

Elisabeth Worliczek

PhD Candidate in Social and Cultural Anthropology
University of New Caledonia | University of Vienna
elisabeth.worliczek@univ-nc.nc

Michel Allenbach

Maitre de Conférences in Geology | University of New Caledonia
michel.allenbach@univ-nc.nc

**CUSTOMARY LAND
TENURE AND THE
MANAGEMENT OF
CLIMATE CHANGE AND
INTERNAL MIGRATION**

**The example
of Wallis Island**

**RÉGIMES FONCIERS
COUTUMIERS
ET GESTION DU
CHANGEMENT
CLIMATIQUE ET
MIGRATIONS
INTERNES
L'exemple de
l'île de Wallis**

**TENENCIA
CONSUECUDINARIA
Y LA GESTIÓN DEL
CAMBIO CLIMÁTICO
Y LA MIGRACIÓN
INTERIOR
El ejemplo de la isla
de Wallis**



ABSTRACT

CUSTOMARY LAND TENURE

WALLIS ISLAND

SEA LEVEL RISE

INTERNAL MIGRATION

This paper focuses on possible scenarios of land use and land tenure in the event of a permanent sea level rise on Wallis Island, part of the French Overseas Territory Wallis and Futuna in the South Pacific. This island holds a unique place in the French system, having its own king and a traditional power structure relying on Polynesian traditions. Land issues are managed through customary law, and this system offers flexible opportunities that can respond to contextual need. Land tenure is based on lines of descent; those who are 'part of' a certain land parcel are identified through his or her ancestry. This traditional system needs to be analysed as regards its effectiveness and its ability to respond to new environmental and

RÉSUMÉ

DROIT FONCIER COUTUMIER

ILE WALLIS

ÉLÉVATION DU NIVEAU DE LA MER

MIGRATION INTERNE

Ce document examine les divers scénarios possibles en matière d'utilisation des terres et des régimes fonciers en cas d'élévation permanente du niveau de la mer dans l'Île de Wallis, partie du territoire français d'Outremer de Wallis et Futuna, dans le Pacifique Sud. Cette île occupe une place unique dans le système français, car elle dispose de son propre roi et de sa propre structure traditionnelle de pouvoir, basée sur les traditions polynésiennes. Les questions foncières sont gérées par le droit coutumier et ce système offre une souplesse bien adaptée aux problématiques et besoins locaux. Les régimes fonciers sont basés sur les lignées de descendance, les 'ayant droit' d'une certaine parcelle de terre

SUMARIO

DERECHO AGRARIO CONSUECUDINARIO

ISLA DE WALLIS

AUMENTO DEL NIVEL DEL MAR

MIGRACIÓN INTERIOR

En este estudio se examinan diversas hipótesis sobre el uso y la tenencia de la tierra en la isla de Wallis en caso de un alzamiento permanente del nivel del mar. Wallis forma parte del Territorio Francés de Ultramar de Wallis y Futuna, y está situada en el Pacífico Sur. La isla tiene un estatuto administrativo único en las disposiciones jurídicas francesas, ya que es regida por un rey y su estructura gubernativa se inspira en las tradiciones polinesias. Las cuestiones territoriales se manejan conforme a la ley consuetudinaria: este procedimiento, que ofrece oportunidades flexibles, permite hacer frente a las necesidades que derivan de las contingencias. La tenencia se funda en las líneas de ascendencia: los individuos que « pertenecen » a una determinada parcela se identifican



political challenges. Local resource use, and shifting residency and agriculture patterns challenge land tenure. With the majority of the population inhabiting the coastline, potential migration opportunities to the higher interior of the island within the residents' own properties in the event of sea level rise need to be explored. Every Wallisian has access to several land parcels, which are distributed across the island.

étant identifiés par leurs ancêtres. Ce système traditionnel doit être analysé du point de vue de son efficacité et de sa capacité à répondre aux nouveaux enjeux environnementaux et politiques. L'utilisation des ressources locales et les changements de résidences et de pratiques agricoles constituent un défi foncier. La majorité de la population réside dans la zone côtière et les opportunités potentielles, en cas d'élévation du niveau de la mer, de migration de ces populations vers des propriétés situées sur les hauteurs de l'île, doivent être explorées. Tout wallisien a accès à différentes parcelles de terres, réparties à travers le territoire de l'île.

gracias a su linaje. Este sistema tradicional debe ser materia de análisis, ya que es necesario determinar su eficacia y sus respuestas ante los nuevos desafíos ambientales y políticos. El uso de los recursos locales, y las cambiantes pautas de residencia de los individuos y las formas de la explotación agrícola constituyen dificultades que suponen un desafío para la situación de la tenencia. Se hace pues necesario investigar cuáles serían, en caso de un aumento del nivel del mar, las posibilidades de migración de una población, en su mayor parte afincada en zonas de la línea de costa, hacia sus propias parcelas situadas en las tierras altas del interior. Todo wallisiense puede acceder a varias parcelas, y estas se distribuyen por todo el territorio de la isla.



