-crowding towns and looking for work rather than living subsistence lives. This migration is reflective of people becoming increasingly removed from the environment and a shift towards cash economies. This change towards a cash economy was seen as the most influential change as traditional kastom was being ignored and lost. Money was described as the main focus with people becoming more dependent on imported goods, including food.

10.3.6 RESPONSIBILITY FOR ENVIRONMENTAL MANAGEMENT

In the qualitative data, most participants described how 'everyone' was responsible for managing the environment — a response reflective of their close relationship with nature. Community leaders such as chiefs, land owners, government departments and teachers were also identified as responsible for managing the environment. External experts were seen as responsible to provide help to the community leaders to ensure that optimal environmental management systems were implemented. Interviewees viewed community leaders as the key to community action and involvement through their promotion of environmentally sustainable practices. The education system was nominated as being responsible for managing the environment through programs teaching whole communities about environmental issues with particular significance on young people as future custodians.

10.3.7 TRADITIONAL WAYS IN A CONTEMPORARY WORLD

In the qualitative results it was found that the majority of participants believed that Indigenous knowledge could assist in the sustainable management of the community and environment, as it provides positive direction to the way people should live and interact with nature. The main assistance indigenous knowledge could give was described as through strengthening and empowering chiefs to practice: Kastom laws e.g. Tabu and traditional knowledge and leadership systems. Community beliefs in 'black magic' were found to be evident as was particularly mentioned by young people as an aspect of traditional kastom that they feared. They believed that 'black magic' was responsible for premature deaths, illness, accidents and punishment for wrong doing. Interviewees believed that the chiefs needed to continuously evolve their practices to accommodate the contemporary world including technological progress, other leaders and systems of governance so they are positioned as 'paddling with two hands.' They believed that the optimal pathway for the future was selecting the best from both worlds. The traditional practice of Tabu as an environmental protectionist method was seen as fundamental to ensuring the sustainable use of the environment. However this system is reliant on the community respecting the chiefs. The use of traditional leadership was also viewed as an important way of ensuring communities and the environment were managed collaboratively for the benefit of the whole community. However this system of leadership was described to be changing with chiefs having less influence over the population and societies adopting individualist worldviews and values. Participants stated that they believed education systems needed to have increased emphasis on traditional kastom.

10.4 OBJECTIVE 4: APPLICABILITY OF INTERGENERATIONAL DEMOCRACY IN THIS PROJECT

This project provided the opportunity to test Intergenerational Democracy in an international context as previously it had only been applied in Australia. The model proved to be successful in capturing the views of people of all ages. The main difficulty in Vanuatu proved to be identifying how to locate the elderly as aged care institutions do not exist and life expectancy is low. It was easier to contact elderly people in a rural village as they were more accessible. Education levels, literacy and language barriers were more significant challenges with older participants. Access to young people was enabled through schools, with relative ease. The model was readily adopted in Vanuatu, because of its alignment with traditional community structures that require the involvement of people of all ages. As with Australian studies it was found that surrounding some issues age specific trends were measured and in other responses influences such as gender, rural or urban areas of residence were the most predominant variables. The application of this model in Vanuatu affirmed the value of the age based approach as a primary method of capturing whole of community views. However the researcher cautions that secondary variables, in this case gender and urban versus rural place of residence, should be coupled with age in any future studies that apply Intergenerational Democracy. Age should not be the sole variant of analysis.

10.4.1 AGE BASED SURVEY FINDINGS

Aged based survey findings were as follows:

Young children (0 - 10 years) placed the most importance on connections to their 'family, friends and community'. People aged from 21 - 61+ years highlighted the importance of 'family and friends and environment equally'. It was notable that environmental attachments were low across all age groups but increased significantly with respondents aged over 61 years. This group's social attachment to 'family, friends and community' was the lowest of all groups. Respondents aged upward from 31 years appeared to experience the strongest connections to their locality. Those in the age group 11 - 30 years were most attached to 'the place where my family used to live or still lives'. Respondents aged from 21 - 30 years were least attached to 'the world in which I live'. Those aged from 41 - 60

years were the highest groups to nominate that they did not 'feel attached to any places'. Young people aged from 11 - 50 years had the highest levels of environmental concern when compared to others age groups. It was found that respondents aged from 51 - 60 years were the most concerned group regarding social issues. Children aged 0 - 10 years were the most concerned group regarding cultural issues.

There appeared to be a trend which revealed that more of the older respondents, particularly those aged upward from 51 years of age, were 'very concerned' about climate change. It was notable that young people aged from 0 - 30 years represented the majority of responses in the 'extremely concerned' group. Most respondents across all age groups ranked their level of knowledge of climate change as 'poor' or 'average'. It was notable that a significant group of respondents aged 0 - 10 years ranked their level of knowledge as 'poor'. Conversely, the largest number of respondents who ranked their level of knowledge about climate change as 'excellent' were young people aged from 11 - 20 years. The age group which described their level of knowledge as predominantly 'average' were those aged from 21 - 30 years. When asked if they had observed changes in the environment that they believed were attributable to climate change responses were found to be consistently and highly affirmative across all age groups with strongest representation from 0 - 50 years. Affirmative responses were found to be less in those aged from 51 - 61+ years and it was notable that these age groups had a larger representation of 'no response' to this question. More people in older age groups 31 - 61+ had observed changes in 'the sea', 'climate and weather patterns' when compared with responses from younger respondents.

When examining trends across age groups it was found that the majority of children aged from 0 - 10 years were more inclined to rank their lifestyle as 'average'. As a larger group, young people aged 0 - 20 years and those aged 51 - 60 years were more likely to rank their lifestyle as 'fair'. Older people aged 61+ years often ranked their lifestyle as 'poor'.

10.4.2 GENDER BASED FINDINGS

Males (12.2%) were found to be more attached to the environment than females (4.5%). Females were more attached to their locality (15.6%) than males (9.8%). Males were found to have stronger national attachments (15.9%) than females (8.5%). More males did not feel any form of attachment (19.6%) when compared to females (13.1%). Notable differences in responses by gender related to cultural and economic issues. It was found that men were more concerned than women about both of these areas. More males were found to be 'very concerned' or 'extremely concerned' about the impacts of climate change when compared to females. More males ranked their levels of knowledge regarding climate change as 'average', 'poor', 'very good' and 'excellent' when compared to females. When asked which areas they thought had been most affected by climate change, more men (43.7%) prioritised 'the sea' than women (39.7%). More males (24.1%) identified changes in 'the land' than females (17.6%).

10.4.3 URBAN VERSUS RURAL FINDINGS

A larger majority of urban residents (46.0%) prioritised their 'family, friends and the environment equally' compared with their rural counterparts (27.1%). A greater percentage (13.0%) of rural respondents favoured 'the environment' than urban citizens (5.1%). It was found that more rural respondents (26.1%) prioritised the place where their family lived or still lives than the urban group (16.5%). A larger percentage of urban residents (13.1%), nominated their primary connections to 'the world' than the rural group (3.4%). It was found that more urban respondents were disconnected from 'the world in which they lived' (urban 20.7% and rural 13.0%). Urban respondents (43.9%) were more concerned about environmental issues than rural citizens (36.7%). Urban respondents (17.7%) were more concerned about social issues when compared with rural citizens

(14.0%). Urban dwellers were less concerned about social and economic issues when compared with rural residents and a higher number of urban residents nominated that they were not concerned about any issues. Significantly more urban respondents were either 'extremely concerned' or 'concerned' about climate change when compared with rural responses. It was found that more people in urban areas ranked their level of knowledge about climate change as 'average', 'good' or 'very good' than those in rural areas. Conversely more rural respondents described their level of knowledge as 'excellent' when compared to their urban counterparts. A significantly higher urban group (84.4%) responded 'yes' to the question, which asked them if they had noticed changes they attributed to climate change, when compared to rural responses (61.8%). It was found that 46.8% of urban dwellers believed that there had been changes in climatic and weather patterns, compared to 20.3% of rural respondents. Urban residents had also noticed more changes in the land and human behaviour as a result of climate change when compared to the responses from rural residents.