INTRODUCTION

Land is a scarce resource in the Pacific. Thousands of islands are scattered over a vast ocean, mere dots in an overwhelming mass of water. When humankind migrated to this region of the world the precious land surfaces – consisting of coral sand, volcanoes, rocks, a thin layer of fertile soil, and varied vegetation – became a new homeland to the settlers who survived long, hard journeys across the seemingly endless Pacific Ocean. This land has become an integral part of the identity of Pacific people. In the past, wars, famines, tsunamis, cyclones and colonialism brought challenges to the inhabitants of these islands, and gave them lessons that were learnt the hard way. These lessons brought them the opportunity to learn, adapt, and develop.

Today, globalization is the challenge of our time. With globalization comes a phenomenon that is palpable in everyday life, a concept that is expressed primarily through complex scientific theories and calculations. Yet it will have a palpable impact on all of us in the longer term: that phenomenon is climate change. Mainstream science (Mimura *et al.*, 2007) agrees that climate change is factual, and that we need to face up to significant changes to the world we thought we knew so well. Of the several consequences that are expected from climate change, rising sea levels are a major issue. (Other implications, such as scarcity of fresh water or global warming, are consciously left out of this article in order to concentrate on this one aspect.) Given that most of the Pacific islands are already small in surface area terms, rising sea levels could literally eliminate some of these islands completely.

In academia, the social sciences have started to contribute to the human dimension of climate change and its impact on the South Pacific (see, for example: Barnett (2001), Daly (2010), Gero (2010), Lefale (2010) for Samoa; Rasmussen (2009) for the Solomon Islands; Lazrus (2009) for Tuvalu; Campbell (2005), Gero (2010) and Matakiki (2006) for Fiji. Others occupy themselves with the impact and the consequences on the whole Pacific region, like Garnaut (2008) or Kelman (2011)). Yet some islands have escaped international attention. There is a lack of knowledge about climate change implications for the local populations in the francophone Pacific – French Polynesia, New Caledonia and Wallis and Futuna. Some of their islands have a reasonable size

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Wallis Island has an area of 78 km² and a population of just 9 000 inhabitants (Institut d'Emission Outre Mer, 2009). It is part of the French Overseas Collectivity of Wallis and Futuna, and is located in the South Pacific Ocean between Fiji and Samoa (Figure 1). The island is of volcanic origin, and the highest elevation in the central plateau is 151 metres above sea level. Its reasonable size and internal elevation therefore offer local inland migration opportunities in the case of a sea level rise. From the locals' point of view, the island has not felt the direct, visible impact of climate change so far. But changes are expected, and they will challenge the traditional system of land tenure if a large proportion of the population that inhabits the coastline would need to relocate to the higher interior of the island. This raises questions about the distribution and redistribution of land – both within families and in the public sector.

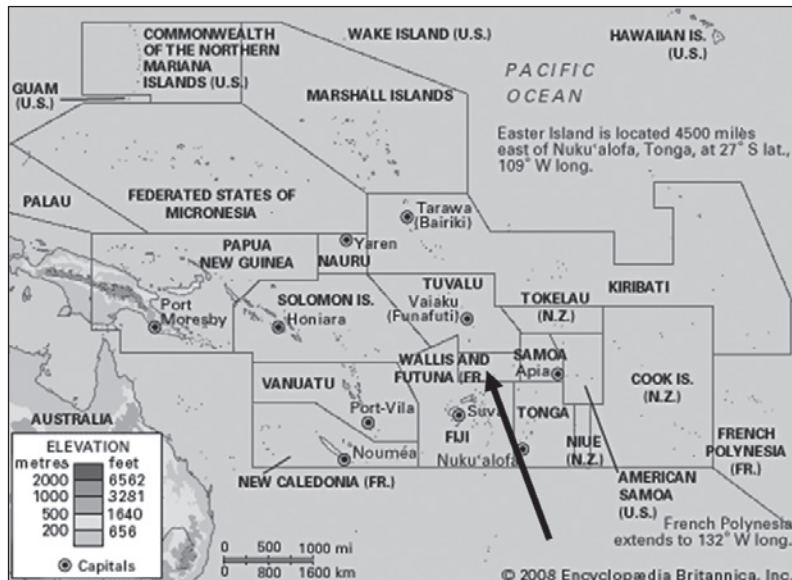


Figure 1
Wallis' location in the
South Pacific



Land tenure is a significant issue in the endeavour to adapt to climate change, and on a number of Pacific islands, land disputes are already a major source of conflict (Wilson, 2009). This tendency can be expected to increase when the available fertile, usable land decreases. It is therefore important to anticipate the changes that will come in order to prepare for them, and find an equitable and sustainable land tenure solution that will meet the needs of the population, before land disputes escalate.

This paper focuses on possible land tenure scenarios in the case of permanent sea level rises on Wallis Island, taking into account the local societal structure. Unless indicated otherwise, the analysis of the situation on Wallis is based on two extended research stays undertaken by the author in 2009 and 2010, in the context of her doctoral research. The information was acquired through numerous qualitative interviews with different stakeholders and the general population. At the time of writing, most of the issues have not been covered in previous published articles and are therefore new contributions to the current situation on the island.

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THE ROLE OF TENURE IN WALLIS' SOCIETY

The coming challenges need to be considered in the context of a particular local political situation on Wallis Island: the current customary authorities in Wallis are not united. There are two groups, one of which represents the royalist section of the population, loyal to the *lavelua* ('king of Wallis'), and the other of which is a reformist movement that has nominated its own customary authorities, and urges innovation in the system. There are also tensions between the customary authorities and the French administration, which is supposed to manage the island's public sector. All of this creates tensions within the population, and a power vacuum at the highest levels of power: decisions taken by the authorities are hard to implement, or simply ignored by parts of the populace. Respect for 'rules' is based on respect for local customary authorities and their associated personalities – i.e. their 'role model' function – rather than on written laws and penalties coming from elsewhere.

Given these circumstances, there is a need to review how the system of land tenure actually works, the rules that are inherent in the culture, and potential problems that could prevent the development of adapted land tenure in times of climate change.

Land tenure on Wallis is a very complex system based on lines of descent. It is clearly identified who is 'part of' a certain land parcel, because land belongs to a family (*kutuga*). Nevertheless, land disputes are the most common reason for conflicts on the island. The customary system, which manages land issues, offers flexible opportunities but needs to be analysed for its effectiveness and its ability to respond to new environmental and political challenges. A solution should be feasible, given that every Wallisian has access to more than one land parcel, and these parcels are distributed across the island.

The customary chiefs maintain a strong position in the Wallisian power pyramid. The *lavelua* is on top of this pyramid, followed by six *fa'u* ('ministers'), three *faipule* ('district chiefs'), and on a lower level, the *pulekolo* ('village chiefs'). Within families, the hierarchy continues, based on principles of seniority and age, with a male representative for each extended family. Parallel to this traditional power structure there is the French administration, with a deputy, a prefect, a senator, a territorial assembly and administrative services. These two power structures have complementary competences, whereby land issues are exclusively the domain of the customary authorities and the administration does not have the right to interfere with any regulations.

No land register exists, and the majority of the properties (and their boundaries) are regulated through oral tradition, such that even today deeds of ownership are rare. Palm trees border the properties but it is the specifics of the boundaries that are often the reason for land disputes. The customary chiefs play a particular role when such disputes arise. If a dispute cannot be settled by the two parties involved (who are often part of the same family) the customary authorities are consulted – first the village chief, then the council on a district level, the *fa'u*, and lastly if still no solution is found, the *lavelua* has the last say. Their decision is usually respected, but the same question can be raised again later. The dimension of time is crucial; a decision is always adapted to the current situation and can be revised later on – it then runs again through the same decision-making process as just



described. Presently, most of the chiefs see themselves as consultants rather than decision-makers. Traditionally the decision of a chief is respected by the population, but given the current political conflict, whether his opinion is respected or not largely depends on the charisma and the integrity of the particular chief in question.

In times of sea level rise, this system offers two opportunities that may actually be quite positive: first, the fact that decision-making is based on contextual need, and second, the fact that the right to use land is not obtained through economic wealth but through ancestry. The concept of contextual need is crucial in land tenure, because regulations can be used very flexibly – the definition of a need is therefore adaptable to the actual situation. Meanwhile the right obtained through ancestry corresponds to the redistribution of land within a family. This should offer a chance for a fair distribution of land and conditions, and equal access for everyone.

In this system it is expected that a chief, if consulted, will make a selfless decision in the interest of the population, although sometimes the integrity of certain chiefs may be questionable. Furthermore, Wallisian society tends to individualize: a number of Wallisians these days want to own their own piece of land instead of sharing it with other family members.