10.5 OBJECTIVE 5: FUTURE STEPS TO ASSIST ESPIRITU SANTO'S SUSTAINABLE FUTURE

The Tabwemasana Research Project has provided the foundations for many future projects and programs. Interviewees and participants identified the key areas they perceived to potentially provide solutions to environmental and social problems. These were: regulatory, education and awareness, training local people in agribusiness and hospitality, improved waste management systems, achieving water security, improved disaster preparedness systems and a heightened recognition of the importance of traditional knowledge. Key areas identified by participants that could assist in providing solutions to social issues included strengthening: governance and leadership, education, aspects of land ownership, economic situation, environmental awareness, water supplies for communities, addressing drug and alcohol addiction, health services. Some more specific details surrounding solutions to environmental and social issues were described by interviewees and participants.

Some of the future directions identified in this study were:

1. Initiatives that recognise the importance of traditional knowledge and kastom in the context of informing and managing contemporary sustainable environments and communities. Further discussions with chiefs and knowledge holders should occur in terms of identifying and prioritising these initiatives, which could include research projects. e.g. the documentation of traditional systems of environmental management through oral histories.
2. Increased awareness and disaster preparedness planning surrounding the impacts of climate change. These activities could range from addressing the immediacy of extreme climatic events to the long-term consequences of seasonal changes on food production and agribusiness. Research and projects in this area could include developing:
 - i. disaster risk reduction and disaster management modules for inclusion in secondary schools curriculum.
 - ii. building regulations and practices to ensure that future building constructions comply with standards designed to withstand extreme events.
 - iii. a carbon trading scheme with tropical forest conservation to reduce net greenhouse gas (GHG) emissions.
 - iv. organic food processing industries for food security.
 - v. projects that address the coastal erosion that is threatening villages and infrastructure in Sanma Province e.g. the road to the south of Luganville .
3. Improved provision of a safe and secure water supply for the community Port Olry as a model for other villages.

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4. Waste management systems in rural villages including systems to manage human sanitation.
 5. Continuing rollout and promotion of solar energy as the preferred option for residential, commercial and industrial energy needs.
 6. Increased environmental education for whole communities including education surrounding waste management, traditional environmental knowledge and climate change.
 7. Special focus on education, training and employment opportunities for young people. Due to Vanuatu's rapidly increasing population growth and predominance of young people, recognising that their future capacity to contribute to the nation's growth should be prioritised.
 8. Volunteer environmental care programs for residents of all ages, with particular emphasis placed on programs for young people.
 9. Research and initiatives that address the control of invasive flora and fauna marine and terrestrial species.
 10. Projects for marine restoration and conservation.
 11. Cultural tourism ventures that will assist economic and employment growth in Espiritu Santo. Some of these opportunities include:
 - i. The development of a military history Museum and precinct in Luganville and surrounds, which tells the World War II history of this location as a significant base for the USA military forces. Such a development could utilise remnant buildings and artefacts that remain largely without conservation in the town and without interpretation with the exception of the sunken vessel SS President Coolidge. This ship wreck would form part of the suite of attractions and activities. Other places that could be included are Million Dollar Point and plane wreck sites. As a component of this venture, discarded military waste that is not significant, could be removed from the island.
 - ii. The community of Port Olry has established a cultural tourism venture, which includes bungalow accommodation, recreational activities and traditional knowledge tours. With some support and assistance this development could be promoted (e.g. via a website) and extended to enable it to increase its viability. This model could be adopted by other rural villages, which could offer visitors a network of eco and cultural tourism experiences.
 12. Develop a micro-cooperative in the Big Bay, West Coast and South Coast areas to assist in the marketing and transport of goods to larger markets.
 13. Health issues such as diabetes and drug use require continuing investment and involvement of the government and community leaders (such as the chiefs and religious leaders) to educate the public and to implement rules and regulations.
 14. Strengthening of micro finance projects focused on providing assistance for women towards business development opportunities.

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- VG *see* Government of the Republic of Vanuatu.
- VMS *see* Vanuatu Meteorological Services
- VNACCC *see* Vanuatu National Advisory Committee on Climate Change.
- VNSO *see* Vanuatu National Statistics Office
- WHC *see* World Heritage Centre UNESCO.
- WHO *see* World Health Organisation.
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Appendices

Appendix 1: Tabwemasana Research Project information (English)

Tabwemasana Research Project

This project has been developed in partnership with - Vanuatu Earth Care Association (VECA), the High Chief of Sanma Council of Chiefs and Honorable Councillors, University of Sydney, The Australian Government (through the Endeavour Research Fellowship Program) and The University of the South Pacific.

Project description

In 2010, VECA will commence a six month research project that will examine the social aspects of environmental sustainability issues, with a special emphasis on global climate change, for the island of Espiritu Santo, Vanuatu. They will be assisted by Kirsten Davies from The University of Sydney who is the recipient of a 2010 Endeavour Fellowship through the Australian Government. The Fellowship will enable Kirsten Davies to undertake a literature review and travel to Espiritu Santo (from April- July 2010) to conduct individual interviews and focus group discussions and distribute a survey (with members of VECA, village chiefs and community members). As the final phase of the project she will write a report which will provide a foundation upon which initiatives and further research can be developed. Of specific focus will be documenting the links between the islands cultural and environmental heritage.

Ten focus group discussions (5 with groups of young people and 5 with community representatives) will be held and 50 individual interviews (25 with young people and 25 with community representatives). The interviews and focus groups will be conducted in locations strategically spread across the island including remote rural villages located in North Santo. These communities and the inclusion of young people have been prioritised by VECA members and the Council of Chiefs as those of highest need in terms of their social and environmental challenges.

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Appendix 2: Tabwemasana Research Project information (French)

Projet de recherche Tabwemasana

Ce projet a été développé en partenariat avec Terre de Vanuatu Care Association (VECA), le chef de la haut du Conseil Samma de chefs et conseillers Honorable.

Description du projet

En 2010, VECA commencera à un projet de recherche de six mois qui examinera les aspects de la durabilité pour Espiritu Santo. Ils seront assistés par Kirsten Davies de l'Université de Sydney, qui est le récipiendaire d'une bourse d'Endeavour 2010 par le gouvernement australien. La bourse permettra à Kirsten Davies à entreprendre un examen de la littérature et de voyages d'Espiritu Santo (depuis avril-juillet 2010) pour la conduite des entrevues individuelles et de groupes de discussion (avec les membres de VECA, les chefs de village et les membres de la Communauté). Comme la phase finale du projet, elle va écrire un rapport qui fournit une base sur laquelle les plans de développement durable peuvent être construites. Mise au point spécifique va être documentant les liens entre le patrimoine culturel et environnemental de îles. Le projet commencera avec une revue de la littérature suivie de 10 groupes de discussion (5 avec des groupes de jeunes) et 5 avec des représentants communautaires et 50 entrevues individuelles (25 avec des jeunes) et 25 avec les représentants de la Communauté. Les entrevues et les groupes de discussion aura lieu dans des endroits stratégiquement répartis sur le île, y compris les 3 villages ruraux à distance de : Pesina Village (Santo Nord), Tolomako Village (Santo Nord) et le village de Olpoi (Nord Ouest Santo). Ces communautés et de l'inclusion des jeunes ont été parmi les priorités par VECA membres et le Conseil des chefs comme ceux des plus besoin en termes de leurs défis sociaux et environnementaux.

La phase finale de recherche consistera à rédiger le rapport qui aidera les VECA dans leur objectif d'élaborer un plan de développement durable qui propose des orientations stratégiques futures.

Pour plus d'informations, contactez :

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Appendix 3: Interview and focus group questions (English)

Tabwemasana Research Project

A project for Vanuatu Earth Care Association (VECA) in partnership with the Australian Governments 2010 Endeavour Fellowship Program

VECA Coordinator - Rex Thomas Researcher- Kirsten Davies

Interview and focus group questions

Thank you for participating in this project. Please feel free to skip any of the following questions if you would prefer not to answer them and note that you will be anonymous in this study.

- 1/ What are the aspects of Espiritu Santo that you love?
- 2/ What are the aspects of Espiritu Santo that concern you?
- 3/ What are the most important environmental issues for Espiritu Santo?
- 4/ What do you think can be done about these issues?
- 5/ What are the most important community issues for Espiritu Santo?
- 6/ What do you think can be done about these issues?
- 7/ How concerned are you about the impacts of climate change on Espiritu Santo?
- 8/ Have you noticed any changes in the natural environment that you think may be due to climate change?
- 9/ If you have noticed some changes, do they have any impacts of local people?
- 10/ Is there a strong link between your community and the environment? Please explain why you have said yes or no.
- 11/ Do you think links between your community and the environment are changing?
- 12/ Can Indigenous knowledge assist in managing the environment and community?
- 13/ Who should be responsible for managing environmental issues?
- 14/ Is there anything else you would like to say?

Thank you for your time and sharing your knowledge and ideas.

Appendix 4: Interview and focus group question (French)

Projet de recherche Tabwemasana

Un projet de Vanuatu terre Care Association (VECA) en partenariat avec le programme gouvernements 2010 Endeavour bourse australienne

Coordonnateur VECA-Rex Thomas chercheur- Kirsten Davies

Questions d'entrevue et les groupes de discussion

Merci d'avoir participer à ce projet. N'hésitez pas à ignorer toutes les questions suivantes si vous préférez ne pas y répondre et notez que vous serez anonyme dans cette étude.

- 1 /Quels sont les aspects d'Espiritu Santo que vous aimez?
- 2 /Quels sont les aspects d'Espiritu Santo qui vous préoccupent?
- 3 /Quelles sont les questions environnementales les plus importantes pour Espiritu Santo?
- 4 /Que pensez-vous peut être effectuée sur ces questions?
- 5 /Quels sont les enjeux les plus importants de la Communauté pour Espiritu Santo?
- 6 /Que pensez-vous peut être effectuée sur ces questions?
- 7 /Comment concernés sont vous sur les impacts du changement climatique sur Espiritu Santo?
- 8 /Avez vous remarqué les modifications dans l'environnement naturel que vous pensez peut être due au changement climatique ?
- 9 /Si vous avez remarqué certains changements, ont-ils des effets de la population locale?
- 10 /Se qu'il y a un lien fort entre votre collectivité et l'environnement ? Veuillez expliquer pourquoi vous avez dit oui ou no
- 11 /Pensez-vous que les liens entre votre collectivité et l'environnement changent?
- 12 /Connaissances autochtones peuvent aider dans la gestion de l'environnement et de la collectivité?
- 13 /Qui devrait être responsable de la gestion des enjeux environnementaux?
- 14 /y chose à dire?

Je vous remercie pour votre temps et partager vos connaissances et d'idées.

Appendix 5: Survey questions (English)

Tabwemasana Research Project

A project for Vanuatu Earth Care Association (VECA) in partnership with The Australian Governments 2010 Endeavour Fellowship Program and supported by The University of the South Pacific- Santo Centre, Espiritu Santo, Vanuatu

VECA Coordinator - Rex Thomas **Researcher**- Kirsten Davies- University of Sydney

Survey questions

Thank you for participating in this project. Please feel free to skip any of the following questions if you would prefer not to answer them and note that you will be anonymous in this study.

1. Which do you feel most connected to? Please check one (1) box only	<input type="checkbox"/> Family, friends and community <input type="checkbox"/> Environment	<input type="checkbox"/> Family, friends and environment equally <input type="checkbox"/> I don't feel any attachments
2. Which of the following regions do you feel most attached to? Please check one (1) box only	<input type="checkbox"/> Locality where I currently live <input type="checkbox"/> Province where I currently live <input type="checkbox"/> Country where I currently reside	<input type="checkbox"/> Place where my family lived or still lives <input type="checkbox"/> The world in which I live <input type="checkbox"/> I don't feel attached to any places
3. Which of the following regions do you feel least attached to? Please check one (1) box only	<input type="checkbox"/> Locality where I currently live <input type="checkbox"/> Province where I currently live <input type="checkbox"/> Country where I currently reside	<input type="checkbox"/> Place where my family lived or still lives <input type="checkbox"/> The world in which I live <input type="checkbox"/> I don't feel attached to any places
4. What are you most concerned about in Espiritu Santo? Please check one (1) box only	<input type="checkbox"/> Social issues <input type="checkbox"/> Environmental issues <input type="checkbox"/> Cultural issues	<input type="checkbox"/> Economic issues <input type="checkbox"/> I am not concerned about any issues
5. What are you least concerned about in Espiritu Santo? Please check one (1) box only	<input type="checkbox"/> Social issues <input type="checkbox"/> Environmental issues <input type="checkbox"/> Cultural issues	<input type="checkbox"/> Economic issues <input type="checkbox"/> I am not concerned about any issues
6. How concerned are you about climate change and how it might affect Espiritu Santo? Please check one (1) box only	<input type="checkbox"/> Not concerned at all <input type="checkbox"/> Marginally concerned <input type="checkbox"/> Concerned	<input type="checkbox"/> Very concerned <input type="checkbox"/> Extremely concerned
7. How would you rank your knowledge about climate change? Please check one (1) box only	<input type="checkbox"/> Poor <input type="checkbox"/> Average <input type="checkbox"/> Good	<input type="checkbox"/> Very good <input type="checkbox"/> Excellent
8. Do you think the affects of climate change are a problem? Please check one (1) box only	<input type="checkbox"/> Now <input type="checkbox"/> In the next 50 years <input type="checkbox"/> In the next 100 years	<input type="checkbox"/> After 100 years <input type="checkbox"/> I don't think it will be a problem
9. Have you noticed changes, that you think may be due to climate change? Please check one (1) box only	<input type="checkbox"/> Yes (go to question 10) <input type="checkbox"/> No (skip to question 11) <input type="checkbox"/> I don't know (skip to question 11)	
10. Which areas do you think have changed due to climate change? Please check all relevant responses	<input type="checkbox"/> Climate and weather patterns <input type="checkbox"/> Sea <input type="checkbox"/> Land <input type="checkbox"/> Birds	<input type="checkbox"/> Animals <input type="checkbox"/> Marine life <input type="checkbox"/> Plants <input type="checkbox"/> Human behaviours
11. How would you rank your lifestyle in terms of its affects on protecting the environment? Please check one (1) box only	<input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Average	<input type="checkbox"/> Good <input type="checkbox"/> Very good <input type="checkbox"/> I don't know

ABOUT YOU

This form collects your personal information, please note that you are anonymous in this study and can skip any question if you would prefer not to respond.