Current land distribution and its uses

The properties close to the coast (especially the east and south coasts) are generally used for housing and small gardens, whereas the properties in the interior and in the west are mostly agricultural land. Each of these properties are bequeathed within families, usually for several generations – each Wallisian (male or female) who descends from a designated ancestor has the right to use that particular piece of land. The consequence is that there are sometimes a few hundred people who are 'part of' a certain land parcel. At the same time, one person may claim access to numerous land parcels by tracing back their roots to different families over many generations. Some people estimate that they have the right to use up to 50 different properties, which are distributed all over the island, over the three districts, the island interior and the coast. Islanders usually construct their house on one of these premises, and use another (or two or three) for agriculture. A land claim in

this context is defined through the current needs of a person to construct a house or to raise crops. The final decision-making process is very complex and drawn out and is discussed with the whole extended family, respecting particular rules of seniority and hierarchy. The decision that is arrived at through this process is binding for the whole family.

Dividing family properties to give parts of the land to individuals is not in line with the idea of the coherence of the extended family, nor the logic of contextual need. Nevertheless, this practice is normally applied after a few generations to avoid unnecessary conflict and to establish clear land claims. Despite this system, land disputes are ingrained in Wallisian society. Modernization brings in additional ideas like deeds of ownership, the creation of a land register, fences around properties and individual land claims.

Historically, extended families possessed properties that stretched from the coast into the interior (Burrows, 1937:68). Over time, these extensive land surfaces became smaller and smaller, resulting from splitting and distributing the land to branches within the family. This continuing division of land parcels has led to a situation in which properties have become very small, especially those right next to the sea. In certain places one can almost touch the neighbouring house at arm's length. The population density is very high on the coast, whereas the land surfaces used for planting crops in the interior tend to be rather large, and are sometimes not in use over years.

Land is inherited through the male and female lineage with no priority given to either side. If a family member needs a place to live, the family examines its properties – the properties that they are 'part of', together with other branches of the family – to see if there is an appropriate empty piece of land available, or sometimes an empty house that is already constructed and that can be occupied. The ideal scenario would involve the whole family coming together in a meeting, but these discussions can take a long time, sometimes requiring repeated meetings. A decision may not be reached until a consensus is arrived at that everyone agrees with. (For more details on land distribution and land use, see also: Malau, 2004; Pechberty and Toa, 2004)

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The toafa

The *toafa* is the central plateau in the northern part of the island. For a long time the *toafa* had the reputation of being a barren place consisting of unfertile scrubland and offering nothing to the population. Archaeological findings in this area are rare (Sand, 1998:95). It is a place that has been avoided throughout history, as opposed to the southern part of the island which at times was quite populated (Sand, 1998:115).

Traditionally, the *toafa* was administered by the customary chiefs – it belonged to no one and was considered the *lavelua's* domain. It was only in recent decades that almost the whole *toafa* was split into pieces and distributed to the population. In the 1970s the population on the east coast became very dense; the customary chiefs wanted to encourage the population to move into the interior of the island in order to relieve the population pressure on the coast. The population in the *toafa* has been growing ever since, and for other reasons too: the extended family structure and living arrangements are changing, the trend now is toward the core family and hence the need for 'individual' housing is rising. Furthermore, the population pressure on the coast remains high. A combination of demographic factors, changes in lifestyle and an elevated conscience for natural hazards, have created an atmosphere in which moving from the coast to the *toafa* has become a viable option. Even if climate change is not the main decisive factor, it is part of a series of decisions and situations that makes a formerly unthinkable option now viable and 'liveable with'.

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THE ISSUE OF CLIMATE CHANGE

So how does this detailed explanation of the Wallisian land tenure system pertain to climate change? According to current mainstream scientific estimates, the sea level will rise in the near future and thus have a considerable impact on the coasts of the Pacific islands (Mimura *et al.*, 2007:694). Even though Wallis is not one of the islands that are immediately threatened in their existence, major changes in the environment are expected. Calculations show that with a sea level rise of up to 200 cm by 2100 (McMullen & Jabbour, 2009:28), major populated areas will become uninhabitable. Numbers and

calculations vary according to different sources. Jens Hesselbjerg Christensen, for example, assumes a 60–100 cm rise by 2100 (Hesselbjerg Christensen, 2011). Looking to the future it is important to establish a trend, regardless of the exact numbers that may be involved, since these can only be estimated and not predicted with 100 percent accuracy.

A shift in population and residency patterns is one consequence of expected sea level rises. Most of the heavily-populated areas are in low-lying zones. Figure 2 (Couturier (a), unpublished) shows a model of the projected sea level rise of 200 cm, with a supplementary 100 cm rise as a consequence of potential additional soil erosion and reflux of the tide. The black areas indicate future flooded areas; the frame at the bottom of the island shown in Figure 3 (Couturier (b), unpublished) indicates that these areas are densely populated. In these two figures, approximate parameters are used for a better visibility on the map, using the maximum projections that in reality are more likely to be attained in the next centuries if current trends continue.



Figure 2
**Approximate 300 cm
sea level rise projection**

Source: Couturier (a), unpublished



Figure 3
**Probable tide limits with an
approximate 300 cm sea level rise
projection in the populated
south of Wallis**

Source: Couturier (b), unpublished

Wallis is an excellent opportunity for investigating this issue, since it is not one of the islands that are exposed to immediate life-threatening change. As such developments on the island can be observed in the mid-term, and solutions can be found within an expanded and reasonable time frame. This allows reviewing of different potential scenarios and models and is an opportunity to anticipate necessary actions.

It is crucial to investigate which major factors play a role in the preparation for this change in lifestyle – and if there is any preparation at all. As a result of her research, the author has come to the conclusion that climate change in Wallis is not considered a pressing issue in the everyday lives of many islanders, at least for a substantial part of the local population. The threat is not perceived as immediate and significant personal consequences are considered unlikely (see Worliczek, 2010). Clearly there is a lack of information at all levels of the population; local everyday issues have a higher and more immediate priority. Anticipating the impact of climate change, such as the necessity to leave the coast, is not something that is on the agenda for many Wallisians– a phenomenon that is not uncommon (Barnett, 2001).

Subsistence economy and local resource use

Wallis' food consumption is based on subsistence economy. Almost every family raises its own pigs, grows taro, yams and manioc, and goes fishing. There is a noticeable shift toward the consumption of imported food, but the core activity for most households is still the local production of food. This is especially important given that two-thirds of the population have no income (Institut d'Emission Outre Mer, 2009) and life depends on the success of agriculture and stock.

Under Wallis' current land distribution, different zones are linked to different purposes: generally taro plantations and gardens tend to be located in the populated areas on the northeastern and southeastern coasts; taro fields are in immediate proximity to the sea and gardens are usually a bit more inland. Plantations for yams and manioc tend to be distributed all over the island, but with a lower density in the *toafoa*.

With rising sea levels it can be expected that the taro plantations will not be useable anymore, and family gardens would have to shift together with family housing. This would very likely be followed by a change in consumption patterns, as was the case in Rangiroa, French Polynesia, in 1948: after a tidal wave destroyed the entire harvest except coconut trees, a shift in agriculture took place. With newly introduced money economy people started to neglect their plantations and relied more and more on imported food. This kind of development, whose beginnings can already be felt in Wallis, is likely to accelerate with the loss or the more complicated cultivation of local staple foods. The shift to imported food therefore assumes a high dependence on the exterior world, and changes the structure of society with widening gaps between those who can and those who cannot afford to live on imported goods.

But agriculture is not the only domain of local resources that will be affected in this case. Presently, one of the pressing issues in Wallis is coastal sand mining, which contributes to the erosion of the island's coast. Beach sand is used in the construction of public and private buildings on the island and therefore has private and commercial use. It is the only resource which can be sold. Even though solutions involving alternative materials are actively being sought, the mining of beach sand is not a problem that is likely to

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be solved soon. Personal gain, a lack of alternative resources that can be monetized and an emphasis on short-term interests all complicate the issue.

As a consequence, most of Wallis' beaches in the populated areas have disappeared (Worliczek, 2010a). Beach erosion continues and the customary definition of how far to the beach or into the lagoon one's personal property reaches is not clearly defined. A rising sea level combined with accelerated beach erosion will diminish properties substantially. This raises another issue: if ever there should be claims made to substitute lost land, to what extent can the owner of a property be made responsible for this loss if he or she had previously extracted a lot of sand from the beach that is part of the property? Would a rising sea level have eroded this very piece of land at the same pace without these extractions? And what if the owner did not extract the sand, but rather it was their neighbour who built an embankment that caused erosion and land loss on this owner's property? Coastal space layout is a determining element here, since there is no overall administration of the coastal area and everyone is free to decide what to do with their own land. Sand mining sometimes took place on a large scale in recent decades, therefore a change in the morphology of Wallis' beaches is not only traceable back to climate change, but also to local human activity in significant degree. This is an ongoing problem, and it will be a major challenge to decide how big the locals' responsibility in this issue is.

The Environmental Service in Wallis has mandated scientific studies about the impact of and alternatives to sand mining (Allenbach, 1999; Bantos, 2011), but politics and customary authorities try to ignore the issue. A solution seems to be out of reach at present; measures against sand mining are very unpopular on Wallis and hard to implement because of the instable power structure.

Internal migration and demographic development

Most of Wallis' chiefs agree that there would be enough space in the interior of the island to accommodate comfortably all of the people living on the island, assuming that the emigrated Wallisians from New Caledonia, metropolitan France and elsewhere do not return home. This is a practical question that does at least need to be asked, given that the right to use a piece of land comes from family lineage and does not expire with absence from the territory.

Beach erosion continues and the customary definition of how far to the beach or into the lagoon one's personal property reaches is not clearly defined

However, at present there is no evidence to suggest such a repatriation – on the contrary, the emigration rate of –8 percent is extremely high (Institut d'Outre Mer, 2009), and a change in the direction of this net outward migration seems rather unlikely.