1. What is your gender?	<input type="checkbox"/> Male <input type="checkbox"/> Female	
2. What is your age?	<input type="checkbox"/> 0-10 years <input type="checkbox"/> 11-20 years <input type="checkbox"/> 21-30 years <input type="checkbox"/> 31-40 years <input type="checkbox"/> 41-50 years	<input type="checkbox"/> 51-60 years <input type="checkbox"/> 61-70 years <input type="checkbox"/> 71-80 years <input type="checkbox"/> 81-90 years <input type="checkbox"/> 90+ years
3. Do you live in an urban area?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4. Please write the name of the city/ town or village where you live		
5. Do you live in a rural area?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6. Please write the name of the region where you live		
7. Do you practice a religion?	<input type="checkbox"/> Yes <input type="checkbox"/> No (skip to question 9)	
8. Please specify which religion	<input type="checkbox"/> Christian <input type="checkbox"/> Islam <input type="checkbox"/> Indigenous beliefs <input type="checkbox"/> Judaism <input type="checkbox"/> Other (please specify) _____	
9. Were you born in Vanuatu?	<input type="checkbox"/> Yes (skip to question 12) <input type="checkbox"/> No	
10. Please write the name of the country you were born in		
11. How long have you lived in Vanuatu?	____ Years	____ Months
12. In which country was your father born?		
13. In which country was your mother born?		
14. How long (in total) have you lived at your current place of residence?	____ Years	____ Months
15. What languages do you speak?	<input type="checkbox"/> Local language <input type="checkbox"/> Bislama <input type="checkbox"/> English <input type="checkbox"/> French <input type="checkbox"/> Other (please specify) _____	
16. What is the highest level of education you have completed? Please check one (1) box only	<input type="checkbox"/> Have not attended school <input type="checkbox"/> Did not complete school <input type="checkbox"/> Still attending school <input type="checkbox"/> Year 10 <input type="checkbox"/> Year 12 <input type="checkbox"/> TAFE qualification <input type="checkbox"/> University Degree	
17. What is your main occupation?		

Thank you very much for your time and knowledge.

Appendix 6: Survey questions (French)

Tabwemasana Research Project

Le Projet de recherche de Tabwemasana pour l'Association de soin de la terre au Vanuatu (Vanuatu Earth Care Association) en partenariat avec le gouvernement Australien- Le Programme Endeavour Fellowship.

Le Coordinateur: Rex Thomas

Chercheur: Kirsten Davies de l'Université de Sydney.

Survey questions

Merci d'avoir participer à ce projet. N'hésitez pas à ignorer toutes les questions suivantes si vous préférez ne pas y répondre et notez que vous serez anonymes dans cette étude.

1. À quoi vous sentez-vous plus attaché? Veillez cocher une case seulement	<input type="checkbox"/> La Famille et les amis à la communauté <input type="checkbox"/> à l'environnement	<input type="checkbox"/> Famille, amis et d'environnement <input type="checkbox"/> Aucun d'attachement
2. Aux lesquelles des régions suivantes vous sentez-vous plus attachées? Veillez cocher une case seulement	<input type="checkbox"/> Localité où je vis actuellement <input type="checkbox"/> Province où je vis actuellement <input type="checkbox"/> Pays où je réside actuellement	<input type="checkbox"/> L'endroit où ma famille a vécu ou vit toujours <input type="checkbox"/> Le monde dans lequel je vis <input type="checkbox"/> Je ne me sens pas attaché à aucun endroit
3. Aux lesquelles des régions suivantes vous sentez-vous moins attachées? Veillez cocher une case seulement	<input type="checkbox"/> Localité où je vis actuellement <input type="checkbox"/> Province où je vis actuellement <input type="checkbox"/> Pays où je réside actuellement	<input type="checkbox"/> L'endroit où ma famille a vécu ou vit toujours <input type="checkbox"/> Le monde dans lequel je vis <input type="checkbox"/> Je ne me sens pas attaché à aucun endroit
4. Quel est le sujet qui vous intéresse le plus sur Espiritu Santo? Veillez cocher une case seulement	<input type="checkbox"/> Questions sociales <input type="checkbox"/> Questions sur l'environnement <input type="checkbox"/> Questions culturelles	<input type="checkbox"/> Questions économiques <input type="checkbox"/> Je ne m'intéresse à aucune question
5. Quel est le sujet qui vous intéresse moins sur Espiritu Santo? Veillez cocher une case seulement	<input type="checkbox"/> Questions sociales <input type="checkbox"/> questions sur l'environnement <input type="checkbox"/> questions culturelles	<input type="checkbox"/> questions économiques <input type="checkbox"/> Je ne m'intéresse à aucune question
6. Comment intéressé êtes-vous intéressés au sujet de changement de climat et comment pourrait-il affecter l'Espiritu Santo? Veillez cocher une case seulement	<input type="checkbox"/> Aucun intérêt <input type="checkbox"/> intérêt marginal <input type="checkbox"/> intéressé	<input type="checkbox"/> très intéressé <input type="checkbox"/> extrêmement concerné
7. Comment classeriez-vous votre connaissance au sujet de changement de climat? Veillez cocher une case seulement	<input type="checkbox"/> Faible <input type="checkbox"/> Moyen <input type="checkbox"/> Satisfaisant	<input type="checkbox"/> très satisfaisant <input type="checkbox"/> excellent
8. Pensez-vous que les affects du changement climatiques sont un problème? Veillez cocher une case seulement	<input type="checkbox"/> Aujourd'hui <input type="checkbox"/> dans 50 ans <input type="checkbox"/> dans 100 ans	<input type="checkbox"/> Après 100 ans <input type="checkbox"/> Je ne pense pas que ce sera un problème
9. Avez-vous remarqué les changements qui peuvent être dus aux changements climatiques? Veillez cocher une case seulement	<input type="checkbox"/> Oui (continuer avec question 10) <input type="checkbox"/> Non (sauter à question 11) <input type="checkbox"/> J' n'en ai aucune idée (sauter à question 11)	
10. Quels secteurs pensez vous qu'il y a eu des changements en raison du changement climatique? Veillez vérifier toutes les réponses pertinentes	<input type="checkbox"/> Type de temps et de climat <input type="checkbox"/> La mer <input type="checkbox"/> Le sol <input type="checkbox"/> Les oiseaux	<input type="checkbox"/> les animaux <input type="checkbox"/> la vie aquatique <input type="checkbox"/> les plantes <input type="checkbox"/> les être humains
11. Comment classeriez-vous votre style de vie en termes de ses affects tout en protégeant l'environnement? Veillez cocher une case seulement	<input type="checkbox"/> Pauvre <input type="checkbox"/> Juste <input type="checkbox"/> Moyen	<input type="checkbox"/> Satisfaisant <input type="checkbox"/> très satisfaisant <input type="checkbox"/> J'en ai aucune idée

Informations personnelles

Ce formulaire rassemble les informations personnelles. Notez que vous seriez anonymes si vous évitez de répondre aux questions. Cette section vous demande de répondre tout en mettant une croix dans la case.

1. Quel est votre genre?	<input type="checkbox"/> Homme <input type="checkbox"/> Femme
2. Quel est votre âge?	<input type="checkbox"/> 0-10 ans <input type="checkbox"/> 51-60 ans <input type="checkbox"/> 11-20 ans <input type="checkbox"/> 61-70 ans <input type="checkbox"/> 21-30 ans <input type="checkbox"/> 71-80 ans <input type="checkbox"/> 31-40 ans <input type="checkbox"/> 81-90 ans <input type="checkbox"/> 41-50 ans <input type="checkbox"/> 90+ ans
3. Vivez-vous dans un secteur urbain?	<input type="checkbox"/> Oui <input type="checkbox"/> Aucun
4. Veuillez écrire le nom de la ville ou du village où vous vivez	
5. Vivez-vous dans un secteur rural?	<input type="checkbox"/> Oui <input type="checkbox"/> Aucun
6. Veuillez écrire le nom de la région où vous vivez	
7. Pratiquez-vous une religion?	<input type="checkbox"/> Oui <input type="checkbox"/> Aucun (sauter à question 9)
8. Si votre réponse est oui indiquer quelle religion	<input type="checkbox"/> chrétien <input type="checkbox"/> l'Islam <input type="checkbox"/> indigène de croyance indigène <input type="checkbox"/> de judaïsme <input type="checkbox"/> autre (indiquez svp) _____
9. Êtes-vous né dans Vanuatu?	<input type="checkbox"/> Oui (sauter à question 12) <input type="checkbox"/> Non
10. Si votre réponse est Non svp à écrivez le nom du pays où vous étiez né	
11. Si votre réponse est non combien de temps habitez vous au Vanuatu?	_____mois _____années
12. Dans quel pays votre père est-il né?	
13. Dans quel pays votre mère est-elle née?	
14. Combien de temps au total avez-vous vécu à votre domicile habituel?	_____mois _____années
15. Quelles langues parlez-vous ?	<input type="checkbox"/> un dialecte <input type="checkbox"/> le Bichlamar <input type="checkbox"/> l'anglais <input type="checkbox"/> Le français <input type="checkbox"/> Autres langues, (indiquez) _____
16. Quel est votre plus haut niveau d'éducation atteint?	<input type="checkbox"/> N'a pas été à l'école <input type="checkbox"/> N'a pas pu compléter les programmes scolaires <input type="checkbox"/> est encore à école <input type="checkbox"/> Soit toujours du d'école <input type="checkbox"/> 10e Année <input type="checkbox"/> 12e Année <input type="checkbox"/> 13e Année <input type="checkbox"/> 14e Année
17. Quel est ou était votre métier principal?	

Merci infiniment de votre temps et votre connaissance.

Appendix 7: Survey questions (Bislama)

Tabwemasana Resej Projek

Wan projek blo Vanuatu Earth Care Association (VECA) wetem partnasip blo Australian Gavman endeva fellosip program 2010 we univesiti blong saot pasifik I sapotem-thru santo senta, Espiritu Santo, Vanuatu

VECA Kodinata - Rex Thomas Reseja - Kirsten Davies- Univesiti blong sydney

Ol sovei quisten

Tankiu blo paticipet lo projek ia. Sapos yu no wandem ansarem eni quisten, yu fri blo skipim. Nem blo yu bae ino kamaot lo stadi ia.

1. Yu fil mo konek long wanem grup? Plis tikim wan (1) box nomo	<input type="checkbox"/> Famli, ol fren mo komuniti <input type="checkbox"/> Enviromen	<input type="checkbox"/> Famli, ol fren environmen I semak/ekwol <input type="checkbox"/> Mi no fil konekted wetem eni wan antap
2. Aot long ol rijen ia, wea nao yu fil attaj or konsen lo hem? Plis tikim wan (1) box nomo	<input type="checkbox"/> Eria we mi liv long hem naoia <input type="checkbox"/> Provins we mi liv long hem naoia <input type="checkbox"/> kaontri we mi stap long hem naoia	<input type="checkbox"/> Ples we famli blong mi I bin stap o liv long hem yet naoia <input type="checkbox"/> Wol we mi liv long hem <input type="checkbox"/> mi no fil attaj long eni ples
3. Aot long ol rijen ia, wea nao yu no fil attaj tumas lo hem? Plis tikim wan (1) box nomo	<input type="checkbox"/> Eria we mi liv long hem naoia <input type="checkbox"/> Provins we mi liv long hem naoia <input type="checkbox"/> Kaontri we mi stap long hem naoia	<input type="checkbox"/> Ples we famli blong mi I bin stap o liv long hem yet naoia <input type="checkbox"/> Wol we mi liv long hem <input type="checkbox"/> Mi no fil attaj long eni ples
4. Wanem nao yu konsen tumas long hem lo Espiritu Santo? Plis tikim wan (1) box nomo	<input type="checkbox"/> Sosol isius <input type="checkbox"/> Environmental isius <input type="checkbox"/> Kaljorol isius	<input type="checkbox"/> Ekonomik issues <input type="checkbox"/> Mi no konsen abaot eni samting
5. Wanem nao yu no konsen tumas long hem lo Espiritu Santo? Plis tikim wan (1) box nomo	<input type="checkbox"/> Sosoll isius <input type="checkbox"/> Environmental isius <input type="checkbox"/> kaljorol isius	<input type="checkbox"/> Ekonomik isius <input type="checkbox"/> Mi no konsen abaot eni samting
6. Olsem wanem nao yu konsen abaot klaemet jenj mo olsem wanem bae I save affektem Espiritu Santo? Plis tikim wan (1) box nomo	<input type="checkbox"/> Mi no konsen nating <input type="checkbox"/> Lelebet konsen <input type="checkbox"/> Konsen	<input type="checkbox"/> Kat plante konesn <input type="checkbox"/> Fuli konsen
7. Wanem level blong save blo yu abaot klaemet jenj? Plis tikim wan (1) box nomo	<input type="checkbox"/> Pua <input type="checkbox"/> Averej <input type="checkbox"/> Gud	<input type="checkbox"/> Mi save plante <input type="checkbox"/> Mi save everi samting
8. Yu ting se ifek blong klaemet jenj hemi wan problem wetaem? Plis tikim wan (1) box nomo	<input type="checkbox"/> Naoia <input type="checkbox"/> Long next 50 yia <input type="checkbox"/> Long next 100 yia	<input type="checkbox"/> Afta long 100 yia <input type="checkbox"/> Mi no ting se bae wan problem
9. Yu bin luk samfala jenj we yu ting se hemi resal blo klaemet jenj? Plis tikim wan (1) box nomo	<input type="checkbox"/> Yes (ko lo quisten 10) <input type="checkbox"/> No (skip iko lo quisten 11) <input type="checkbox"/> Mi no save (skip iko lo question 11)	
10. Wanem erias nao yu tinges oli jenj folem resal blong klaemet jenj? Plis tikim everi wan we yu luk	<input type="checkbox"/> Klaemet mo weta paten <input type="checkbox"/> Sol wota <input type="checkbox"/> Kraon <input type="checkbox"/> Ol pigin	<input type="checkbox"/> Ol Animol <input type="checkbox"/> Marin laef <input type="checkbox"/> Ol Plan <input type="checkbox"/> Fasin blong ol man
11. Olsem wanem nao yu rankem fasin blong yu lo saed blong protectem environmen? Plis tikim wan (1) box nomo	<input type="checkbox"/> Pua <input type="checkbox"/> Fea <input type="checkbox"/> Averej	<input type="checkbox"/> Gud <input type="checkbox"/> I gud tumas <input type="checkbox"/> Mi no save

Appendix 8: Additional tables – survey data by age

Q.1 Which do you feel most connected to?