After having analysed the political, customary, demographic, economic and cultural context, the author has come to the conclusion that there are issues that need to be addressed when proposing a migration to the interior of the island that is not random, but controlled and directed:

→ **Can the traditional land tenure system keep pace with these changes?**

One would estimate that the flexibility of the traditional system allows an adaptation to new challenges – given that this system actually works and is respected by the majority of the population, which is currently not the case. The future development of the two lines of tension mentioned earlier will be a determining factor in the next few years, since negotiations about the management of land tenure and the question about the creation of a land register are pointing the way ahead.

→ **How can land distribution work within extended families?** Wallisian society is based on solidarity; sharing and support are essential values, especially within families. Decisions concerning land questions take into account the contextual need – an involuntary displacement caused by climate change meets the criteria for 'need'. Having said that, there should be clear instructions coming from the customary authorities to help the families' heads to take the right criteria into account. This would help to avoid land disputes or discrimination against family members that are underrepresented.

→ **Which discrepancy creates the growing difference in economic prosperity of the population?** In theory, land should be redistributed within the family. But since land can be sold to other Wallisians (but not to foreigners), will there be a shift in property distribution? Will money even play a role in land distribution within families? Again, clear indications from customary authorities and the *lavelua* (having the support of the population) are necessary.

→ **Will France finance these displacements?** The infrastructure on the east coast is far better developed than in the interior, and the west coast does not have any infrastructure at all, apart from a few dirt roads. Electricity

Decisions concerning land questions take into account the contextual need – an involuntary displacement caused by climate change meets the criteria for 'need'



and water are commodities that people would not want to leave behind. There is also the question of who would pay for the construction of new houses. The majority of the population has abandoned the traditional *fale* and lives in concrete buildings, depending heavily on imported materials. These houses are expensive to construct, especially for the two-thirds of the population that do not have a regular income (Institut d'Outre Mer, 2009). If islanders need to leave their current houses, supplementary funding for new homes will be necessary.

It should be possible to adapt the traditional land tenure system to the challenges of climate change, to put the emphasis on its flexibility and its inherent character of contextual need – this is exactly what is required for the coming redistribution of land. Whatever option Wallis adopts, it is absolutely critical that the leaders of the island speak with a united voice and define a common strategy, otherwise they will not be able to unite the population behind them.

Scenarios and options

As a result of the author's discussions with different customary authorities and members of the population, three different internal migration scenarios are considered to be realistic:

- **Villages affected by sea level rise are dissolved.** Inhabitants assimilate in other villages where they are genealogically linked through their land. Families should be able to find properties and space for everyone; if they do not, they can consult the customary mechanism. With the exception of two villages (Mala'e and Lotoalahi), all villages are on the coast, with some lying lower than others. That is why this migration movement is more likely to be realized as a shift in population towards the interior rather than a complete displacement.
- **Relocation of an entire village to the interior: the creation of new villages.** Since there is hardly any customary land left that is not in the possession of families or individuals, this option would be difficult to realize. It would require the expropriation of land parcels located in the interior to make space for an entire village; it is highly questionable if all

the parties involved would agree with this. Such a scenario could only take place at the village level, and a compensation scheme would have to be developed. If this option were to be followed, the value of land would change considerably because it would become more monetized. This runs contrary to present Wallisian land tenure principles, where land is seen as the basis of the livelihood of future generations in each family.

→ **Increased emigration to nearby New Caledonia, metropolitan France and other destinations.** The trend toward emigration, which is already strong, is likely to accelerate with sea level rise. Climate change could be the decisive factor among a set of factors that are taken into consideration when thinking about emigration. Wallis already has a very high emigration rate and it is not in the interest of the island to lose an even bigger part of the population. Furthermore, it is questionable if New Caledonia would be willing to absorb a high rate of Wallisian immigrants, given that elevated immigration from Wallis has already been an essential element of political tensions in the past (Angleviel, 2004:86). As for metropolitan France, this seems a possible option but would have to be negotiated. Emigration should only be considered as a last resort, as the aim is to establish a liveable long-term scenario on Wallis Island itself.

The author's analysis shows that the first option represents the most likely workable scenario. This would surely be the reason for land disputes: thus the need for a strong, functioning, customary power structure that is able to deal with these tensions and place an emphasis on the need for solidarity. To this end, it may not even be necessary to make major changes in the land tenure system even as it is. An assessment will need to be carried out in order to establish who is really implicated and to what extent, an issue that raises questions about the predictability of sea level rise and the variables used for calculations. Resources will need to be made available, and a time span established, that allows each family to solve this issue individually. Supplementary funding from the administration needs to be channelled so that it can be used reasonably, such as for spatial planning in coastal areas (e.g. assistance for the technically-correct construction of sea walls) and the reinforcement of infrastructure in the higher areas of the island.