Description	All participants														Total
	0-10 years		11-20 years		21-30 years		31-40 years		41-50 years		51-60 years		61 – 90+ years		
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
Family, friends and community	11 73.3%	13 65.0%	33 44.6%	33 38.4%	17 44.7%	23 39.7%	5 18.5%	6 15.8%	6 23.1%	9 36.0%	6 50.0%	1 14.3%	1 14.3%	1 9.1%	165 37.2%
Environment	2 13.3%	0 0.0%	4 5.4%	10 11.6%	0 0.0%	10 17.2%	2 7.4%	3 7.9%	1 3.8%	1 4.0%	0 0.0%	1 14.3%	0 0.0%	5 45.5%	39 8.8%
Family, friends and environment equally	2 13.3%	7 35.0%	22 29.7%	25 29.1%	20 52.6%	18 31.0%	17 63.0%	20 52.6%	8 30.8%	14 56.0%	3 25.0%	3 42.9%	3 42.9%	3 27.3%	165 37.2%
I don't feel any attachment	0 0.0%	0 0.0%	1 1.4%	1 1.2%	0 0.0%	1 1.7%	0 0.0%	3 7.9%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 9.1%	7 1.6%
No Response	0 0.0%	0 0.0%	14 18.9%	17 19.8%	1 2.6%	6 10.3%	3 11.1%	6 15.8%	11 42.3%	1 4.0%	3 25.0%	2 28.6%	3 42.9%	1 9.1%	68 15.3%
Total	35		160		96		65		51		19		18		444

Q.2 Which of the following regions do you feel most attached to?

Description	All participants														Total
	0-10 years		11-20 years		21-30 years		31-40 years		41-50 years		51-60 years		61-90+ years		
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
Locality where I currently live	7 46.7%	4 20.0%	5 6.8%	14 16.3%	9 23.7%	7 12.1%	14 51.9%	14 31.8%	6 23.1%	13 52.0%	6 50.0%	3 42.9%	2 28.6%	8 72.7%	112 25.2%
Province where I currently live	0 0.0%	2 10.0%	13 17.6%	16 18.6%	9 23.7%	15 25.9%	2 7.4%	2 5.3%	1 3.8%	5 20.0%	1 8.3%	1 14.3%	1 14.3%	0 0.0%	68 15.3%
Country where I currently reside	1 6.7%	6 30.0%	15 20.3%	19 22.1%	4 10.5%	12 20.7%	2 7.4%	3 7.9%	4 15.4%	2 8.0%	0 0.0%	0 0.0%	0 0.0%	1 9.1%	69 15.5%
Place where my family lived or still lives	0 0.0%	3 15.0%	26 35.1%	19 22.1%	11 28.9%	12 20.7%	4 14.8%	8 21.1%	4 15.4%	2 8.0%	1 8.3%	2 28.6%	1 14.3%	0 0.0%	93 20.9%
The world in which I live	3 20.0%	1 5.0%	7 9.5%	11 12.8%	5 13.2%	4 6.9%	1 3.7%	4 10.5%	0 0.0%	1 4.0%	1 8.3%	0 0.0%	0 0.0%	0 0.0%	38 8.6%
I don't feel attached to any places	0 0.0%	1 5.0%	2 2.7%	2 2.7%	0 0.0%	3 5.2%	0 0.0%	2 5.3%	0 0.0%	1 4.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	11 2.5%
No Response	4 26.7%	3 15.0%	6 8.1%	5 5.8%	0 0.0%	5 8.6%	4 14.8%	5 13.2%	11 42.3%	1 4.0%	3 25.0%	1 14.3%	3 42.9%	2 18.2%	53 11.9%
Total	35		160		96		65		51		19		18		444

Q.3 Which of the following regions do you feel least attached to?

Description	All participants														Total
	0-10 years		11-20 years		21-30 years		31-40 years		41-50 years		51-60 years		61-90+ years		
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
Locality where I currently live	4 26.7%	4 20.0%	12 16.2%	11 12.8%	6 15.8%	2 3.4%	4 14.8%	3 7.9%	4 15.4%	4 16.0%	1 8.3%	0 0.0%	0 0.0%	0 0.0%	55 12.4%
Province where I currently live	2 13.3%	2 10.0%	9 12.2%	12 14.0%	5 13.2%	10 17.2%	7 25.9%	4 10.5%	3 11.5%	1 4.0%	0 0.0%	1 14.3%	0 0.0%	0 0.0%	56 12.6%
Country where I currently reside	0 0.0%	5 25.0%	5 6.8%	14 16.3%	8 21.1%	7 12.1%	2 7.4%	10 26.3%	0 0.0%	3 12.0%	1 8.3%	0 0.0%	1 14.3%	0 0.0%	56 12.6%
Place where my family lived or still lives	1 6.7%	2 10.0%	14 18.9%	12 14.0%	7 18.4%	7 12.1%	1 3.7%	2 5.3%	0 0.0%	2 8.0%	4 33.3%	0 0.0%	2 28.6%	2 18.2%	56 12.6%
The world in which I live	5 33.3%	2 10.0%	12 16.2%	15 17.4%	8 18.4%	15 25.9%	5 13.2%	5 13.2%	3 11.5%	2 8.0%	1 8.3%	2 28.6%	0 0.0%	1 9.1%	76 17.1%
I don't feel attached to any places	2 13.3%	4 20.0%	11 14.9%	15 17.4%	3 7.9%	8 13.8%	5 13.2%	5 13.2%	3 11.5%	12 48.0%	2 16.7%	2 28.6%	0 0.0%	2 18.2%	74 16.7%
No Response	1 6.7%	1 5.0%	11 14.9%	7 8.1%	1 2.6%	9 15.5%	3 11.1%	9 23.7%	13 50.0%	1 4.0%	3 25.0%	2 28.6%	4 57.1%	6 54.5%	71 16.0%
Total	35		160		96		65		51		19		18		444

Q.4 What are you most concerned about in Espiritu Santo?

Description	All participants														Total
	0-10 years		11-20 years		21-30 years		31-40 years		41-50 years		51-60 years		61-90+ years		
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
Social issues	5 33.3%	3 15.0%	11 14.9%	14 16.3%	12 31.6%	12 20.7%	4 14.8%	2 5.3%	1 3.8%	0 0.0%	5 41.7%	2 28.6%	0 0.0%	0 0.0%	71 16.0%
Environmental issues	4 16.7%	6 30.0%	32 43.2%	38 44.2%	14 36.8%	21 36.2%	16 59.3%	14 36.8%	9 34.6%	15 60.0%	4 33.3%	2 28.6%	2 28.6%	3 27.3%	180 40.5%
Cultural issues	5 33.3%	5 25.0%	6 8.1%	11 12.8%	1 2.6%	7 12.1%	2 7.4%	4 10.5%	0 0.0%	6 24.0%	0 0.0%	1 14.3%	1 14.3%	2 18.2%	51 11.5%
Economic issues	1 6.7%	3 15.0%	13 17.6%	15 17.4%	6 15.8%	9 15.5%	3 11.1%	8 21.1%	5 19.2%	2 8.0%	0 0.0%	1 14.3%	1 14.3%	4 36.4%	71 16.0%
I am not concerned about any issues	0 0.0%	3 15.0%	5 6.8%	4 4.7%	2 5.3%	4 6.9%	0 0.0%	2 5.3%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	20 4.5%
No Response	0 0.0%	0 0.0%	7 9.5%	4 4.7%	3 7.9%	5 8.6%	2 7.4%	8 21.1%	11 42.3%	2 8.0%	3 25.0%	1 14.3%	3 42.9%	2 18.2%	51 11.5%
Total	35		160		96		65		51		19		18		444

Q.5 What are you least concerned about in Espiritu Santo?

Description	All participants														Total
	0-10 years		11-20 years		21-30 years		31-40 years		41-50 years		51-60 years		61-90+ years		
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
Social issues	3 20.0%	0 0.0%	9 12.2%	17 19.8%	3 7.9%	8 13.8%	5 18.5%	5 13.2%	3 11.5%	3 12.0%	1 8.3%	1 14.3%	0 0.0%	1 9.1%	59 13.3%
Environmental issues	4 26.7%	8 40.0%	11 14.9%	16 18.6%	6 15.8%	6 10.3%	3 11.1%	10 26.3%	1 3.8%	3 12.0%	1 8.3%	1 14.3%	0 0.0%	0 0.0%	70 15.8%
Cultural issues	1 6.7%	4 20.0%	13 17.6%	18 20.9%	8 21.1%	9 15.5%	3 11.1%	6 15.8%	3 11.5%	7 28.0%	0 0.0%	0 0.0%	1 14.3%	0 0.0%	73 16.4%
Economic issues	1 6.7%	3 15.0%	15 20.3%	15 17.4%	7 18.4%	14 24.1%	7 25.9%	7 18.4%	4 15.4%	4 16.0%	0 0.0%	1 14.3%	1 14.3%	3 27.3%	82 18.5%
I am not concerned about any issues	4 26.7%	3 15.0%	11 14.9%	12 14.0%	12 31.6%	6 10.3%	4 14.8%	4 10.5%	4 15.4%	7 28.0%	6 50.0%	1 14.3%	2 28.6%	2 18.2%	78 17.6%
No Response	2 13.3%	2 10.0%	15 20.3%	8 9.3%	2 5.3%	15 25.9%	5 18.5%	6 15.8%	11 42.3%	1 4.0%	4 33.3%	3 42.9%	3 42.9%	5 45.5%	82 18.5%
Total	35		160		96		65		51		19		18		444

Q.6 How concerned are you about climate change and how it might affect Espiritu Santo?

Description	All participants														Total
	0-10 years		11-20 years		21-30 years		31-40 years		41-50 years		51-60 years		61-90+ years		
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
Not concerned at all	2 13.3%	5 25.0%	5 6.8%	10 11.6%	2 5.3%	3 5.2%	1 3.7%	3 7.9%	0 0.0%	0 0.0%	1 8.3%	0 0.0%	0 0.0%	0 0.0%	32 7.2%
Marginally concerned	3 20.0%	1 5.0%	9 12.2%	11 12.8%	3 7.9%	10 17.2%	2 7.4%	3 7.9%	2 7.7%	3 12.0%	2 16.7%	0 0.0%	0 0.0%	0 0.0%	49 11.0%
Concerned	7 46.7%	2 10.0%	21 28.4%	17 19.8%	10 26.3%	14 24.1%	11 40.7%	7 18.4%	4 15.4%	8 32.0%	3 25.0%	0 0.0%	1 14.3%	1 9.1%	106 23.9%
Very concerned	1 6.7%	4 20.0%	24 32.4%	26 30.2%	12 31.6%	12 20.7%	9 33.3%	11 28.9%	8 30.8%	8 32.0%	2 16.7%	5 71.4%	3 42.9%	5 45.5%	130 29.3%
Extremely concerned	2 13.3%	8 40.0%	11 14.9%	17 19.8%	10 26.3%	15 25.9%	4 14.8%	7 18.4%	3 11.5%	4 16.0%	1 8.3%	1 14.3%	0 0.0%	2 18.2%	85 19.1%
No Response	0 0.0%	0 0.0%	4 5.4%	5 5.8%	1 2.6%	4 6.9%	0 0.0%	7 18.4%	9 34.6%	2 8.0%	3 25.0%	1 14.3%	3 42.9%	3 27.3%	42 9.5%
Total	35		160		96		65		51		19		18		444

Q.7 How would you rank your knowledge about climate change

Description	All participants														Total
	0-10 years		11-20 years		21-30 years		31-40 years		41-50 years		51-60 years		61-90+ years		
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
Poor	4 26.7%	8 40.0%	7 9.5%	16 18.6%	12 31.6%	6 10.3%	11 40.7%	7 18.4%	6 23.1%	8 36.0%	4 33.3%	1 14.3%	0 0.0%	4 36.4%	95 21.4%
Average	3 20.0%	3 15.0%	29 39.2%	20 23.3%	12 31.6%	25 43.1%	6 22.2%	12 31.6%	2 7.7%	5 20.0%	3 25.0%	3 42.9%	2 28.6%	2 18.2%	127 28.6%
Good	3 20.0%	1 5.0%	8 10.8%	12 14.0%	6 15.8%	5 8.6%	4 14.8%	8 21.1%	5 19.2%	3 12.0%	2 16.7%	2 28.6%	1 14.3%	2 18.2%	62 14.0%
Very good	3 20.0%	1 5.0%	11 14.9%	15 17.4%	5 13.2%	10 17.2%	4 14.8%	8 21.1%	2 7.7%	6 24.0%	0 0.0%	0 0.0%	1 14.3%	0 0.0%	66 14.9%
Excellent	2 13.3%	7 35.0%	13 17.6%	22 25.6%	2 5.3%	9 15.5%	1 3.7%	1 2.6%	1 3.8%	1 4.0%	0 0.0%	0 0.0%	0 0.0%	1 9.1%	60 13.5%
No Response	0 0.0%	0 0.0%	6 8.1%	1 1.2%	1 2.6%	3 5.2%	1 3.7%	2 5.3%	10 38.5%	1 4.0%	3 25.0%	1 14.3%	3 42.9%	2 18.2%	34 7.7%
Total	35		160		96		65		51		19		18		444