There is a need for a strong, functioning, customary power structure that is able to deal with these tensions and place an emphasis on the need for solidarity



Actors and stakeholders

A change in policy is definitely necessary from a climate change development point of view. But, according to some locals, similar examples in the past did not work out in a satisfactory manner. Foreign policy-makers came to Wallis in order to establish environmental protection schemes, without taking into account the needs of a population that is not involved in scientific discourse in everyday life. (By outlining this example, the author is suggesting that environmental issues can be taken as an illustration of the distribution and perception of new ideas among Wallisians.) The foreigners' approach was sometimes perceived as invasive, and the message was not accepted by the population. The majority of Wallisians lacks higher education – only 35 percent of the women and 38 percent of men have obtained their A-levels (see Hadj, 2008) – and do not have a regular income. For them, scientific ideas and theories about environmental protection are a luxury that contradicts an established set of life-sustaining practices on the island.

The most difficult step in fomenting long-term climate change awareness is surely the first one: to raise the level of consciousness about an issue that is not palpable in everyday life. Stakeholders in the administration and the customary authorities need to be better informed. Information passes through personal communication, discussions and setting an example for new ideas, not through written policy. Hence the need to review communication channels and how information is communicated: policy-making at the administration level is difficult to implement, the information does not usually reach the population in an appropriate way, and because of this it is not considered important enough. The population first needs an understanding of the necessity for action, and second tends to follow local role models.

A hierarchic communication model (Figure 4) shows that the local *pulekolo*, the village chief, is the pivotal element in the transmission of information. He is the customary authority that is closest to the population, and has the necessary credibility for implementing and integrating new information. The two stakeholders that are not part of the customary structure, but that are nevertheless influential – the administration and associations – have encountered problems in the past when attempting to communicate through the customary structure. These problems were often caused by personal rivalries

or political affiliation. Additionally, there were attempts to bypass the customary authorities, an approach that is doomed to fail in a society where the power pyramid has developed over generations: it is an integral part of the Wallisian culture and it would be more efficient to use it than to ignore it.

The *pulekolo* is the key to successful communication. He should be the target audience (with the approval of the *fa'u / faipule*) and needs to be convinced of the importance of the issue, something that can only occur through oral communication and devoting time to discussion and explanation. As soon as he has profoundly integrated instructions and principles, this will generate a trickle-down effect into the population, especially the part of the population that is not part of the privileged few who have other ways of obtaining information (e.g. TV or higher education) and who are not driven by economic daily needs because they have salaries. In order to reach the entire population, it will also be essential to talk to both the royalist and the reformist authorities, since they are role models for different segments of the islanders.

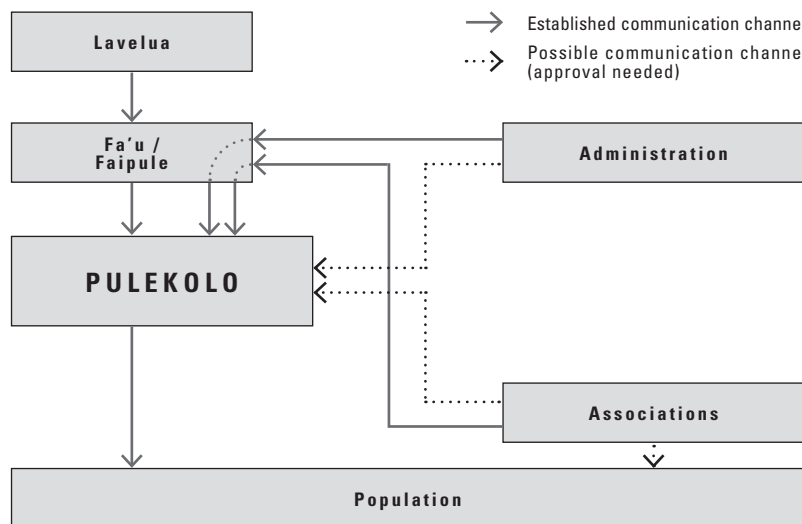


Figure 4
Hierarchic communication model



The administration will need to supply the technical information, whereas the customary authorities are the only ones that are able to communicate this information to the population. This two-step process has proven to be difficult in the past, since the two institutions work with a completely different logic, and money tends to curb efforts on both sides.

Associations (grouped around a village or a certain interest group such as women or the environment) start to become important actors in Wallisian society. They tend to address issues in modern society (such as the need for collecting rubbish in the village) that have developed recently and that are not rooted in the customary structure. They should not be neglected in this future problem-solving scenario: they can help to bridge the gap between science and the population, although they will need to work with the approval of the customary authorities to have the necessary credibility.