Q.8 Do you think the effects of climate change are a problem

Description	All participants														Total
	0-10 years		11-20 years		21-30 years		31-40 years		41-50 years		51-60 years		61-90+ years		
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
Now	8 53.3%	7 35.0%	29 39.2%	33 38.4%	28 73.7%	29 50.0%	21 77.8%	29 76.3%	14 53.8%	21 84.0%	7 58.3%	3 42.9%	3 42.9%	8 72.7%	240 54.1%
In the next 50 years	6 40.0%	8 40.0%	18 24.3%	15 17.4%	6 15.8%	15 25.9%	3 11.1%	2 5.3%	1 3.8%	2 8.0%	1 8.3%	0 0.0%	1 14.3%	1 9.1%	79 17.8%
In the next 100 years	0 0.0%	2 10.0%	1 1.4%	6 7.0%	0 0.0%	1 1.7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 14.3%	0 0.0%	0 0.0%	11 2.5%
After 100 years	0 0.0%	2 10.0%	3 4.1%	3 3.5%	1 2.6%	1 1.7%	1 3.7%	1 2.6%	0 0.0%	0 0.0%	0 0.0%	1 14.3%	0 0.0%	0 0.0%	13 2.9%
I don't think it will be a problem	1 6.7%	1 5.0%	9 12.2%	11 12.8%	1 2.6%	4 6.9%	0 0.0%	4 10.5%	1 3.8%	1 4.0%	1 8.3%	0 0.0%	0 0.0%	0 0.0%	34 7.7%
No Response	0 0.0%	0 0.0%	14 18.9%	18 20.9%	2 5.3%	8 13.8%	2 7.4%	2 5.3%	10 38.5%	1 4.0%	3 25.0%	2 28.6%	3 42.9%	2 18.2%	67 15.1%
Total	35		160		96		65		51		19		18		444

Q.9 Have you noticed changes, that you think may be due to climate change?

Description	All participants														Total
	0-10 years		11-20 years		21-30 years		31-40 years		41-50 years		51-60 years		61-90+ years		
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
Yes	13 86.7%	12 60.0%	59 79.7%	65 75.6%	31 81.6%	40 69.0%	24 88.9%	30 78.9%	14 53.8%	22 88.0%	6 50.0%	4 57.1%	3 42.9%	5 45.5%	328 73.9%
No	2 13.3%	5 25.0%	6 8.1%	14 16.3%	3 7.9%	11 19.0%	1 3.7%	3 7.9%	1 3.8%	1 4.0%	1 8.3%	1 14.3%	1 14.3%	0 0.0%	50 11.3%
I don't know	0 0.0%	0 0.0%	8 10.8%	5 5.8%	2 5.3%	3 5.2%	0 0.0%	1 2.6%	0 0.0%	1 4.0%	1 8.3%	0 0.0%	0 0.0%	0 0.0%	21 4.7%
No Response	0 0.0%	3 15.0%	1 1.4%	2 2.3%	2 5.3%	4 6.9%	2 7.4%	4 10.5%	11 42.3%	1 4.0%	4 33.3%	2 28.6%	3 42.9%	6 54.5%	45 10.1%
Total	35		160		96		65		51		19		18		444

Q.10 Which areas do you think have changed due to climate change

Description	All participants														Total
	0-10 years		11-20 years		21-30 years		31-40 years		41-50 years		51-60 years		61-90+ years		
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
Animals	0 0.0%	0 0.0%	3 4.1%	9 10.5%	5 13.2%	7 12.1%	4 14.8%	4 10.5%	2 7.7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	3 27.3%	37 8.3%
Birds	0 0.0%	1 5.0%	3 4.1%	8 9.3%	4 10.5%	6 10.3%	8 29.6%	2 5.3%	1 3.8%	0 0.0%	1 8.3%	0 0.0%	0 0.0%	3 27.3%	37 8.3%
Climate and weather patterns	2 13.3%	1 5.0%	21 28.4%	24 27.9%	15 39.5%	14 24.1%	20 74.1%	18 47.4%	7 26.9%	16 64.0%	5 41.7%	4 57.1%	2 28.6%	4 36.4%	153 34.5%
Human behaviour	3 20.0%	2 10.0%	16 21.6%	12 14.0%	13 34.2%	11 19.0%	8 29.6%	9 23.7%	3 11.5%	1 4.0%	1 8.3%	2 28.6%	0 0.0%	4 36.4%	85 19.1%
Land	1 6.7%	1 5.0%	11 14.9%	16 18.6%	8 21.1%	15 25.9%	7 25.9%	11 28.9%	8 30.8%	8 32.0%	0 0.0%	2 28.6%	0 0.0%	6 54.5%	94 21.2%
Marine life	0 0.0%	0 0.0%	7 9.5%	9 10.5%	12 31.6%	4 6.9%	4 14.8%	10 26.3%	2 7.7%	3 12.0%	4 33.3%	1 14.3%	2 28.6%	4 36.4%	62 14.0%
Plants	2 13.3%	1 5.0%	7 9.5%	12 14.0%	11 28.9%	10 17.2%	5 18.5%	8 21.1%	2 7.7%	2 8.0%	2 16.7%	3 42.9%	1 14.3%	3 27.3%	69 15.5%
Sea	6 40.0%	9 45.0%	27 36.5%	31 36.0%	25 65.8%	19 32.8%	18 66.7%	23 60.5%	8 30.8%	14 56.0%	6 50.0%	3 42.9%	2 28.6%	8 72.7%	199 44.8%
No Response	1 6.7%	5 25.0%	18 14.3%	33 38.4%	8 21.1%	19 32.8%	1 3.7%	7 18.4%	10 38.5%	4 16.0%	5 41.7%	2 28.6%	4 57.1%	2 18.2%	119 26.8%
Total*	35		160		96		65		51		19		18		444

*respondents included multiple responses

Q.11 How would you rank your lifestyle in terms of its effects on protecting the environment?

Description	All participants														Total
	0-10 years		11-20 years		21-30 years		31-40 years		41-50 years		51-60 years		61-90+ years		
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
Poor	3 20.0%	1 5.0%	6 8.1%	15 17.4%	9 23.7%	7 12.1%	10 37.0%	6 15.8%	2 7.7%	6 24.0%	1 8.3%	1 14.3%	3 42.9%	4 36.4%	74 16.7%
Fair	3 20.0%	8 40.0%	26 35.1%	21 24.4%	6 15.8%	11 19.0%	3 11.1%	6 15.8%	5 19.2%	4 16.0%	4 33.3%	2 28.6%	0 0.0%	0 0.0%	99 22.3%
Average	5 33.3%	8 40.0%	9 12.2%	13 15.1%	2 5.3%	7 12.1%	4 14.8%	10 26.3%	5 19.2%	4 16.0%	3 25.0%	1 14.3%	1 14.3%	3 27.3%	75 16.9%
Good	4 26.7%	2 10.0%	10 13.5%	7 8.1%	12 31.6%	11 19.0%	3 11.1%	7 18.4%	3 11.5%	6 24.0%	1 8.3%	1 14.3%	0 0.0%	0 0.0%	67 15.1%
Very good	0 0.0%	1 5.0%	10 13.5%	18 20.9%	3 7.9%	10 17.2%	2 7.4%	4 10.5%	1 3.8%	3 12.0%	0 0.0%	1 14.3%	0 0.0%	1 9.1%	54 12.2%
I don't know	0 0.0%	0 0.0%	9 12.2%	10 11.6%	4 10.5%	6 10.3%	2 7.4%	2 5.3%	1 3.8%	1 4.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	35 7.9%
No Response	0 0.0%	0 0.0%	4 5.4%	2 2.3%	2 5.3%	6 10.3%	3 11.1%	3 7.9%	9 34.6%	1 4.0%	3 25.0%	1 14.3%	3 42.9%	3 27.3%	40 9.0%
Total	35		160		96		65		51		19		18		444