CONCLUSION

Wallisian society is not static: new influences, developments and ideas are taking root in a modernizing society. It will take time, together with targeted information and education, for the concept of climate change and its threats to take root in the local mindset. The steps required do not necessarily call for new institutions because existing structures can be used. This possibility should also be explored on other Pacific islands. Customary power structures exist on these islands as well and have been partially integrated into their governing structures (e.g. Samoa, Tonga); in some places they have even been 'reinvented' (see e.g. Lazrus (2009) re Tuvalu). They should be called upon to deal with this important long-term issue.

Existing structures that have provided a certain degree of efficiency in the past have the greatest potential to implement new concepts and instructions successfully, since their chances of being accepted by the population are high. The degree of resilience to climate change needs to be explored separately on each Pacific island; countries like Tuvalu or Kiribati, for example, seem to be in a situation where there will be no escape from the need to relocate the population to new lands. But this is not the case on all Pacific islands –

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different factors come into play, and the physical environment and availability of land is a major factor (Worliczek, 2011). Rasmussen *et al.*, (2009:1) state for some of the Solomon Islands (Ontong, Java, Bellona, Tikopia): "It is concluded that the capacity to cope with and adapt to climate variability and extreme weather events is well developed, and the social resilience of island communities appears to be high."

Wallis is in the fortunate position of having a well-adapted geomorphology. The challenge will be to balance out the desire of a part of the population for a revision of the land tenure system, keeping this in line with customary definitions and the need to eradicate possibilities for arbitrariness at the same time. The issue of sand mining is an ongoing problem that definitely needs to be solved soon, since it is intimately linked with a rising sea level. If there are future compensation schemes, they would have to take into account the role that local populaces have played in commercial sand mining.

On Wallis island, there is also one central land tenure issue that needs to be taken into account that has no direct link to climate change: the fact that there is no general agreement about how land should be managed. The customary chiefs on one side want to keep their power but are split into two groups. This brings with it a loss of credibility, and therefore power. The French administration on the other side is more in favour of a formalized land tenure system that would approach the French model and be easier to manage. To this end a land register would be necessary, but this would be anathema to a part of the Wallis population, who would not readily accept it. Wallis jealously guards its traditions; an attempt to renovate the system would be regarded as a voluntary step toward destroying the culture and traditions. Nevertheless, Wallis does need to face new challenges: without the willingness to allow at least some modifications to certain legal procedures and responsibilities, it will be difficult to offer a suitably forthright response to a potentially disastrous long-term situation.

Step by step, a migration movement can be mastered with tools that to a large extent already exist. First, a technical assessment is necessary to find out who is really affected and would have to move away from the coast. Only then can the extent of the required actions be established. Second, each of the core families concerned will need to discuss the issue with their extended

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family across the island, in order to find properties that can be occupied. It is likely that a large number of families would be able to find a solution within the extended family, the social unit that works with a relatively high degree of autarchy and does not require much assistance from the public sector. If usable land is found within the family – very likely in the *toafoa* – then the remaining aspect that needs to be negotiated is potential financial support from the government for the construction of houses, an issue that the administration would have to settle. (If no solution is found within the family, the village chief will need to examine whether there is really no appropriate land available or if personal issues have prevailed. This is certainly the case in some families where personal enrichment is a driving factor.)

It is very likely that a large number of cases can be solved using this family-centred approach. It is the most logical approach, and also the most Wallisian approach, given that the extended family usually looks after the well-being of all family members. For the remaining cases that cannot be solved, the few land parcels that are still under customary authority will need to be reviewed and it might be necessary to distribute these. But this last step is rather unlikely, given the low population density on some parts of the island.

The ideal condition for meeting the challenge of rising sea levels is the early development of a collective conscience that anticipates and accepts the likelihood of the changes to come. At present it is not clear whether climate-induced change will catch the population of Wallis unaware, or if the island's people will consciously become aware of the issue in time (Giddens, 2009; Rudiak-Gould, 2011 (in press)). However, thanks to the flexibility of the Wallisian land tenure system and its logic of contextual need, the islanders may be able to react quickly enough, once a clear decision to do so is taken. They have an advantage compared with other Pacific islands where land tenure is managed by official administrative systems: these systems work slowly and find it more difficult to produce quick responses; the author observed this in her research around French Polynesia in 2009 and 2011. It is absolutely crucial to take into account the nature of the local land tenure system and its power mechanism: even if we understand much about the technical aspects of climate change and its consequences, there will be no possibility of adapting to the coming changes if the key actors themselves are not convinced of the necessity to act.

The ideal condition for meeting the challenge of rising sea levels is the early development of a collective conscience that anticipates and accepts the likelihood of the changes to come

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